
DISPLACEMENT: A REVIEW OF THE EMPIRICAL LITERATURE

by

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Abstract: *This paper reviews 55 published articles on crime prevention measures in which researchers specifically looked for evidence of displacement. These articles are classified by the type of crime prevented and the nature of the preventive measure. Analysis of the evidence suggests that displacement is not inevitable, and that if displacement occurs, it will be limited in scope.*

INTRODUCTION

"Paradoxically, the behaviour most intensively analyzed by criminologists in relation to the displacement hypothesis is not a crime: it is suicide" (Barr and Pease, 1992:108).

This statement by Barr and Pease might lead the reader to conclude that our empirical knowledge of the displacement of crime is fairly limited. For some time now, however, criminologists have been keenly aware of the threat of displacement. The large number of theoretical, methodological and empirical studies about crime displacement are testimony to this awareness. This paper, however, is confined to empirical studies of crime displacement, foregoing a discussion of the theories used to explain the presence or absence of displacement and the methodological problems involved in the empirical study of the phenomenon.

The focus on empirical studies does not suggest that theoretical and methodological issues of displacement are irrelevant. However, displacement has far too often been a topic primarily discussed on the basis of

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assumptions or value judgments. Critics of situational prevention, for example, often state that the approach is useless because it only displaces crime to other places or times. Yet these critics tend to base their conclusions on ideological grounds rather than on the basis of sound, empirical knowledge. Hence the need for a systematic review of the present empirical knowledge about crime displacement. This paper provides such a review, first by giving a brief overview of the definition and forms of displacement found in the literature. The overview will be followed by a presentation of the findings of 55 empirical studies, after which some general conclusions about crime displacement will be discussed.

WHAT IS DISPLACEMENT?

In practice, displacement has been studied almost exclusively in relation to programs aimed at reducing the opportunity to commit crime in specific geographical areas (e.g., shopping centers, parking lots, housing estates and neighborhoods). Because such situational crime prevention efforts do not aim to alter the root causes of crime, researchers are faced with the threat of displacement, in which the offenders who are deflected simply shift to other targets or places, severely limiting the net reduction in crime achieved.

Most authors view displacement as the result of the implementation of effective measures against crime (Gabor, 1990:66). Thus, displacement has been defined as "...a change in offender behavior, along illegitimate means, which is designed to circumvent either specific preventive measures or more general conditions unfavorable to the offender's usual mode of operating (Gabor, 1990:66). Crime may be displaced in any manner of ways. Offenders, for instance, may displace to other times, places, methods, targets or offenses (Repetto, 1976).

Repetto's classification of the forms of displacement is rather static, and it is surprising that most authors do not acknowledge that the different forms of displacement could occur in combination. For example, a burglar may move to a different neighborhood, employ new tactics, *and* offend at a different time of day: in practice, the number of expressions of displacement can be great. Only a few authors acknowledge this fact, and they suggest that given the extent to which different forms of displacement operate at the same time, it may be impossible to confirm empirically the existence or magnitude of displacement (Barr and Pease, 1992; Clarke, 1992a; Ekblom, 1989).

Studies of displacement tend to assume rational decision making on the part of the offender. Offenders are most likely to displace when other crime targets are familiar to them or share the same "choice-structuring characteristics" as the original crime from which the offender was deterred (Cornish and Clarke. 1987; Eck, 1993). Bennett and Wright (1984), for example, contend that displacement is a short-term psychological process in that displacement occurs when alternative offenses are committed subsequent to the offender being prevented from his or her initial target. Thus, displacement is related to the same, earlier decision to offend.

With some exceptions, displacement has been studied empirically in two different ways: by conducting ethnographic studies of offenders' motives and decision-making processes, and by evaluating the impact of programs to reduce crime. Most studies of displacement take the latter approach, evaluating the amount of displacement resulting from a crime prevention measure by examining crime rates in adjacent areas or for other offenses. If researchers observe an increase in crime rates, they typically assume that displacement has occurred as the result of the crime prevention project. It is possible, however, that other factors independent of the project are the cause of these findings, such as changes in the offender population, the opportunity structure, or the overall trend in crime rates. Only a few authors have stressed these other factors in their explanations of the displacement effects of crime prevention projects (Chaiken et al. 1974; Stenzel. 1977; Hakim and Rengert. 1981; Barron, 1991). If researchers neglect these other factors, they may overestimate the amount of crime being displaced due to a project.

The above discussion suggests that the displacement phenomenon is highly complex. The amount of displacement may depend both upon whether offenders resort to any combination of alternative targets, times, places, methods, and offenses, and whether these alternatives are familiar to the offender. In addition, researchers may mistakenly assume that a crime prevention effort causes an increase in crime rates, when this causal relationship may in fact be spurious. Thus, displacement is difficult to predict and often impossible to measure in all its forms. Nevertheless, it is safe to assume that most preventive measures may potentially result in displacement. The following section examines the empirical work on displacement to determine the extent to which displacement occurs in practice.

THE EMPIRICAL WORK ON DISPLACEMENT

The clutch of studies demonstrating that preventive interventions displace crime can be easily balanced by research to the contrary" (Heal. 1092:261).

Sampling

Prior to a discussion of the results of the empirical work on displacement, the question must be raised as to whether the publications reviewed are an appropriate sample of all the work published on the topic. Because there is currently no international database containing all known research on displacement, it is impossible to estimate the true number of such publications. In this sense the studies reviewed here represent a selective sample.

During the research period June 1992 through August 1993, two primary sources were examined: (1) the databases and bibliographies at the Ministry of Justice in the Netherlands, containing both Dutch and international publications in the field of crime; and (2) the National Criminal Justice Reference Service Document database (updated in June 1991). Both sources provided a wealth of theoretical, methodological and review studies. These two sources were subsequently reviewed to identify additional titles not documented in the databases. In total, more than 100 publications were located. Forty-nine of these examined displacement following introduction of an apparently successful crime prevention measure, and another six involved interviews with offenders regarding displacement.

Although it is possible that many recent studies were not identified or located, it is nonetheless probable that the 55 publications sampled provide a reliable representation of the present empirical knowledge. This is not to suggest, however, that this sample provides a complete picture of the displacement phenomenon.

The Classification of the Material

Evaluation outcomes were classified by the type of preventive measure used in each study. Whereas a preliminary classification by the five forms of displacement seemed to be a promising approach, such a classification was not useful because more than 40% of the evaluations studied several

forms of displacement simultaneously. Classification by crime type also resulted in a great deal of overlap. This was not the case when the publications were ordered on the basis of different preventive measures. This classification, furthermore, is useful in that it suggests whether certain crime preventive programs lead to displacement whereas others do not.

Researchers have proposed several means of describing and classifying crime prevention measures and programs (Lab, 1988; Van Dijk and De Waard, 1991; Clarke, 1992a). Given the content of the publications, the typology suggested by Clarke (1992a: 10-21) was judged most appropriate for the purposes of this analysis. Clarke distinguishes between 12 techniques of situational crime prevention, each technique consisting of several methods and measures. The techniques are based on three basic mechanisms: increasing the effort in committing crime (e.g., target hardening), increasing the risks in committing crime (e.g., surveillance by the police or employees) and reducing the rewards of crime (e.g., target removal or identifying property).

In 27 studies, the implementation of one specific measure was evaluated. Twenty-two studies address projects for which several different measures were implemented simultaneously. These studies have been classified in seven additional subgroups based on the type of offense(s) being prevented.

In addition to these studies, six ethnographic studies of offenders were reviewed. Table 1 shows the result of the classification of publications, and Appendix I details the breakdown of publications by country, year, offense(s) studied, type(s) of displacement studied, and research design.

RESULTS

This section presents the main findings of the 55 publications studied. The conclusions of the author were used to determine whether displacement occurred; however, in most instances, specific amounts of displacement were not reported. Only a few authors attempted to quantify the proportion of the amount of crime prevented to the amount of crime displaced (Allatt, 1984; Burrows, 1980).

Table 1: Classification of the 55 Empirical Studies

INCREASING THE EFFORT	
target hardening	3
access control	1
control of facilitators	8
INCREASING THE RISK	
formal surveillance and enforcement	9
surveillance by employees	4
natural surveillance	1
REDUCING THE REWARDS	
target removal *	1
identifying property	2
COMBINATION OF MEASURES	
street prostitution	3
vandalism	1
theft from bags	1
car crime	2
residential burglary	5
bank robbery	4
several offenses	6
OFFENDER RESEARCH	6
Total	55

- This measure has been evaluated separately In a study about formal surveillance and displacement (Chalken et al., 1974).

Increasing the Effort

This section presents the results of ten studies designed to increase the offender's effort to commit specific crimes. All ten studies quantified displacement as a change in crime patterns.

Target-hardening

Since January, 1971, all new cars manufactured in or imported to England were required to be fitted with steering column locks to prevent auto theft. Following implementation of this new law, the proportion of new cars stolen declined by a factor of three. However, the risk to older cars—those without the locks—almost doubled. Mayhew et al. (1980) concluded that the effective measure was offset by displacement to older, unprotected cars.

After the installation of security screens (partitions forming a barrier between the cashier and the customer) in 1,300 London (UK) post offices, the number of robberies decreased from 266 in 1982 to 21 in 1985 (Ekblom, 1988). However, there was also an increase in the number of failed robbery attempts resulting from robbers switching to different methods—in most cases using firearms threats at the screen. Ekblom (1988:39-40) states that these alternative methods are more likely to fail because the robbers will commence their firearms threat from a position of psychological disadvantage, in a game where bluff is more important than the actual use of weaponry.

Allatt (1984) examined the effects of the installation of ground-floor security devices in a public housing estate of 792 dwellings. Although there was no decline in residential burglary, the rate of increase was much lower compared to the control estates. Furthermore, there was a marked decline in burglary attempts on the target estate versus an increase in attempts on the control estate. Allatt also found spatial displacement of burglary to two adjacent areas, and target displacement to the privately owned dwellings on the treatment estate. Finally, there was an increase in other kinds of offenses on the target estate, especially thefts of vehicles and burglaries of other premises (e.g., garages). In contrast, on the control estate there was little change in the incidence of other crimes. Nevertheless, Allatt concludes that despite these displacement effects, there was still a net savings in the number of crimes prevented.

Access Control

During a five-week publicity campaign in high-risk areas for auto crimes (thefts and break-ins) in Plymouth (UK), car drivers were encouraged to lock their vehicles. Burrows and Heal (1980) found no significant change in the level of auto crime either during or after the campaign. There

was no evidence of spatial displacement to areas outside the campaign area, nor did cars parked in different locations (streets, car-parks) become more vulnerable. Some evidence was found, however, of temporal displacement to the early hours of the morning, presumably because the campaign persuaded offenders to act with more caution under the cover of darkness.

Control of Facilitators

Facilitators are those items necessary to commit specific crimes. A helmet, for example, is a facilitator for stealing motorcycles when the law requires that all riders must wear helmets: without a helmet, the offender has an increased risk of being apprehended by the police. Likewise, in the case of armed robberies and homicides, firearms are necessary facilitators.

Mayhew et al. (1989) examined whether the four-stage introduction of legislation requiring motorcycle drivers to wear helmets in Germany led to displacement to thefts of cars or bicycles (see also Mayhew. 1991). It was found that the requirement to wear helmets had no effect on thefts of motorcycles until after fines for non-compliance were imposed in mid-1980. Thereafter, thefts of motorcycles began to decrease. Furthermore, there was little evidence of displacement to bicycle or auto thefts; the number of auto thefts increased only slightly, and bicycle theft declined markedly.

The progressive removal of carbon monoxide from domestic gas in England and Wales led to a decline in the number of suicides without displacement to other methods (Clarke and Mayhew, 1988). These same effects were found in Scotland and the Netherlands, although detoxification in these countries had a smaller effect on the overall suicide rates than in England and Wales (Clarke and Mayhew. 1989).

In a study of the introduction of checks as a means of payment in Sweden (Knutsson and Kuhlhorn. 1992), researchers found that check forgeries became increasingly common. This prompted the 1971 requirement that all check writers must present identification when paying by check. The authors found a decrease in check forgeries after the introduction of this identification requirement, with no displacement to other forms of crime.

Even in the case of preventive measures that are not as far-reaching as blanket regulations, the control of a facilitator can lead to a reduction in crime without displacement. To remove the anonymity of obscene phone

callers, two systems were introduced in the New Jersey Bell area in 1987 (Clarke, 1992b). First, "Caller-ID," which displays the incoming call's number, was made available to customers. In addition, customers had the option of using "Call Trace," through which they could dial a code to record the number of the last telephone call received. Clarke found that complaints about annoyance calls declined in one year by at least 25% in the 57 areas with these new technologies. Furthermore, there was no evidence that obscene phone calls were displaced to the 155 areas without these technologies.

Not all preventive measures that control facilitators reduce crime without displacement, however. In a recent review of the effects of limiting access to lethal methods for suicide and homicide, Lester (1993) found some evidence that individuals switched to different methods.

Increasing the Risk

In this section the main results of 14 studies designed to increase the risks of specific criminal acts are presented. With one exception (Van Gemert, 1988), displacement was quantified as a change in crime patterns.

Formal Surveillance and Enforcement

In two American studies, the effects of citywide police campaigns have been evaluated. Hall and Lindgren (1971) found that a campaign in the District of Columbia resulted in a decrease of 4,039 reported offenses ("Index" crimes). While the number of reported offenses in suburban areas increased by 1.818, the authors concluded that there was no spatial displacement.

Stenzel (1977) found that an anti-crime campaign in St. Louis (MO), which relied heavily upon the introduction of foot patrols, led to an increase in reported crime of 2% and to some spatial displacement for residential burglary to 93 adjacent areas. This increase, however, was only temporary, leading Stenzel to conjecture that the overall rise of crime in adjacent areas probably was not the result of displacement, but of changes in the opportunity structure (e.g., the building of new houses and shopping centers).

Two studies examined the displacement effects of an increase of patrol officers. To tackle crime in a high-crime area, 100 new police officers were employed in the twentieth precinct of New York. Press (1971) concludes

that a reduction of crime as a result of the greater police presence was offset by spatial displacement to one of the three adjacent areas.

The displacement study by Chaiken et al. (1974) is noteworthy because the researchers looked both for short- and long-term displacement effects. In response to an increase in robberies on subways in New York City, the number of officers of the Transit Police Force was increased from 1,219 to over 3,100 in April 1965. These additional officers patrolled every station and train in the system from 8:00 p.m. to 4:00 a.m. Although it was expected that crime would be displaced to other hours, no such effect was found; robbery rates dropped sharply both during the day and night immediately after the deployment of the additional patrols.

Thus, the exact opposite of temporal displacement occurred—a phenomenon which Chaiken et al. called a "free side benefit." Others have termed this spread of the beneficial influence of an intervention the diffusion of benefits (Clarke, 1992a; Clarke and Weisburd, 1994). This beneficial effect, however, decayed after about eight months. After this period robberies increased, but nighttime robberies increased at a much slower rate than daytime robberies. Chaiken et al. do not suggest that this shift in patterns can be explained by temporal displacement.

A study of curfews in Detroit, requiring juveniles to be in their homes between the hours of 10:00 p.m. and 06:00 a.m., concluded that the curfew led to temporal displacement of crime (Hunt and Weiner, 1977). After requiring a curfew, crime in the afternoon almost doubled, from 13 to 22% of all reported crime.

Several American studies examined the relationship between unequal allocation of police resources and the distribution of crime (Hakim and Rengert, 1981). In these studies, it is assumed that areas with a lower police presence have higher crime rates due to the fact that offenders are spatially displaced from areas of high police presence. This assumption was tested using cross-sectional data for approximately 50 cities. In general, the expected relationship was found, especially for property crime (Mehay, 1977; Fabrikant, 1980; Hakim et al., 1982).

Finally, the Dutch ethnographic study by Van Gemert (1988) observed the responses of drug dealers to enforcement efforts in two streets of Amsterdam. Van Gemert found evidence of temporal, spatial, and tactical displacement. Drug dealers communicated by radio, exchanging information to unmask undercover agents or observation posts, and shifted the locations and hours of their business accordingly. Furthermore, the dealers used several camouflage techniques (e.g., disguises or the use of

foreign languages) so that they would not be recognized by officers. Other researchers have also observed that drug dealing is an offense which is extremely susceptible to displacement (Sherman, 1990; Rengert, 1990; Caulkins, 1992; Eck, 1993).

Surveillance by Employees

Sturman (1980) examined the extent to which vandalism on English buses is affected by the presence of employees who can provide surveillance. He found that rear-entrance conventional buses had a greater amount of damage at the front of the bus than in the center or rear. Sturman explains this finding partially as the result of a displacement effect: "People sitting near the staircase might be more reluctant to commit acts of vandalism when there would be a danger of being supervised by another passenger or the conductor" (1980:35).

Burrows (1980) concluded that the installation of closed-circuit televisions (CCTVs) in four London Underground stations resulted in some spatial displacement of thefts and robberies to the 15 stations without CCTVs in the same sector; displacement was particularly high in the seven stations situated closest to the four stations with CCTVs.

In 1989, 17 city stewards were employed in the center of the Dutch city Dordrecht. City stewards are the extra eyes and ears of the police and the local government. They have several tasks: to give general information to the public, to observe unusual and suspect behavior and report it to the proper authorities, and to prevent petty crime or other misbehavior by surveillance. Kees (1990) found that petty crime reported to the police in the city center increased at a much slower rate after the introduction of the city stewards. The results indicated some spatial displacement to an area within the center not covered by the city stewards.

To prevent the theft of merchandise by employees, the management of a major electronics and appliance retailer in New Jersey introduced what was called the Preventive Audit Survey (PAS). The PAS was designed to detect internal shrinkage and reduce opportunities for theft by increasing the frequency of physical inspections by loss prevention personnel. In practice, the PAS is a daily cycle count of products in stock. Since all the merchandise could not be secured, two product categories were chosen: camcorders and VCRs. Masuda (1992) found that after the introduction of the PAS, shrinkage was completely eliminated for the camcorders and VCRs. In addition, theft of non-targeted merchandise, such as portable

compact disks and car stereos, declined as well. Masuda concluded that instead of the expected target displacement, there was a diffusion of benefits resulting in a significant reduction of overall losses.

Natural Surveillance

Research indicates that informal supervision by residents of areas around their homes can prevent offenders from committing crime just as effectively as the presence of police or employees. This is one of the premises of "neighborhood watch." Mukherjee and Wilson (1987) evaluated the effects of neighborhood watch programs operating in 11 metropolitan and 5 country districts in the state of Victoria, AUS. Researchers found evidence of spatial displacement to areas without neighborhood watch, as well as to other offenses.

Reducing the Rewards

The following three studies measured displacement as a result of projects aimed at reducing the rewards of crime.

Target Removal

Chaiken et al. (1974) studied the use of exact fare buses in New York City, which were introduced in 1969. On average, the monthly bus robbery rates were 98% lower after the introduction of the exact fare buses than they were before. At the same time, however, the number of subway robberies, which had been increasing at an annual rate of 46% in the year prior to the introduction of exact fare buses, increased at an annual rate of 92%, suggesting that target displacement occurred.

Identifying Property

Gabor (1981) studied the possible displacement effects of property marking in a small town south of Ottawa, CAN. He concluded that there was evidence of spatial displacement of burglary, but there were no signs of target displacement or a change of tactics by offenders.

Another property-marking project, this one in three small English villages situated in the same valley, found that the number of burglaries reported to the police dropped from 128 to 74 (Laycock, 1986). The reduction was attributed mainly to a decrease in burglary victimization among the participants of the program, who displayed decals on their front

windows indicating participation. The burglary rates for non-participants remained stable. Laycock concluded that no target displacement took place. The author doubts, however, that the reduction in burglary was the result of property marking alone; the most plausible explanation for the reduction is the increased investigatory efforts on the part of police. In investigating burglaries, the police called on every door in the neighborhood, and thus they were most likely to have called on some burglars as well.

Combination of Measures

In many projects, various crime prevention measures are employed simultaneously. In some cases these multi-measure efforts are employed by a single agency, whereas in other cases several organizations are involved (the multi-agency approach). In this section the results of 22 studies, all using a number of preventive measures, are presented. With one exception (Barron, 1091), all quantified displacement as a change in crime patterns. In one project (Van Burik and Starmans, 1990), both the reactions of offenders and changes in crime patterns were studied.

Street Prostitution

Lowman (1992) concludes that despite a variety of preventive measures, street prostitution persisted in Vancouver (CAN) and that the efforts merely displaced the trade to other areas. In contrast, Matthews (1990) found that a multi-agency approach (intensive policing, a road closure scheme, and regular meetings among the police, the local authorities and the residents) almost eradicated street prostitution in Finsbury Park, a red light district of London (UK), with very little evidence of displacement. Matthews attributes this finding to the fact that for many women the street prostitution in the area was rather opportunistic. This was especially true for the "away-day" girls, who travelled to London each day by rail; these women simply desisted from an occupation to which they were only marginally committed.

A similar approach to prostitution in another area of London, however, led to spatial and some temporal displacement of the phenomenon because the commitment to prostitution was much stronger than that of the women in Finsbury Park (Matthews, 1993).

Vandalism

Several measures have been adopted to address the problem of vandalism on a fleet of double-decker buses in northern England. The introduction of live and dummy cameras on a small percentage of buses was supported by a televised publicity campaign. In addition, officials visited local schools to encourage children to treat the buses and the staff with more respect. Poyner (1988:50) found a substantial reduction in vandalism for all buses in the fleet, with no displacement: "Damage and other misbehavior was not only reduced on the five buses with live or dummy video cameras, but damage and cleaning problems reduced throughout the whole fleet of 80 buses." He attributes this widespread impact to the publicity effort and the school visits. In addition, most children appeared to believe that most buses have cameras, or at least they were uncertain about which buses have cameras, and therefore perceived the risks of getting caught as higher than they actually were.

Theft from Shopping Bags

In a large city center market in Birmingham (UK), shoppers often fell victim to thefts of their wallets or purses from shopping bags. Birmingham police formed a team to tackle the problem, employing several enforcement techniques, such as using policewomen as decoys and conducting covert observations to identify offenders. Poyner and Webb (1992) concluded that these actions merely displaced the problem spatially rather than preventing it. An alternative measure was therefore introduced, whereby part of the market was redesigned through the installation of improved lighting and the widening of spaces between stalls. Within two years after the design changes were implemented, there was a 70% reduction in thefts (from 112 to 33 reported thefts), with no spatial displacement to the other markets. On the contrary. Poyner and Webb (1992:106) conclude that: What seems to have happened is that by improving the worst areas of risk, the whole markets area has benefited.

Car Crime

Versteegh (1990) describes the results of a project to tackle theft from cars in a large Dutch city. During the project several measures were implemented simultaneously: improving informal social control by the

general public, reducing opportunity through police surveillance and property marking, and general deterrence through increased apprehension of offenders. The project resulted in a 25% decrease of theft from cars in the project area. This reduction was attributed mainly to the law enforcement activities of the police. Versteegh also observed a 20% reduction in car break-ins in a control area, which he considered a diffusion of benefits. There was no indication of spatial displacement to other areas, but some displacement to other crimes occurred (e.g., theft of bicycles, theft of cars, shoplifting and pocket-picking).

Poyner (1991) examined the effects of different measures (target hardening, lighting, CCTVs, and surveillance by employees) implemented to tackle car crimes in two parking facilities in Dover, UK. The project led to a reduction of car crimes, especially theft from cars, without spatial displacement to two adjacent parking lots. The presence of a CCTV in only one of two adjacent parking lots reduced car crimes in both lots, providing another example of the diffusion of benefits.

Residential Burglary

A large amount of crime on the Kirkholt estate in England consisted of residential burglaries, in which offenders broke into prepaid gas meters. Removing these meters in combination with other measures (target hardening, property marking, and home watch) led to a dramatic reduction of burglary (Forrester et al., 1988; Pease, 1991). No evidence was found of increases of burglary to other homes, nor was there an increase in other offenses.

Spickenheuer (1983) examined the impact of a broad-based neighborhood crime prevention project in a Dutch city, which included foot patrol, the distribution of crime prevention information to residents, police inspection of homes for security problems, and a vandalism prevention program in schools. He studied the impact of the prevention program by examining crime rates in the project area, in areas adjacent to the project area, and in areas elsewhere. His results indicate that reported residential burglaries increased at a lower rate in both the project and adjacent areas, whereas burglaries in the non-adjacent control area continued to increase at the same rate as that prior to the intervention strategy. Spickenheuer's findings suggest that displacement did not occur, but the reduction of burglaries in the treatment area also diffused to the adjacent control area.

Lindsay and McGillis (1088) found no displacement effects in their evaluation of a neighborhood crime prevention program in Seattle, WA. The program consisted of household security inspections conducted by the police, property marking, and neighborhood watch. Forty percent of households in the neighborhood participated in the project. On the basis of two waves of victim surveys, Lindsay and McGillis found that the number of victimizations decreased for both participating and nonparticipating households, indicating that no target displacement occurred. Furthermore, the authors found no indications of spatial displacement to surrounding neighborhoods.

In a study of a similar neighborhood crime prevention effort in Portland (OR), researchers found that participants had lower risks of victimization than nonparticipants (Schneider, 1988). The author observed a citywide decline in burglary and concluded that no displacement took place: "If the decline in participating households had been produced entirely by displacement to nonparticipating households, then there should have been no change in the citywide rates" (Schneider, 1088:84-85).

Bank Robbery

Several studies have examined the impact of different measures taken to prevent bank robberies. In general, the measures consisted of a combination of target hardening, access control, and surveillance by guards or employees.

Rengier (1085) analyzed the long-term impact of a number of measures implemented to increase security in German banks. The subsequent reduction in bank robberies among those banks that increased security did not result in an increase in robberies of unprotected banks. However, the author found evidence that offenders changed their methods (e.g., using masks to avoid recognition by CCTVs, using firearms, and taking hostages). Furthermore, Rengier found evidence of target displacement to robberies of other businesses, such as drug stores, combined with increased use of violence. He explains this increase of violence by conjecturing that owners of drugstores are more likely to resist a robbery in an effort to protect their property.

Grandjean (1088, 1000) found no escalation of violence following the security upgrading of Swiss banks. Contrary to expectations, the installation of bulletproof screens for tellers resulted in less violence during holdups. The total number of commercial robberies of all targets increased

in Switzerland from 74 in 1979 to 119 in 1985. Grandjean found no target displacement to post offices and railway station ticket offices during this period, but noted the possibility of displacement of robberies from banks to cash in transit. In addition, robberies displaced from more to less protected branches.

Both Marsden (1990) and Clarke et al. (1991) conclude that the improved protection of Australian banks through target hardening and the use of security guards did not result in a displacement of robberies to other targets, such as credit unions, gas stations, motels, or shops. Clarke found that, from 1987 to 1988, the number of armed bank robberies and the number of other armed robberies decreased in Victoria and New South Wales, but the number of armed robberies in other parts of Australia remained stable (Clarke et al., 1991). However, according to Marsden (1990:15) the upgrading of bank security resulted in displacement from more protected banks to less protected banks within the same local area. This is especially the case when guards are part of the security measures: The more competitor branches in the surrounding area use guards, the more likely is the branch to be attacked.

Multiple Offenses

Lavrakas and Kushmuk (1988) studied the impact of crime prevention through environmental design implemented in a commercial strip in Portland, OR. Several basic strategies were chosen (e.g., access control, surveillance, activity support and motivation reinforcement generating a variety of preventive measures). The program led to a reduction in commercial burglaries, but no significant changes in crime rates were found for either residential burglary or commercial robbery, and there was no evidence of displacement from commercial to residential burglary.

A multi-agency approach to reduce property crimes, public nuisances and drug dealing in a large Dutch inner-city shopping center led to various displacement effects (Van Burik and Star mans, 1990). The shopping center, situated next to a major railway junction, was a hot spot with various problems of crime and disorder (e.g., public intoxication, theft, drug use and sales, and street prostitution). Several preventive measures were taken, including: increasing police surveillance; closing parts of the center at night; and providing information to shopkeepers and the general public on how to secure their cars and bicycles. The authors found temporal displacement, as drug addicts became less of a nuisance during

the day and more so at night. Spatial displacement, particularly of shoplifting and burglary, was found in other areas within the shopping center and to nearby areas outside the shopping center. In addition, the Increased police presence was purported to have caused an increase in violent behavior among drug addicts.

Another multi-agency approach, this one in a commercial area of Liverpool (UK), led to spatial displacement. The author conjectured that displacement resulted because those offenders who were deflected were primarily juveniles, who are extremely mobile:..."there is certainly strong inferential evidence that when the project's measures were building up, so the distance an increasing number of offenders were travelling to commit their crimes" (Barron. 1991:5).

A project aimed at reducing property crime, public nuisances, and fear of crime on a public housing estate reported that thefts from cars were displaced to an adjacent area (Delft and van der Ven. 1989). Whereas in the target area, reports of thefts from cars dropped from 41 to 5, there was an increase in thefts from cars at another location, from 47 to 105.

Several projects in the Netherlands consisted of a mixture of target hardening, formal surveillance, natural surveillance, and removing inducements to crime, in an effort to reduce both crime and fear of crime in post-war public housing estates. Various displacement effects are described: "Vandals wait until the caretaker is out of sight, burglars commit their crimes when [a resident] is at home...Locking the central entrance displaced burglary to the cellarages (or vice versa), and when they were locked two offenders shifted their attention to the nearby parking lots" (Elsinga and Wassenberg, 1991:126-7).

Finally. Miethe (1991) found that a combination of burglary prevention measures, such as locking the doors, leaving the lights on, installing an alarm system, and having a watch dog, reduces an individual's risk of being burglarized. These measures, however, did not reduce the risks of theft of goods on residential properties, nor did they prevent vandalism. Because many households take very few precautions against crime, the level of security within neighborhoods is unequal. Miethe. therefore conjectured that the unequal security level would either lead to target displacement or a diffusion of benefit; however, he found no clear evidence of either result.

Offender Research

The findings on displacement previously presented in this paper related to the results of crime prevention projects. This section summarizes the findings of six ethnographic studies of offenders conducted to learn how offenders respond to blocked opportunities.

Bennett and Wright (1984) interviewed 128 offenders incarcerated for residential burglary, asking respondents what course of action they take when they are unable to complete a crime. Nearly half of the respondents claimed that they had never experienced a case in which they could not complete their burglaries. Of the remaining respondents, 43% reported that they committed their crime elsewhere (displaced). 41% said that they gave up (desisted, either temporarily or permanently) and, among the other 16%, their reaction depended on the circumstances. Thus, 40% of burglars faced with blocked opportunities will find targets elsewhere, thereby displacing crime.

A similar study concluded that Dutch burglars are not easily discouraged either. Of the respondents who experienced a failed attempt to break into a house, 72% said they chose another target (Van Burik et al., 1991). When asked hypothetically what they would do if unable to complete a burglary, two-thirds of the respondents gave an answer that could be classified as displacement: 30% indicated they would find other targets. 36% said they would resort to other crimes, 25% said that they would use different methods, and only 4% said that would desist altogether.

A study of imprisoned inmates, while not focusing specifically on the issue of displacement, can nonetheless be applied to the phenomenon:

They were looking for activities that were less violent and dangerous than armed robbery, even if the financial benefits were more modest. They found that certain crimes are particularly interesting and advantageous. For the occasional robber, fraud appeared to be an ideal choice— The chronic armed robber, on the other hand, favored dealing in drugs.... Most of the subjects who did espouse to have desisted from armed robbery have merely shifted their focus to other, more innocuous forms of criminality [Gabor et al., 1987:73-74].

Extremists would argue that offenders will always persist in their criminal activities, despite blocked opportunities, because the demand for crime is inelastic. Grapendaal et al. (1991), in a study of the life patterns and criminal behaviors of 89 drug addicts in Amsterdam, found evidence

to the contrary. The study documented that neither the use of heroin and cocaine by individuals nor their inclinations to commit crimes to obtain money for drugs are constant. The researchers therefore refute the assertion by some that, despite blocked opportunities, addicts will continue to be driven to crime in order to obtain drugs.

Similar results were found in an study of 30 active and addicted burglars (Cromwell et al., 1991). The authors concluded that the demand for crime is elastic and that prevention does not always lead to displacement:

Heroin addicts appear to be more capable of controlling their habit than previously believed....The research revealed numerous instances where an addicted offender planned a burglary and was deterred temporarily by some situational factor, such as a neighbor watching the target house or the presence of dogs or alarm systems. Occasionally the deterred burglar located another burglary target and committed a burglary, as intended. Just as often, however, the planned crime was not committed and the potential burglar borrowed money, shoplifted, or sold something legitimately obtained [Cromwell et al., 1991:319].

Finally, Bieleman and Kroes (1991) examined the reactions of 62 addicts when asked about crime prevention and other measures taken in the Dutch city of Groningen. Addicts were classified into one of seven groups: the original criminal (15%), the instrumental criminal (20%), the pragmatic user (10%), the delinquent user (15%), the intellectual user (5%), the integrated user (25%) and the retired user (10%). The authors found that the original criminal, the instrumental criminal and the delinquent user were inclined to displace their activities (accounting for a total of half of the addicts interviewed). The original criminal, possessing a lengthy criminal career and countless imprisonments, is likely to escalate the aggression associated with his or her criminal acts when faced with blocked opportunities. In the case of the instrumental criminal, crime becomes more important when he is unable to finance his addiction through legitimate means; blocked opportunities for the instrumental criminal often lead to target and spatial displacement. The delinquent user is rather young (between 17 and 24 years) and is already highly involved in criminal behavior. In general, this user will react rather unexpectedly and unpredictably when unable to commit his original crime.

SUMMARY

Table 2 provides a summary of the overall results of the above review of empirical research on displacement (see Appendix II for a classification of each study by intervention strategy, author, crime type, and type of displacement, if any).

In 22 of the studies reviewed, no displacement was identified; a high proportion of these studies involved the control of facilitators or a combination of preventive measures. Another common thread among those studies with no evidence of displacement is that most of these prevention efforts were distributed throughout the jurisdiction—be it the neighborhood, city, county, or country.

The above review also provides evidence that some crime prevention measures have the unexpected and beneficial effect of reducing crime in adjacent control areas or for other targets. Such a diffusion of benefits was found in 6 of the 22 studies reviewed that had no evidence of displacement. Thirty-three studies reported some form of displacement, but no study reported complete displacement. In fact, for most studies in which displacement was observed, it was found to be quite limited in scope.

Ethnographic studies of offenders also revealed that, while some offenders persist in seeking out alternative targets, others are discouraged by blocked opportunities and are thus prevented from committing the criminal act. Because these studies focused on highly committed offenders, such as imprisoned burglars, robbers and drug addicts, it is questionable whether we can generalize to the entire offending population that, for example, one-half to two-thirds of all offenders will displace. Indeed, it is more likely that offenders with less extensive criminal histories will be less likely to displace.

In most cases, displacement took the form of different tactics, targets, times or places, but offenders continued to commit the same offenses. Auto-thieves displaced to cars without steering column locks from cars with them: robbers targeted unprotected banks versus those protected, and altered their tactics by using firearms: and prostitutes chose other times or locations to continue their business. In all studies in which temporal displacement was expected, it was observed in practice. For spatial and target displacement, about half the studies that looked for

Table 2: Summary of Effects by Crime Prevention Technique or Study

	I¹	II²	III³
INCREASING THE EFFORT			
target hardening			3
access control			1
control of facilitators		6	
INCREASING THE RISK			
formal surveillance and enforcement	1	2	6
surveillance by employees	1		3
natural surveillance			1
REDUCING THE REWARDS			
target removal			1
identifying property		1	1
COMBINATION OF MEASURES			
street prostitution		1	2
vandalism	1		
theft from bags	1		
car crime	1		1
residential burglary	1	4	
bank robbery		1	3
several offenses		1	5
OFFENDER RESEARCH			
			6
TOTAL	6	16	33

(1) I = no displacement and a diffusion of benefits reported.

(2) II = no displacement.

(3) III = some displacement.

these forms of displacement found evidence of them. Only a few studies observed a change in either tactic or crime types. (See Table 3.)

These findings suggest a hierarchy of possible displacement outcomes. The form of displacement most likely to occur is that which requires the least effort on the part of the offender. And it is likely that—in the short run—the costs of temporal, target and spatial displacement are lower than the costs associated with a change in crime type or tactic.

Table 3: Number of Studied and Observed Displacement Effects

	Studied*	Observed
temporal	7	7 (100%)
spatial	34	18 (53%)
target	23	11 (48%)
tactical	8	3 (38%)
offense	17	6 (35%)

*In many studies several forms of displacement have been examined simultaneously.

The policy implications of these findings suggest that crime prevention dollars would be put to best use by implementing a variety of preventive measures throughout an entire jurisdiction. However, it was not possible for this study to consider all of the other factors that might be indicators of a successful prevention effort, such as the number of targets affected by the effort, the way in which the measures were implemented, and the composition of offenders operating in the treatment area. Therefore, it remains difficult to predict the success of a crime prevention effort with regard to minimizing displacement without further empirical research focused specifically on this issue.

DISCUSSION

The main conclusion from the above analyses is that displacement is a possible, but not inevitable, consequence of crime prevention. Further, if displacement does occur, it will be limited in size and scope. This conclusion is supported by other review studies on the topic (Bannister, 1991; Eck, 1993; Gabor, 1990; Lab, 1988; Sherman, 1990).

In a deterministic model of offending behavior, displacement is viewed as the inevitable outcome of efforts to reduce crime opportunities (Repetto, 1976). This claim is usually based on three premises: the demand for crime is inelastic; offenders are flexible and can commit a variety of crimes; and the opportunity structure offers unlimited alternative targets. On the basis of this study, it can be concluded that these premises are only partially supported.

The results of ethnographic studies show that the demand for crime is more or less elastic. And while offenders are probably fairly adaptable, there will be limits in their mobility and general flexibility (Brantingham and Brantingham, 1993; Eck, 1993; Hesselning, 1992; Repetto, 1976). Finally, it is questionable whether the opportunity structure offers enough alternative and suitable targets as perceived by the offender (Sherman et al., 1989). It is doubtful, for example, that a shoplifter, when deflected from a shopping center, would perceive a residential neighborhood to offer viable alternative opportunities. Indeed, advocates of the rational choice perspective argue that viable alternative opportunities must share the same "choice-structuring properties" as the original offense from which the offender was deflected. Thus, displacement will occur ... only where crimes serve the same needs at similar costs (Cornish and Clarke, 1990:104). Given the findings of this study, it appears that the present state of knowledge on displacement supports this rational choice perspective.

While most researchers do not intentionally look for evidence of diffusion of benefits, this review found that it can be an outcome of crime prevention measures. This raises important research questions that need to be answered, such as under what conditions (types of measures, offenses, and jurisdictions) is displacement or diffusion likely or unlikely to occur.

This paper reviewed two different ways in which displacement may be studied: through an analysis of changes in crime rates after implementation of a crime prevention measure, and through interviews of active offenders. Both types of analyses are necessary to gain a better understanding of the phenomenon of displacement. In order to effectively prevent criminal acts, more research is needed to learn why offenders commit certain crimes, what makes some crimes more desirable to them than others, and what are offenders' perceptions of and reactions to changes in criminal opportunities. The knowledge obtained from such offender studies can be used to explain the changes in crime patterns due

to crime prevention efforts, and can help us develop more effective crime prevention strategies.



Acknowledgements: This review is one component of a research project analyzing the displacement of crime resulting in a project to reduce car theft in the inner city of Rotterdam. The author would like to thank Jaap de Waard, Patty van Rossem and Hans van Netburg for their support in locating literature. Finally, I thank Nancy La Vigne, Rutgers University, for her help in preparing this paper for publication.

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Appendix I: Selected Information on the 55 Empirical Publications

Country of Publication

United Kingdom	20
United States	16
Netherlands	10
Australia	3
Canada	3
Germany	1
Sweden	1
Switzerland	1

Year of Publication

1964-1979	7
1980-1989	27
>1992	1

Offense Studied

Several index crimes	19
Residential burglary	10
Robbery	8
Theft of/from cars	0
Street prostitution	3
Suicide	2
Vandalism	2
Drug dealing	1

Forgery	1
Employee and petty theft	2
Obscene phone calls	1
Displacement Type	
Spatial	34
Target	23
Offense	16
Tactical	8
Temporal	8
Research Design	
Time-series	15
One-shot case study	15
One-group, pre- and post- test	15
Static-group	7
Non- equivalent control group	3
Data	
Reported crime to the police	31
Interviews /observation	7
Reported crime and surveys	5
Surveys	4
Other/different sources	8

Appendix II: An Overview of the Kind of Displacement by Technique/Study, Author and Offense

1. Increasing the Effort

Target-hardening

Mayhew et al. (1980)	theft of cars	target
Eklom (1988)	robbery	methods
Allat (1984)	burglary	target, spatial, offense

Access Control

Burrows and Heal (1980)	car crime	temporal
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Control of Facilitators

Mayhew et al. (1989)	motorcycle theft	none
Mayhew(1991)	motorcycle theft	none
Clarke and Mayhew (1988)	suicide	none
Clarke and Mayhew (1989)	suicide	none
Knutsson and Kuhlhorn (1992)	check forgery	none
Clarke (1992b)	obscene phone calls	none

2. Increasing the Risk*Formal Surveillance and Enforcement*

Hall and Lindgren (1971)	index crimes	none
Stenzel (1977)	index crimes	none
Press (1971)	index crimes	spatial
Chaiken et al. (1974)	subway robbery	diffusion
Hunt and Weiner (1977)	index crimes	temporal
Mehay(1977)	index crimes	spatial
Fabrikant (1980)	index crimes	spatial
Hakim et al. (1982)	index crimes	spatial
Van Gemert (1988)	street drug dealing	temporal, spatial, tactical

*Surveillance by**Employees*

Sturman (1980)	vandalism	target
Burrows (1980)	theft, robbery	spatial
Kees (1990)	petty crimes	spatial
Masuda(1992)	employee theft	diffusion

Natural Surveillance

Mukherjee and Wilson (1987)	burglary	spatial, offense
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3. Reducing the rewards*Target Removal*

Chaiken et al. (1974)	bus robbery	target
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Identifying Property

Gabor(1981)	theft, burglary	spatial
Laycock (1086)	burglary	none

4. Combination of Measures*Street Prostitution*

Lowman(1992)	street prostitutions	spatial
Matthews (1090)	street prostitution	none
Matthews (1093)	street prostitution	spatial, temporal

Vandalism

Poyner(1988)	vandalism	diffusion
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Theft from Bags

Poyner and Webb (1092)	theft from bags	diffusion
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Car Crime

Versteegh (1900)	car crime	offense
Poyner (1001)	car crime	diffusion

Residential Burglary

Forrester et al. (1088)	burglary	none
Pease (1991)	burglary	none
Spickenheuer (1983)	burglary	diffusion
Lindsay and McGillis (1988)	burglary	none
Schneider (1988)	burglary	none

Bank Robbery

Rengier (1085)	robbery of banks	methods, target
Grandjean (1988)	robbery of banks	target
Marsden (1990)	robbery of banks	target
Clarke etal.(1991)	robberyof banks	none

Several Offenses

Lavrakas and Kushmuk (1988)	burglary/robbery	none
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Van Burik and Starmans (1990)	nuisance and crime	temporal, spatial
Barron(1991)	property crime	spatial
Delft and van der Ven (1990)	nuisance and crime	spatial
Elsinga and Wassenberg (1991)	nuisance and crime	temporal, target
Miethe(1991)	burglary, theft. vandalism	spatial

5. Offender Research

Bennett and Wright (1984)	burglary	temporal, spatial
Van Burik et al. (1991)	burglary	target
Gabor(1987)	robbery	offense
Grapendaal et al. (1991)	index crimes	offense
Cromwell et al. (1991)	burglary	target, spatial
Bieleman and Kroes (1991)	index crimes	target, spatial, offense