

Crime Prevention

Approaches, Practice and Evaluations

Third Edition

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Chapter 3 The Physical Environment and Crime

Surveillance

Lighting as a means of increasing surveillability has been one of the most researched individual crime prevention strategies. Advocates of lighting programs point to the deterrent ability of lights, which makes potential offenders choose less well-lit areas for their crimes. There also exists the improved ability to watch over an area on the part of legitimate users and residents. The typical study reports on the installation of new lights in a given area and contrasts the subsequent criminal activity in that area with areas that do not receive new or improved lighting (Type 1 effects).

In general, the reported results show little impact of lighting on crime. Many studies report no impact, or even increased crime after lighting changes. Official police data for New Orleans reveal no effect of lighting on auto thefts or assaults (Mayor's Criminal Justice Coordinating Council, 1977). The City of Atlanta found that the relit areas of a high-crime census tract experienced a greater increase in robbery and assault compared to unrelit areas (Atlanta, 1975). Reppetto (1974), comparing differing levels of lighting in Boston, reported no correlation between lighting and robbery or burglary. Lewis and Sullivan (1979) found that a threefold increase in lighting did not appear to reduce crime in areas of Fort Worth, Texas. Finally, Atkins et al. (1991) were unable to find any change in crime after the installation of new lighting.

Contrary to these earlier studies, Wright and associates (1974) found significant reductions in violent crime and some decline, although not statistically significant, in property crimes in relit areas. This finding was true for both residential and commercial areas of Kansas City (Wright et al., 1974). Lighting has shown an impact on reduced levels of convenience store robberies in some studies (see, for example, Jeffery et al., 1987). Perhaps the most strident support for lighting is offered by Painter (1993), based on a series of analyses conducted in England. Unfortunately, Painter fails to address a number of methodological concerns and inconsistencies (Nair et al., 1993), which leads to serious doubts about the efficacy of the results.

Finally, Tien et al. (1977), reviewing over 40 studies, present a detailed analysis of 15 street lighting programs. They report a similar amount of inconsistency in results to that shown above. Seven of the projects report decreases in at least some categories of crime, three show increased crime levels, and seven find no changes in crime attributable to street lighting. The most promising results of street lighting appear to be its impact on the fear of crime. Of seven programs that measured fear of crime, all but one found that residents and legitimate users "feel safer" as a result of the increased lighting (Tien et al., 1977).

There are a variety of methodological problems throughout the lighting studies. One of the most problematic of the issues relates to the measurement of lighting. Various studies tend to differentiate between "relit" and "unrelit" areas of town without producing evidence of the increased level of illumination or the uniformity of the lighting (Tien et al., 1977). Simply altering the light fixtures does not guarantee an actual change in the amount of illumination. A related problem is the lack of information on the control areas and their lighting, besides the fact that these areas did not receive the new lights (Nair et al., 1993; Tien et al., 1977). Targeting high-crime areas and comparing them to lower crime areas may account for the failure of the project. Reduced crime in a high-crime area could be a regression artifact. This means that the unusually high offense levels return to a lower, more natural level over a period of time. A related problem is that of using short-term follow-up times, which could mask true results (Nair et al., 1993).

Besides lighting, surveillability is determined by a wide range of other factors. Fisher and Nasar (1992; Nasar and Fisher, 1993) note the physical design impact on prospect, refuge, and escape. Prospect refers to the ability of individuals to see an area. Areas that offer greater prospect should engender less fear and victimization than locations that limit sight lines. Refuge deals with the presence or absence of concealment, in which offenders could hide from potential victims. Refuge provides both hiding places and protection for potential offenders. Finally, escape addresses the ability of both offenders and victims to escape from an area before and/or after an offense. In essence, physical design features that affect surveillability should alter both fear and victimization levels.

Fisher and Nasar (1992; Nasar and Fisher, 1993) tested these assumptions using a university site that offered greatly varying degrees of prospect, refuge, and escape. Using both surveys and observations, the authors report strong support for their argument. Areas of increased concealment (refuge), blocked prospect, and limited escape elicit greater fear. Crime figures also show greater victimization accompanying blocked prospect and greater concealment (Nasar and Fisher, 1993). The findings are site-specific and suggest that analysis needs to focus on the

micro-level. That is, while macro-level analyses may suggest that individuals are fearful in a certain area, that fear is actually more targeted at specific places in the area, not the entire area. Interestingly, lighting has no impact on reported fear once the issues of prospect, refuge, and escape are considered (Fisher and Nasar, 1992). While limited to a single site on a university campus, these results suggest that a more general view of surveillability is needed than just an analysis of lighting.

The impact of surveillance needs further exploration. While simple lighting does not seem to reduce crime, the impact on fear is more demonstrable. People appear to make assessments of their surroundings and respond to the potential danger and fear they interpret in different situations. The research on prospect, refuge, and escape provides support for these conclusions. Reviews that claim that lighting has an impact on crime (see, for example, Poyner, 1993) typically accept the conclusions of the original authors at face value and do not consider the methodological problems of the analyses. Despite the questionable impact on crime and victimization, the findings of lowered "fear of crime" among citizens may be sufficient to continue relighting programs.

Property Identification Programs

Despite the great proliferation of property identification programs (typically called Operation Identification), there is little empirical research on most programs. The basic idea behind these projects is to increase the difficulty for offenders to dispose of marked items. One review of these programs surveyed 99 projects from across the United States and reported that, although a majority of the public are aware of the programs, few programs are able to entice more than 10 percent of the population to participate (Heller et al., 1975). Likewise, few programs report significant changes in reported burglary (the targeted offense) and none find an impact on arrests or convictions for burglary (Heller et al., 1975). Two positive results do appear in this evaluation. First, the programs seem to engender good police-community relations due to heavy police involvement in the programs. Second, Operation Identification appears to introduce people to the broader realm of crime prevention and leads to other crime prevention activities.

A more recent evaluation of property marking was undertaken in South Wales (Laycock, 1985; Laycock, 1990). Three physically proximate villages were targeted for the property-marking campaign due to their relative isolation from other residential areas. The choice of isolated villages was made in order to reduce the chance that the program would simply displace crime. The program relied on a high degree of publicity, door-to-door contact, and the provision of free equipment and window stickers. Project efforts were successful at engendering participation by 72 percent of the homes. More importantly, the evaluation showed a 40 percent drop in burglary for participating homes with little or no displacement to nonparticipating residences (Laycock, 1985). A follow-up evaluation (Laycock, 1990) revealed greater reductions in burglary in the second year after program implementation. A more thorough examination of monthly burglary data, however, revealed that the year two reductions followed monthly increases in the level of burglary. Further, both the initial and year two reductions in crime followed heavy public publicity of the program. Increases in burglary occurred during

times of low publicity (Laycock, 1990). This suggests that the results are more related to the media attention and not the property marking.

Television Surveillance and Alarms

Two potential avenues for crime prevention are the use of closed circuit television and various entry and detection alarms. Evidence for each approach as individual factors is sparse due to the implementation of more than a single crime prevention component at a time. Musheno et al. (1978) evaluated the impact of closed circuit television in three public housing structures in New York City. The cameras were located in the elevators and public lobbies of the buildings and residents could view these areas by tuning to Channel 3 on their television sets. A three-month follow-up of the program failed to uncover any significant effect on crime as compared to matched control buildings (Type 1 effect). Similarly, there was no effect on the fear of crime. The authors report that this may be due to the already low crime figures within these buildings and the reported lack of use by residents (Musheno et al., 1978). A study of surveillance cameras in businesses revealed significantly higher clearance and conviction rates (Whitcomb, 1978). Conversely, the installation of cameras throughout a business district in Florida appears to have had no effect on reported crimes (Surette, 1985). There was, however, an increase in feelings of security among the businesses. The discrepancy between these results for residences and businesses may be attributable to a higher concern about crime in a commercial setting. Employees and owners may also incorporate surveillance into the normal work routine.

The effectiveness of alarms has undergone similar analysis. Silent alarms in various Cedar Rapids, Iowa schools and businesses resulted in greater numbers of arrests and twice the clearance rate compared to buildings without such alarms (Cedar Rapids Police Department, 1975). Break-ins at buildings with alarms revealed entry through places not hooked up to the alarms (Type 1 effect) (Cedar Rapids Police Department, 1975). More recently, Buck et al. (1993) examined the impact of alarms and other factors on burglary in three Philadelphia suburbs. Alarms proved to be a strong deterrent to household burglary.

Interviews with offenders also reveal the impact of alarms. Reppetto (1974) found that one-third of the offenders checked on the presence or absence of alarms during the planning stages of the offense. Bennett and Wright (1984) asked burglars to evaluate videotape and photos of potential targets. They found that the presence or absence of alarms was a prime consideration in the choice of their targets. The potential of both surveillance cameras and alarms for crime prevention is clear.

Locks, Doors, and Related Access Factors

Access control can be improved through the installation of various devices that make entry more difficult. These will not eliminate crime. Rather, a motivated offender will need to work harder and find more effective ways of gaining entrance. The Seattle Law and Justice Planning Office (1977) evaluated the effect of various methods aimed at making entry more difficult in four public housing projects. The target hardening methods employed were the installation of solid case doors, deadbolt locks, and pins in sliding glass doors. They also constructed short

walls aimed at making entry through windows more difficult. The study found a significant decline in the level of burglary in three of the four target areas (Type 1 effect). The mode of entry after the improvements were made shifted to the use of open and unlocked windows and doors. This shift was expected due to the increased difficulty posed by the changes (Seattle Law and Justice Planning Office, 1977).

Bennett and Wright's (1984) study of burglars also shows support for the use of target hardening devices. Their subjects list the type of windows and locks as one influence on their decisionmaking. Offenders tend to prefer smaller windows because they are easier to force open. Similarly, the presence of a lock becomes more effective as the difficulty in picking or breaking the lock increases (Bennett and Wright, 1984).

Street Layout and Traffic

The design of streets has been posited as affecting crime through the level of accessibility that potential offenders have to an area. Dead-end streets, cul-de-sacs, one-way streets, and street entrances that project a private atmosphere are assumed to cut down on the level of use by strangers and increase the presence of legitimate users. Often this approach is coupled with broader community planning activities, but there have been a few studies aimed specifically at evaluating this method.

Newman and Wayne (1974) compared public and private streets in adjacent areas of St. Louis. A private street is one that is owned and maintained by the residents living on the street, is often a cul-de-sac, and is set apart from the connecting streets by means of landscaping, gates, entranceways, or other similar features. The authors found less crime on private streets and the fear of crime was lower among subjects living on those streets (Type 1 effect) (Newman and Wayne, 1974). They also found more interaction between the residents living on these private streets—a Type 2 effect. The lack of comparability between the experimental and control groups, however, suggests that these results be viewed with some caution.

A variety of different types of streets can be compared in evaluating their effect on crime. Bevis and Nutter (1977) look at the relative effect of dead-end, cul-de-sac, "L" type, "T" type, and through traffic streets. These are arranged in order of accessibility with the dead-end street being the least accessible. The authors find a clear relationship between the type of street layout and burglary. More accessible streets experience higher rates of burglary (Bevis and Nutter, 1977). Beavon et al. (1994) also report that property crime increases with increased street accessibility. Interestingly, Buck et al. (1993) find greater burglary levels on cur-de-sacs in three Philadelphia suburbs. While contrary to other findings, they suggest that their results are a reflection of other factors, such as area affluence and household attractiveness, besides the type of street. That is, suburban cur-de-sacs with higher valued homes attract offenders more than the street layout discourages them.

Street layout is a surrogate measure for the amount of traffic passing through a neighborhood. The assumption is that crime is an indirect result of easy access to an area by non-residents. White (1990) evaluates the effect of permeability of an area on the level of burglary. Permeability is measured by the number of access lanes from each major traffic artery into a

neighborhood. Using data from Norfolk, White (1990) finds that the level of burglary is significantly related to permeability of an area. The analysis also shows that permeability is more significant than neighborhood instability, housing density, and economic well-being of the area.

An alternate means of evaluating the effect of street accessibility on crime is by measuring the actual level of traffic, both auto and pedestrian, in the vicinity. Baumer and Hunter (1978) measure the level of pedestrian traffic by surveying 556 residents/legitimate users of an area. The authors find that the fear of crime is higher among those who perceive high levels of street usage. The effect is mitigated, however, by the social integration of the respondent. That is, individuals who are socially integrated into the area are less fearful of crime, regardless of the level of traffic (Baumer and Hunter, 1978).

Several studies have analyzed the impact of auto and pedestrian traffic as it effects the level of crime, particularly convenience store robberies and area burglaries. Duffala (1976) uses four measures of traffic: the actual number of autos on the street in a 24-hour period, the proximity of a major thoroughfare, the presence of surrounding commercial activities, and the land use pattern in the area. Each of these taps the level of access and surveillance around the stores. The author shows that stores on high-traffic streets and not surrounded by commercial establishments are more vulnerable targets (Duffala, 1976). Additional analyses in other locations have arrived at similar conclusions, particularly in relation to the level of traffic (Beavon et al., 1994; Buck et al., 1993; Jeffery et al., 1987).

The available evidence illustrates the potential of traffic control as a means of combating crime. Streets and areas that are easily accessible to pedestrian and auto traffic tend to experience higher levels of actual crime and fear of crime (a Type I effect). The construction of cur-de-sacs, dead-end streets, and streets that promote a feeling of ownership will have positive effects for crime prevention.

As noted earlier, the amount of research aimed at single crime prevention approaches is minimal. Few crime prevention programs are unidimensional in approach. Rather, most plans introduce a variety of techniques to be implemented as part of a larger crime prevention package. This makes evaluation of the individual factors problematic and necessitates research focused on entire programs. We now turn to an evaluation of crime prevention efforts that include a range of ideas, including some of those already discussed.

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