ANTICIPATED CONSEQUENCES: DEVELOPING A STRATEGY FOR THE TARGETED MEASUREMENT OF DISPLACEMENT AND DIFFUSION OF BENEFITS

by

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Abstract: *This paper examines how displacement and diffusion of benefits can be measured within the context of crime reduction project evaluations. Attempts to monitor the impact of Reducing Burglary Initiative (RBI) projects in the United Kingdom highlighted an existing lack of measurement strategies in this area. This paper seeks to make a start at addressing this problem through a three-stage approach. First, this paper examines existing empirical and theoretical literature on displacement and diffusion of benefits and highlights some of the established difficulties associated with their measurement. It is argued that many of these difficulties relate to the lack of a systematic basis for targeting measurement. Second, the paper reviews some of the key literature on offender decision making, motivation and mobility to see if there is any empirical basis for anticipating the direction and form of any displacement/diffusion of benefits. Third, this paper goes on to explore how one might, within the context of typical project evaluation research, model offending characteristics with the aim of anticipating any possible offender adaptation to the impact(s) of project work. This is illustrated with the example of the "buffer zone selection model," which was developed to select areas to test for spatial displacement/diffusion of benefits from RBI project areas. The discussion then turns to examining how one might interpret changes in crime levels in project and buffer areas, and a number of possible confirmatory tests are outlined that could be utilised to validate any resulting hypotheses.*

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Finally, the paper attempts to frame this discussion within a practical consideration of how the measurement of displacement/diffusion of benefits should be tied into the ongoing tasks of problem analysis, project development, and the strategic review of local crime pattern/level changes.

INTRODUCTION

The fundamental aim of this chapter is to advance the discussion as to how displacement can be measured by researchers and crime reduction practitioners undertaking project evaluations. The origins of this work lie in efforts to monitor the performance of over 160 crime reduction projects funded under the second phase of the U.K. government's Reducing Burglary Initiative (RBI). The structure of the RBI mirrors an established tradition of funding crime reduction work through the central provision of short-term grant funding to projects that have been predominantly based around local, multi-agency partnerships operating at the district or city level. These partnerships, in turn, have usually focused their work upon one discrete local geographic area or "community."

Central to attempts at monitoring the performance of these projects has been not only assessing whether they have reduced burglary in the project areas, but also whether project work has led to either the "displacement of crime" or to a "diffusion of benefits." (These terms are defined in the next two sections.) However, at the outset of this task it became clear that prior research studies offered minimal assistance in providing a systematic methodology for predicting and measuring displacement. Whilst the theoretical foundations of displacement have been well developed, it seemed that there had been a limited application of this theory to the development of theoretically-informed measurement strategies.

Typically in project evaluations, displacement/diffusion of benefits has been measured through the simple comparison of project area crime figures with neighbouring geographic units. These units have either been chosen on the basis of rigidly applied geographical criteria or on the basis of unspecified, or loosely reasoned, principles. This unfocused approach to measuring displacement has contributed to the general pessimism that Barr and Pease (1990) have rightly identified as being a common affliction of crime reduction practitioners and academics. Pessimism about the possibility of measuring and thereby *discounting* the occurrence of displacement contributes

to a wider pessimism that crime reduction activity simply results in crimes being displaced.

The purpose of this chapter is therefore threefold. First, this chapter seeks to provide a basic review of the various forms of displacement/diffusion of benefits, together with a brief discussion of some of the traditional problems that are encountered when attempting to measure them. Second, the chapter examines the available empirical evidence and theory which can potentially assist in developing a more systematic measurement strategy. Finally, the chapter presents and develops the strategy that was used to target the measurement of spatial displacement under the RBI monitoring exercise. Though the discussion in this chapter is framed in terms of measuring displacement/diffusion of benefits resulting from burglary reduction work, much of what is covered should be widely applicable to measuring displacement from other types of crime reduction activities.

Displacement of Crime

A perennial question that must be faced when attempting to assess the impact of crime reduction projects is: "Was crime displaced as a result of the project's activities?" The key literature covering displacement is comparatively well known so this section will only recap the most salient points.

Displacement of crime refers to the phenomena where offenders adapt to a restriction in criminal opportunities with the result that the established pattern and/or level of crime changes. Typically a crime reduction practitioner would hope that offenders would adapt to the introduction of crime prevention activity in one location by desisting from their offending activity altogether or at least for an appreciable period of time. Conversely a practitioner might fear that offenders might alternatively adapt to this activity by switching to another location to commit their offences or to a different type of offence. The now standard displacement typology (see Reppetto, 1976; Hakim and Rengert, 1981; Barr and Pease, 1990), refers to six main forms of displacement. These are:

- Temporal displacement: committing the same intended offence but at a different time.
- Spatial displacement: committing the same intended offence against the same type of target but in a different location.
- Tactical displacement: committing the same intended offence but using a different method.

- Target displacement: committing the same intended offence but against a different type of target.
- Crime type/functional/offence displacement: committing a different type of offence.
- Perpetrator displacement: after the removal of one offender, the same offence is committed, but by a new offender (the notion being that some criminal opportunities are so lucrative that the incapacitation of one offender will simply result in a new offender taking his or her place: see Barr and Pease, 1990).

Clearly, one can have several forms of displacement at work at the same time. For instance, if offenders are put off offending in one area owing to recently installed street lights, they may not only move to a new area to offend (spatial displacement), but they may also tailor their method of offending to suit the opportunities and characteristics of this new area (tactical displacement).

Pessimism regarding the inevitability of displacement centres around notions about the fallibility and etiological superficiality of situational crime prevention techniques. The argument goes that if one blocks an offending opportunity through some physical impediment or some design modification, the net result will be that, at best, the offender will be displaced from that crime target at that specific point in time. This is because the temporary blockage of opportunity will in no way alter the offender's determination and *motivation* to offend, and plenty of alternative criminal opportunities will always be available. This raises the theoretical possibility of "total displacement": namely, where crime will not go down at all but instead offenders will simply amend their behaviour to circumvent any blockage/removal of opportunities.

Situational crime prevention, by contrast, has been developed on the basis of a less deterministic view of offender behaviour. Mayhew et al. (1976) have argued that offender behaviour is not always strongly motivated and, indeed, is often restricted to an exploitation of a readily available opportunity. Empirical research into offending careers largely bears out this less deterministic and more restrictive view of offending behaviour. Offending careers are generally short[1] and offenders predominantly do not conceive of themselves as purely "criminals"; rather, their illegal activities are often fluidly intermingled with the pursuit of legitimate activities and the fostering of conventional socio-economic aspirations (see, for instance, Hobbs, 1998). In their development of "rational choice theory," Cornish and Clarke (1986; Clarke and Cornish, 1985) have taken this conception of offenders forward, arguing that an offender, in carrying out a

criminal act, makes a rational decision that the benefits of carrying out that act outweigh any associated costs. If the costs of exploiting an opportunity are therefore perceived as being too high, or if an opportunity is reduced or removed altogether, then at least a temporary desistance by the offender is just as plausible as some form of displacement.

Empirical research partially affirms this portrayal of offenders as rational and as capable of suppressing their offending behaviour. Bennett and Wright (1984) and Cromwell et al. (1991) both found that burglary offenders employed some degree of rational decision making in their offending behaviour. They also concluded that offender motivation was not so strong an impetus that it was incapable of being suppressed (even amongst drug-using offenders). More generally, research into displacement has not been able to find any evidence — contrary to the fears of "displacement pessimists" — that crime prevention measures ever result in a total displacement of crime. For instance, Hesseling (1994) reviewed over 55 studies of displacement and found that in 40% of cases there was no evidence that displacement had occurred at all.

Even where displacement does occur, its existence does not automatically equate with a reduction in the success attributed to a project. As Barr and Pease (1990) have argued, displacement need not be negative (or malign), it can in fact sometimes be positive (benign). Crimes can be displaced away from more serious crimes to less serious crimes, or away from more vulnerable populations to less vulnerable populations. For instance, an evaluation of a burglary reduction project in Burnley hypothesised that the increase in incidents of criminal damage during the project period was in part a consequence of burglars failing to gain entry to the increasingly secure pool of domestic households (Hamilton-Smith, 1999). Therefore, far from detracting from the achievements of the project, the increase in this offence category could be seen as an indicator of the project's success.

Diffusion of Benefits

It has been demonstrated that crime reduction projects can also result in the reverse of displacement: i.e., crime reduction gains can "spill out" beyond the property or people that have been targeted by the project. For instance, Poyner (1991) found that when a closed-circuit television (CCTV) system was introduced to cover three car parks at the University of Surrey, a reduction in crime was observed not only in the three targeted car parks but also in a fourth car park that was not covered by the camera system. Poyner hypothesised

that offenders, having observed that a CCTV system had been installed, had assumed that the system covered all four car parks; they therefore desisted from offending in all four car parks. Miethe (1991) has termed this "the free rider effect," where neighbours (or neighbouring targets) benefit vicariously from crime prevention activity. Clarke and Weisburd (1994), in turn, have argued for the adoption of the term "diffusion of benefits," as crime reduction gains can spill over not only to non-targeted property or people but also to other time periods, to other places and indeed to other crime types.

An example of the broader spin-offs that can derive from crime reduction activity is provided by Sherman (1990), who found that intensive police operations targeted against specific crime problems or problem areas (termed "crackdowns") could have beneficial effects beyond the period of the crackdown itself.[2] Sherman, in turn, hypothesised that the benefits of police crackdowns could be further enhanced if such operations were implemented and rotated at different times and places on a randomised basis. Such a strategy would leave offenders uncertain as to the extent of police activity and liable, in turn, to overestimate the risks of offending at any given location or point in time.

Difficulties of Measurement

Though the preceding discussion may provide reassurance that displacement is not inevitable, and indeed that a diffusion of benefits is a possible alternative outcome of crime reduction work, it moves us no further forward in terms of measurement. Accurately measuring displacement/diffusion of benefits is particularly difficult because attributing the occurrence or non-occurrence of one crime to the prevention of another is ostensibly a somewhat speculative pastime! There are, in particular, five related problems that initially confront us:

(1) If offenders do employ rational decision making when offending, and if they operate in an environment that provides a bountiful quantity of criminal opportunities, then predicting what form any possible displacement might take will be problematic.

(2) This uncertainty is compounded by the fact that studies of offenders have generally shown (see Tarling, 1993) that most offenders are not specialists (i.e., they do not concentrate solely on specialising in one type of crime), but can in fact range across a range of different criminal activities. Offenders are versatile in that they amend their criminal behaviour to take advantage of changing criminal opportunities.

(3) Theories of modernity emphasise the increasing mobility of the general population in terms of their movement across time and space (Urry, 1991). This increased mobility extends to both potential offenders and victims (Felson, 1994). Thus, offenders may be seen as both versatile and mobile, again impeding attempts to predict the direction and form of any possible displacement activity.

(4) If the focus of any crime reduction evaluation work involves crimes that are thinly spread across time and space[3] — or if to compensate for the uncertainty of offender mobility/versatility an evaluator looks for displacement across a wide range of offence categories and/or a wide geographic area — then any possible displacement effect will be difficult to distinguish from the natural fluctuations of the background crime rates (Barr and Pease, 1990).

(5) Finally, even if we feel confident that we can distinguish some effect over and above natural crime rate fluctuations, then we will still be confronted with the difficulty of attributing any possible displacement/diffusion of benefits to the impact of the project under study. Other external or extraneous activities or events in the study area(s) may account for any crime. The larger the area in which we search for displacement, the more complex this "background noise" is liable to be.

Clearly if we wish to be able to have a realistic chance of gauging the presence and approximate extent of displacement then we need to avoid the measurement problems covered in points four and five above. Our search for displacement needs to be targeted (Clarke and Weisburd, 1994). However, points one to three in turn, if true, deprive us of any systematic bases on which we could build a targeting strategy! Fortunately, however empirical research into criminal decision making and behaviour does not fully bear out the fluid and unpredictable portrait of offending outlined above.

The Reasoning Criminal

Cornish and Clarke (1986) acknowledge that while offenders do make rational choices when committing a criminal act, they act nevertheless with only limited rationality. This is borne out by empirical work that shows that burglars do not usually select targets on the basis of elaborate pre-offence planning (Wright and Decker, 1994); more typically they exploit criminal opportunities that they spot "by chance" or "in passing" (Wiles and Costello, 2000). Moreover, evidence would suggest that this rather casual opportunism is as true

for displacement as it is for target selection, with offenders tending to displace on a fairly immediately basis, if at all (Bennett and Wright, 1984).

This characterisation of displacement is supported in Hesseling's (1994:219) review of the displacement literature and the most frequently reoccurring forms of displacement observed. The ranking across 55 studies was as follows:

Temporal displacement	=	100%
Spatial displacement	=	53%
Target displacement	=	48%
Tactical displacement	=	38%
Offence displacement	=	35%

It should be noted that this ranking allows for multiple forms of displacement (hence, temporal displacement was predictably a feature of every incident of observed displacement). What is striking about this ranking is that offenders, in displacing from blocked opportunities, are clearly more likely to be displaced along the line "of least resistance" — namely, offenders commit the same type of crime using the same method. This is congruent with our portrait above of offenders exploiting criminal opportunities on a fairly immediate basis. These patterns of displacement however do not support any contention that the other dominant influence on offender behaviour is irrational or chaotic decision making. Offenders sensibly displace, first and foremost, to the same or similar opportunities.

What underpins and links this mix of opportunistic behaviour and rational decision making is the fact that offenders base many of their judgements and actions not on conscious decision making but on the employment of pre-defined and readily available "rules of thumb" (Cromwell et al., 1991; Cornish, 1994). Both Cromwell and Cornish have developed multi-stage models of how offenders assess and exploit criminal opportunities. Whilst the full structure and assumptions underlying these models may be contentious within the field of psychology, a consistent point that both models convey (and which is also conveyed in Giddens' [1984] more general conception of "practical consciousness") is that offender decision making and behaviour is partially *routinised*. These routines derive from an individual's personal repository of practical knowledge, accumulated experience, and reinforced behaviours relating to the commission of a particular type of offence. These assist the offender in the offence process by helping him or her to recognise a suitable criminal opportunity, to assess risks related to that opportunity (in particular immediate situational

factors), and to accomplish the task of exploiting that opportunity. In short, at each stage of the crime commission process the employment of routines mitigates against the need consciously to think through each and every stage and circumstance relating to the commission of a specific offence. This employment of routines inserts an element of predictability into offender behaviour (including target selection *and* displacement).

The Motivated Offender

Hesseling's ranking of displacement types, while it may support our portrait of opportunistic offenders pursuing favoured types of criminal activity, still highlights a significant number of cases where tactical or offence displacement occurs. As discussed earlier, most offenders do not specialise in one exclusive type of criminal activity. Thus, if one type of opportunity is blocked (and, in particular, is persistently or permanently blocked) an offender may choose to exploit another opportunity that involves the utilisation of a different method of offending or a different type of offence altogether.

One key factor in determining whether or not this type of adaptation and displacement takes place will be the strength and nature of offender motivation. Farrington (1987) has previously noted that offenders who have longer and more serious criminal careers are more likely to displace, and also to display more flexibility in their displacement patterns. The nature of motivation is also important because it is likely to significantly determine the direction of any displacement, in particular offence displacement. For instance, the primary motivation for most burglary offenders is instrumental gain, principally the acquisition of money (Maguire, 1982; Bennett and Wright, 1984; Rengert and Wasilchick, 1985; Cromwell et al., 1991). Clearly, if material gain is the principal motivation behind an offence, then the most likely direction for offence displacement to take is to another type of crime that provides similar rewards. Tarling (1993) provides some evidence for this in his study of offender careers. He found that burglary offenders — if they were going to commit another offence aside from burglary — were more likely to commit some other type of acquisitive crime.

Felson and Clarke (1998) provide further evidence of the importance of motivation. In their discussion of research into the theft of motor vehicles, they argue that the direction of displacement away from any particular model of car will depend on the particular motivation behind the original theft. Joyriders prefer different models of cars from thieves who are looking to steal a car for its parts; in turn, the preferences of thieves who are stealing cars "to order" are differ-

ent again. Thus, if a joyrider car model is "target hardened," one would expect displacement towards another one of the other car models favoured by joyriders.

Choice-structuring Properties

The reader may at this point think that the preceding discussion promises the possibility of developing typologies that will allow us to predict displacement fairly accurately. Offender behaviour is not simply based upon rational decision making. Rather, the pure cost-benefit calculus suggested by rational choice theory is circumscribed by routinised behaviours and the motivation of offenders. It might therefore seem that we have a strong basis for making generalisable displacement/diffusion of benefit predictions for certain types of offenders.

Unfortunately, matters are more complicated than this. First, though there may be, for instance, similarities in the underlying motivation and the types of routines and decision making employed by burglary offenders, there are also likely to be significant individual and sub-group differences. Offenders differ both because they possess different personal attributes and also because offenders operate in varying social and physical environments. For instance, Cromwell et al. (1991) found that, while for most burglars the dominant motivation was acquisitive gain, for many younger burglars the main motivation was in fact excitement (which if we are trying to predict offence type displacement is a very significant difference). Equally, the skills and decision making of a burglar operating in an environment where opportunities are to be found in breaking into high-rise flats may be very different from those of a burglar operating in an area where no high-rise building is present.

Cornish and Clarke (1987) have gone some way to modelling this complexity with their concept of "choice-structuring properties." No one operates on the basis of unlimited choices, rather we make choices on the basis of available options, or our *perceptions* of what options are available. These options will vary between different individuals because the choices available to us will be based on the particular social and physical environments that we inhabit, as well as our own individual attributes. Thus, offender motivation and decision making cannot be divorced from the social, physical, and individual "properties" which determine the choices available to a given offender. "Choice-structuring properties" provide a framework for modelling what choices are available to offenders. Though Cornish and Clarke do not draw up a list of properties specifically for burglary offenders, we might broadly summarise here some generic properties

that would be pertinent to burglary under the headings "individual properties," "social properties," "physical properties" and "opportunity properties."

Individual Properties

Offenders need to be aware of offending opportunities and/or have the skills for identifying opportunities. Offenders need to have the relevant expertise/knowledge of crime commission methods as well as methods of disposing of stolen goods. They need to be available to commit the offence at the appropriate time and they need to have the time generally to plan and commit the offence. They need to be motivated to commit the offence (including the fact that they must have decided that the benefits of commission outweigh any cost). They also need to have the relevant physical, affective, and cognitive aptitudes required to commit the offence.

Social Properties

The offender may be dependent upon the availability of associates (in some cases with particular skills). Offenders also need fences who are interested in purchasing the sort of goods that they steal. If offenders wish to adapt or develop their offending behaviour, they also need to be able to draw on locally available knowledge of offending opportunities and offending methods. The admiration, approval or support of social peers may be essential to an offender's motivation.

Physical Properties

The offender may require specific tools/materials for the commission of the crime or the subsequent disposal of property. Transport may be required. Safe sites for the storage of stolen property may also be needed.

Opportunity Properties

Suitable opportunities need to be available to the offender. Clarke (1999) has developed an acronym — "CRAVED" — to capture the properties that a product or item needs to possess to make it "suitable" for stealing. An item needs to be "concealable" (so it can be safely removed with limited risk), "removable" (some items are harder to remove owing to protective measures), and "available" (the items are available locally and they are visible to offenders). Items also need to be "valuable" (whether in monetary or other terms), "enjoyable" (this is related to an item's value, as the value of items is sometimes

found in the enjoyment or status they provide) and "disposable" (the stolen items are easy to sell).

These choice-structuring properties form the background to an offender's decision making and routine behaviours. These properties not only enable offenders to commit certain types of offences, but they also define the boundaries of an offender's options (and hence they define the boundaries of any possible displacement). The fact that the choices available to offenders are ultimately unique to each offender should not disguise the fact that generalisations can be made about types or groups of offenders. However, the limitations and scope of such generalisations clearly need to be recognised. The level at which generalisations can be made will also vary by offence. In the case of burglary, most offenders operate at a geographically local level, exploiting locally available opportunities and working with local offending resources. Any generalisations that are employed to model potential displacement away from residential burglary therefore need to be checked against the particularities of local offending. Cornish and Clarke's "choice-structuring properties" provide a conceptual framework that can assist us with this task.

However, before we move on to examine how we can practically utilise this knowledge there is one further issue that needs to be considered. While our discussion to date has focussed upon offender decision making and motivation, and the properties that shape these attributes, one final aspect of offender behaviour that has not been considered is offender mobility. The characteristics of the social and physical environment may well fundamentally inform and limit the choices available to a given offender, but these environments vary from place to place. If offenders move freely through "space," then our ability to make any predictions about their likely offending choices becomes severely compromised! The question is, therefore, are offenders freely mobile, and, if not, is there any basis on which we can predict their restricted movements?

Offenders in Space

A productive development in criminology has been the gradual convergence of rational choice theory with "routine activities theory" (Bottoms and Wiles, 1997). While the former, as we have seen, helps us examine how offenders assess a criminal opportunity, routine activities theory addresses the issue of how offenders come across criminal opportunities in the first place. Central to this theory is the notion that criminal offences occur in circumstances where motivated offenders come across suitable opportunities in the absence of a capable guardian (Cohen and Felson, 1979). Routine activities the-

ory therefore examines the movement, distribution and conjunction of offenders, victims, capable guardians and opportunities.

The grounds for convergence have been based around the increasing importance being attributed to "routines" both in rational choice theory and routine activities theory. As we have seen in our discussion of offender decision making, the majority of offenders do not engage in elaborate pre-offence planning or target selection searches. Rather, targets predominantly consist of opportunities that are identified and acted upon as an offender moves "routinely" through space. This raises the question of how one can characterise — and whether one can predict — these routine movements of offenders.

Clearly, the literal and metaphorical point of departure for any discussion of offender mobility must be the offender's residence. Offender residences are important because any limitations in their mobility can be best measured from their home residence. Wiles and Costello (2000) examined changes in offender mobility in the city of Sheffield, comparing police data from 1966 and 1995. Whilst they did find evidence that offender mobility had increased in so far as the distance travelled to a burglary scene had increased, they still found that over 40% of offenders travelled less than one mile from their place of residence to their chosen crime site. In 1995 the average journey to a burglary offence was 1.88 miles. So is there therefore any basis upon which we can predict these limited travel patterns? Fortunately there is a well-evidenced and developed set of work in environmental criminology that enables us to make such predictions. Brantingham and Brantingham (1981, 1984) are the most well known exponents of a model of human mobility that emphasises the routinised aspects of travel.

People (including offenders) do not travel around a city in a random manner (Lenz, 1986), nor are any of us usually familiar with more than a part of any given city or town. Rather, our movements display a directional bias based around certain key "anchor points" or "nodes" (Rengert, 1992) . A central anchor for all of us is usually our place of residence, followed in turn by those locations were we engage in work and leisure activities. What Brantingham and Brantingham argue is that our travel movements are largely determined by these anchor points and our knowledge/consciousness of our surroundings are centred upon these points and the corridors of travel that lead from one point to another. Thus it is predominantly along these "paths of consciousness" and around these anchor points that offenders will be aware of the criminal opportunities on offer. This hypotheses that offenders commit offences in areas with which they are routinely familiar has a strong evidential base in empirical

studies (Carter and Hill, 1979; Rengert and Wasilchick, 1985; Beavon et al., 1994; Wiles and Costello, 2000).

While Brantingham and Brantingham's modelling of offender movements stands up well against the empirical evidence, the portrayal of travel routes and zones of consciousness being based around the three anchor points of home, leisure and work holds up less well within a contemporary setting. Rengert and Wasilchick (1989) have argued that for many offenders an important anchor point in terms of their daily routines is their drug sale or consumption locations. Wiles and Costello (2000) observed that a large percentage of the offenders that they studied were either unemployed or economically active only on a sporadic basis. They also found that for many offenders the residence of friends or girlfriend formed an important anchor point around which they offended. In their study, they found that the key anchor point for offenders were (in order of priority):

- areas of current residence;
- areas previously lived in; and
- areas well known.

Unsurprisingly, offenders generally lived in areas characterised as socially and economically deprived. Wiles and Costello found that of the 23 neighbourhoods that their study covered in Sheffield, 68% of offenders had lived in six or less of these neighbourhoods, and these neighbourhoods were all characterised by their unpopular social housing. Thus, offenders — at least when it comes to movements and anchor points that are related to their individual residence or the residence of their friends and family — are likely to offend in deprived neighbourhoods. Consistent with previous studies, the authors found that offenders in Sheffield were least likely to know middle class areas and, consequently, they were less likely to offend in these areas.

Another complicating aspect of offender mobility is that some offenders have an itinerant lifestyle with frequent moves between short-term addresses. Wiles and Costello found that their sample of offenders was clearly dichotomised between those offenders who had a stable residential address and those that didn't. Generally, however, they found (2000:44) that most offenders were not that mobile, a conclusion that they found unsurprising.

> Long range travel, like much other human activity, requires knowledge, confidence, skills and resources. However, the risk factors associated with offending are either the lack of such skills or are closely correlated with them.

The implications of this body of environmental research are that offender movements, with the general exception of movements in and out of the city centres, are disproportionately centred around deprived and more disadvantaged residential areas. This concentration accords well with routine activities theory. Not only are offenders more likely to travel in or be familiar with more deprived neighbourhoods, but this very familiarity is also likely to ensure that offenders have a better knowledge of suitable opportunities in these areas. Moreover, these areas frequently play host to vulnerable populations who are more prone to personal victimisation (Kershaw et al., 2000), while the generally lower levels of physical security in these areas (Budd, 1999) make access to property easier. Finally, it is precisely these types of areas that are characterised as frequently exhibiting higher levels of social disorder and lower levels of informal social control, with the implication being that levels of capable guardianship will also be lower (Skogan, 1986).

MEASUREMENT STRATEGIES

What the preceding sections tell us is that the problems of measurement that we identified in relation to offender motivation, rationality and mobility are not as severe an impediment to the measurement of displacement as we first thought. Offender motivation is not fluid or inexhaustibly flexible, nor is offender behaviour solely based around pure rational decision making. Furthermore offenders do not range freely through time and space. In short, the importance of routines in informing offender movements and decision making, and the limitations placed on offender behaviour by the choice-structuring properties available to a given offender, provide us with a critical element of predictability. This predictability allows us to target our search for displacement.

This final section therefore deals with the practical task of converting our discussion to date into a practical measurement strategy that can be used either in practitioner-driven or independent research. Such research is typically conducted within fairly tight resource constraints. This is problematic because — as we have seen — it is not possible to pre-specify universally applicable typologies of offenders and their likely displacement choices. Nor, is it practical with limited resources, to undertake for each piece of research a full and systematic analysis of all the choice-structuring properties identified by Cornish and Clarke. However, while we may not be able fully to characterise all the pertinent aspects of the offences and offenders that we are studying — and consequently we may not be able to predict every possible permutation in offender behaviour when faced

with a blocked criminal opportunity — what we *can* do is at least narrow down the possibilities.

A Time and a Place for Measurement?

This leads to the question of how and when should one fit in the task of predicting displacement or diffusion of benefits into the typical setting of project-based work? The simple answer is that this task should ideally be built into the task of general problem analysis at the very outset of a given project. A project analysis of any quality will normally provide at least some information on offenders, victims and offence locations, in the project area. This information is increasingly analysed through following the precepts of the "problem analysis triangle" (PAT; see Hough and Tilley, 1998) in that analysts endeavour to elicit those salient aspects of offenders, victims and locations that lead to the generation of a criminal event. This sort of analysis can also be re-utilised to help us predict displacement/diffusion of benefits.

In predicting displacement or diffusion of benefits essentially what one is doing is modelling patterns of offending and considering how they might be affected by the introduction of a given crime reduction measure(s). This is of course exactly the sort of analytical work that is required in developing a crime reduction project in the first place. As we develop a theory of our problem and a theory about how our project interventions will impact on this problem, we are in effect modelling the interaction between each intervention and the offender (this interaction is often referred to as the "mechanism" through which the intervention impacts on the problem — see Pawson and Tilley, 1997). However, a common shortcoming of many project analyses is that this mapping of project impact stops at the point of modelling how an intervention impacts on the offender *in one particular way,* and it does not consider how an offender might subsequently react. Typically, many crime reduction interventions work by blocking the offenders' access to a suitable criminal opportunity. What is too often not considered in project design is how the offender might respond or adapt to this blockage.

Heal and Laycock (1988) have previously noted that displacement is more likely to occur if the design of any crime reduction measure is weak in terms of anticipating how the offender might attempt to circumvent or counter the measure. For instance, one might fit improved door locks to households in an area because forcing existing locks has been a dominant method for burglars to gain entry. Such a measure, however, is of limited value if the same houses offer easy alternative design weaknesses that will allow the offender to gain en-

try by other means (for instance, through forcing open windows). Thus, anticipating displacement and offender adaptation is an essential part of project design.

However, project design should not only be refined with a view to minimising displacement, it should also be harnessed to maximise the benefits of the project (Clarke and Weisburd, 1994). This may sometimes involve addressing the problem from several angles to ensure a more lasting preventative effect, or a diffusion of benefits beyond the targeted crime type or target area. Enhancing project impact, as we have seen, may also move beyond simply blocking or removing opportunities or apprehending offenders to the more subtle art of affecting offender *perceptions* of opportunities and risks through publicity and disinformation strategies.[4]

Information on Offenders, Victims and Locations

In bringing together this information to consider potential displacement or diffusion of benefits information, we need in essence imaginatively to reconstruct the criminal event to try and understand how the combination of these elements equates with an attractive and viable criminal opportunity. In short, we need, in Ekblom's (1997) words, to put ourselves in the place of the offender and to "think thief." Information on victims, on offences, and offence locations tells us much indirectly about the skills and motivation of offenders. But how do we move, in turn, from information on current offender behaviour and decision making to predicting alternative offender behaviours and decisions? Given what we know about offending behaviour from our discussions above, we need to examine how the project interventions are intended to impact on the targeted offending behaviours and then consider how offenders might in turn respond by changing their patterns of offending, as follows:

Temporal, Spatial and Target Changes

Where and when are crime reduction measures being introduced? Do they cover all of the identified high crime area and do they cover all the attractive targets in that area (incident records will provide an indication of the characteristics and location of attractive opportunities)? If the measures have a temporal aspect to them, are the same criminal opportunities available at non-targeted times? (Offenders for instance might be at school or capable guardians might be at home.) Are there alternative areas within easy reach of offenders that offer similar opportunities? (Offender records may give some indication of the geographical "range" of those offenders who are operating in the

project area.) Equally, even if the measures do not cover all of the targeted opportunities in the project area all of the time, is there nevertheless a likelihood that they might *appear to offenders* to have a wider coverage (even possibly beyond the project area)?

Tactical Changes

Looking at the common *modus operandi* of offenders in the project area, and considering which skills or tactics employed by offenders are *not* covered by crime reduction measures, are there alternative opportunities available that can be exploited using existing skills?

Crime Type/Offence Changes

Are opportunities available to commit other offences in the project area or an accessible alternative area? These opportunities need to accord with the skills and tactics of known offenders together with the offenders' motivation and "portfolio" of offending experience: i.e., what other offences of a similar type have they committed in the past? Equally, looking at the *modus operandi* of other crime types, is it possible that the reduction measures might block non-targeted criminal opportunities as well?

In short, an examination of not only dominant patterns of offending, but also the wider range of related offending behaviours, together with a consideration of the likely impact of any crime reduction measures, can provide critical pointers as to possible forms of displacement/diffusion of benefits.

So what sort of information is typically available at the project level to inform this modelling of offending? In an ideal, resource-rich, research environment official data on offending would be supplemented by more probing sources, such as interviews with offenders and victim surveys. However, in most project analysis work, the resources are not available to exploit such methods. Nevertheless, official data sources can still provide considerable information. The two main sources of data are, of course, police offender records and police crime incident records. Between them, these records can generate information on the age, gender, race, residential location, *modus operandi,* and the "breadth" and length of the *detected* criminal careers of offenders. Incident records provide information on the age, gender, race and sometimes occupation of victims. They also provide an account of the modus operandi behind an offence (including, in case of acquisitive crime, what goods were stolen), the spatial and temporal location of an offence, and some of the characteristics of the offence location. Under the RBI, a good analysis of these records fre-

quently generated distinct patterns of offending that allowed practitioners to build up actionable portraits of offenders and their preferred offending locations and opportunities.

There are however, well-identified problems associated with utilising official data on offending (see, for instance, Bottomley and Coleman, 1995; Burrows et al., 2000; U.K. Her Majesty's Inspectorate of Constabulary, 2000). In particular, the ostensible volume and content of certain offending records are often more a reflection of the targeting of enforcement activity or reporting and recording decisions, and less a reflection of the actual levels of a given criminal activity (this is particularly true of drug offence records). However, for the majority of high-volume crimes, comparisons of recorded crime data and crime survey data have shown that recorded data does provide a reliable indicator of crime trends, if not of overall volume (U.K. Home Office 2000). There are, though, three further problems with offending data, which are of particular relevance here:

(1) Electronic offence and offender records are often oversimplified versions of the original paper incident and intelligence reports. This is often due to limitations of database design, with, for instance, the full paper accounts of offence *modus operandi* being summarised and squeezed into a few standardised categories and tick boxes. The fact that this conversion of paper records into digital ones is often undertaken not by the attending officer but by a third party, simply adds to the potential for distortion and for critical detail to be lost.

(2) One way round this problem is of course to go back to the original paper records. For instance, Mativat and Tremblay (1997), in their study of credit card counterfeiters, used police investigative files to "put flesh" onto computerised offender records. Such files provide more detail on the attributes of offenders and on their methods of offending, and in doing so can illuminate many of the choice-structuring properties that underpin their offending. Mativat and Tremblay, for instance, were able to model the sort of personal affective attributes — together with the sort of resources (including associates) — required to commit different types of credit card offences. They then used this model to attempt to predict likely routes of offender adaptation and/or displacement. However, the quality and reliability of intelligence records can vary hugely from formal records systematically compiled in the course of dealing directly with offenders, through to third-party intelligence and hearsay. The difficulty in assessing the reliability of such intelligence is that

information of markedly different quality can often be found mixed together, though this information is sometimes rated for reliability by "host" agencies.

(3) A final consideration is that official data on offenders are relatively scant in that detection rates for many crimes in many areas can be very low (typically for burglary as low as 10%, though the national average for burglary in England and Wales in 2000/1 was 14.2% — Povey et al., 2001). Thus, any profile of offenders that one derived from such data would arguably be biased. Compensating for a low detection rate through including retrospective records on offending over several years is of dubious legitimacy in view of the brevity of most criminal careers and the tendency for offenders to change their patterns of offending over time. However, a 10% clear-up rate in a high crime area can actually produce a reasonable sample of offenders for high volume crimes, such as burglary, even if only one or two years' worth of data are examined. Moreover, data on offenders are biased for our purposes in a wholly constructive way. As Farrington (1989) found in his comparative study of self-report and official data on offenders, police records tend to pick out the more persistent and prolific offenders. As these are the very offenders that we would anticipate to be most likely to continue offending in the face of any introduced crime reduction measures (i.e., to be displaced), this bias should assist us in our modeling of potential displacement.

THE RBI APPROACH: PRACTITIONER ACCOUNTS

Under the RBI, limitations in police data on offending were often ameliorated by the availability of data held by other agencies. For instance, probation records, as well as providing further general information on the characteristics of offenders, were also often more reliably accurate about certain details (notably the residential addresses of offenders and their drug-using status). However, such records are not always available to researchers or project analysts, and, even when they are, these combined official sources still often omit critical information. There may, for instance, not be enough data to illuminate what sort of alternative criminal opportunities might be available in the project or adjacent areas, nor may these records be sensitive enough to identify emerging crime trends. Records on individual offenders may also not indicate sufficiently the associations and dynamics existing *between* offenders.

An approach that was therefore adopted under the RBI was to triangulate this formal data with a more qualitative practitioner-informed account of crime in the given project area. This entailed assembling relevant local multi-agency representatives, *at the project planning stage,*[5] to discuss and consider both the existing formal sources of data and their own "on the job"-based knowledge of offenders, victims and locations. Representatives were invited from all the agencies that were contributing to a given project. Where possible, agency representatives included not only those agency staff who had a knowledge of the strengths and weaknesses of their agencies' formal data on offending, but also "ground level" representatives who had an active and qualitative working knowledge of the problem area.

Critically, this approach added finer local detail to a consideration of displacement/diffusion of benefits. Utilising a skilled facilitator, these sessions also offered the opportunity to triangulate formal data on offending with local "folk knowledge."[6] An additional benefit of this approach in some instances, was that it compensated for situations where agencies were not willing to share individual-level data, but were willing to discuss in general terms the salient characteristics of their data. Finally, these sessions had an important subsidiary function in that they also provided the opportunity for project participants to analyse the likely impact of their project and, in doing so, to identify points of weakness or limitations in their existing approach. This, in turn, often led to a consideration of ways in which project impact could be enhanced or widened.

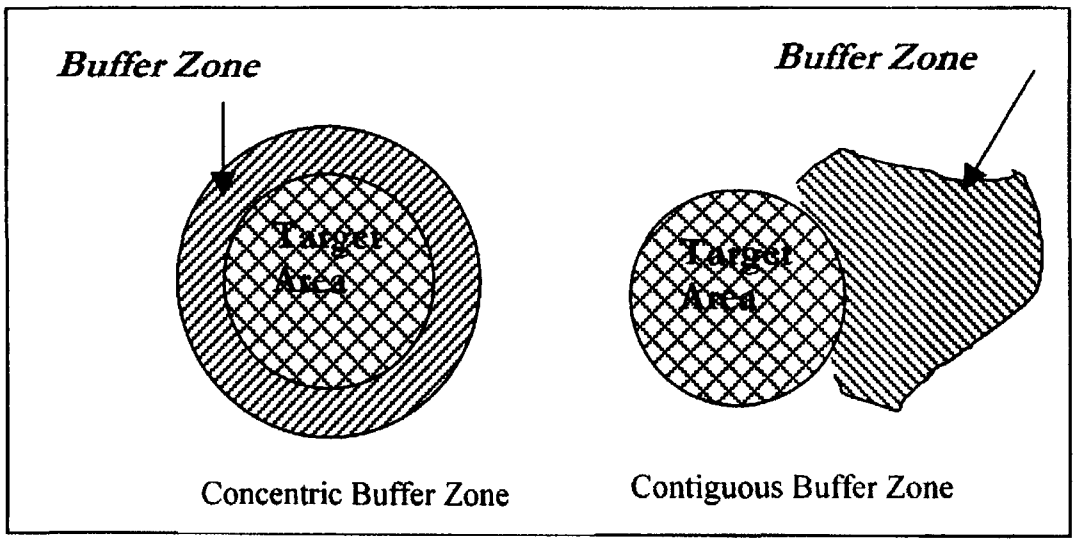
This was an extensively employed approach when selecting suitable areas to test for spatial displacement from round two RBI project areas. The resources were not available to select, collect and analyse individualised offence categories for each project, nor were we able to collect disaggregated data to examine temporal, tactical or target-based crime shifts. Rather, a standard batch of acquisitive crime categories were selected to test for functional /offence displacement/diffusion of benefits, while a "buffer zone" was selected to test for spatial displacement/diffusion of benefits. It was only in relation to this last type of crime shift that we were able to develop and utilise a more systematic, theory- and data-informed method of testing for displacement. In this next section, we examine the development of a measurement strategy to test for spatial displacement/diffusion of benefits.

The Buffer Zone Selection Model

Within the context of the RBI, efforts to predict displacement focussed around the selection of a buffer zone to test for spatial dis-

placement. The majority of RBI projects were focussed upon reducing burglary within a single geographic area. In looking to test for spatial displacement from a project in such an area, one selects another area which is commonly termed a "buffer area* or "buffer zone." A buffer zone is an area one would expect to be the most likely site for displacement from the project area. In this section the discussion will predominantly refer to "displacement" rather than "diffusion of benefits." However, as we shall see, the characteristics of an area that recommend it as a site for any possible displacement would also *generally* recommend it as a site for any possible diffusion of benefits as well.[7]

Figure 1: Buffer Zones



Conventionally, buffer areas fall into one of two types, concentric buffer zones and contiguous buffer zones. These two types are illustrated in Figure 1.

Concentric buffer zones are defined by taking an area that fully surrounds the project area. Usually these zones are defined in such a way that at all points the boundary of the buffer zone is at a set distance from the boundary of the project area. The simple assumption behind concentric buffer zones is that if offenders are displaced from the project area criminological theory would suggest that they are unlikely to displace far. By taking a "strip" around the project area, one can gauge whether or not offenders are displaced to the immediate surrounding area. The advantage of such an approach is that one

can test for displacement regardless of the direction in which offenders move out of the project area. The disadvantage of such an approach is that defining and extracting data for concentric buffer zones can be complex (and typically requires the use of a geographic information system). A further disadvantage of the concentric approach is that it is based upon one criminological idea, and fails to take advantage of other predictable aspects of offender movement that provide the possibility of making a more refined selection.

In monitoring the Reducing Burglary Initiative, the decision was taken to opt for something akin to contiguous buffer zones instead. A contiguous buffer zone refers to a neighbouring area that borders onto the project area, but, unlike a concentric buffer zone, does not usually completely surround it. An advantage of contiguous buffer zones is that they are invariably based around geographic areas that are pre-defined in terms of administrative units. This makes the task of obtaining crime data for these areas less problematic. However, while the buffer zones used under the RBI were usually contiguous to the target area, they were not exclusively so. The aim was to select buffer zones that provided as robust a test of displacement as possible. These zones were therefore selected not simply on the criteria of direct proximity to a target area and/or being based around convenient administrative units. Rather, the empirical literature on offender mobility and target selection was utilised to make a more theoretically informed selection. The type of buffer zones developed under the RBI might therefore best be called "theory-driven" rather than "contiguous."

A model was developed for helping RBI project participants to select a buffer zone(s) for their project. This model initially grew out of a "beat selection model" developed for the RBI by Johnson et al. (2000) at Liverpool University. Utilising pooled information on offenders, victims and locations, project participants in collaboration with a facilitator followed three key stages in selecting a buffer zone for their project.

(1) *Select a buffer zone(s) that is contiguous to the target area boundary (unless a non-contiguous area is strongly recommended under 2).*

In view of generally short "travel to crime" distances, practitioners were encouraged initially to consider contiguous areas as possible sites for displacement. There were, however, a number of cases where non-contiguous areas were seen to be preferable to contiguous ones. Typically, these exceptions occurred for one of two reasons. First, in some urban areas there are often strong social and familial links between non-contiguous areas. In one East Midlands town, for instance, the project area consisted of local authority flats that pre-

dominantly housed young single adults. This group was believed to provide the main supply of offenders. These young adults, however, had in turn generally grown up in another council housing area on the other side of town. Allocation procedures therefore created a social link between these two areas, with young adults from the project area frequently travelling between the two areas visiting friends and family. It was therefore considered that displacement was more likely to this non-contiguous "anchor point" than to any of the contiguous areas.

A second common reason for choosing a non-contiguous buffer zone was that a number of project areas hosted a very specialised form of offending that was not transferable to any of the contiguous areas owing to a lack of similar opportunities. For instance, choosing a contiguous buffer zone for a project based around distraction burglary offences (or "burglary artifice" offences as they are commonly known) against the elderly is only appropriate if there is a reasonably large elderly population living in a contiguous area.[8] Given what we know about distraction burglars — namely that they are specialised offenders who are generally quite mobile (Choli, U., forthcoming) — it would be theoretically more likely that such offenders would transfer their particular skills to another suitable area rather than displace a short distance to commit a more conventional type of burglary or another offence type altogether.

(2) *In selecting a buffer zone, review the socio/demographic and physical characteristics of the project and potential buffer zone areas.* Key characteristics to consider in making this selection should include:

(a) Offender Residence and Characteristics. It is helpful to know the location of offender residences (as in those offenders offending within the project area) and the basic demographic characteristics of those offenders. Clearly if offenders live outside the target area then this will affect one's consideration of likely spatial displacement routes. Conversely, if the majority of offenders are known to be relatively young and to reside within the project area, then one may choose to limit one's search for spatial displacement to the fairly immediate surrounding area. If direct data on offenders is lacking, then crime incidence data may well provide invaluable clues. For instance, the modus operandi behind offences may reveal that in a given project area the dominant style of offending is based around the rather amateurish theft of small, low value goods that can be easily removed (and concealed) from the property by an offender on foot, and which are easy to dispose of (cash, cigarettes, alcohol, etc.). In several RBI projects, the presence of these offence characteristics *suggested* that

offenders were both fairly local and young and were not therefore liable to be displaced far (if, of course, they were displaced at all). In contrast, if the dominant modus operandi indicates that offenders are highly skilled and organised, then the scope for displacement (both spatially and otherwise) is likely to be much broader.

(b) Anchor Points/Offender Knowledge of Other Areas. As we saw in our review of research into offender movement, a critical consideration in assessing likely routes and sites for displacement is assessing offenders' frequenting/familiarity/knowledge of other areas. If specific intelligence on the offending sites of project area offenders is lacking, then such an assessment is frequently made on the basis of considering the general mobility of the broader socio-demographic group or community to which the offenders belong. Under the RBI, commonly identified anchor points included socially-linked housing areas, schools which included young offending populations within their catchment area, and contiguous areas that fell between the project area and the nearest commercial/leisure centre (i.e., which fell along a major route of travel, as well as commercial/leisure centres themselves). Practitioners often brought a considerable amount of local knowledge to this sort of assessment. For instance, in two cases buffer zones were centred around residential areas that included hospitals that served the main offender residence areas. In one of these cases, police intelligence was available to show that drug using offenders offended along the foot route to the hospital (where a needle exchange scheme operated). Generally practitioners not only had a practical knowledge of common transport corridors (and the quality of transport links), but also frequently knew the social and *symbolic* significance of different locations within the locality.[9]

One final factor in predicting offender movement was basic physical access. Offenders frequently had limited access to transport, while in many cases certain contiguous areas were physically separated from the project area by distinct barriers. Typically, these barriers consisted of motorways, railways and rivers. However, even here practitioner knowledge was important in assessing the extent to which these ostensible barriers acted effectively as a block on offender movement. For instance, whereas in one West Midlands project the presence of motorway was considered to be a distinct barrier to offender movement across to a contiguous area, in a project in the North West a railway line was not judged to impede access owing to the presence of a footbridge linking the target area with the contiguous area. Moreover, police intelligence already pointed to offenders using the footbridge to transport stolen goods out of the contiguous area.[10] Finally, a railway line in the East Midlands that superficially looked on a map like a physical barrier to offender displacement, in

fact proved to be a semi-derelict line and a well-known offender "rat run." Offenders used this informal travel corridor both to transport stolen goods (with minimal risk of detection) and to access properties that adjoined the line.

(c) Opportunities in Other Areas. Having considered the impact of offender residence and routine movement in shaping any possible displacement, the final consideration relates to the availability of opportunities in other areas. Offenders may well be familiar with a particular contiguous area, but this area may not offer the same opportunities. A critical issue to consider is "can the offence style be easily transferred to a contiguous area"? Neighbouring housing areas may not display the same vulnerabilities and may not therefore provide the same offending opportunities. For instance, a common reason for deciding that a buffer zone if as a good test of displacement was that the housing design was similar. On this basis, one could presume that unless the buffer area limited opportunities in other ways (either because the houses did not contain the same desirable goods, or because the area exhibited better capable guardianship), then the similarity in housing design would allow burglars to easily transfer their offending.

An example of restricted opportunities is provided by an RBI project in the North West. The contiguous area to the north of the project area was ruled out on the grounds that the housing stock was newly built and conformed to "secure by design" standards. The contiguous area to the south was also ruled out on the grounds that as part of another recent crime reduction project, alleygates had been extensively installed throughout the area. This example, of course, points to the fact that opportunities may not only be restricted as a result of longstanding area attributes, but they might also be temporarily restricted as a result of activities being undertaken by other agencies/projects in the area in question.

(3) *Select a buffer zone(s) for which the population (or in the case of burglary the number of households) is comparable to the project area or, if possible, no more than two times that of the project area.* One easy way to select a buffer zone of a similar size to the project area is to define the buffer zone using the same administrative unit used to define the project area (for instance, typically a police beat or a local authority ward). The advantage in having a buffer zone that is of a similar size to the project area is that it makes it easier to identify possible displacement effects. Buffer zones that are too large or too small in relation to the project area suffer from what can be termed either the "drowning" or "amplifying" of any effect.

For instance, if we take the example given in Table 1 below, where the buffer zone is ten times the size of the project area, we can see that a significant percentage drop in burglary in the project area amounts to no more than a small percentage rise in the chosen buffer zone. The difficulty is that burglary has risen by the same number of incidents in our buffer zone as it has fallen by in the project area, which might suggest that displacement has taken place. However, the size of the buffer zone means that this rise represents a small percentage change relative to the size of the zone and therefore we cannot discount the possibility that this rise is simply a product of random fluctuation. Moreover, the size of the zone also might introduce the difficulty that a large number of other alternative explanatory factors could account for this rise. For instance, a buffer zone of this size may contain, or be contiguous to, separate offending populations that are not active in the project area. In short, a larger buffer zone introduces a greater degree of what can be termed "background noise" that will impede our ability to judge whether or not displacement (or a diffusion of benefits) has occurred. If we have project and buffer areas of a similar size, a rise or fall in one area of a certain magnitude will be easier to compare to similar changes in the other area.

Table 1: First Hypothetical Case

	Project Area	**Buffer Area**
Number of Households	2000	20,000
No. of Burglary Incidents Year –1	200	1,800
No. of Burglary Incidents Year +1	150	1,850
Change in number of incidents	-50	+50
% change in number of incidents	-25%	+3%

Alternatives to Geographic Buffer Zones

It should be noted that there might be instances where — having followed the buffer zone selection model — it is concluded that there is no appropriate geographical buffer zone. There are circumstances where spatial displacement can be dismissed as practically and/or

theoretically implausible. One RBI project, which focussed on targeting multiple-dwelling properties in a city centre area where both offenders and their victims resided, did not have a buffer zone set. The rationale in this case was not that there was a lack of contiguous residential areas (there were). Rather, offenders were markedly unfamiliar with these neighbouring areas (which contrasted with the densely populated town centre of this seaside report, consisting as they did of more sparsely laid out areas of suburban bungalows and detached dwellings). The contiguous areas lacked the sort of facilities that might provide offenders with a reason for passing through them, while offenders lacked the personnel transport easily to access these areas (and public transport was limited). Finally, offenders had ample alternative opportunities for functional /crime type displacement in the city centre areas.

In other cases, it may be determined that displacement is less likely to occur in a specific geographic area but may rather occur amongst a specific population group or other target type. For example, if again we have a project that is focussed on targeting distraction burglaries against the elderly within a specific area — it may be felt that there is no one alternative geographic concentration of elderly residents that can be identified as a suitable buffer zone. An alternative might be to create a buffer zone consisting of all residents aged 60 or over living within the wider police division or local authority area.

Interpreting Trends in Buffer Zones and in Other Crime Categories

After one has selected a buffer zone to test for displacement, and decided on which crimes to monitor to test for any displacement to other crime types, it is worth considering how one subsequently interprets the crime figures that are collected. This discussion cannot encompass all the usual technical and conceptual issues that accompany the general interpretation of crime figures (for that see, for instance, Ekblom, 1988; and Ekblom and Pease, 1995). An assumption will therefore be made that we have arrived at a set of crime change figures for the target and buffer area, and that issues such as seasonal variations, regression to the mean, pre-project trends, comparative performance against wider background trends, etc., have already been taken account of. We will also presume that any estimates have also been balanced against the impact of other possible non-project events or activities in the target *and* buffer area (a convenient presumption in view of the conceptual difficulties associated with this task!).

In producing estimates of changes in crime levels over one or more time periods, one will often end up not with a single estimate of change but an "estimate range." In view of the difficulties involved in accurately attributing either displacement or diffusion of benefits to the work of a project, a prudent strategy might be ultimately to select a single estimate for each crime based on the most conservative end of any estimate range (unless, of course, the characteristics of the data already recommend one estimate over another). The "most conservative" estimate should be taken to mean here the estimate that provides the lowest figure for displacement or diffusion of benefits. For simplicity's sake we will base our example here on monitoring only one other crime "heading"[11] — namely vehicle crime.

Table 2 below provides figures for a hypothetical burglary reduction project with a buffer zone of a similar size to the project area. The estimates given tell us how much crime has risen above or below the levels expected (after one year of the project) based on the most conservative projection.

Table 2: Second Hypothetical Case

	Burglary Dwelling		Vehicle Crime	
	N	(%)	N	(%)
Project Area	-93	(-25%)	+9	(+4%)
Buffer Zone	-15	(-7%)	+6	(+1%)

From these estimates it could be hypothesised that whilst burglary has declined in the project area by 25% more than expected, there has also been a decline in burglaries in the buffer zone. This positive picture is tempered by the small amount of potential displacement within the project and buffer areas away from burglary and into vehicle crime. Attributing the drop in burglary in the buffer zone to the impact of the burglary project would be inappropriate unless it was theoretically plausible that the project work could have had an impact on this offence in this area. If the project, for instance, involved widely disseminated publicity or entailed the apprehension of offenders who may have operated in both areas, then it could be claimed that the project work has resulted in a diffusion of benefits. Conversely, this need for plausibility applies equally to the rise in

vehicle crime being attributed to displacement of offenders away from burglary.

Obviously, if our search for displacement has been well informed and systematic then the plausibility of any findings will be greater. But are there other steps we can take to test or strengthen the findings that we have? Moreover, how can we interpret the significance of other shifts in crime patterns (from, say, one time period to another or from one method of offending to another)? Though the RBI monitoring exercise has not yet been able fully to explore this question, prior research might suggest that the following strategies could provide helpful corroborative evidence to support any hypotheses as to the occurrence of displacement and/or diffusion of benefits.

- One can examine differences in modus operandi/offence characteristics between the original target offence and any other offences that may rise or decline in the buffer or project area. One may wish, for example, to examine whether a decline in a non-targeted offence type could plausibly be attributed to a diffusion of benefits. If the dominant characteristics of this additional crime type were similar to the characteristics of the targeted offences (in particular if the motivation, rewards, required skills and resources were similar) — then this would suggest that diffusion of benefits is at least theoretically plausible. Even if the characteristics of these offences are different, if the *mechanism(s)* by which the reduction measures impacted on the targeted offences could also plausibly have an effect on the modus operandi of these extra saved offences, then an argument for diffusion of benefits can be made. For instance, to use a simple example, a project might install street lighting in an area to deter burglary offenders. However, this lighting might also plausibly impact on a number of other offending behaviours present in the area on the basis that they all partly rely on the low levels of lighting (for instance street violence and car theft).[12]

- If the dominant modus operandi of the target offence changes, it may be worth asking the question whether the new modus operandi is consistent with the offending style, skills, aptitudes and resources of offenders observed at the outset of the project. For instance, Clarke et al. (1994) found that measures that dramatically reduced ticket machine fraud on the London underground were soon followed by a change in the modus operandi of offenders. However, the new patterns of offending

were wholly inconsistent with offending in the pre-project period, with the offending process being organised along different spatial lines and with a considerable increase in the sophistication of the offending method and the resources required. The authors therefore concluded that a new offending group was responsible for the continuing levels of fraud and that there was no evidence of displacement by the original offenders.

- If one is looking at relatively large numbers of crimes over several years, one could examine offender records in the project and buffer area on a "before and after" basis. Taking, say, four years of data (two years pre-project and two years during/post-project), one might establish an offending "base" in terms of the number of offenders detected for the targeted offence[13] in the project area. One could then examine how many of these offenders from this four-year base were detected in the project and buffer areas, respectively, during the two pre-project years. One could then produce a percentage figure for each area (i.e., what percentage of all these detections in the pre-project period occurred in the buffer zone?). Repeating these calculations for the two post-project years, one could finally compare the percentage of project area offenders operating in the buffer zone in the pre-project period with the percentage operating in the buffer zone in the post-project period. If the number of project area offenders being detected in the buffer zone rises in the post-project period, this would suggest that some spatial displacement may have occurred. Clearly such a method would only be valid if there was a relatively high detection rate in both the project and buffer areas. Biases in the data may also need to be confronted (for instance, detection rates may change significantly over time in either one or both areas). This method could also be used to examine temporal, tactical, target and functional/offence displacement (as well, indeed, as any hypothesised diffusion of benefits).

- An alternative method which has been utilised for a different purpose before would be to undertake exactly the same matching process but using forensic data (and, in particular, DNA data) instead of offender records. For offences where there is a comparatively high rate of forensic evidence gathered (of which burglary is one), this method has the advantage that it will identify more unique offenders than detection records. A disadvantage of this approach, as its developers have readily identified (Wiles and Costello, 2000), is that forensic

records held in Britain by the Forensic Science Service can only be easily traced back to the police station from which they originated (and even then the relevant crime incident may have occurred outside of that station's official operational boundaries).

- Finally, if crime trends in the project and buffer zones show marked linearity in the pre-project period then this might suggest that many of the active offenders are common to both areas (and conversely non-linearity might suggest the opposite). If, for instance, one then observes a significant move away from linearity with crime, say, falling in the target area but rising in the buffer zone, then this would provide some evidence for the possibility of displacement to the buffer zone.

Such tests cannot provide firm answers but they do provide confirmatory evidence for any hypotheses. Assuming that we *do* decide that the figures presented in Table 2 *are*, respectively, indicators of diffusion of benefits and displacement — this leaves us with the question — how do we adjust any original estimate of project impact? If one has no alternative explanation for the additional falls in burglary then one might wish — not so much to adjust one's estimate of project impact up — but to create an estimate range based on the addition of these "saved" crimes (e.g., presenting the project as having saved somewhere between 93 and 108 burglaries). In relation to the rise in vehicle crime, it would not be appropriate numerically to deduct one type of offence from another (e.g., the rise in vehicle crime from the burglary savings). Rather, one can simply qualify any presentation of impact with the possibility that there *may* have been some marginal displacement to vehicle crime. What is more important than coming up with a neat single estimate of impact is presenting a clear range of facts and figures together with an account of the underlying assumptions on which these figures are based.

CONCLUDING REMARKS

The purpose of this chapter has been to examine the existing empirical evidence on offenders and offending behaviour to see if one can use this evidence to construct a more systematic strategy for measuring displacement. But even if we can demonstrate that displacement can be measured (albeit roughly!) and is not an inevitable phenomena, the attitude of many practitioners may still be that the effort involved in such a measurement exercise is not worth the investment of time. What this chapter has sought to argue is that this disinclination to measure can be reduced if measurement is placed

within the broader context of project development. Predicting displacement offers the opportunity not only to prevent displacement but also to widen the impact of crime reduction work.

A strong case can be made for the need not only to open up the discussion beyond measuring displacement to maximising and measuring a diffusion of benefits, but also to move the discussion onto the wider plane of modelling, maximising and measuring the consequences and impact of crime reduction projects. The concentration of researchers and practitioners on measuring crime outcomes often comes at the expense of ignoring the wider consequences of project work. A recent example of this was evident during an HMIC inspection of a police division where a major undercover operation had been conducted in one of the area's main (and long-standing) "problem estates." The police view of the project was that while several arrests had been made as a result of the operation, these results were not of a sufficient magnitude to justify the considerable investment of resources. The view of the local council housing department, however, was far more positive. Though, only a few convictions had been secured, evidence gathered by the police had assisted the department to evict several key problem families from the estate through civil proceedings. The consequences of these evictions had been dramatic. The level of void properties on the estate declined significantly, as did the level of incivilities. Moreover, the confidence of the residents in their estate and in the police had — reportedly — improved markedly. The revenue savings for the housing department were estimated to far outweigh the operational costs incurred by the police. Moreover, these non-crime outcomes almost certainly would, if they were sustained, also impact on crime levels and patterns in the area.

Even concentrating more narrowly on crime levels there are important issues that extend beyond the simple question of whether crime has been displaced or reduction benefits diffused as a result of crime reduction work. *How and to whom or what* crime has been displaced or benefits of diffusion enjoyed is equally critical and can often have long-term strategic implications. For instance, in this author's research into a burglary reduction scheme in Burnley (Hamilton-Smith, 1999), crime levels fell with limited evidence of displacement either within or outside the target area. However, there was strong evidence that even though crime fell within the target area it fell in such a way that the patterns and concentration of crime altered in certain critical ways. Notably, an area that had previously been characterised by a burglary problem that was driven by a very high rate of burglary *prevalence* and an unusually low rate of repeat victimisation, came to enjoy significantly lower rates of prevalence

but at the expense of increased rates of repeat victimisation. Moreover, within the target area the spatial distribution of burglary altered, with offences "retreating" into two notorious council estate areas and increasing in concentration in private residential areas.

The immediate implications of these changes for ongoing crime reduction was obvious (a need to refocus their strategy on repeat victims). However, there were also long-term implications of a broader sort in the movement of offending into private residential areas. This movement coincided with a general upsurge in private renting within these areas, as tenants who had previously lived in council housing areas took advantage of the far cheaper rents and housing available in private residential areas. Council moves to tighten up conditions of tenancy in order to rid themselves of problem tenants also threatened to add to this trend through driving problem tenants into private residential areas. These trends, driven as they were by a mix of housing allocation policies, imbalances in the wider regional housing market structure, and individual resident decisions,[14] had serious implications both for crime reduction practice and also for neighbourhood-based regeneration strategies. Thus, wider social trends, and the consequences of wider social policies, interact with changing trends and patterns in crime. This interaction can often be complex and can produce unforeseen or unintended consequences.

Finally, even if crime reduction measures do not lead to displacement or diffusion of benefits in the short term, the monitoring of crime patterns and trends may reveal more long term adaptations by offenders to blocked opportunities, or more generally may illuminate the exploitation of new opportunities. As Ekblom (1997) has vividly illustrated, offending behaviour evolves, with offenders adapting their offending technique to circumvent blockages, acquiring new skills, resources and associates to exploit alternative targets, and "innovating" to exploit new opportunities. The latter are frequently associated with the development of new high-tech consumer goods or with the emergence of certain social trends.) The proactive identification of new criminal behaviours or new crime patterns clearly allows for an early operational response. An example of this is provided by Hope and Foster (1992) who in examining the impact of regeneration measures on an estate in Hull found that crime within the project area had been displaced internally to one particular part of the estate. However, this picture of short-term displacement was buttressed by a potentially altogether more significant observation: namely, that the regeneration measures had seemingly fostered new connections between older established criminals on the estate and new potential/active criminals who had been allocated accommoda-

tion in the area. If true, the long-term implications of these developments would be worrying.

An exclusive preoccupation with displacement is therefore an unhealthy condition. It is symptomatic of the practitioner or academic who conceptualises his or her work as one of reducing the quantity of crime in the short-term (or measuring that reduction). This is not to say that crime cannot or should not be reduced, but rather that this focus needs to broadened to include both the short and long-term *impacts of crime.* In this respect any assessment of displacement and diffusion of benefits needs to be combined with an ongoing assessment of what Barr and Pease (1992) have termed "crime placement." As we have seen, crime levels even if they do not go up or down can nevertheless be redistributed in ways that are either more or less socially harmful. Crime placement raises difficult issues of social justice and equity. The excessive concentration of crime in pockets of deprivation and amongst the most vulnerable members of society *arguably* exacerbates the social harm resulting from crime (whether that be in terms of material loss, personnel injury, or emotional impact), whilst also generating more crime (as criminal opportunities are easier to exploit).

Thus, the way to "sell" the measurement of displacement is to not only link this exercise into the key task of project development (by focussing on maximising the benefits of project work), but also to tie it to the more strategic task of routinely monitoring crime *and social* trends and patterns generally. Positioning the monitoring of displacement and diffusion of benefits in this broader strategic setting adds value to the exercise. Thus placed, such monitoring can inform the ongoing consideration of crime and social trends and the formulation and evaluation of policies, and provide a perspective on the long-term consequences (anticipated or otherwise) of both.

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NOTES

1. Tarling (1993), for instance, found that the average length of an offending career for nearly 60% of men and nearly 80% of women was less than one year.

2. See also Laycock (1992) for an example of a similar effect achieved in a different operational setting.

3. For an example of the difficulties experienced in measuring displacement from thinly dispersed low-volume crime, see Ekblom's (1987) study of post office robberies.

4. As an extension of Sherman's (1990) crackdown approach, Ken Pease has recently advocated the systematic development of disinformation strategies that would seek to "trick" offenders into believing that their risk of apprehension, and/or the restriction in opportunities, is more severe than it in fact is.

5. A post-project version of this process would be methodologically dubious as it would invite participants to make sense of pre-project patterns on the basis of post-project results.

6. A problem observed in the RBI monitoring exercise was that while practitioners frequently had a rich repository of knowledge on local offending, they did not always critically scrutinise the use they made of it. For instance, one common tendency has been for practitioners to choose offence types as potential routes for likely displacement, not on the basis of theoretical plausibility, but on the basis of the offence being one of a number about which they are routinely preoccupied. For instance, invariably practitioners nominate "robbery" as a possible route of displacement from "burglary" in spite of the fact that in many cases their own local knowledge demonstrates that this is theoretically implausible.

7. The most likely site for spatial displacement may not *always* be the same as the most logical site for any spatial diffusion of benefits. To use a hypothetical example, a project area may be bordered by two other areas with which project area offenders are familiar and where alternative criminal opportunities are available. The project may result in a diffusion of benefits to one of these adjacent areas owing to offenders perceiving that project work is restricting opportunities in this area. However, offenders may still feel that opportunities are available in the second adjacent area and may consequently displace in this direction. Thus, displacement and diffusion of benefits could occur simultaneously in two different areas (and of course could equally occur simultaneously within one area!).

8. "Distraction burglary" (or "burglary artifice") refers to burglary offences where the offender gains entry to a property through means of a trick such as, commonly, posing as an official.

9. Bottoms (1993) has previously commented on the importance of understanding the symbolic significance of locations to offenders. A reliance purely on formal data will not provide access to many of the more subtle social dynamics and meanings attendant on specific locations. However, these more qualitative perspectives are important because an offender's offending decisions will not simply be based on a mechanistic assessment of social space but will also take into account these symbolic attachments.

10. This is a good instance of a project where the consideration of possible displacement should be linked to the refinement of the project's reduction strategy. As evidence already existed of offenders offending in both areas, with the footbridge providing the sole point of access for foot-based offenders, the project should ideally have broadened its work to include perhaps some form of increased surveillance on the footbridge to deter or detect offenders using it as a transport corridor for stolen goods. Through such a strategy potential displacement could be transformed into a diffusion of project benefits.

11. The term "heading" is used here because the single figure that is being taken is in fact the sum of the four Home Office vehicle crime notifiable offence categories. It may sometimes be appropriate and more clear cut *initially* to aggregate offence categories like this to produce one total that covers a distinct and coherent family of offences.

12. See Painter and Farrington (1999) for a recent study that has demonstrated the generalised crime reduction effect that can follow the introduction of street lighting.

13. If one has produced a "portfolio" of all the similar types of offences that one would theoretically expect that this group of offenders could displace to, then one could examine this full portfolio rather than just the target offence.

14. For more detailed coverage of how housing market and allocation dynamics can impact on neighbourhoods (and in particular on patterns of crime) see Bottoms and Wiles (1986, 1992) and Taub et al. (1984).