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ABSTRACT

This brief discusses the use of traffic barriers to block automobile access to streets as a way to reduce gang violence. The tactic was used in a crime-plagued area of Los Angeles, California, that had experienced a high level of drive-by shootings, gang homicides, and street assaults. The program, Operation Cul de Sac (OCDS), was evaluated as a crime reduction tactic. In its 2 years of operation, OCDS did appear to reduce crime. The number of homicides and street assaults fell significantly during the program's operation and rose after the program ended. The street closure did not appear to affect property crime, only violence. Crime was not displaced to other areas. The success of the initiative suggests that traffic barriers can be part of an approach to maximize the defensible space of neighborhood residents by increasing their span of control. (SLD)

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National Institute of Justice

Research in Brief

Jeremy Travis, Director

November 1998

Issues and Findings

Discussed in this Brief: The use of a deceptively simple tactic, traffic barriers, to block automobile access to streets as a way of reducing gang violence. The tactic was used in a crime-plagued area of Los Angeles that had experienced the city's highest level of drive-by shootings, gang homicides, and street assaults. The NIJ-sponsored evaluation of Operation Cul de Sac (OCDS), as the program was called, examined whether the tactic could reduce gang crime.

Key issues: OCDS was based on the theory of situational crime prevention, which postulates that crime occurs partly as the result of opportunity and can be reduced by first identifying and then blocking these opportunities rather than attempting to eliminate "root causes." The Los Angeles Police Department noted that in the OCDS target area gang crime clustered on the periphery of neighborhoods linked to major roadways; police set up traffic barriers as a way to block the opportunities for crime the roadways created. The evaluation sought to determine whether these street closures could help to "design out" gang crime.

Key findings: In its 2 years of operation, 1990 and 1991, OCDS appeared to reduce violent crime.

- The number of homicides and street assaults fell significantly in both years and rose after the program ended.

"Designing Out" Gang Homicides and Street Assaults

by James Lasley, California State University, Fullerton

The hottest spot for gang-on-gang homicide and assault in the city of Los Angeles had seen gang violence becoming a cycle of attacks followed by reprisals, followed by the inevitable counterattacks. Using a deceptively simple tactic, the Los Angeles Police Department (LAPD) intervened in an attempt to restore order to the area. Under the direction of then Assistant Chief of Operations Robert Vernon, an experiment involving the use of traffic barriers to block access by automobiles was launched in 1990 as a means to "design out" crime by reducing the opportunities to commit it.

In Operation Cul de Sac (OCDS), as the program was called, the traffic barriers were placed in neighborhoods where gangs and accompanying gang violence had spiraled out of control. The year before the project was launched, these neighborhoods had seen the highest number of drive-by shootings, gang homicides, and street assaults in the city. Police intelligence sources indicated that several street gangs had sold narcotics and/or engaged in other criminal activity in the neighborhoods.

In an NIJ-sponsored evaluation, researchers compared crime levels in the OCDS area before, during, and after its 2 years of operation to find out if the barriers, by reducing automobile access to the area, reduced crime. (For details of the study method, see "Evaluating Operation Cul de Sac.") The study revealed that homicide and aggravated assault fell and that these crimes were not displaced to other areas. The tactic used by the LAPD aimed to help restore the area's "defensible space."

The study results are cause for optimism, but it should be noted that the program was established and evaluated at one site only. The same results cannot be guaranteed in other communities, even though their problems may be similar to those reported here. Thus, jurisdictions that wish to adopt a program like OCDS should do so with the realization that further evaluations are needed to confirm the effectiveness of traffic barriers in reducing serious gang crime.

Gang violence: The product of opportunity

The underlying assumption of OCDS was that gang violence, including gang-related homicide, is partly the result of criminal opportunity. In this respect the program directly challenged the popular notion that gang rivalries are so deep-seated, emotionally charged, and irrational that they cannot be mitigated or

continued...

Issues and Findings

continued...

- Property crime decreased substantially during the first year of the program but it also decreased in the comparison area, where there was no OCDS, indicating that some factor or factors other than the traffic barriers were responsible for the reduction in the OCDS site.

- In the second year of the program, property crime rose, suggesting the street closures affected only violent crime.

- Crime was not displaced to other areas. Violent crime fell, not only in the OCDS area, but also in contiguous areas. This may be because the areas of potential displacement are the turf of rival gangs. As such they would be off-limits to gangs that might want to enter new territory when the traffic barriers reduced their opportunities to commit crime on their own turf.

- Traffic barriers can be used as part of an approach to maximize neighborhood residents' defensible space by increasing their span of control. Zones configured with the barriers heighten the visibility of suspect activities. They can be particularly effective when combined with "natural guardians"—people who serve as informal sources of surveillance and social control.

Although these findings indicate traffic barriers may work to reduce violent crime, it should be kept in mind that the experiment was conducted at only one site. Replications of OCDS and further evaluations are needed to fully test the effectiveness of the tactic.

Target audience: Police chiefs, sheriffs, urban designers and planners, crime prevention organizations.

stopped by specific deterrence measures. On the contrary, OCDS postulates that violent gang crime is, in fact, deterrable because the opportunities, in this case opportunities presented by major roadways that facilitate entrance to and exit from high-crime neighborhoods, could be controlled.

OCDS focused on a proximate cause rather than a "root cause," with the goal of using traffic barriers to decrease the mobility of rival neighborhood gangs traveling to and from gang crime "hot spots." In this way the barriers change the situations in which gangs perceive opportunities to carry out "hit-and-run" crimes such as drive-by shootings.

Situational crime prevention

One of the leading theories of criminal opportunity is "situational crime prevention." Developed by criminologist Ronald V. Clarke, the theory is based on the assumption that crime can be reduced by pinpointing and blocking the forces that facilitate would-be offenders' criminal acts.[1] Would-be offenders, the theory proposes, make rational choices in planning their criminal acts. For example, gangs may choose a particular street to commit a crime because they rationally determine that the way the street is situated provides them with ready access and exit, thereby creating an opportunity to more easily elude arrest.

Applying the model to gangs, the LAPD assumed that they did in fact make a "rational choice" about whether to engage in a particular act of criminal violence and whether to do so in a particular neighborhood setting. Evidence to support the theory has come from studies of residential burglary, shoplifting, and other crimes,[2] but OCDS was an initial attempt to apply situational crime prevention to gang violence.

Designing out gang crime

When police and researchers examined hot spots in the OCDS program area, they found a systematic pattern of opportunity. The majority of drive-by shootings and violent gang encounters occurred in clusters on the periphery of neighborhoods linked to major thoroughfares. To stem the violence, the police closed all major roads leading to and from the identified hot spots by placing standard cement K-rails (freeway dividers) at the end of the streets that led directly to these roads. This reconfiguration, which essentially created cul-de-sacs, was completed within the relatively short period of a week. Later, the K-rails were replaced with fixed iron fences which featured a locked gate that could be opened to permit access by emergency vehicles. Most of the traffic barrier configurations generally allowed one unrestricted roadway entrance/exit point.

Violent crime fell significantly

The number of homicides and assaults in the OCDS area fell significantly during the 2 years the program was operating, and rose after it ceased operations, while in the comparison area the level of these crimes remained constant.

The year before OCDS began, 1989, 7 homicides were committed in the area. During the subsequent 2 years—after the traffic barriers were installed on major streets in the gang hot spots—only one homicide was recorded in the OCDS neighborhood. (See exhibit 1.) The reduction in homicides between the year before the program began (1989) and the first year of the program (1990) is statistically significant and could be the result of OCDS traffic "design" changes, not random fluctuations in the number of homicides. For assaults, the story is similar. Between the preprogram year and the first year, the number of these crimes fell

significantly (from 190 to 163), and continued to do so the second year (from 163 to 138). (See exhibit 2.) Reductions of this magnitude indicate the change may have been due to the effects of OCDS.

As predicted by the hypothesis, homicide and assault did not decrease in the comparison site, where OCDS did not operate. The numbers remained static, with no significant decrease (or increase) in the 2 years of the program.

Postprogram crime. The year after the program ceased operations, the level of homicides and assaults rose in the OCDS area, as the hypothesis predicted. Their similarity ends here, however, because in the comparison area, where there was no OCDS, the homicide and assault levels took different courses.

The statistically significant rise in homicide in the OCDS area after the program ended coincided with the reopening of traffic access to selected gang hot spots. In the comparison area a similar statistically significant increase occurred in this final period, further supporting the conclusion that OCDS had suppressed homicides. The explanation may be that removal of the barriers opened the roads for rival gangs from both the OCDS and comparison areas to freely engage in drive-by shootings, thereby increasing the number of homicides in both areas. This finding may also suggest a "backlash" effect of the traffic closures: gang rivalries and actions that were suppressed when the traffic barriers were installed may have intensified as a result of the sudden increase in drive-by shooting opportunities created when the traffic barriers were removed.

Unlike the situation with homicide, assault did not increase in the

Evaluating Operation Cul de Sac

Operation Cul de Sac was tested in a 10-block area (roughly the size of a census tract) that in 1989 experienced the highest average number of drive-by shootings, gang homicides, and street assaults in the city of Los Angeles. In that year—the year before the project was launched—this amounted to approximately 38 drive-by shootings, 7 homicides, and 174 aggravated street assaults. Police intelligence sources indicated that 25 to 30 hardcore street gangs (primarily African-American and Latino/Hispanic street turf-oriented gangs) had sold narcotics and/or engaged in other criminal activity in the OCDS test neighborhood.

Comparing crime before and after OCDS. The researchers used an interrupted quasi-experimental study design, which measures effects of a program or other factor before, during, and after implementation and also compares the effects to areas that are similar but where there has been no implementation. Thus, the impact of Operation Cul de Sac on gang crime was measured by comparing crime levels in the test area before and after the program began to see if they fell.

The comparison site. In addition to obtaining and analyzing crime data from the OCDS site, researchers studied crime in the entire patrol division surrounding the OCDS site. The effects of the "experimental" OCDS program were compared with crime data from this surrounding comparison area to detect changes (if any) in the crime level and to determine the statistical significance of those changes. The researchers also examined the question of whether crime had been displaced from the OCDS site to the comparison area, which is contiguous to the experimental site.

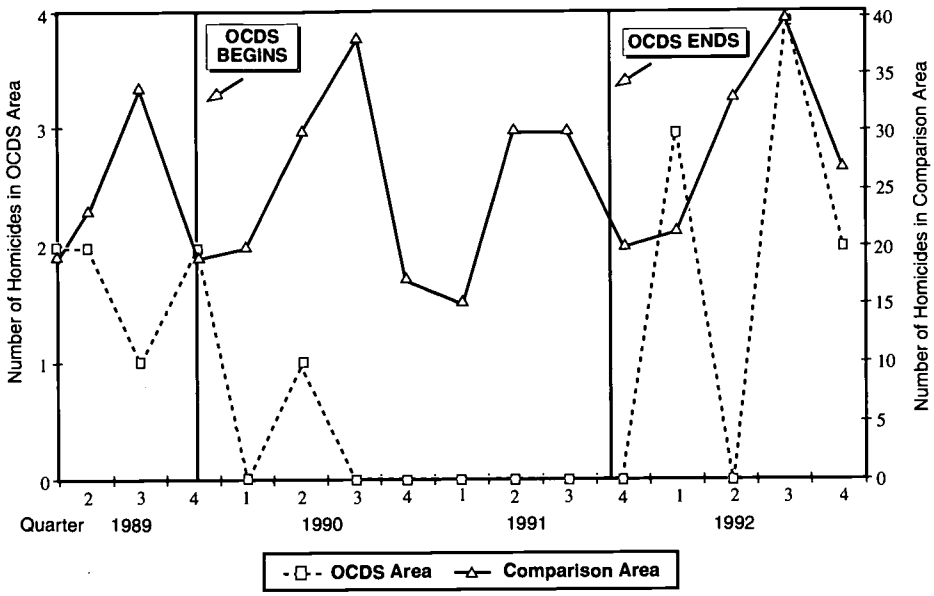
The program was fully functional from January 1990 to December 1991. The study ran longer, from 1989 to 1992, to enable researchers to compare crime levels before the program began and after it ended.

Data sources and reporting. Researchers used official LAPD data on Part I crimes (those defined by the FBI as serious offenses): homicide, aggravated assault, and property crime. The homicides and assaults examined in the study were identified by the LAPD as gang related. The property crimes examined were burglary, automobile theft, automobile burglary (of locked vehicles), grand theft, bicycle theft, theft from automobiles (from unlocked vehicles), and theft from individuals (larceny).

All crime data were reported by year as well as quarterly. Because the sample sizes were very small, tests were conducted to determine their statistical significance,* with the test for significance set at $p < .05$. (For findings significant at this level, the chances are less than 5 in 100 that the result has occurred randomly.)

* The statistical tests used both parametric (t-test for correlated samples) and nonparametric methods (the Wilcoxson Matched-Pairs Test). See Siegel, S., *Nonparametric Statistics for the Behavioral Sciences*, New York: McGraw Hill, 1956.

Exhibit 1: ***Homicides Fell During Operation Cul de Sac***



comparison area after the program ended in the OCDS. Rather, the level remained constant.[3] One explanation may be that because aggravated assault is tied to intergang conflict (at least in the OCDS area), an increase in this crime in the OCDS area would come as no surprise. Another possible explanation is that the traffic closures reduced the likelihood that gangs would come into contact with one another (either deliberately or accidentally) in automobiles, and this in turn reduced the likelihood of assaults until the barriers were removed.

The barriers did not deter property crime

Property crime decreased substantially (approximately 31 percent) during the first year the traffic barriers were installed. Although it is possible that the barriers were responsible for reducing property crime, the study did not provide statistical support for this conclusion. A nearly identical reduction in property crime took place at the same time in the comparison area, indicating some other factor was responsible.

During the second year of the program, property crimes rose to their pre-program levels (about 30 percent, a statistically significant increase) in the OCDS area. In the comparison area, there was a nearly identical increase (32 percent). Taken together, these findings suggest that the possible impact of traffic closures on gang-related crime appears to be limited to violent offending (homicide and assault). In fact, it may be that people who committed property crime in the OCDS area were neighborhood residents who were unaffected by restrictions in roadway mobility resulting from the traffic closures.

Violent crime was not displaced

One of the central concerns about programs such as OCDS that block the natural flow of criminal opportunity is the displacement of criminals and crime to contiguous neighborhoods.[4] No evidence of such a change in offending patterns was discovered for the OCDS program. This finding is contrary to the negative displacement hypothesis, which holds that gang members in the OCDS area would move to contiguous neighborhoods where they might continue their violent rivalries under less physically restrictive conditions.

A possible reason gang-related crime was not displaced lies in the nature of gang ties to specific neighborhoods or turf. The gangs in the OCDS area may have refrained from committing crime in surrounding neighborhoods because these neighborhoods are the turf of rival gangs. Turfs create natural social mechanisms that prevent street gangs from moving at will to new streets, parks, or blocks. Similarly, rival gangs traveling by automobile into neighborhoods in the general vicinity of the OCDS site may have been given the word to stay clear of the traffic closures, thus avoiding OCDS and contiguous neighborhoods altogether.

Criminals did not adjust their m.o. to the barriers

There is no reason to believe that criminals adapted to the OCDS traffic closures; that is, adjusted their modus operandi to the closures and used the barriers to their criminal advantage. Clearly, if gang members discovered ways to use the traffic barriers to their advantage (for example, to avoid the police or to confront rival gangs), it is likely that significant increases in violent crime would have occurred by the second year of OCDS. They did not.

Lessons from OCDS

A number of lessons that may be useful in considering the adoption of programs like OCDS can be drawn from the study findings.

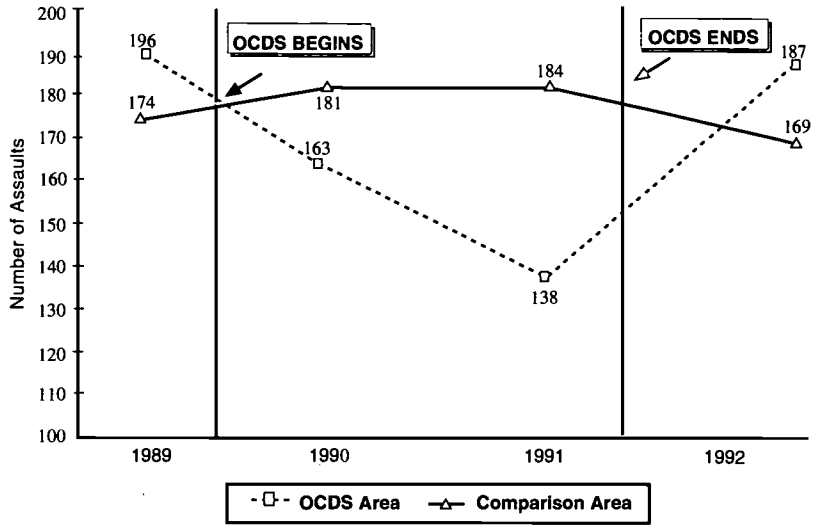
1. Plan traffic flow wisely. Future attempts to counter gang violence through traffic closures similar to those employed in the OCDS program can be carried out as follows:

- Survey traffic in the target community to identify major flows through areas that present prime opportunities for crime (chances are, these areas will report a large number of crimes, although, on the other hand, the proportion of unreported crime may be high). The survey would be conducted before deciding on the final configuration of the traffic barriers.

- When looking for crime opportunity areas, try to identify streets, places, individuals, and objects that may be considered attractive targets. In addition to gangs and gang hangouts, these may include liquor stores, fast food restaurants, schools, parks, parking lots, poorly lighted locations, and areas where luxury or other cars are not kept in garages at night. If traffic barriers are included as part of this strategy, it is possible they might be the factor that works to reduce property crime at these kinds of targets.

- Configure new traffic patterns. Channel more traffic into streets that offer the lowest criminal opportunity: those that prohibit parking, those with steady traffic flow that prohibits stopping, or those bordered by open areas where the line of vision is unobstructed. The general idea is to use the new configurations to alter the routines of offenders who use certain streets on a regular basis because these routines mean they cross paths with potential victims or may come into contact with their households and their places of business.

Exhibit 2: ***Assaults Fell During Operation Cul de Sac***



2. Use traffic flow to increase defensible space. "Defensible space" refers to physical design that facilitates neighborhood residents' tendency to and ability to exercise informal social control. A common strategy employs mechanisms of access control to increase the resident-to-outsider ratio in the hope that residents will thereby exercise more control over nonsociable behavior and increase sociable behavior.[5]

The ability to restore defensible space is perhaps the most beneficial crime prevention feature of traffic barriers.[6] For this restoration to occur, the barriers must be used to increase the span of control of people living in areas plagued by gang crime. The general approach is to use barriers to make suspect activity more visible in neighborhoods that have lost control because vehicle and pedestrian traffic is unrestricted.

Zones of control can be established by using traffic barriers to maximize defensible space. These zones rely on "natural guardians," people whose routine presence in and familiarity with an area function as the eyes and ears on the street that ensure a measure of informal social control. If there are no natural guardians in a traffic barrier zone, the zone will not deter crime no matter how skillfully it is designed. Locations that allow a continuous, unobstructed view of the zones are the best. In conjunction with traffic barriers, people who remain at home during the day (e.g., homemakers, retired people), windows lighted at night that offer unobstructed views of the street, and churches or other gathering places where there is intense activity during the evening and daytime hours function as natural surveillance mechanisms.

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3. Foster community involvement. To achieve community acceptance of traffic barrier programs, it is essential that community members participate in all phases of program development. Programs like OCDS work best in neighborhoods where citizen patrols or other forms of community activism against crime already exist. Traffic closure programs that embrace the true spirit of community policing—as partnerships in which responsibilities are shared by police and the community—can become effective crime prevention tools.

James Lasley, Ph.D., teaches in the Division of Political Science and Criminal Justice at California State University, Fullerton. The research was conducted with support from NIJ (grant number 96–IJ–CX–0009). Photocopies of the full report on which this summary was based, "Using Traffic Barriers to Design Out Crime: A Program Evaluation of LAPD's Operation Cul de Sac," are available at cost from the National Criminal Justice Reference Service (NCJRS). The report is also available through interlibrary loan from NCJRS.

Notes

1. Clarke, R.V., "Introduction," in *Situational Crime Prevention: Successful Case Studies*, R.V. Clarke, ed., New York: Harrow and Heston, 1992.

2. For a study of situational crime prevention as it relates to residential burglary, see Cromwell, P., J. Olson, and D. Avary, *Breaking and Entering: An Ethnographic Analysis of Burglary*, Newbury Park, California: Sagel, 1991; for its application to shoplifting, see Carroll, J., and F. Weaver, "Shoplifters' Perception of Crime Opportunities: a Process-tracing Study," in *The Reasoning Criminal*, D.B. Cornish and R.V. Clarke, eds., New York: Springer Verlag, 1986. There is a complete review in Felson, M., *Crime and Everyday Life: Insights and Implications for Society*, Thousand Oaks, California: Pine Forge Press, 1994.

3. Because the reduction in the number of assaults in the comparison area (from 184 to 169) between 1991—the final year of OCDS—and 1992 is not a statistically significant decrease, the number essentially remained constant.

4. See Clarke, R.V. and D. Weisburd, "Diffusion of Crime Control Benefits: Observations on the Reverse of Displacement," in *Crime Prevention Studies*, R.V. Clarke, ed., Monsey, New York: Willow Tree Press, 1994.

5. More research is needed to further support the concept of defensible space.

6. Newman, O., *Creating Defensible Space*, Washington, D.C.: U.S. Department of Housing and Urban Development, 1996.

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