**COPS**
Community Oriented Policing Services
U.S. Department of Justice
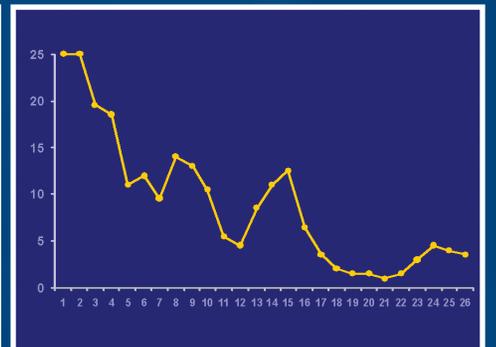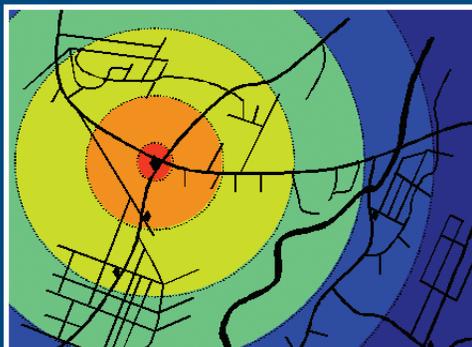
CRIME ANALYSIS FOR PROBLEM SOLVERS

In 60 Small Steps

Ronald V. Clarke & John E. Eck

Center for Problem-Oriented Policing

Crime Analysis for Problem Solvers
In 60 Small Steps

Handler

Manager

Offender

Place

CRIME

Target/Victim

Guardian

Ronald V. Clarke

John E. Eck

foreword

One of the primary concerns in policing in the United States today—and for the foreseeable future—is the severe constraint on spending. The lion's share of police budgets is consumed in personnel costs. As a result, many police agencies are already operating significantly below their authorized strength. Funds to hire new officers to meet growing needs are hard to obtain. And, of special relevance here, traditional forms of policing, because they are so heavily dependent on personnel, are being curtailed. Calls cannot be handled as completely and quickly as in the past. Personnel cannot be as freely assigned to increasing the police presence on the streets in labor-intensive tactics, such as crackdowns, sweeps, and special task forces.

This reality is a powerful new force for rethinking the way in which we police. It connects with prior efforts to promote greater concern for the effectiveness of the police. And it lends fresh impetus to meeting a long-standing neglected need, the need to equip the police with an institutionalized capacity to examine their work product—to routinely ask, before committing to more of the same, what it is that the police are expected to accomplish and how they can more effectively accomplish it.

Rethinking current methods requires a new understanding of the role of the police on the part of both the police and the public they serve. It is essential to recognize that the police function is not as simple as it is sometimes portrayed. It is incredibly complex. It is not a singular function, commonly defined as enforcing the law. It requires dealing with a broad range of behavioral problems, each quite different from the other. It does not consist simply of reacting to an endless array of incidents. Police are now expected to prevent them from occurring in the first instance.

A fresh perspective on policing requires that the police examine in depth each of the numerous behavioral problems that together constitute their business; that they consider a broader range of strategies on how best to prevent, reduce, or eliminate each of them; and that they weigh more precisely their effectiveness upon adopting a new targeted response. This is the essence of problem-oriented policing.

Many advances have been realized under the umbrella of problem-oriented policing since the concept was first introduced in 1979. But these have not been mainstreamed within policing. Their implementation has been spotty, uneven, and without deep and lasting roots. They remain overshadowed by the dominant, continuing commitment to traditional policing and its heavy dependence on lots of police officers patrolling and making arrests.

Greater concern about police effectiveness in dealing with specific behavioral problems need not start from scratch. Collectively, we know much about the wide range of behavioral problems that constitute police business and how best to prevent them. This knowledge can be found in the substantial literature on crime and crime prevention, especially in the literature on situational crime prevention. Much of value can be found, too, among the practices of police agencies and in the minds of experienced police officers, but this experience and expertise must be tapped and subjected to rigorous analysis.

The Center for Problem-Oriented Policing (POP Center) (www.popcenter.org) now serves as a locus for the collection of the growing body of knowledge regarding problems commonly encountered by the police. It disseminates this material in various ways, primarily through the publication of its problem-oriented guides. Each guide synthesizes existing knowledge and evaluated practices regarding a specific problem and stimulates police to advance their own thinking about how best to handle the problem in its local context.

While the POP Center has documented hundreds of successful cases in problem-oriented policing, a major impediment to advancing the concept has been the absence of an analytical capacity within police agencies. Many police agencies do employ one or more crime analysts, but some of the largest and more advanced police organizations do not. When employed, the job of the crime analyst is often narrowly limited to tabulating crimes that occur. In other cases, it extends to identifying patterns of crimes with the primary objective of identifying the likely offender so that he or she can be apprehended. In its more ambitious form,

the crime analyst's job may include identifying factors contributing to a crime pattern—but the job of deciding how to respond to these factors is usually deferred to operational personnel, who then tend to use traditional means for dealing with them.

Meanwhile, the field of crime analysis itself has grown much more sophisticated. A strong body of literature on its potential is now available. The ability to electronically capture, store, and retrieve massive amounts of data that police routinely collect is infinitely greater than it was just a decade ago. The capacity to map crime geographically is stunning and is now a major, indispensable tool in crime analysis. Standard approaches have been developed for the collection, analysis, and dissemination of intelligence across jurisdictional lines.

In this manual, Ronald Clarke and John Eck set out a much more ambitious and potentially productive agenda for the analyst. They outline a role in which the crime analyst invests heavily in seeking new responses to the problems that are diagnosed and participates directly in efforts to test and implement them. The analyst is expected to contribute to exploring new, more creative, and potentially more effective ways of carrying out the police job. Through this manual, Clarke and Eck demonstrate how one analyst, properly trained and used, has the potential to increase many times the productivity and effectiveness of perhaps hundreds of police officers. Understood in this way, an investment in crime analysts can be a smart way to increase the return on the substantial investment that communities make in sworn police personnel.

Blending their expertise as researchers and their familiarity with policing, Clarke and Eck have collected all of the knowledge and methodology that is relevant and currently available, organized it in 60 small segments or steps that build logically upon each other, and communicated the material in a style that is both concise and engaging. The volume is packed with vital and sophisticated information that makes it one of the most significant publications addressed to the policing field in the past several decades.

The most immediate goal of the manual is to help the relatively small number of individuals now commonly employed in police agencies as crime analysts to expand their function and thereby contribute more to the effect-iveness of their agency's operations. It is intended, more ambitiously, to contribute to (1) the training of new crime analysts or problem solvers, (2) increasing their number, and (3) development of their profession as a distinct and vital one. But problem analysis is not the exclusive domain of technicians. We hope that everyone else in a police agency, from officers on the beat to police executives and, more broadly, those in both the public and private sector concerned about crime, will incorporate the line of thinking set forth in the manual into the perspectives they bring to their work.

Herman Goldstein
Professor of Law Emeritus
University of Wisconsin-Madison

read this first

This 60-step manual assumes that you are an experienced analyst and that you are accustomed to providing the kind of information needed to support police operations. This means that you

- use modern computing and know how to access and manipulate comprehensive databases;

- know how to use software to map crime, to identify hot spots, and to relate these to demographic and other data;

- routinely produce charts showing weekly or monthly changes in crime at departmental and beat level, perhaps to support CompStat-style operations;

- are accustomed to carrying out analyses into such topics as the relationship between the addresses of known offenders and local outbreaks of car theft and burglary;

- may have carried out some before-and-after evaluations of crackdowns, such as on residential burglaries or car thefts;

- have some basic knowledge of statistics and research methodology such as is provided by an undergraduate social science degree.

The manual builds on this experience to prepare you for a different analytic role as a key member of a problem-solving team. Indeed, the latest writings on problem-oriented policing see crime analysts as central to this new way of policing communities. These writers argue that many of the weaknesses of current practice result from the insufficient involvement of well-trained crime analysts at each stage of the problem-solving process.

The manual prepares you for this new role by providing you with a basic knowledge of problem-oriented policing and the related fields of environmental criminology and situational crime prevention. You cannot adequately function as a problem-solving crime analyst without being conversant with these fields. Nor can you fill this role without rethinking your job, and the early sections of the manual explain how to take a more proactive approach. You cannot simply wait

for your police colleagues to come to you with requests for information. Instead, you must take the initiative at every stage of the project in defining the scope of the problem-solving effort: in trying to analyze the causes of the problem, in helping to find an effective response, and in setting up the project so that it can be evaluated and the police can learn from the results. This means that you must be an integral member of the problem-solving team, that you must explore sources of information and data well beyond those that you normally use in your work, that you must stick with a particular project much longer than you normally would, and finally that you will share the credit for its success or the disappointment for its failure equally with the other members of the team.

The manual assumes that analysts who take on this new role are interested in contributing to the development of their profession. Assisted by vastly improved databases and powerful computing hardware and software, crime analysis is on the verge of becoming an exciting new specialty. Indeed, it has already begun to attract a cadre of well-trained and highly motivated professionals who are vital to the development of policing in the 21st century. You can make your contribution by communicating the results of your work in professional meetings and in the journals of your profession. By doing so, you will not only help your profession and policing in general but you will also become a more informed and valuable resource to your own force.

The manual is short enough to get through in a weekend. It would be hard work and probably worth doing, but it was not designed to be read and then shelved. Instead, we hope that you will find it to be an indispensable reference source that you will keep near your desk, consulting it whenever needed in the course of a problem-solving project. This is why it is designed to be robust, allowing for continuous use. When open at a particular step it is designed to lie flat on your desk so that you can consult it easily when working at your computer.

We have arranged the steps to follow logically one from another, in line with the SARA model (scanning, analysis, response, and assessment), though each is self-contained and deals with a specific topic. This should make it unnecessary for you to leaf through the manual, jumping from place to place, when dealing with a particular topic. To get the best out of the manual, you should be thoroughly familiar with the list of contents, and you should have browsed through sections that interest you to get an idea of the coverage. But you need only study a particular step when you have an immediate need for the information it contains. In any case, this is the best way to learn: to seek and apply information when you have a practical need for it.

In some cases we do deal with a particular topic in more than one place. For example, step 12 provides a general introduction to the concept of displacement, while steps 48 and 49 explain how to check for various forms of displacement at the evaluation stages. The combined glossary and index at the end of the manual should help you find where a topic is mentioned in more than one place.

We use examples from other countries as well as from the United States. We sought the best examples to make our point, so even if the context is foreign, the principles are universal. We hope this diversity of ideas stimulates creative thought: "Could that approach be adapted to this problem? How could we do it?"

We have not referenced the manual as fully as an academic publication for several reasons. We have already tried to distill the essentials of the literature at each step. We also doubt that busy crime analysts will have much time for academic reading. Last, few of you will have ready access to the specialized libraries that hold this material. But occasionally you will need to know more about a topic, and at each step we identify key articles or books that you should be able to obtain more easily. Where possible, we have chosen those that are accessible on the Internet. If you need help with references, feel free to e-mail one of us at the addresses given in our bios. We would also be glad to receive any comments on the manual, especially suggestions for improvement, which could be useful if we prepare later editions. Most important, please don't be shy about suggesting your own analyses for inclusion!

The Home Office and the British police

As explained in the acknowledgements, we have developed this manual from an earlier version that we prepared for the Jill Dando Institute of Crime Science at University College London. We have removed British terms and spelling and have replaced many of the British examples with American ones. But you will still find many references to things British. In particular you will see frequent mention of the Home Office, which is equivalent to the U.S. Department of Justice. It has overall responsibility for matters relating to crime and justice in England and Wales, including the police. There are only 43 police forces in England and Wales (for a population of about 50 million), so the forces are much larger than most American police departments. There is also much more uniformity among British police forces in policies, rank structures, equipment, and deployment. This is partly due to the oversight provided by the Home Office (which provides 51 percent of each force's budget) and regular inspections by Her Majesty's Inspectors of Constabulary. The Home Office also funds a great deal of research on crime and criminal justice and has its own large research department that publishes many studies of direct, practical relevance to police. Recently, it has sponsored much work on problem-oriented policing, including the original version of this manual.

1. Rethink your job

1

Like most crime analysts, you probably think of your job in rather modest terms. You do not solve crimes single-handed. Nor do you take the lead in setting departmental crime-fighting priorities. Instead, you crunch data for those who do the "real" work of finding better ways to arrest criminals. You respond to requests for the latest statistics on burglary or car theft from beat officers and sergeants. You map crime for weekly meetings so that the lieutenant knows where to demand more effort. And you compile monthly statistics that others need for their reports. In other words, you sit in the back seat while others do the driving, asking for your help only when they need it.

This manual will help you rethink your role. Even someone sitting in the back seat can help the lost driver find direction. Control over information is crucial, and the ability to analyze it is all-important. The person who learns how to do so becomes an essential member of the team. But we are not talking here about power or status. We are referring instead to a challenge facing all police forces: how to solve enduring and repetitive crime problems. Think of yourself as a member of a team helping to solve these problems, with a particular role on that team. As you use this manual you will begin to see how to perform that role, and you will also see how essential it is.

To play that essential role you need to know more. We are not referring to improved computer skills or mapping ability, important though these are. You need to learn more about crime itself to become a resource to your department as an expert on crime in your local area. If there is a new burglary wave, you should be the first to know and the first to tell. Analyze and map the statistics, and get the basic facts yourself. If you wait, others will say what is happening without any factual basis. Once more you will be relegated to the back seat. You are the facts person, and you must find things out as soon as possible using the best means possible. This will often mean going beyond police data, and this manual will tell you how to use other data sources including

interviews with victims and offenders and records of crime kept by businesses. Becoming a source of information is a first step. The ideal is to also be a source of advice. Whether you can do this depends on your supervisor's openness, but at least you can provide options or support the suggestions of others with information and data.

In particular you should know what works in policing and what does not. How effective is random patrol? How often do police come upon a crime in progress? How often are crimes solved later through patient detective work or forensic evidence? How productive are stakeouts and surveillance in terms of arrests? How much do crackdowns cost in officers' time? What are the arrest rates for different kinds of crimes? How many crimes of different kinds are even reported to the police? Knowing answers to these questions will tell you why even the most hardworking officers are relatively ineffective in preventing crime and why an increasing number of police forces are now turning to problem-oriented policing.

The main purpose of this manual is to tell you about problem-oriented policing and the vital part you can play in its implementation. The manual helps you distinguish problem-oriented policing from other forms of community policing. It shows you how problem-oriented policing can become more effective by using environmental criminology and situational crime prevention. It describes each of the four stages of a problem-oriented project—*scanning* for crime problems, *analyzing* a specific problem in depth, *responding* to the problem by implementing solutions, and *assessing* the results of the project—and gives examples of the data and information that you could provide at each stage. Finally, it illustrates the kind of analyses that you can undertake at all four stages to work effectively as a member of the problem-solving team.

These stages of a problem-oriented project will require that you remain working on a single project much longer than your traditional analytic role requires. You can expect to stay

with a problem-solving project for weeks or months rather than just the few hours needed to plot a burglary hot spot or provide a monthly report. Where a detailed assessment of results is needed, your involvement might even stretch for more than a year. You may have to explain this to officers who come to you for help. At first they may be surprised that you expect to stick so long with a project, but soon they will appreciate your commitment to making the effort worthwhile.

Your time has been wasted if you cannot communicate the results of your work. Later sections of the manual give suggestions for communicating more effectively by telling a story using simple maps and tables. Your presentations should try to lead to a course of action, but you must always explain the limits of your data and tell officers where your recommendations are based on best guesses rather than facts.

This manual cannot tell you everything you must know or do to become a problem-solving analyst. You must seek constantly to enhance your professional and technical skills and keep up to date with the latest developments in relevant fields. You must take the initiative in finding more effective ways to capture information and more efficient ways to process it, as time freed up from routine tasks means more time for the new work of problem analysis. You must read more widely and explore other sources of information. Additional readings are recommended throughout this manual, but you will also have to find material for yourself. A good way to do this is through networking with analysts in other departments and by attending professional meetings of analysts, police, and criminologists. And try to pass on lessons you have learned by making presentations at these meetings of valuable or novel analyses you have undertaken.

In short, you should begin to see yourself as more than just a technician, skilled in manipulating and presenting data. You should become more like a researcher—albeit with a highly practical focus—one who is bringing the very best that science can offer to make policing more effective. By the same token, also recognize that you are part of an emerging profession, which you can help to develop.

Rethink your job

- Become a crime expert
- Know what works in policing
- Promote problem solving
- Take your place on the project team
- Learn about environmental criminology
- Hone your research skills
- Communicate effectively
- Enhance your profession

Read more

Braga, Anthony. 2002. *Problem-Oriented Policing and Crime Prevention*. Monsey (New York): Criminal Justice Press.

2. Be the local crime expert

How often have you been asked the following sorts of questions in your work?

- What locations are hot for auto theft right now?
- Which convenience stores are repeatedly robbed and why?
- What are burglars taking from shops and where do they fence the goods?
- Is there less crime on the better-lit streets?
- Which apartment complexes harbor drug markets?

Some of these you might not have been able to answer at all—others only after a special analysis. But suppose you had the answers to them and many more at your fingertips? Suppose you were the expert on crime in your force area? In fact, nobody else can fill that role:

- Individual officers are too busy answering calls.
- Detectives are focused on specific cases.
- Sergeants are supervising their officers.
- Lieutenants are overseeing patrol responses for large geographic areas.
- The chief, his or her assistants, and the captains are busy with administrative issues.

In short, nobody can see the whole crime picture. But if you became the local crime expert, it would help make your department more informed, efficient, and capable of using its resources to reduce crime. It would provide more opportunity to warn citizens, to detect offenders, and to initiate prevention efforts. In short, you could help a lot of people by gathering the right information.

To become the local crime expert, sit in regularly with dispatchers and talk to officers about what they are seeing. Remember the late shift might not see officers on the early shift, and those on one side of town might not see officers on the other. They often talk about exceptions, not the rules, about what made them angry, not about the routine. Yet the routine is the bread and butter of crime analysis.

Take ride-alongs as often as time permits. Not only will you get to know more of the officers in your department but you will also get a better feel for their work and the problems they face on the street. Matt White, crime analyst with the Jacksonville (Florida) Sheriff's Office, recommends taking along a laptop loaded with Geographic Information System (GIS) data. You can then compare information about the area with the officers' perceptions.

Crime scenes receive a good deal of attention in serious crimes but not usually in ordinary crimes. You can learn a lot by visiting them, especially when trying to understand a particular crime problem. Comparing incident reports with your own observations could reveal that important details about the setting and the circumstances of incidents might not have been recorded—perhaps because the report form did not specifically request them. Armed with this knowledge, you can suggest changes to the forms to capture information that is helpful both for detecting offenders and for thinking about how to prevent these crimes in the future.

Try to keep abreast of new trends in crime. Read through a batch of crime reports each week to see if there is anything new. Try also to pay attention to failed crime attempts (see sidebar). Some offenders have a trial-and-error process as they look for new ways to get something for nothing. Those trying to cheat ticket vending machines or ATMs may have difficulty in finding a method that works. But when they do, the word will spread. If you know their method, you might be able to warn officers and others.

Very often, a local crime problem is also found elsewhere. Your force may experience a rash of thefts from building sites when this has never been a problem before. But you can be sure that somewhere else has suffered this problem. That's why it is important to be alert to changes in crime targets and modus operandi. The Internet is a good source of information about what crime others are seeing. You should also ask your analyst colleagues in nearby forces. They may be experiencing exactly the same problem, with perhaps the same group of offenders involved.

Do not limit yourself to the police, because many other people know a lot about particular crime problems:

- City code inspectors can see blight developing before this is apparent to others.
- Bar owners know about underage drinking, poor serving practices, and sloppy management (in other bars, of course!).

- Principals know all too well about bullying and vandalism on school premises.

- Small business owners are alert to problems involving their premises. For example, a pharmacist knows what is being stolen from his store or whether intoxicated people are hanging out nearby.

- Emergency room personnel see many injuries from crime that they record but might not report to the police.

- Women's shelters or rape crisis centers know far more about patterns of domestic violence than most police officers.

- Private security guards are often the first to know about a particular incident. But they also have information that can contribute to your general understanding of local crime patterns.

Offenders themselves are surprising sources of information. Although they might not admit doing anything themselves, they are often willing to talk about how it is usually done. Many offenders are actually quite talkative about the craft of offending and will tell you exactly how they pick targets and fence valuables, what offenders are looking for these days, and the like. Asking your police colleagues to obtain this information from offenders can sometimes be very useful.

Last, victims can tell you a good deal about the crime. For offenses such as burglary, they may not be able to give a precise time of offense, but they can still tell you where an offender broke in, what is missing, what room or floor was left alone, etc.

How to become expert on crime in your area

- Get away from your computer!

- Talk to officers about what they are seeing.

- Go on ride-alongs and sit with dispatchers.

- Visit crime scenes and examine crime reports.

- Check failed attempts to learn exactly what happened.

- Talk to city officials about specific crime problems.

- Exchange information with businesses and private security.

- Ask analysts in nearby cities about changes in crime targets and methods.

- Ask officers to question offenders about their methods.

- Get information from victims about exactly when, where, and how.

- Help to improve crime incident forms and data capture.

Learning from unsuccessful attempts

The Chula Vista (California) Police Department was aware that the city's building boom could worsen the residential burglary problem. The new houses were intended for affluent couples who would be out during the day when burglaries were most likely to happen. The police, therefore, decided to examine the effectiveness of existing security precautions to see if any of these could be built into new homes or suggested to homeowners. Cathy Burciaga, one of the department's crime analysts, compared completed burglaries with unsuccessful attempts for an 18-month sample of 569 homes in the city. This indicated that deadbolts should be installed on both the side and front doors of new houses. Interviews conducted with 250 victims and 50 burglars revealed that not one burglar had tried to enter a house by breaking a double-glazed window. This led to the recommendation that all windows in new housing be double-glazed and meet strict forced-entry standards.

	Completed burglaries	Unsuccessful attempts	Effective?*
Dusk to dawn light	28%	29%	No
Indoor light on	26%	29%	No
Indoor timer light	9%	11%	No
Deadbolt on front door	28%	25%	No
Deadbolt front & side doors	15%	29%	Yes
Outdoor motion detector	23%	36%	Yes
Radio/TV left on	9%	18%	Yes
Alarm company sign	19%	36%	Yes

* "Yes" means present in a larger proportion of unsuccessful attempts than completed burglaries.

3. Know what is effective (and not) in policing

Evidence on what makes police effective points to the vital role of crime analysis in 21st century policing. Understanding this research can help you apply the lessons the police profession has learned over the last third of a century.

There has been considerable research into which police practices are effective at reducing crime and which practices are not effective. Recently, the National Academy of Sciences established a panel of social science experts to review all police research including the question of police effectiveness. The figure on the next page is adapted from this report. The least effective approaches to crime reduction are in the lower left quadrant and the most effective are in the upper right.

In the lower left corner of the figure, we have the "standard model" of policing. This is the dominant policing strategy in North America. The standard model is characterized by its reliance on law enforcement and by a lack of focus. Here we find general patrolling to deter offenders, rapid responses to a wide variety of calls for police service, follow-up investigations of crimes, and other law enforcement activities that make little distinction among the characteristics of the people, places, times, or situations. Faced with a public demand to reduce crime, public officials and the press—who are wedded to the standard model—will request more police officers, decreases in response time, greater police visibility, higher success rates in investigations, and more arrests. Equally important is what the press and public officials do not call for—increased precision as to who, what, when, where, why, and how crimes take place; distinctions among crime types; the involvement of other public and private institutions to address crime; or the application of non-law enforcement alternatives.

Some of the earliest research into police effectiveness addressed aspects of the standard model. This research has consistently failed to find that the standard model has any noticeable effect on crime, disorder, or fear of crime. Random patrol, rapid response, follow-up investigations, and arrest policies may be very beneficial for other purposes, but we should not expect any of these practices to have an impact on crime or disorder. Nor is there solid evidence that adding police to carry out these practices will affect crime.

To have an effect on crime, research strongly suggests that police strategies must include two elements. These are represented on the axes of the figure. First, the strategy must diversify its approaches to crime and disorder. That is, policing must address crime and disorder using a greater range of tools than simply enforcing the law. This idea is expressed on the vertical axis. There is evidence that working with the public and going beyond law enforcement can have modest crime and disorder reduction effects; and the more personal the police-citizen contacts, the more likely it is that they will have an effect on crime.

The second element necessary to highly effective policing is focus. This element is expressed on the horizontal axis of the figure. There is generally solid evidence that geographically concentrated enforcement at crime or disorder hot spots can be effective, at least in the short run. That is, focused patrolling of very small high-crime places (e.g., street corners and single blocks) has a modest effect on crime and a large effect on disorder. This can be accomplished with or without intensive arrest actions. CompStat and other related innovations of the late 1990s seek to take advantage of these findings. The Office of Community Oriented Policing Services has published a Problem-Oriented Policing Guide about when crackdowns and related tactics are and are not effective (see Read more).

If a few individuals are responsible for most crime or disorder, then removing them should reduce crime. Though this idea is sound in principle, the research testing it is very poor, so we do not know whether repeat offender programs work in actual practice or if they are a seemingly promising notion that cannot be effectively carried out.

Problem-oriented policing applies both elements—combining the use of diverse approaches with focused action. How effective is it? There is a large body of evaluation evidence here, applying weak-to-strong research methods, that consistently finds that this combination does reduce crime and disorder. First, many problem-solving efforts have been applied after concentrated enforcement has failed to produce long-lasting effects on crime, so something else needs to be done. In one of the earliest examples, police in Newport News, Virginia, had been struggling with the exceptionally high burglary rate in the New Briarfield apartments for

more than a decade. They had obtained some short-term results from various enforcement methods such as foot patrols and mini-station programs. But each time the police redeployed away from New Briarfield, the burglary rate surged. It was only after applying a problem-oriented approach—involving citizens, the public housing authority, the fire department, the city codes department, and the U.S. Department of Housing and Urban Development—that they were able to substantially reduce burglaries. Second, when problem solving at drug hot spots was compared to traditional law enforcement at drug hot spots in a Jersey City, New Jersey, randomized experiment, David Weisburd and Lorraine Green found that problem solving had the greater impact. So, even though focused law enforcement is more effective than unfocused law enforcement, focused problem solving is more effective still.

The lessons learned during a third of a century of research are now clear. Effective police work requires both focused attention and diverse approaches. The least effective policing uses neither element. The explanation for this is also clear. If diverse approaches are used without focus, it is difficult to apply the appropriate approach to the places and people who most require it. If police are focused on hot spots, but only enforce the law, they limit their effectiveness. A fully effective police agency must take advantage of the details of crime situations to reduce crime opportunities. Crime analysts have important roles in applying both elements—focusing with precision using their analytical methods and helping to craft appropriate police tactics that fit the details of problems they have uncovered. This makes the 21st century the century of crime analysis in policing.

Read more

Scott, Michael S. 2003. *The Benefits and Consequences of Police Crackdowns.* Problem-Oriented Policing Guides: Response Guides Series No. 1. Washington, DC: Office of Community Oriented Policing Services. http://ric-zai-inc.com/ric.php?page=detail&id=COPS-P049.

Weisburd, David, and John Eck. 2004. "What Can Police Do to Reduce Crime, Disorder and Fear?" *Annals of the American Academy of Political and Social Science* 593 (May): 42–65.

Effectiveness of policing strategies

Great:
Apply a diverse array of approaches, including law enforcement

Diversity of approaches

Little:
Rely almost exclusively on law enforcement

Community policing
Little or no evidence of effectiveness
- Impersonal community policing (e.g., newsletters)

Weak to moderate evidence
- Personal contacts in community policing
- Respectful police-citizen contacts
- Improving legitimacy of police
- Foot patrols (fear reduction only)

Problem-oriented policing
Moderate evidence of effectiveness
- Problem-oriented policing

Strong evidence of effectiveness
- Problem solving in hot spots

Standard model
Little or no evidence of effectiveness
- Adding more police
- General patrol
- Rapid response
- Follow-up investigation
- Undifferentiated arrest for domestic violence

Focused policing
Inconsistent or weak
- Repeat offender investigations

Moderate to strong evidence of effectiveness
- Focused intensive enforcement
- Hot spots patrols

Low   **Focus**   High

Adapted from Wesley Skogan and Kathleen Frydl, eds. 2004. *Fairness and Effectiveness in Policing: The Evidence.* Washington, DC: The National Academies Press.

learn about
problem-oriented policing
problem-oriented policing

4. Become a POP expert

When a serious crime occurs, the police are expected to react immediately. They must provide help and reassurance to victims and move fast to arrest offenders. Yet we have seen that many times, the police are not able to arrest the culprits and may not be able to secure a conviction when they do. We have also seen that random patrolling, which the public expects, is not an efficient way to apprehend criminals. This means that much police work that is carried out to meet public expectations is of limited value in controlling crime.

If they knew these facts, people would not be content for police to abandon patrol or downgrade their response to serious crimes. Rather, they would expect the police to find new and better ways to control crime while continuing their traditional work. In fact, this is what the police leadership has been trying to do by experimenting with CompStat, zero tolerance, community policing, and problem-oriented policing (or problem solving as it is often called). While crime analysts have a role in all these innovations, problem-oriented policing (POP) thrusts them into the limelight and gives them an important team function. That's why you should learn about it.

Herman Goldstein originated the concept of problem-oriented policing in a paper published in 1979. His idea was simple: that policing should fundamentally be about changing the conditions that give rise to recurring crime problems and should not simply be about responding to incidents as they occur or trying to forestall them through preventive patrols. Police find it demoralizing to return repeatedly to the same place or to deal repeatedly with problems caused by the same small group of offenders. They feel overwhelmed by the volume of calls and rush around in a futile effort to deal with

them all. To escape from this trap, Goldstein said the police must adopt a problem-solving approach in which they work through the following four stages:

1. Scan data to identify patterns in the incidents they routinely handle.

2. Subject these patterns (or problems) to in-depth analysis of causes.

3. Find new ways of intervening earlier in the causal chain so that these problems are less likely to occur in the future. These new strategies are not limited to efforts to identify, arrest, and prosecute offenders. Rather, without abandoning the use of the criminal law when it is likely to be the most effective response, problem-oriented policing seeks to find other potentially effective responses (which might require partnership with others) with a high priority on prevention.

4. Assess the impact of the interventions and, if they have not worked, start the process all over again.

SARA is the acronym used to refer to these four stages of problem solving—scanning, analysis, response, and assessment. Later sections of this manual will discuss these in detail, but you can already see why you have a central role in problem-oriented policing. You are the person most familiar with police data, and you know how best to analyze and map that data to identify underlying patterns. You may know better than anyone else in the department how to use data in evaluating new initiatives. If you make it your business to become the local crime expert, you will also know where to find other relevant information about problems, where to find information on the Internet and in specialist literature about successful responses used elsewhere, how to use insights from environmental criminology in developing a problem

analysis, and how to anticipate and measure any possible displacement. Without your day-to-day involvement at all four stages, the POP project will not achieve a substantial and sustained reduction in the problem.

Problem solving can be difficult. The greatest difficulties are found at analysis and assessment, precisely where you could make your greatest contribution. Indeed, from the very first, Goldstein has argued that problem-oriented policing depends crucially on the availability of high-level analytic capacity in the department, an argument repeated in his most recent publications. In fact, he has been very supportive of the idea of writing this manual, which is addressed directly to the role of the crime analyst in problem-oriented policing.

You might agree that you have a substantial role in problem-oriented projects, but you might ask how you can ever succeed in that role given the realities of your job. How can you devote the time needed for the kind of careful analyses required? How can you make a long-term commitment to a project when you are continually being asked to produce statistical reports and maps immediately, if not sooner? How will you ever be accepted as an equal member of the team, especially if you are a mere civilian? How can you function as an equal member when your boss wants to approve every analysis you suggest and wants to see all your work before it leaves the unit? How can you restrain the natural impatience of officers to move to a solution before the analysis is complete? How can you persuade them to consider solutions other than identifying and arresting offenders? How will you deal with criticisms that you are more interested in research than practical action? In short, you may be wondering what planet we are living on because it certainly resembles nothing you have seen.

These are good questions, but we believe that policing is changing and that you can help speed up these changes. There is slow but increasing pressure on police to become more effective, and the time is long past when chiefs could say they would cut crime if only they had more resources.

Now, at least in larger departments, they must make a detailed, evidence-based case for these resources and must explain precisely how they would use them. Their performance is being watched more closely every day, and the crime reductions that police in many cities claim to have achieved have undermined excuses for failure.

In short, there is no doubt that police will become increasingly reliant on data to acquire resources and manage them effectively. By providing this data, you can ride this tide of change to a more rewarding career in policing, though you will have to work patiently to supply timely information in a form that is helpful to the organization. If you do this, and if you remain firmly focused on crime reduction, you and your profession will gradually move into a more central policing role—and problem-oriented policing provides you with the perfect vehicle. We all know that policing is beset by new fads that follow hot upon one another and almost as quickly disappear when something new arrives. Many seasoned officers play along for a while, waiting for management to lose interest so that they can get back to business as usual. But problem-oriented policing is not just a fad. It delivers results and is here to stay.

Read more

Goldstein, Herman. 1979. "Improving Policing: A Problem-Oriented Approach." *Crime & Delinquency* 25(2): 234–58.

Goldstein, Herman. 1990. *Problem-Oriented Policing*. New York: McGraw-Hill.

Goldstein, Herman. 2003. "On Further Developing Problem-Oriented Policing: The Most Critical Need, The Major Impediments, and a Proposal." In *Problem-Oriented Policing: From Innovation to Mainstream*, edited by Johannes Knutsson. Vol. 15 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press.

5. Be true to POP

Some police managers attracted to problem-oriented policing also apply other strategies, such as community policing, broken windows policing, intelligence-led policing, and CompStat. Depending on how these other strategies are implemented, they may or may not be compatible with POP. Even when implemented in a compatible manner, they are not the same as POP. For these reasons, it is critical to understand how POP differs from these other strategies.

Problem-oriented policing is a method for analyzing and solving crime problems. Community policing, on the other hand, represents a broader organizational philosophy. Community policing includes problem solving as addressed in problem-oriented policing, but it also includes the development of external partnerships with community members and groups. In addition, community policing addresses organizational changes that should take place in a police agency (such as decentralized decision making, fixed geographic accountability, agency-wide training, and personnel evaluations) designed to support collaborative problem solving, community partnerships, and a general proactive orientation to crime and social disorder issues. Community policing is therefore more focused on police-public interaction than problem-oriented policing and represents a broader organizational philosophy that incorporates the principles of problem-oriented policing within it. When done well, community policing provides a strong overarching philosophy in which to engage in POP, but community policing that fails to incorporate the principles of POP within it is unlikely to have a substantial impact on reducing crime.

Problem-oriented policing *identifies partners whose help is needed in dealing with a specific problem*. In an ideal case, community policing does this as well. If the problem is assaults around bus stops, a necessary partner will be the local transit authority. If the problem is shoplifting, then the cooperation of local businesses is needed. Community members often identify problems. Specific members of the public (including offenders) can have important insights useful for problem analysis. Community members can help implement solutions (for example, by installing deadbolts or not giving money to beggars). And the success of a problem-solving effort might be defined in terms of community reaction. But rarely can the community at large help with the specialized technical work involved in problem analysis, solution development, and evaluation. In addition to partnering around specific problems, community policing seeks out partnerships among the community at large (and

government organizations) in order to increase the level of trust and general cooperation with them. In this sense, it goes beyond the partnerships described under problem-oriented policing. Agencies that adopt the broader general philosophy of community policing should be careful not to let these partnerships with a different purpose (building trust and cooperation) dilute the more focused problem-solving partnerships and efforts that the community policing philosophy also encourages.

These distinctions are most easily confused when the focus of a problem-oriented project is a deprived neighborhood. In this case, the project should proceed by identifying the collection of individual problems that together make up the greater one (see step 14). Rather than attempting to build a relationship with the community at large, a problem-oriented project focuses on solving the specific problems of, say, drug houses, commercial burglaries, and bar fights. To the extent that members of the community become productively involved in solving these discrete problems, they may be a rather different group of individuals in each case. Broader partnerships with the community could be developed in order to build trust between police and the community and this can make the problem-solving process easier; however, even in the absence of widespread community support, problems need to be systematically addressed.

It is also important to understand the difference between problem-oriented policing and broken windows policing. Under the former, *specific* solutions to the variety of problems confronting the police emerge from careful and detailed analysis of the contributory causes of each. By contrast, broken windows advocates the same *general* solution—policing incivilities and maintaining order—whenever crime shows signs of becoming out of hand. This approach is based on two principles, the first of which is that small offenses add up to destroy community life. For example, littering one piece of paper is nothing terrible, but if everybody does it, the neighborhood becomes a dump. The second principle of broken windows is that small offenses encourage larger ones. For example, abandoned and boarded-up properties often become the scene for drug dealing and can spawn more serious crimes. This important insight has led some cities to pay much more attention to policing against small offenses.

All policing requires discretion, and broken windows policing requires some very important decisions to be made by officers on the street. (This is why it should not be confused with

"zero tolerance," which is a political slogan, impossible for the police to deliver because it would soon result in clogged courts and an alienated population.) One has to figure out which of the small offenses multiply into more crimes and which do not. For example, New York City subway system managers learned that young men jumping turnstiles to travel free often committed robberies within the system. Controlling the minor crime helped reduce the major one. But the subway managers also learned that those painting graffiti did not normally commit more serious crimes. Although their efforts to control graffiti were very effective (see step 41), they did not reduce robbery.

Problem-oriented policing also addresses these less serious offenses even if there is no expectation that they will lead to worse problems. Vandalism in a public park might not increase the chances of robbery, but it does destroy public facilities, so it is a problem that needs to be addressed. Citizens in a neighborhood may be very concerned about speeding, traffic congestion, or noise. As long as these meet the criteria for a problem (step 14), they are addressable by POP, even if there is no expectation that the neighborhood will deteriorate should these go unaddressed.

Crime analysts are given a central role in intelligence-led policing, which puts a premium on the need for sound information to guide policing operations. However, intelligence-led policing is primarily a methodology for producing sound, usable intelligence. It does not guide police through the whole process of designing and implementing a crime reduction initiative in the way that the SARA model is intended to do. Nor does it give a central role to crime analysts at every stage in such an initiative. This is why problem-oriented policing has a great deal more to offer crime analysts and why it expects much more of them.

Finally, problem-oriented policing is not the same as CompStat, though they share some common features. Both focus police attention, though CompStat as normally practiced restricts itself to geographic hot spots while POP can be applied to a wider array of crime concentrations. Though both use data to drive police action, the variety of data and depth of analysis used in POP is greater than quick-paced CompStat targeting. CompStat uses law enforcement tactics almost exclusively, while POP uses these along with a wider variety of responses. CompStat may have short-term impacts on geographic hot spots of crime that wear off and require more enforcement. A problem-oriented approach seeks longer-term solutions. If CompStat is used as a first-aid response while POP is applied to enact a longer-term cure, then the two approaches can work well together.

Read more

Kelling, George L., and James Q. Wilson. 1982. "Broken Windows." *The Atlantic* (March): 29–38.

Differences between problem-oriented policing and other strategies

	Focus	Objective	Rationale	Method	First steps
Problem-oriented policing	Specific, recurring crime problems	Remove the causes of these problems	Prevention is more effective than enforcement	Undertake focused action-research (SARA)	Identify problems requiring attention
Community policing	Public-police relations, organizational changes, problem-solving	Proactive prevention of crime and social disorder and increased public confidence in and support of police	Support is critical for police effectiveness. Organizational changes are essential to maintain changes, problem-solving is a central method to dealing with crime and social disorder issues	Build trust by contacts with residents and community meetings, enacts organizational changes to support efforts, engages in problem-solving	Appoint a community officer for the neighborhood, identify problems requiring attention, identify organizational changes necessary to support efforts
Broken windows	Deteriorating neighborhoods	Halt slide of neighborhood into serious crime	Nip trouble in the bud	Policing incivilities/order maintenance	Identify a deteriorating neighborhood
Intelligence-led policing	The process of collecting, analyzing, and disseminating intelligence	Base policing strategies and tactics on sound intelligence	Action only effective when based on sound intelligence	Promote the intelligence cycle of collection, evaluation, collation, analysis, and dissemination	Development of data gathering, processing, and dissemination
CompStat	Acute, short term geographic crime patterns	Reduce crime hot spots	Fewer hot spots reduce overall crime	Computerized hot spot identification and intensive patrols and enforcement	Build crime mapping and geographic accountability

6. Be very crime specific

Your department will sometimes mount a crackdown on a particular crime such as auto crime or burglary, and you might be asked to map these offences or provide other data to support the operation. But these categories are too broad for problem-oriented policing. They include too many different kinds of crimes, all of which need to be separately analyzed. For example, "auto crime" could include any of the following:

- Stealing hubcaps for resale or badges for collections

- Breaking into cars to steal items left inside

- Breaking into cars and stealing radios and other fittings

- Joyriding by juveniles

- Taking a car for temporary transport

- Stealing a car for use in another crime

- Stealing and keeping a car

- Stealing cars for "chopping" and sale of the parts

- Stealing cars for resale

- Stealing cars for export overseas

- Carjacking

You can see these crimes are committed for a variety of motives; by different offenders; with varying degrees of organization, knowledge, and skills. Stealing hubcaps is the least difficult and daring and is committed by juvenile wannabes. Joyriding requires more courage and some basic knowledge about starting and driving cars. Stealing cars for export is a much more complicated crime requiring high levels of organization with many more stages and people involved. The offenders are as likely to be dishonest businessmen as career criminals. More ruthless, hardened criminals commit carjackings.

These differences between crimes explain why the solutions to each cannot be the same. Joyriding can be reduced by better built-in security, which explains why immobilizers are now bringing down overall levels of car theft. However, immobilizers cannot prevent carjacking, because victims can be forced to hand over the keys if these are not already in the ignition. In fact, some commentators believe that carjacking has increased because newer cars with ignition immobilizers are difficult to steal in the usual way. Immobilizers can also be overcome by those with sufficient technical skill, and they

may do little to reduce theft of cars for export. The solution to this problem may lie in better port and border controls and documents that are harder to forge.

Breaking down a larger problem of crime into smaller categories is merely the first step in tightening the focus of a POP project. For example, a recent POP project in Charlotte, North Carolina, originally focused on downtown thefts from cars, became progressively more specific as the analysis of the problem unfolded. First, it became clear that the problem was concentrated in the parking lots. Only 17 percent involved cars parked in residences or on the streets. Then it was found, after counting parking spaces, that cars in surface lots were six times more at risk than those in parking garages, which were generally more secure (see step 27). This meant the project could focus on improving security in the surface lots through better lighting and fencing and more supervision by attendants. This would be much easier than trying to reduce the already low levels of theft in the parking garages. Tightening the focus of a POP project in this way increases the probability of success and uses resources effectively.

There are few rules for determining precisely the level of specificity needed for a successful POP project. Tightening the focus too much could result in too few crimes being addressed to justify the expenditure of resources, though this depends on the nature and seriousness of the crimes. If only a few hubcaps are being stolen, then this problem would not merit a full-blown POP project. On the other hand, a POP project to reduce corner store robberies could be worth undertaking even if only a few such robberies occur each year, because these can escalate into worse crimes such as murder and because they increase public fear.

"Because so much effort has been concentrated on crude groupings of crime types, such as burglary, robbery or auto theft, it has been virtually impossible to find truly common facts about the conditions which lead to each of these groups of crimes. This implies that we have to be very patient and try to solve the problems of crime gradually and progressively, piece by piece."

Being more specific about residential burglary

Barry Poyner and Barry Webb have argued that preventing residential burglaries targeted on electronic goods requires quite different measures from those to prevent burglaries targeted on cash or jewelry. This is because they found many differences between these two sorts of burglaries in the city they studied. When the targets were cash or jewelry, burglaries occurred mostly in older homes near to the downtown area and were apparently committed by offenders on foot. When the targets were electronic goods such as TVs and VCRs, the burglaries generally took place in newer, more distant suburbs and were committed by offenders with cars. The cars were needed to transport the stolen goods and had to be parked near to the house but not so close as to attract attention. The layout of housing in the newer suburbs allowed these conditions to be met, and Poyner and Webb's preventive suggestions consisted principally of means to counter the lack of natural surveillance of parking places and roadways. Their suggestions to prevent inner city burglaries focused more on improving security and surveillance at the point of entry.

Source: Poyner, Barry, and Barry Webb. 1991. *Crime Free Housing*. Oxford: Butterworth-Architecture.

Some serious crimes, such as school shootings, are so rare that they cannot be properly addressed at the local level by problem-oriented policing. This is because the methodology depends upon a certain level of repetition to permit underlying causes to be identified. For these kinds of crimes, police forces must ensure that routine security measures are in place and that they have a well-worked out plan for responding to incidents.

While one should avoid beginning with a solution, some solutions for specific crimes are so promising that they might help define the focus of a POP project. To return to the example of robbery at corner stores, there is good research showing that having at least two members of staff on duty can reduce late-night robberies of these stores. You could

therefore take a look at how many corner store robberies occur late at night in your area. If there were enough of them, you might persuade your department to mount a POP project focused on these late night robberies simply because you know that an effective solution exists.

Finally, as you learn more about a problem in the analysis stage, you might decide that it is so similar to a related problem that it is worth addressing the two together. For instance, when working on a problem of assaults on taxi drivers, you might discover that many of these are related to robbery attempts and that it would be more economical to focus your project on both robberies and assaults. In this way, you may identify a package of measures that would reduce the two problems together.

Separate problems, common solutions

Specific problems in a dilapidated neighborhood or apartment complex should always be separately analyzed, but for cost effectiveness reasons, solutions ought to be considered together. In the hypothetical example below, the last identified solution, a gatekeeper and closed circuit television (CCTV) system, is the most costly of all those listed. But it is also predicted to be the most effective solution for each problem. It might therefore be chosen as a solution to all three problems when costs might have ruled out its selection for just one of the problems.

Identified solutions (from least costly to most)	Vandalism to elevators	Thefts of / from cars	Burglaries of apartments
Trim bushes to improve surveillance ($)		**	**
Block watch scheme ($)	***	*	*
Alarms for elevators ($$)	****		
Electronic access to parking lot ($$)		****	****
Installation of entry phone ($$$)	**		
Security patrol ($$$$)	*	**	**
Window locks and strengthened doors for apartments ($$$$)	****	****	****
$ Level of predicted costs *Degree of predicted effectiveness			

7. Be guided by SARA – but not led astray!

Within problem-oriented policing, the police are required to (1) carefully define specific problems (see step 14 for the definition of "problem"), (2) conduct in-depth analyses to understand their causes, (3) undertake broad searches for solutions to remove these causes and bring about lasting reductions in problems, and (4) evaluate how successful these activities have been. This is a form of *action research,* a well-established social science method in which researchers work alongside practitioners, helping to formulate and refine interventions until success is achieved. This can be contrasted with the usual role of researchers, in which they work apart from the practitioners, collect background information about problems, and conduct independent evaluations. In action research, however, the researcher is an integral member of the problem-solving team. This is the role of the crime analyst. Your analyses must inform and guide action at every stage.

You will find that SARA will help you and your team keep on track. This is the acronym formulated by John Eck and Bill Spelman to refer to the four problem-solving stages of scanning, analysis, response, and assessment. This process is very similar to many other analytical processes, including the standard crime analysis process of collection, collation, analysis, dissemination, and feedback. By dividing the overall project into separate stages, SARA helps to ensure that the necessary steps are undertaken in proper sequence—for example, that solutions are not adopted before an analysis of the problem has been undertaken. This is a useful check on the natural tendency to jump straight to a final response while skimping on definition of the problem and analysis and forgetting to assess their impact on the problem.

Problem-solving projects can be complex. In action research, the team is expected to persist until success is achieved, refining and improving an intervention in the light of what is learned from earlier experiences. The process is not necessarily completed once the assessment has been made.

If the problem persists or has changed its form, the team may have to start over. This is represented in the figure, where the outer arrows describe the feedback between assessment and scanning.

However, the four problem-solving stages do not always follow one another in a strictly linear fashion. In fact, projects rarely follow a linear path from the initial scanning and analysis stages through the stages of response and assessment. Rather, the process often has loops, so that an unfolding analysis can result in refocusing of the project, and questions about possible responses can lead to the need for fresh analyses. The longer and more complicated the project, the more loops of this kind are likely to occur. The set of smaller inner arrows in the figure illustrate this dynamic process. For example, one might jump from scanning to the implementation of a short-term emergency response to stabilize the problem while further analysis is undertaken. An assessment of the short-term response could add to the analysis and contribute to the formulation of a new response, which is then assessed. This might lead back to scanning as new information forces a revision of the problem definition or the discovery of new problems. The important point is that analysis and evaluation are meaningfully incorporated into the sequence of events, and one does not simply jump from scanning to response and declare victory.

The SARA problem-solving process
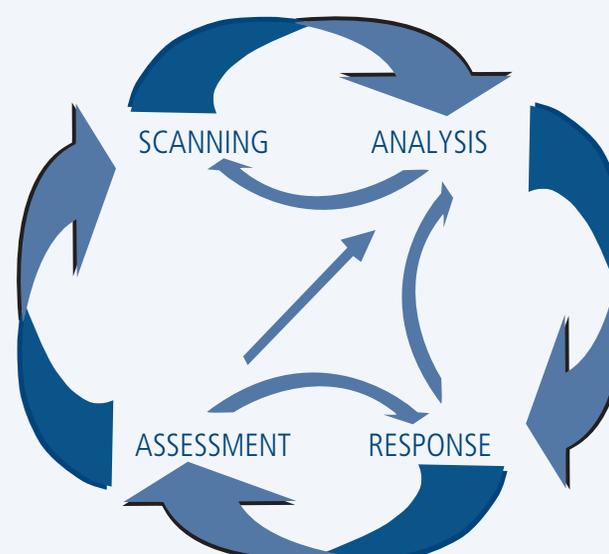
One of us (Clarke) recently worked with Herman Goldstein on a project to reduce thefts of appliances from houses under construction in Charlotte, North Carolina. The housing developments were often in fairly isolated rural areas and were impossible to patrol effectively. They were difficult to secure because builders wanted to encourage prospective buyers to tour the sites in the evenings and on weekends. Because few offenders were ever caught, we knew little about them or how they disposed of the appliances. We considered a wide range of possible solutions, including storing appliances in secure containers on site and the use of portable alarms and closed-circuit television cameras. Then we hit on a solution being used by some small builders—to delay installation of the appliances until the day that the buyer took possession.

Many builders were hostile at first to the idea. Sales staff believed that having the appliances installed made a home more saleable and that the absence of appliances, if attributed to theft, might alarm purchasers about the area they were moving into. Site supervisors felt that delivering and installing appliances as houses were occupied would be more difficult than batch delivery and installation. Some erroneously believed that building inspectors would not certify the houses as suitable for occupancy unless appliances were in place. Others wrongly believed that this was a mortgage requirement. Finally, individual installation would mean that builders could no longer arrange for building inspectors to visit a site and issue certificates of occupancy wholesale.

Because the solution had so many advantages, we decided to return to the analysis stage to find answers to the builders' objections. Ultimately, this information was useful in persuading builders to adopt the solution and thus reduce the number of appliance thefts.

This shows how problem-oriented policing is a process in which the gradual acquisition of data and information informs the project, leading to more questions, to

SARA and the "5 I's"

Paul Ekblom of the British Home Office has recently proposed a development of SARA consisting of intelligence, intervention, implementation, involvement, and impact and process evaluation. The "5 I's" are supported by a wealth of practical concepts and tools.

A summary can be found at www.crimereduction.gov.uk and www.jdi.ucl.ac.uk.

redefinition, and even to changes in focus as it moves along. As soon as a promising response is identified, its costs and benefits need to be analyzed in depth. The alternative of comprehensively exploring all available response options runs the risk that the project will lose momentum and the support of those involved.

Read more

Clarke, Ronald, and Herman Goldstein. 2002. "Reducing Theft at Construction Sites: Lessons from a Problem-Oriented Project." In *Analysis for Crime Prevention*, edited by Nick Tilley. Vol. 13 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_13/06-Clarke.pdf.

Eck, John. 2003. "Why Don't Problems Get Solved?" In *Community Policing: Can It Work?,* edited by Wesley Skogan. Belmont, CA: Wadsworth.

8. Use the problem analysis triangle

Most criminological theories focus on what makes people criminals. They find causes in distant factors, such as child-rearing practices, genetic makeup, and psychological or social processes. These theories are very difficult to test, are of varying and unknown scientific validity, and yield ambiguous policy implications that are mostly beyond the reach of police practice. But you will find that the theories and concepts of environmental criminology (and of the new discipline of crime science) are very helpful in everyday police work. This is because they deal with the immediate situational causes of crime events, including temptations and opportunities and inadequate protection of targets. You will be a stronger member of the problem-oriented team if you are familiar with these concepts.

The problem analysis triangle (also known as the crime triangle) comes from one of the main theories of environmental criminology—routine activity theory. This theory, originally formulated by Lawrence Cohen and Marcus Felson, states that predatory crime occurs when a *likely offender* and *suitable target* come together in *time* and *place* without a capable guardian present. It takes the existence of a likely offender for granted, because normal human greed and selfishness are sufficient explanations of most criminal motivation. It makes no distinction between a human victim and an inanimate target, because both can meet the offender's purpose. And it defines a *capable guardian* in terms of both human actors and security devices. This formulation led to the original problem analysis triangle with the three sides representing the offender, the target, and the location or place (see inner triangle of the figure).

By directing attention to the three major components of any problem, the inner triangle helps to ensure that your analysis covers all three. Police are used to thinking about a problem in terms of the offenders involved—indeed, the usual focus is almost exclusively on how to identify and arrest them. But POP requires that you explore a broader range of factors, and this requires information about the victims and the places involved.

The latest formulation of the problem analysis triangle adds an outer triangle of "controllers" for each of the three original elements (see figure):

1. For the target/victim, this is the *capable guardian* of the original formulation of routine activity theory—usually people protecting themselves or their own belongings or those of family members, friends, and co-workers. Guardians also include public police and private security.

2. For the offender, this is the *handler*, someone who knows the offender well and who is in a position to exert some control over his or her actions. Handlers include parents, siblings, teachers, friends, and spouses. Probation and parole authorities often augment or substitute for normal handlers.

3. For the place, the controller is the *manager*, the owner or designee who has some responsibility for controlling behavior in the specific location, such as a bus driver or teacher in a school, bar owners in drinking establishments, landlords in rental housing, or flight attendants on commercial airliners.

Problem analysis triangle
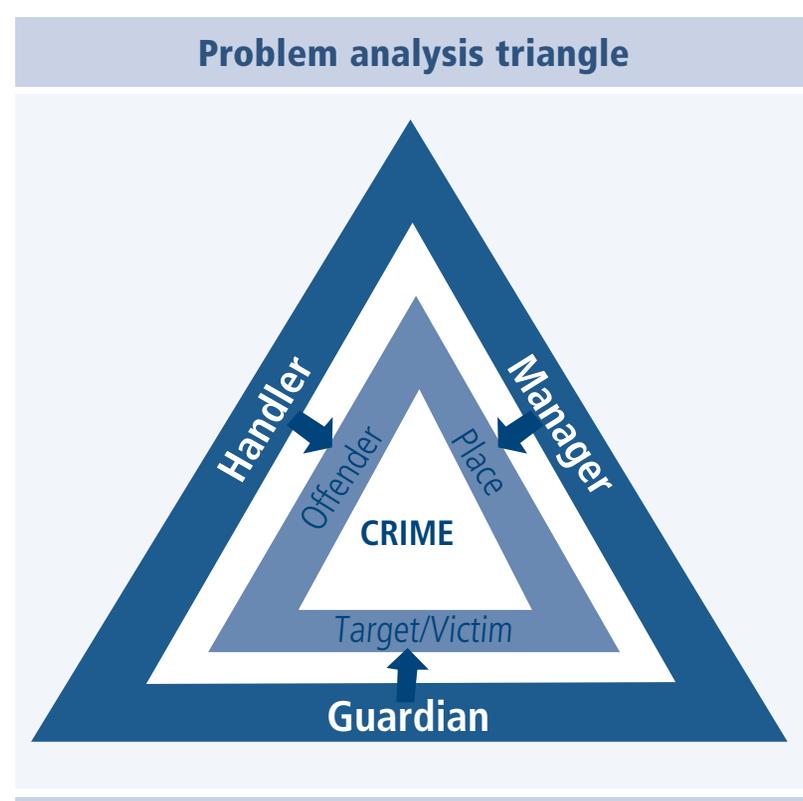
The problem analysis triangle is the basis for another useful analytic tool—a classification of the three main kinds of problems that confront police and a theory about how these problems arise. John Eck and William Spelman have proposed classifying such problems as "wolf," "duck," and "den" problems:

- Repeat offending problems involve offenders attacking different targets at different places. These are ravenous WOLF problems. An armed robber who attacks a series of different banks is an example of a pure wolf problem. Wolf problems occur when offenders are able to locate temporarily vulnerable targets and places. The controllers for these targets and places may act to prevent future attacks, but the offenders move on to other targets and places. It is the lack of control by handlers that facilitates wolf problems.

- Repeat victimization problems involve victims repeatedly attacked by different offenders. These are sitting DUCK problems. Taxi drivers being repeatedly robbed in different locations by different people is an example of a pure duck problem. Duck problems occur when victims continually interact with potential offenders at different places, but the victims do not increase their precautionary measures and their guardians are either absent or ineffective.

- Repeat location problems involve different offenders and different targets interacting at the same place. These are DEN of iniquity problems. A drinking establishment that has many fights but always among different people is an example of a pure den problem. Den problems occur when new potential offenders and new potential targets encounter each other in a place where management is ineffective. The setting continues to facilitate the problem events.

Note that pure wolf, duck, and den problems are rare. Most problems involve a mixture. The question is which is most dominant in a given problem: wolves, ducks, or dens?

When crime is occurring, all inner elements of the triangle must be present and all outer elements weak or absent. If potential offenders are constantly present, for example, but crimes occur only when guardians are absent, then rescheduling guardians might be a useful solution. Ask yourself, "What does the problem analysis triangle look like before, during, and after crimes?"

Understanding how problems are created by opportunities will help you think about what might be done to prevent offenders from reoffending by making better use of handlers; help victims reduce their probabilities of being targets; and to change places where problems occur, be these schools, taverns, or parking lots. In short, right from the beginning, it helps you to focus data collection on those six aspects most likely to lead to practical solutions.

What is crime science?

Crime science is a radical departure from the usual ways of thinking about and responding to the problem of crime and security in society. The distinct nature of crime science is captured in the name.

First, crime science is about **crime**. Traditional criminological approaches are concerned largely with *criminality,* focussing on distant causes such as poverty, social disadvantage, parenting practices, and school performance. In contrast, crime scientists are concerned with near causes of *crime* – why, where, when, by whom, and how a particular offence is committed. They examine ways in which the immediate situation provides opportunities and provocations that account for the highly patterned distribution of crime events.

Second, crime science is about **science**. Many traditional responses to controlling crime are unsystematic and based on untested assumptions about what works. In contrast, crime science is an evidence-based, problem-solving approach that embraces empirical research. Adopting the scientific method, crime scientists collect data on crime, generate hypotheses about crime patterns and trends, and build testable models to explain observed findings.

Crime science is practical in its orientation and multidisciplinary in its foundations. Crime scientists actively engage with front-line criminal justice practitioners to reduce crime by making it more difficult for individuals to offend and making it more likely that they will be detected if they do offend. Many disciplines contribute to the crime science agenda, including criminology, sociology, psychology, geography, architecture, industrial design, epidemiology, computer science, mathematics, engineering, and biology.

Source: Jill Dando Institute for Crime Science. Accessed May 22, 2015. http://www.jdi.ucl.ac.uk.

9. Know that opportunity makes the thief

For environmental criminologists, "opportunity makes the thief" is more than just a popular saying; it is the cornerstone of their approach. They believe that if opportunity increases so will crime. To see if you agree, consider the scenario suggested by Gloria Laycock and Nick Tilley of the Jill Dando Institute of Crime Science:

> *Suppose all situational controls were to be abandoned: no locks, no custom controls, cash left for parking in an open pot for occasional collection, no library check-outs, no baggage screening at airports, no ticket checks at train stations, no traffic lights, etc., would there be no change in the volume of crime and disorder?*

If you answer that of course crime and disorder would increase, then you, too, think opportunity is a cause of crime. Incredibly, most criminologists would not agree. They believe that opportunity can only determine when and where crime occurs, not whether it occurs. In their view, whether crime occurs is wholly dependent on offenders' propensities and these propensities collectively determine the volume of crime in society.

In fact, crime levels are as much determined by the opportunities afforded by the physical and social arrangements of society as by the attitudes and dispositions of the population. This is difficult to prove without conducting experiments, but it would be unethical to create new opportunities for burglary or robbery and wait to see what happens. However, experiments have been undertaken with minor transgressions. In the 1920s, researchers gave children the opportunity to cheat on tests, to lie about cheating, and to steal coins from puzzles used. Other researchers have scattered stamped and addressed letters in the streets, some containing money, to see if these were mailed. In a third group of lab experiments, subjects were instructed to "punish" others for disobeying test instructions by delivering severe electric shocks through the test apparatus (in fact, no shocks were actually delivered).

The results of these experiments support the causal role of opportunity. Most of the subjects, even those who generally resisted temptation, took some opportunities to behave dishonestly or aggressively—opportunities they would not have encountered but for their participation in the studies. But you cannot generalize from these minor transgressions to crimes of robbery or car theft. We, therefore, must turn to some other sources of evidence about the importance of opportunity in causing crime.

Suicide and opportunity

Suicide is not a crime, but like much crime is generally thought to be deeply motivated. However, there is clear evidence from the United Kingdom that opportunity plays an important part in suicide. During the 1950s, about half the people who killed themselves in the United Kingdom used domestic gas, which contained lethal amounts of carbon monoxide (CO). This was known as "putting your head in the gas oven." In the 1960s, gas began to be made from oil instead of coal. The new gas had less CO and the number of gas suicides began to decline. By 1968, only about 20 percent of suicides involved gas. This is when a second change began: manufactured gas was replaced by natural gas from the North Sea. Natural gas contains no CO and is almost impossible to use for suicide. By the mid-1970s, less than 1 percent of suicides in the United Kingdom used this method.

What is deeply surprising is that suicides did not displace wholesale to other methods. The table shows that between 1958 and 1976, suicides dropped by nearly 30 percent from 5,298 to 3,816. (This was during an economic decline when suicide could have been expected to increase and, indeed, was increasing in other European countries.) People did not turn to other methods, because these all had drawbacks. Overdoses are much less lethal than carbon monoxide. Hanging requires more knowledge as well as courage. Not everyone has access to guns, which can result in disfigurement instead of death. On the other hand, domestic gas was readily available in most homes. It was highly lethal, and using it was bloodless and painless. It is not surprising it was the preferred method for so long and that when the opportunity to use it was removed, the number of suicides declined.

Suicides in England and Wales, 1958–1977

Year	Total suicides	Suicides by domestic gas	Percent of total
1958	5,298	2,637	49.8
1960	5,112	2,499	48.9
1962	5,588	2,469	44.2
1964	5,566	2,088	37.5
1966	4,994	1,593	31.9
1968	4,584	988	21.6
1970	3,940	511	13.0
1972	3,770	197	5.2
1974	3,899	50	1.3
1976	3,816	14	0.4

Source: *Mortality Statistics, England and Wales: Causes*. London: Her Majesty's Stationery Office, Annual.

Murder and opportunity

Opportunity also plays an important causal role in murder, as shown by a comparison made some years ago of homicide rates in the United States and in England and Wales. For 1980–84, the period covered by the study, the overall homicide rate in the United States was 8.5 times greater than in England and Wales. The gun homicide and handgun homicide rates were, respectively, 63 times and 75 times as great. In the whole of England and Wales in this period (with about 50 million people), only 57 handgun murders occurred. In the United States, with a population of about 230 million (less than five times greater), a total of 46,553 people were murdered with a handgun.

These findings tended to be dismissed because the overall crime rate in the United States was generally higher than it was in England and Wales during that period. However, in the past 15 years, the overall crime rates of the two countries have converged so that there is now little difference between them—with the glaring exception of homicide. There is still a much higher rate of murder in the United States, because far more people here own guns, especially handguns, than in the United Kingdom. Even the police in the United Kingdom do not routinely carry guns! So, when people fight here, someone is much more likely to get shot than in the United Kingdom. Similar, but not as striking, findings emerge from comparing murder rates in the United States and Canada (see box). Taken together, these comparisons show that gun availability (an opportunity variable) plays an important causal role in murder.

Understanding the arguments in this section, and accepting that opportunity causes crime, does not mean you must deny the importance of other causes such as inherited personalities, broken homes, and inconsistent discipline. But there is little you can do to change people's personalities or the divorce rate or poor parenting. However, you can alter the criminogenic situations in which they find themselves. Understanding that opportunity makes the thief will help direct your attention to practical means of preventing crime and help you defend them from criticism.

Guns and homicide in the United States and Canada

A classic study compared the rate of homicides and assaults in Seattle, Washington, and Vancouver, British Columbia, from 1980–1986 to determine the effect of handgun availability on the crime rate. Although similar to Seattle in many ways, Vancouver has a more restrictive approach to handgun possession. The study found that wider availability of handguns increases the rate of homicide. The key findings were:

1. The two cities differed little in their rate of assaults.

2. The murder risk was significantly higher in Seattle than in Vancouver, mainly due to a five times greater risk of being murdered with a handgun in Seattle.

3. Rates of nongun homicides differed little between the two cities.

Source: Sloan, John, et al. 1988. "Handgun Regulations, Crime, Assaults, and Homicide." *The New England Journal of Medicine* 319: 1256–1262.

Read more

Felson, Marcus, and Ronald Clarke. 1998. *Opportunity Makes the Thief: Practical Theory for Crime Prevention*. No. 98 in Police Research Series. London: Home Office. http://www.popcenter.org/library/reading/pdfs/thief.pdf.

10. Put yourself in the offender's shoes

Whenever you analyze a crime problem or think about solutions, try to see the crime from the offender's perspective. Try to understand why they commit the crime—not the distant social or psychological causes, but the *benefits* they are seeking. A radical critique of criminology pointed out 30 years ago that is not their genes that propel bank robbers through the doors of the bank: they rob banks because they want to get rich.

In many cases of theft and robbery, the benefits are obvious, but they may not be clear for gang violence or so-called "senseless" vandalism and graffiti. In fact, graffiti can mark the territory of a juvenile gang, can indicate where to purchase drugs, or can simply be a way to show off. Knowing which of these reasons is dominant helps to define the focus of a problem-solving project and unravel the contributory factors. It can also help the project team identify solutions. Thus, the New York City subway authorities succeeded in eradicating graffiti only when they understood the motivation of the "taggers," which was to see their handiwork on display as the trains traveled around the system (see step 41).

Learning *how* offenders commit crimes is as important as learning why they commit them. You will find rational choice theory helpful in thinking about these questions. The name is misleading because the theory does not assume that offenders plan their crimes carefully; it assumes only that they are seeking to benefit themselves by their crimes, which is rational enough. The theory does not even assume that offenders succeed in obtaining the benefits they seek. This is because they rarely have all the information they need, they do not devote enough time to planning their actions, they take risks, and they make mistakes. This is how we all behave in everyday decision making and is what theorists call limited or bounded rationality.

Offenders must often decide quickly how to accomplish their goals and how to get away without being caught. Interviewing offenders will help you understand how they make these decisions. (The COPS Office guide on interviewing offenders will help you think about the legal and technical difficulties of conducting these interviews. See "Read more.") Surprisingly, it is usually not difficult to get offenders to talk, especially if you confine yourself to the general nature of the

problem you are trying to solve and avoid specific questions about crimes they have committed. Offenders are no exception to the rule that we enjoy talking about ourselves and about the work we do. On the other hand, always retain some skepticism, because people who habitually break the law may also habitually exaggerate and lie.

> Martin Gill of Leicester University in England tells a story of interviewing an experienced offender in prison. When dealing with the crime that had led to his arrest, Gill asked: "Did you think you'd get caught?" The prisoner leaned back in his chair and gave him a long look before saying: "I never expected to hear someone from a university ask such a stupid question. Do you think I'd have done it if I thought I'd get caught?"

If you cannot interview offenders, try to imagine the course of a crime (see step 35). What must be done at each stage? How are targets selected? How can victims be subdued or tricked? The police escaped? The goods disposed of? Even if you cannot answer all these questions about modus operandi, your attempt to enter the offender's mind can help you think about responses. This is not an invitation to try your hand at psychoanalysis. Instead of delving into the offender's unconscious, you should try to understand the tangible benefits the offender is seeking and how he must manage the commission of crime without too much effort or risk. This is what Paul Ekblom of the Home Office Research Department means when he advises problem solvers to "think thief."

> Paul Ekblom interviewed thieves on the London Underground (subway system) who told him that they would stand near signs warning that "pickpockets" were operating. On noticing the signs, passengers would reassuringly pat whichever pockets contained their wallets, which was a considerable help to the thieves.

Another alternative to interviewing your own group of offenders is to search the literature for reports of interviews with similar groups of offenders. Environmental criminologists have greatly expanded our knowledge about the methods that criminals use by interviewing car thieves, muggers, shoplifters, and residential and commercial burglars. The offenders may not be quite the same group as your own, but carefully looking at the results of these interview studies can suggest hypotheses that you might explore in regard to your own problem.

Read more

Decker, Scott. 2004. *Using Offender Interviews to Inform Police Problem-Solving.* No. 3 of Problem-Oriented Guides for Police: Problem Solving Tool Series. Washington, DC: Office of Community Oriented Policing Services. http://ric-zai-inc.com/ric.php?page=detail&id=COPS-P074.

Armed robbers talking

Motives

"You are sitting there alone and you feeling light in your pocket, your rent is due, light and gas bill, you got these bill collectors sending you letters all the time, and you say, 'I wish I had some money. I need some money.' Those are the haints. [You haint got this and you haint got that.] Your mind starts tripping cause you ain't got no money and the wolves are at the door. . . . [After my last stickup] I gave my landlord some money and sent a little money off to the electric company, a little bit off to the gas company. I still had like twenty or thirty dollars in my pocket. I got me some beer, some cigarettes, and [spent] some on a stone [of crack cocaine]; enjoy myself for a minute." (pp. 43–44)

Advantages of robbery

"Robbery is the quickest money. Robbery is the most money you gonna get fast. . . . Burglary, you gonna have to sell the merchandise and get the money. Drugs, you gonna have to deal with too many people, [a] bunch of people. You gonna sell a fifty-dollar or hundred dollar bag to him, a fifty-dollar or hundred-dollar bag to him, it takes too long. But if you find where the cash money is and just go take it, you get it all in one wad." (pp. 51–52)

Choosing the victim

"See, I know the places to go [to locate good robbery targets]. Usually I go to all the places where dope men hang out . . . . but I [also have] done some people coming out of those instant tellers." (p. 78)

"That's all I done robbed is drug dealers . . . they not gonna call the police. What they gonna tell the police? He robbed me for my dope? They is the easiest bait to me. I don't want to harm no innocent people, I just deal basically with drug dealers." (p. 64)

Violence

"Well, if [the victim] hesitates like that, undecided, you get a little aggressive and you push them. . . . I might take [the] pistol and crack their head with it. 'Come on with that money and quit bullcrapping or else you gonna get into some real trouble!' Normally when they see you mean that kind of business they . . . come on out with it." (p. 109)

Source: Wright, Richard, and Scott Decker. 1997. *Armed Robbers in Action: Stickups and Street Culture.* Boston: Northeastern University Press.

11. Expect offenders to react

Offenders make choices based on their perceptions of opportunities. Understanding how offenders see things is important to preventing crime because almost all crime prevention involves changing offenders' perceptions of crime opportunities. Some prevention programs work directly on offenders' perceptions, such as when police inform offenders that they are being closely watched. But most prevention programs work through one or more intermediate steps, such as in property marking programs, for example, where residents apply window stickers showing participation. Changes in the environment change offender perceptions. These perceptions influence offenders' behaviors, which in turn alter crime patterns.

In many cases, the preventive measures deter offenders from further criminal activity. They can also have the positive unintended effects of (1) reducing crime beyond the focus of the measures, which is known as *diffusion of benefits* (see steps 13 and 47), and (2) reducing crime before they have actually been implemented, known as *anticipatory benefits* (step 52). However, preventive measures do not always achieve the desired effects, sometimes because offenders are quite unaware of the interventions in place. For example, offenders may continue to offend in the face of covert enforcement because they might not perceive that their risks of being caught have increased. In other cases, offenders may adjust negatively to the preventive measures. These negative adjustments include displacement and long-term adaptation.

- *Displacement* occurs when offenders change their behavior to thwart preventive actions. Displacement is the opposite of diffusion of benefits. Displacement is a possible threat, but it is far from inevitable. Reviews show that many situational prevention programs show little or no evidence of displacement, and when displacement is found, it seldom fully offsets the prevention benefits (step 12).

- *Adaptation* refers to a longer-term process whereby the offender population as a whole discovers new crime vulnerabilities after preventive measures have been in place for a while. Paul Ekblom, Ken Pease, and other researchers often use the analogy of an *arms race* between preventers and offenders when discussing this process. So, in time, we can expect many crimes that have been reduced by preventive measures to reappear as criminals discover new ways to commit them. Adaptation may occur as the original offenders slowly discover new methods, or it may occur as new offenders take advantage of changing opportunities.

A good example of adaptation is credit card fraud (see sidebar). Another more recent example of adaptation involves bike locks. Bike thieves discovered that they could defeat a widely used and effective lock by using a common and cheap ballpoint pen. But not all preventive measures are so vulnerable to criminal ingenuity. For example, Neal Shover has argued that technology has brought a lasting respite from safecracking, which is now very rare though it was once quite common.

In some circumstances, preventive actions may stimulate defiance. This occurs when offenders challenge the legitimacy of prevention efforts and commit more crimes rather than fewer. Police are legitimately concerned, for example, that premature displays of force can sometimes stimulate crowds to engage in riotous behavior, so police often refrain from dressing in full riot gear until there is strong evidence that serious misbehavior is likely. There is some research evidence that defiance is more likely when the police are perceived to be unfair and heavy handed and that people are more law-abiding when police treat them fairly, even if the outcome is not what people desire. In general, defiance is not a well-documented phenomenon, but it cannot be ruled out as a possibility, particularly when police use enforcement as the principal prevention tool.

Read more

Ekblom, Paul. 1997. "Gearing up Against Crime: a Dynamic Framework to Help Designers Keep up with the Adaptive Criminal in a Changing World." *International Journal of Risk, Security and Crime Prevention* 2(4): 249–265. https://www.ncjrs.gov/App/publications/abstract. aspx?ID=178131.

Offender Adaptation and Credit Card Fraud

Michael Levi and his colleagues have described how a partnership between the police, the British Home Office (similar to the U.S. Department of Justice), and the credit card issuers led to successful action in the mid-1990s to reduce credit card frauds. The measures introduced included new lower limits for retailers for seeking authorization of transactions and more secure methods of delivering new credit cards to consumers via the mail. As the figure shows, there was a resulting marked reduction in fraud losses (total, lost & stolen, and mail nonreceipt). In recent years, however, credit card losses have begun to climb again. This principally because of a growth in losses resulting from "card not present" frauds (due to the rapid expansion of Internet sales) and in counterfeiting of cards (said to be the work of organized gangs in East Asia).

Credit Card Fraud Losses, U.K.
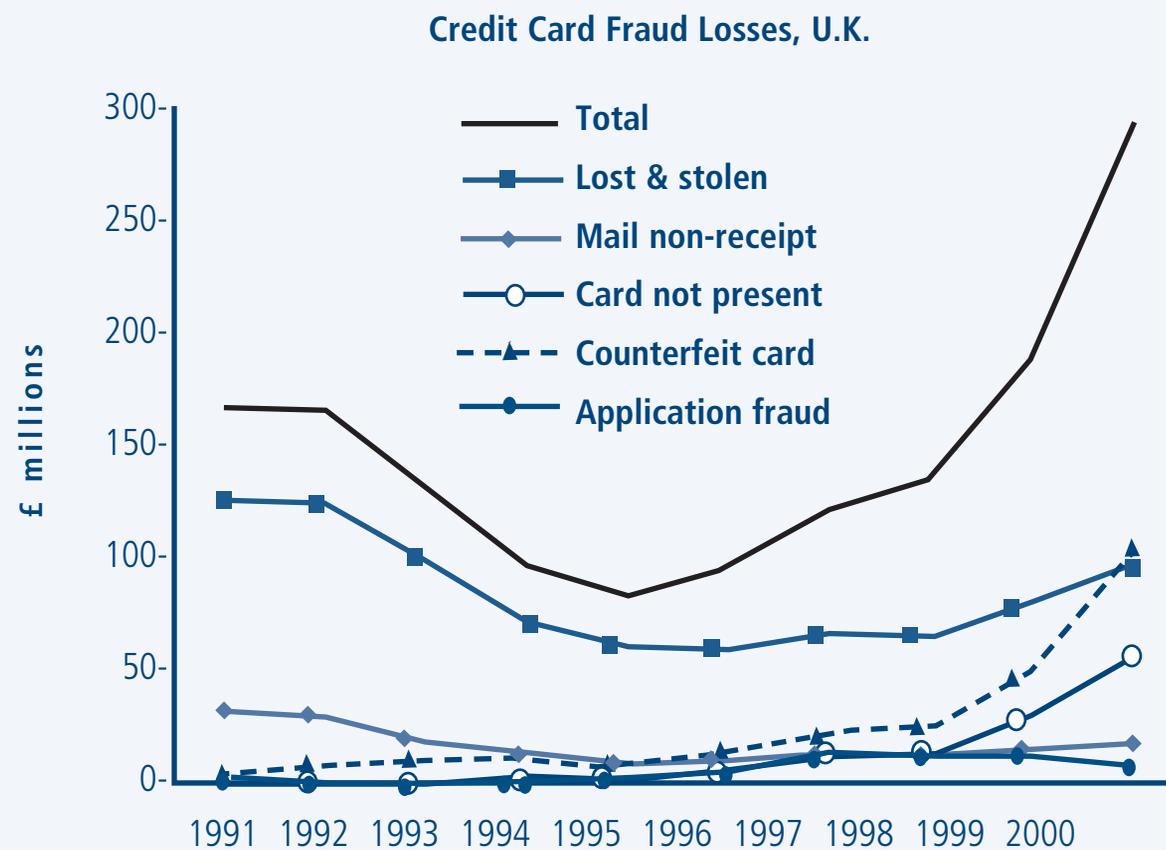
12. Don't be discouraged by the displacement doomsters

Problem-oriented policing often tries to reduce opportunities for crime. For example, window locks may be fitted to prevent burglary in an apartment complex or closed circuit television cameras installed to prevent thefts in parking lots. These ways of reducing opportunities for crime often meet the same objection: all they do is move crime around, not prevent it. This theory of displacement sees crime as being shifted around in five main ways:

1. Crime is moved from one place to another (*geographical*).

2. Crime is moved from one time to another (*temporal*).

3. Crime is directed away from one target to another (*target*).

4. One method of committing crime replaces another (*tactical*).

5. One kind of crime is substituted for another (*crime type*).

In each case, the theory assumes that offenders are *compelled* to commit crime, whatever impediments they face. The basis for the assumption is either that the propensity to commit crime builds up and must be discharged in the same way that sexual release is sought or that "professional" criminals or drug addicts must obtain a certain income from crime to maintain their lifestyles. There is no evidence that offenders must satiate some deep physiological appetite to commit crimes. In fact, there is plenty of evidence that people make choices about whether, where, and when to offend. Whatever its basis, the displacement assumption neglects the important role of temptation and opportunity in crime (step 9).

Even in the case of more committed offenders, the displacement theory fails to give enough importance to opportunity. Thus, research on drug addicts has shown that they adapt to variations in the supply of drugs. Nor is there any simple progression in drug use. Rather, addicts might be forced to use smaller amounts or less agreeable drugs because the supply of drugs has been cut.

As for professional criminals like bank robbers, there is no reason to assume that they must obtain a fixed amount of money from crime. They would surely commit fewer robberies if these became difficult and risky, just as they would commit more robberies if these became easy. Bank robbers, like everyone else, may sometimes have to adjust to reduced circumstances and be content with lower levels of income.

This does not mean that we can ignore displacement. Indeed, rational choice theory predicts that offenders will displace when the benefits for doing so outweigh the costs. For example, in the early 1990s, the New York City Police deployed its tactical narcotics teams to several high drug-dealing neighborhoods. Dealers responded by shifting their sales locations from curbside to inside the foyers of apartment buildings. But numerous other studies have found that displacement did not occur at all or only to a limited extent. For example, consider the following:

- Intensive gun patrols reduced firearms crimes in a Kansas City, Missouri, high gun-crime neighborhood without displacing these or other crimes to nearby communities.

- New identification procedures greatly reduced check frauds in Sweden with no evidence of displacement to a range of "conceivable" alternative crimes.

- Extensive target hardening undertaken in banks in Australia lowered robbery rates, but there was no sign that corner stores, gas stations, betting shops, motels, or people in the street began to experience more robberies.

- Burglary was not displaced to nearby apartment complexes when a problem-solving approach drove down burglary in a high-crime apartment complex in Newport News, Virginia.

- When streets were closed in the London neighborhood of Finsbury Park and policing was intensified, there was little evidence that prostitutes simply moved to other nearby locations. According to the researchers, many of the women working the streets in Finsbury Park were not deeply committed to prostitution, but saw it as a relatively easy way to make a living. When conditions changed, so did their involvement and many seem to have given up "the game" (step 50).

- Redesign of a trolley stop to curb robberies and assaults resulted in a reduction in violent crime at a San Diego, California, location without shifting these crimes to other trolley stops.

In these examples and numerous others, the offenders' costs of displacing seemed to have outweighed the benefits, and the examples bear out the argument that displacement occurs much less than commonly believed. This is the consensus of four different reviews of the displacement literature undertaken in the United Kingdom, Canada, the United States, and the Netherlands. The Dutch review (the most recent one) reports that in 22 of 55 studies from around the world in which displacement was examined, no evidence of it was found. In the remaining 33 studies, in which evidence of displacement was found, only some of the crime seems to have been displaced. In no case was the amount of crime displaced equal to the amount prevented. And in no case did displacement increase crime.

Displacement is usually limited because offenders have difficulty adapting quickly. If they do make changes, they are most likely to change to places, times, targets, methods, and crime types that are similar to those the prevention program blocks, because these are the easiest changes for them to make. This suggests that displacement can be predicted by anticipating the easiest changes for offenders to make. If there are obvious easy changes, you should consider how to incorporate these in your prevention plan. And if you cannot include them, you should consider monitoring them to detect possible displacement.

To sum up, displacement is always a threat, but there are strong theoretical reasons for believing that it is far from inevitable. In addition, the studies of displacement show that even when it does occur, it may be far from complete and that important net reductions in crime can be achieved by opportunity-reducing measures.

Read more

Hesseling, Rene. 1994. "Displacement: A Review of the Empirical Literature." In vol. 3 of Crime Prevention Studies, edited by Ronald V. Clarke. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_03/07_hesseling.pdf.

Claims of displacement often evaporate under closer scrutiny

In the mid-1980s, John Eck observed a displacement dispute within the Newport News (Virginia) Police Department. A crackdown on a street corner marijuana market resulted in the market's closure. Some police officials asserted that the offenders had merely moved to a nearby corner to deal drugs. However, close inspection by other officers revealed several important facts:

- The nearby corner dealers were selling heroin, not marijuana.

- None of the offenders from the marijuana market were found at the heroin market.

- The heroin market was a much smaller scale operation.

- It predated the opening of the marijuana market.

The claims of displacement were probably due to selective perception. Prior to the marijuana market, street corner drug dealing had been low key and did not attract much public notice. Consequently, drug markets were not a high police priority. When neighborhood members complained about the marijuana market, greater attention was paid to other drug markets as well.

13. Expect diffusion of benefits

Researchers looking for displacement have some-times found precisely its reverse. Rather than finding that crime has been pushed to some other place or time, they have found that crime has been reduced more widely than expected, beyond the intended focus of the measures. This is a relatively recent discovery, but already many examples exist:

- As expected, electronic tagging of books in a University of Wisconsin library resulted in reduced book thefts. However, thefts of videocassettes and other materials that had not been tagged also declined.

- When a New Jersey discount electronic retailer introduced a regime of daily counting of valuable merchandise in the warehouse, employee thefts of these items plummeted— but thefts also plummeted of items not repeatedly counted.

- When LoJack vehicle tracking systems were introduced in six large cities, rates of theft declined citywide, not just for car owners who purchased the devices.

- Simon Hakim and his colleagues at Temple University have shown that widespread ownership of burglar alarms in an affluent community near Philadelphia resulted in reduced burglary rates for the community at large.

- When red light cameras were installed at certain intersections in Strathclyde, a large city in Scotland, fewer people ran the lights not only at these locations but also at other traffic lights nearby. (In a smaller city with more local traffic, this effect might be short-lived as people learned exactly which intersections had cameras.)

- The implementation of added security for houses that had been repeatedly burgled on a UK public housing estate in Kirkholt reduced burglaries for the whole of the estate, not just for those houses given additional protection.

These are all examples of the diffusion of benefits resulting from crime prevention measures. It seems that potential offenders may be aware that new prevention measures have been introduced, but they are often unsure of their precise scope. They may believe the measures have been implemented more widely than they really have and that the *effort* needed to commit crime or the *risks* incurred have been increased for a wider range of places, times, or targets than is really the case. This means that diffusion can take several forms, paralleling the different kinds of displacement (see table).

Diffusion of benefits is a windfall that greatly increases the practical appeal of situational crime prevention, but we do not yet know how to deliberately enhance it. One important method may be through publicity. A publicity campaign helped to spread the benefits of video surveillance cameras across an entire fleet of 80 buses in the North of England, although these were installed on just a few of the buses. One of the buses with the cameras was taken around to schools in the area to show students they could be caught if they misbehaved and vandalized the bus, and the first arrests resulting from the cameras were given wide publicity in the news media.

Displacement and diffusion of benefits for burglary of apartments			
Type	Definition	Displacement	Diffusion
Geographical	Geographic change	Switch to another building	Reduce burglaries in targeted building and in nearby buildings
Temporal	Time switch	Switch from day to evening	Reduce burglaries during day and evening
Target	Switching object of offending	Switch from apartments to houses	Reduce burglaries in apartments and houses
Tactical	Change in method of offending	Switch from unlocked doors to picking locks	Reduction in attacks on locked and unlocked doors
Crime type	Switching crimes	Switch from burglary to theft	Reduction in burglary and theft

We should expect the diffusion of benefits to decay when offenders discover that the risks and effort of committing crime have not increased as much as they had thought. Research has shown that this occurred in the early days of the breathalyzer in the United Kingdom, which had a much greater immediate impact on drunk driving than expected, given the actual increase in the risk of getting caught. However, as drivers learned that the risks of being stopped were still quite small, drunk driving began to increase again. This may mean that ways will have to be found of keeping offenders guessing about the precise levels of threat, or about how much extra effort is needed if they are to continue with crime.

At a practical level, diffusion is important as a counter-argument to displacement from those resisting the introduction of preventive measures. And you will certainly encounter many of those! Second, it is important that you plan your evaluation to take account of diffusion. Ways to do this are discussed in step 51 by using two sets of control areas, both nearby and more distant. Otherwise, you might find that people question the effectiveness of the preventive initiative on grounds that crime fell across a broader area than was targeted.

Read more

Clarke, Ronald V., and David Weisburd. 1994. "Diffusion of Crime Control Benefits: Observations on the Reverse of Displacement." In vol. 2 of Crime Prevention Studies, edited by Ronald V. Clarke. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_02/08clarke.pdf.

Diffusion of benefits and video surveillance in a university's parking lots

A new head of security at the University of Surrey in the United Kingdom decided to deal with a plague of thefts in the university's parking lots by introducing video surveillance (or CCTV—closed-circuit television). He installed a CCTV camera on a mast to provide surveillance of the parking lots. As the diagram shows, the camera could not provide surveillance equally for all four parking lots because buildings obscured its view of parking lot 1.
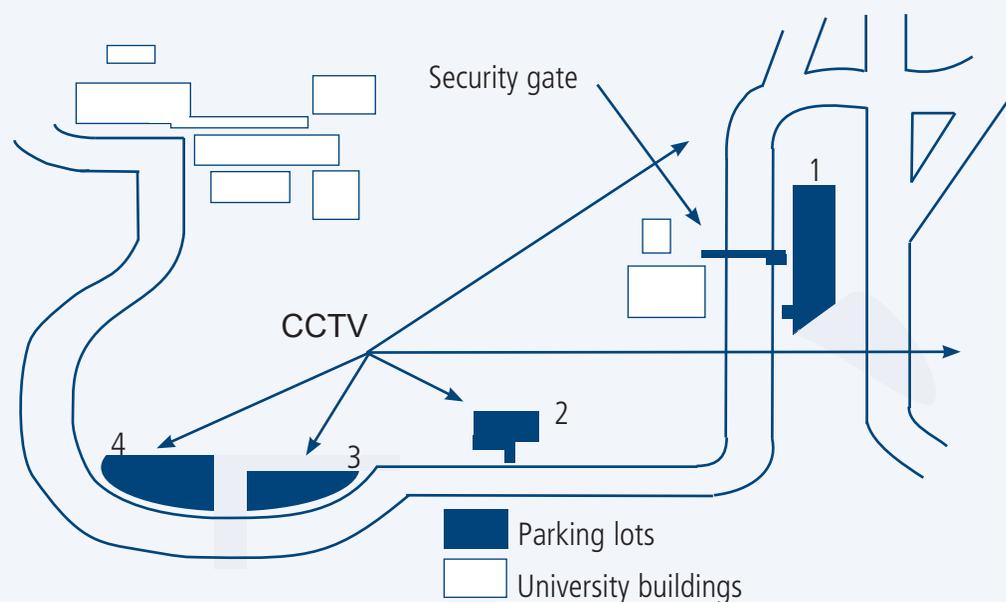
It might have been expected, therefore, that if the camera had any value in preventing crime this would only be for the parking lots it covered adequately. It might also have been expected that crime would be displaced by the camera from these parking lots to the one not given proper surveillance. In fact, in the year following the introduction of the camera, incidents of theft and vandalism in the lots were cut in half, from 138 in the year prior to 65 in the year after. Incidents declined just as much in parking lot 1, not covered by the cameras, as in the other three lots. This diffusion of the benefits of the video surveillance probably resulted from potential offenders being aware that it had been introduced at the university, but not knowing its limitations. Many probably decided that it was no longer worth the risk and effort of going to the university parking lots to commit crime.

Source: Poyner, Barry. 1997. "Situational Prevention in Two Parking Facilities." In *Situational Crime Prevention: Successful Case Studies*, 2nd edition, edited by Ronald V. Clarke. Guilderland (New York): Harrow and Heston.

14. Use the CHEERS test when defining problems

A problem is a recurring set of related harmful events in a community that members of the public expect the police to address. This definition draws attention to the six required elements of a problem: community, harm, expectation, events, recurrence, and similarity. These elements are captured by the acronym CHEERS:

1. **Community.** Members of the public must experience the harmful events. They include individuals, businesses, government agencies, and other groups. Only some—not all or most—community members need experience the problem.

2. **Harm.** People or institutions must suffer harm. The harm can involve property loss or damage, injury or death, serious mental anguish, or undermining the capacity of the police (as in repeat fraudulent calls for service). *Illegality is not a defining characteristic of problems.* Some problems involve legal behavior that the police must address. Noise complaints arising from the impact of legitimate commercial activity on neighboring residents is a common example. Some problems are first reported as involving illegal behavior, but on closer inspection do not involve illegalities. If such reports meet all the CHEERS criteria, they are problems.

3. **Expectation.** Some members of the community must expect the police to address the causes of the harm (their numbers do not have to be large). Expectation should never be presumed but must be evident through processes such as citizen calls, community meetings, press reports, or other means. This element does not require the police to accept at face value the public's definition of the problem, their idea of its causes, or what should be done about it. The public may be mistaken as to its cause and characteristics. It is the role of analysis to uncover the causes.

4. **Events.** You must be able to describe the type of event that makes up the problem. Problems are made up of discrete events. Examples of events include a break-in at a home, one person striking another, two people exchanging money for sex, or a burst of noise. Most events are brief, though some may involve a great deal of time—some frauds, for example.

5. **Recurrence.** These events must recur. Recurrence may be symptomatic of acute troubles or a chronic problem. *Acute* troubles suddenly appear, as in the case of a neighborhood with few vehicle break-ins suddenly having many such break-ins. Some acute troubles dissipate quickly, even if nothing is done. Others can become chronic problems if not addressed. For this reason, acute troubles should be investigated to determine if they signal something more entrenched. *Chronic* problems persist for a long time, as in the case of a prostitution stroll that has been located along one street for many years. Unless something is done, the events from chronic problems will continue to occur.

6. **Similarity.** The recurring events must have something in common. They may be committed by the same person, happen to the same type of victim, occur in the same types of locations, take place in similar circumstances, involve the same type of weapon, or have one or more other factors in common. Without common features, you have an arbitrary collection of events, not a problem. Common crime classifications—such as used by the Uniform Crime Reports—are not helpful. Vehicle theft, for example, includes joyriding, thefts for chop shops, thefts for export to other countries, thefts for use in other crimes, and a host of other dissimilar events. So a cluster of vehicle thefts may not be a single problem. More information is needed. With common features, we have a pattern of events that could indicate a problem—for example, thefts of minivans in suburban neighborhoods to be used as gypsy cabs in the inner city.

Problems need to be examined with great specificity (see steps 6 and 15) because small details can make a difference between a set of circumstances that gives rise to harmful events, and a set of circumstances producing harmless events. CHEERS suggests six basic questions you need to answer at the scanning stage:

1. Who in the community is affected by the problem?

2. What are the harms created by the problem?

3. What are the expectations for the police response?

4. What types of events contribute to the problem?

5. How often do these events recur?

6. How are the events similar?

Not everything the police are asked to address is a problem. CHEERS can help identify demands that are not problems. We are using the term "problem" in the technical POP sense, not as we would in everyday speech. So things that are not problems may be troublesome and may require police attention. These are as follows:

- **Single events.** A single event, no matter how serious, is not a problem unless there is a reasonable prospect that another similar event will occur if nothing is done. A single event may deserve investigation or some other police action, but problem solving cannot be applied to isolated events because nothing can be prevented.

- **Neighborhoods.** Small areas, such as city centers or particular residential apartment complexes, sometimes get reputations as problems, but these neighborhoods are seldom problems. Rather, they are usually areas containing several problems. The individual problems might be related but not always. Tackling an entire area as a single problem increases the complexity of the effort and reduces the chances you will find effective responses. Instead, you should identify specific problems within a neighborhood and tackle them individually. If the problems are linked (e.g., the street network contributes to several problems), tackling the link might be helpful. Do not assume problems are linked just because they are near one another. In some cases, of course, there may be common solutions to distinct problems (see step 6).

- **Status conditions.** Truant school children, bored teenagers, vagrant adults, and convicted criminals are not problems because of their status of not being in school, having nothing to do, not being employed, or having been found guilty of an offense. A community might expect the police to do something about them, but status conditions lack the characteristics of harm and events. Some of these people may play a role in problems as targets, offenders, or in some other capacity, but that does not make them problems themselves. Defining a problem by status conditions is evidence of lack of precision and a need to examine the issue in greater depth. Status conditions may point to pieces of a larger problem.

Always use the CHEERS test—does the possible problem have all six elements? If it does not, it is probably not a suitable focus for a problem-oriented policing project.

15. Know what kind of problem you have

Because local police have to deal with a wide range of problems that meet the CHEERS definition (step 14), we have developed a classification for these problems. This classification pattern can help you precisely define the problem. It helps separate superficially similar problems that are actually distinct. It also allows you to compare your problem to similar problems that have already been addressed, and it helps identify important features for examination. For example, an extensive set of guides to addressing common problems is available from the Office of Community Oriented Policing Services and the Center for Problem-Oriented Policing websites (step 19). Knowing the type of problem you are investigating can help you identify guides that might be helpful, even if they do not directly address your problem. The classification pattern is based on two criteria: the environments within which problems arise, and the behaviors of the participants. (The pattern is different from the wolf/duck/den classification in step 8, which is a classification of persistent problems.)

Environments regulate the targets available, the activities people can engage in, and who controls the location. Specifying an environment allows comparisons of environments with and without the problem. Environments have owners who can be important for solving the problem (see step 44). There are 11 distinct environments for most common police problems:

1. **Residential.** Locations where people dwell. Houses, apartments, and hotel rooms are examples. Though most are in fixed locations, a few are mobile, such as recreational vehicles.

2. **Recreational.** Places where people go to have a good time. Bars, nightclubs, restaurants, movie theaters, playgrounds, marinas, and parks are examples.

3. **Offices.** Locations of white-collar work where there is little face-to-face interaction between the workers and the general public. Government and business facilities are often of this type. Access to these locations is often restricted.

4. **Retail.** Places for walk-in or drive-up customer traffic involving monetary transactions. Stores and banks are examples.

5. **Industrial.** Locations for processing of goods. Cash transactions are not important activities in these environments, and the public is seldom invited. Factories, warehouses, and package-sorting facilities are examples.

6. **Agricultural.** Locations for growing crops and raising animals.

7. **Education.** Places of learning or study, including day care centers, schools, colleges and universities, libraries, and places of worship.

8. **Human services.** Places where people go when something is wrong. Courts, jails, prisons, police stations, hospitals, and drug treatment centers are examples.

9. **Public ways.** Routes connecting all other environments. Roads and highways, footpaths and bike trails, and driveways and parking facilities are examples.

10. **Transport.** Locations for the mass movement of people. These include buses, bus stations and bus stops, airplanes and airports, trains and train stations, ferries and ferry terminals, and ocean liners and piers.

11. **Open/transitional.** Areas without consistent or regular designated uses. These differ from parks in that they have not been designated for recreation, though people may use them for this. Transitional areas include abandoned properties and construction sites.

Behavior is the second dimension for classifying a problem. Specifying behaviors helps pinpoint important aspects of harm, intent, and offender-target relationships. There are six types of behavior:

1. **Predatory.** The offender is clearly distinct from the victim, and the victim objects to the offender's actions. Most common crimes are of this type. Examples include robbery, child abuse, burglary, bullying, and theft.

2. **Consensual.** The parties involved knowingly and willingly interact. This typically involves some form of transaction. Examples include drug sales, prostitution, and stolen goods sales. Note, however, that assaults on prostitutes are predatory behaviors.

3. **Conflicts.** Violent interactions involving roughly coequal people who have some pre-existing relationship. Some forms of domestic violence among adults involve this type of behavior, though domestic violence against children and the elderly is classified as predatory because the parties involved are not coequal.

4. **Incivilities.** Offenders are distinguishable from victims, but the victims are spread over a number of individuals and the harms are not serious. Many concerns that are annoying, unsightly, noisy, or disturbing but do not involve serious property damage or injury fall into this category. Loud parties are an example. Whether vandalism fits in this category depends on the details.

Some forms of vandalism are predatory. Some incivilities are troublesome regardless of the environment, while others are only troublesome in specific environments.

5. **Endangerment.** The offender and the victim are the same person, or the offender had no intent to harm the victim. Suicide attempts, drug overdoses, and vehicle crashes are examples.

6. **Misuse of police.** A category reserved for unwarranted demands on the police service. False reporting of crimes and repeated calling about issues citizens can handle themselves are examples. This is a category of last resort—for use when the sole harm stemming from the behavior is the expenditure of police resources and when none of the other categories fit.

The table shows the full classification. A problem is classified by putting it in the cell where the appropriate column intersects with the appropriate row. So, for example, the 2001 Tilley Award winner dealt with glass bottle injuries around pubs, a conflict-recreational problem (A). Officers in San Diego had to deal with repeat fraudulent calls of gang member threats at a convenience store (B). Notice how this differs from the 2003 Goldstein Award runner-up, addressing stores selling alcohol to minors in Plano, Texas (C). The 2002 Goldstein Award winner dealt with motor vehicle accidents involving migrant farm workers, an endangerment/public ways problem (D). The 1999 Goldstein Award winner dealt with litter and vagrancy, a public way/incivility problem (E). Consider the difference between a problem of street corner drug sales (F) and a robbery/retaliatory shooting problem stemming from disputes between the dealers (G). These two problems overlap, but they are not the same.

Though most problems fit into a single cell, on occasion a problem might involve multiple behaviors or environments. For example, the Staffordshire (England) Police had a problem created when protesters occupied abandoned buildings along a construction right of way. These were open/transitional environments. The protests involved incivilities, but the tactics for occupying these buildings also posed a danger to the protesters. Thus, endangerment was another relevant behavior (H in the table). Though multiple types of behaviors or environments are sometimes needed, excessive use of multiple types can lead to imprecision.

By classifying problems, police agencies can compare separate problem-solving efforts that occur in the same environments and involve the same category of behavior. Are there common analysis issues or effective responses to these problems? Do analysis and response issues for problems of this type differ from other types of problems? Answering questions like these can improve problem solving as well as problem-solving training and help us increase our understanding of what might work for different types of problems in different types of environments.

Read more

Eck, John, and Ronald V. Clarke. 2003. "Classifying Common Police Problems: A Routine Activity Approach." In *Theory for Practice in Situational Crime Prevention,* edited by Martha Smith and Derek Cornish. Vol. 16 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_16/.

A classification scheme for common problems facing local police						
Environments	**Behaviors**					
	Predatory	Consensual	Conflicts	Incivilities	Endangerment	Misuse of police
Residential						
Recreational			A			
Offices						
Retail		C				B
Industrial						
Agricultural						
Educational						
Human service						
Public ways	G	F		E	D	
Transport						
Open/Transition				H	H	

16. Study the journey to crime

While the problem analysis triangle (step 8) identifies the three essential elements of crime, it does not explain how offenders find suitable targets. According to Marcus Felson, they do this in three main ways:

1. Through personal knowledge of the victim (your neighbor's son might know when you are away from your house)

2. Through work (a burglar working as a telephone engineer might overhear that you will be taking vacation next week)

3. Through overlapping "activity spaces"

The concept of activity spaces is central to crime pattern theory, which was developed by the Canadian environmental criminologists Pat and Paul Brantingham (see figure). They use the concept to describe how offenders find targets in the course of their daily routines. Starting with a triangle, they consider offenders going from home to work to recreation. Around each of these three nodes and along each of these three paths (excepting a buffer zone where they might be recognized), offenders look around for crime opportunities. They may find these a little way off the path, but they usually do not go far beyond the area they know. This is because it is easier to commit crimes in the course of their daily routine than by making a special journey to do so.

The Brantinghams also use the term "edges" to refer to the boundaries of areas where people live, work, shop, or seek entertainment. Some crimes are more likely to occur at these edges—such as racial attacks, robberies, or shoplifting— because this is where people from different neighborhoods who do not know one another come together. In an early study, the Brantinghams found that residential burglaries in Tallahassee, Florida, tended to cluster where affluent areas bordered on poor areas. Their explanation was that the affluent areas provided attractive targets to burglars from the poorer areas, but the burglars preferred not to venture too far into them because they were unfamiliar with the territory and might be recognized as not belonging there. They would also be more vulnerable because they would have further to travel with the proceeds of the crime.

The paths that people take in their everyday activities and the nodes they inhabit explain risks of victimization as well as patterns of offending. This is why the Brantinghams and other crime pattern theorists pay so much attention to the geographical distribution of crime and the daily rhythm of activity. For example, these researchers generate crime maps for different hours of the day and days of the week, linking specific kinds of crimes to commuter flows, school children being let out, store closing hours, or any other process that moves people among nodes and along paths. Pickpockets and some shoplifters seek crowds while other offenders pay closer attention to the absence of people. For example, the flow of people to work generates a counterflow of burglars to residential areas, taking advantage of the commuters' absence. The flow of workers home at night and at weekends produces a counterflow a few hours later of burglars targeting commercial and industrial sites.

Many studies have shown that the journey to crime is typically very short—offenders generally commit crimes within one or two miles of their homes. For example, Andy Brumwell, a crime analyst with the West Midlands Police, one of the United Kingdom's largest police forces, has recently completed an analysis of 258,074 crime trips made over a two-year period. He found the following:

- About half the journeys were less than a mile. (In most U.S. studies, the journeys might be a little longer because of lower population densities and greater access to vehicles.)

- Distance traveled varied with the offense. For example, shoplifters tended to travel further than many other kinds of offenders.

- Women traveled further than men, possibly because many committed shopliftings.

- Individual offenders varied considerably in crime trips. Some usually committed crimes in their local neighborhoods. Others traveled further, particularly when working with co-offenders.

- The youngest offenders committed crime very close to home, while those in their 20s traveled the furthest.

Susan Wernicke, a crime analyst with the City of Overland Park, Kansas, presented more detailed information on juveniles at the National Institute of Justice's 2000 National Crime Mapping Conference in San Diego, California. She showed that in Overland Park, the 11-year-olds arrested had committed crimes an average of 1.5 miles from home. This distance gradually increased with age and by age 17 was 2.7 miles. She attributed part of the increase to greater access to cars.

The journey to crime and the self-containment index

Andy Brumwell has developed the "self-containment index," which looks at the percentage of crimes in an area that is committed by offenders who also live in that area. A value of 100 indicates that local offenders are responsible for all the crimes, whereas a value of zero indicates that local offenders commit none of them. This value should be calculated when analyzing a local problem. Whether predators are local or come from a distance will have an influence on the type of situational crime prevention measures that could be successfully introduced. For example, closing streets in a particular neighborhood will only be effective if many of the offenders drive to the neighborhood to commit crime.

You can use the concepts of crime pattern theory to understand crime in your jurisdiction. You should try to piece together offender and offense patterns by finding nodes, paths, and edges. You can begin to distinguish between how offenders search for crime and when they find it by accident. You can find where offenders are absent and where they congregate in hot spots and think about the reasons for this (step 17). You will find that very local crime patterns tell the story. Thus a high-crime district will have some streets with no crime at all and some addresses which generate most of the problem. Residents may know it is fairly safe to walk down one street but not to walk down another. They may even choose one side of the street over the other. If residents know their local turf this well, what's to stop you from finding out about it? Crime pattern theory helps you do just that, and it will help to define a specific problem at the scanning stage and understand the contributory causes at analysis.

Read more

Brantingham, Patricia, and Paul Brantingham. 1993. "Environment, Routine, and Situation: Toward a Pattern Theory of Crime." In *Routine Activity and Rational Choice,* edited by Ronald V. Clarke and Marcus Felson. Vol. 5 of Advances in Criminological Theory. New Brunswick (New Jersey): Transaction.

Felson, Marcus. 2002. *Crime and Everyday Life.* Thousand Oaks (California): Sage.

Wiles, Paul, and Andrew Costello. 2000. *The Road to Nowhere: The Evidence for Travelling Criminals.* Home Office Research Study no. 207. London: Home Office. http://www.popcenter.org/tools/offender_interviews/PDFs/WilesCostello.pdf.

Brantingham crime pattern theory
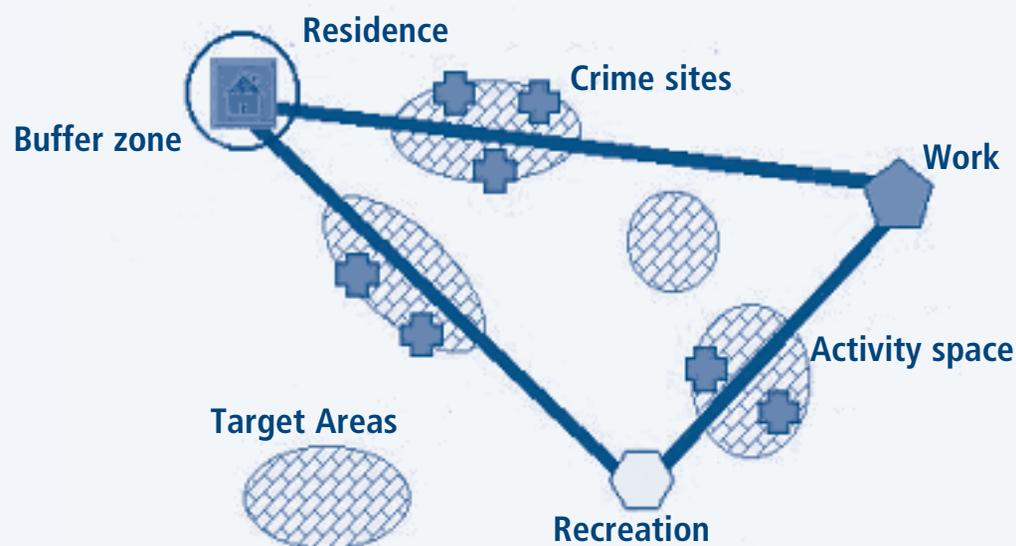
Kim Rossmo prepared this diagram to represent the Brantinghams' theory. It shows an offender's activity space (residence, work, recreation, and the travel routes between them), the buffer zone close to the home in which offenders do not usually commit crimes, and five potential target areas (for example, parking lots). Where an offender's activity space intersects a target area, this is where crimes happen (crosses). Note that in this example no crimes occur around the offender's workplace, because there are no suitable targets there. Also, there are two target areas with no crimes in them because this offender is not aware of those places.

Source: Rossmo, Kim. 2000. *Geographic Profiling.* Boca Raton (Florida): CRC Press.

17. Know how hot spots develop

Analysts often examine hot spots by use of geography alone. This can often be a useful starting point, but to reduce or eliminate the hot spot you must look deeper to understand why it is a hot spot. We focus on developing an understanding of the processes that create hot spots. Later, in steps 23 and 55, we examine how to analyze and map hot spots without letting your mapping software call the shots. As we have seen in previous steps, small areas—places—are critical to understanding many problems and developing effective responses. We, therefore, focus on hot spot places in this step. In later steps we will build on this idea to examine hot spot streets and areas.

There are three kinds of hot spot places, each with its own underlying causal mechanisms:

1. **Crime generators** are places to which large *numbers* of people are attracted for reasons unrelated to criminal motivation. Providing large numbers of opportunities for offenders and targets to come together in time and place produces crime or disorder. Examples of generators include shopping areas, transportation hubs, festivals, and sporting events. The large number of crime or disorder events is due principally to the large number of place users and targets.

2. **Crime attractors** are places affording many criminal opportunities that are well known to offenders. People with criminal motivation are drawn to such locales. In the short run, offenders may come from outside the area, but over longer time periods, and under some circumstances, offenders may relocate to these areas. Prostitution and drug areas are examples. Some entertainment spots are also well known for allowing deviant activity. Such places might start off being known only to locals, but as their reputation spreads increasing numbers of offenders are drawn in, thus increasing the number of crime and disorder events.

3. **Crime enablers** occur when there is little regulation of behavior at places: rules of conduct are absent or are not enforced. The removal of a parking lot attendant, for example, allows people to loiter in the parking area. This results in an increase in thefts from vehicles. This is an example of an abrupt change in place management. Sometimes place management erodes slowly over time,

leading to problem growth. Crime enablers also occur with the erosion of guardianship and handling. For example, if parents attend a play area with their children, they simultaneously protect the children (guardianship) and keep their children from misbehaving (handling). If parenting styles slowly change so that the children are increasingly left to themselves, their risk of victimization and of becoming offenders can increase.

Patricia and Paul Brantingham suggest that areas can be crime neutral, i.e., they attract neither offenders nor targets, and controls on behaviors are adequate. These areas tend to have relatively few crimes, and the crimes tend to be relatively unpatterned. For this reason, crime-neutral areas seldom draw police attention. Though they seldom require crime analysis, they are important because they provide a useful comparison to the other types of areas. Comparing crime-neutral areas, for example, to a hot spot can help identify the differences that create the troubles in the crime generator, crime attractor, or crime enabler. Case-control studies (step 32) are useful for this purpose.

In summary, when a crime or disorder hot spot becomes a greater problem, it is generally because the number of targets has increased, the number of offenders taking advantage of the hot spot has increased, or the level of control being exercised at the site has declined. Often, all three are at work. Shoppers might increase in an area, for example, due to new roads. This might lead to increased thefts as offenders take advantage of the new theft opportunities. Successful offending might attract new offenders. Increased offending might cause the number of shoppers to decline. This removes guardianship (shoppers). But it has another effect. It could reduce place management as the resources of the businesses decline. So, a problem that started out as a crime generator evolved into a crime attractor and then into a crime enabler.

We can compare numbers and rates to diagnose which of these mechanisms may be operating. Dividing the crimes in question by the number of possible crime targets creates rates (step 27). This is often expressed as the number of crimes per 100 targets available. So, for example, if a parking lot has 15 car break-ins during a year, and the lot contains 150 spaces and operates at near capacity, its break-in rate is 15/150 or .1. This translates to 10 break-ins per 100 spaces

per year. Note that this analysis is only useful if the lot is operating near capacity. If only 50 spaces are used on most days, then the rate is three times as high (15/50=.3 or 30 break-ins per 100 spaces per year).

Table 1 illustrates the differences in ranking the importance of hot spots depending on whether numbers or rates are used. Place A is the hottest spot in terms of numbers but second in terms of rates, and place C goes from third-hottest to first- when one switches from numbers to rates.

Let's look at how hot spot mechanisms generate indicative combinations of numbers and rates. Crime generators have many crimes, but as their number of targets is high, they have low crime rates (place A in table 1). Crime attractors also have many crimes, but as they have relatively few targets, their crime rates are high (place B). Crime enablers, with their weakened behavior controls, tend to be unattractive to targets. However, those few available targets have high risks. So a place with few crimes but a high crime rate suggests a crime enabler (place C). Finally, the number of crimes at crime-neutral locations will be low, so even if the number of targets is not particularly great, their crime rate will also be low (place D). Table 2 summarizes these relationships.

The rankings of numbers and rates are relative, so this process is useful for comparison purposes. And there may be multiple mechanisms operating. Low behavioral controls (enabler) may also attract offenders (attractor), for example. Nevertheless, such comparisons provide an early indicator of how to proceed and establish hypotheses for later examination (see step 20). Such analysis will help suggest the types of responses that could be effective. This is summarized in table 3.

Read more

Brantingham, Patricia, and Paul Brantingham. 1995. "Criminality of Place: Crime Generators and Crime Attractors." *European Journal on Criminal Policy and Research* 3(3):1–26.

Table 1. Numbers and rates

Place	Crimes	Targets	Rate	Per 100 targets
A	148	1,795	.082	8
B	341	898	.350	35
C	117	243	.481	48
D	28	638	.044	4

Table 2. Diagnosing hot spot mechanisms

	Number	Rate
Crime generators	High	Low
Crime attractors	High	High
Crime enabler	Low	High
Crime neutral	Low	Low

Table 3. What to do about worsening hot spots

Hot spot type	Cause	Type of response	Questions to answer
Crime generator	Many unprotected targets	Increase protection	In what circumstances are targets vulnerable? How can vulnerability be changed?
Crime attractor	Attracts offenders	Discourage offenders from coming	What is attracting offenders? How can this be changed?
Crime enabler	Erosion of controls	Restore guardianship, handling or place management	Who could control behavior? How can they be encouraged to exert controls?

18. Learn if the 80–20 rule applies

A very important principle of crime prevention is that crime is highly concentrated on particular people, places, and things. This suggests that focusing resources where crime is concentrated will yield the greatest preventive benefits. These concentrations (dealt with in more detail in later steps) have attracted labels that are becoming well known to most crime analysts:

- **Repeat offenders.** In Wolfgang's famous Philadelphia cohort, about 5 percent of all offenders in the study were responsible for more than 50 percent of the crimes.

- **Repeat victims.** According to the British Crime Survey, repeat victims (just over 4 percent of all victims) endure 40 percent of the crimes reported in the survey (see step 29).

- **Hot spots.** In the landmark paper that put this concept on the map, so to speak, Lawrence Sherman and colleagues found that 6 percent of the addresses in Minneapolis accounted for 60 percent of the calls for police service.

- **Hot products.** Annual data produced by the Highway Loss Data Institute show that theft claims for some automobile models are as much as 30 times greater than for other cars (see step 31).

- **Risky facilities.** In Danvers, Massachusetts, three out of 78 stores (5 percent) accounted for 55 percent of shoplifting incidents reported to the police (see step 28).

This kind of concentration is not peculiar to crime and disorder but is almost a universal law. A small portion of the earth's surface holds the majority of its life. Only a small proportion of earthquakes cause most of the earthquake damage. A small proportion of the population holds most of the wealth. A small proportion of police officers produce most of the arrests.

This phenomenon is commonly called the 80–20 rule, where in theory 20 percent of some things are responsible for 80 percent of the outcomes. In practice, it is seldom exactly 80–20, but it is always a small percentage of something or some group involved in a large percentage of some result. The table shows this rule in practice. It reports an analysis made by Stacy Belledin of construction site thefts and burglaries for 55 homebuilders in Jacksonville, Florida. Eleven of the builders (20 percent of the group) experienced

between them 85 percent of all the thefts and burglaries at construction sites reported to the Jacksonville Sheriff's Department between January and September 2004.

In investigating any problem, you should therefore always ask if the 80–20 rule applies. A simple six-stage procedure shows how to answer this:

1. Make a list of the people, places, or products with a count of the number of events associated with each of these.

2. Rank order them according to the number of events associated with each—most to least.

3. Calculate the percentages of the events each person, place, or product contributes. In the table, there are 386 incidents of theft and burglary. Sixty of these incidents (15.5 percent) occurred at construction sites owned by builder 1.

4. Add up the percentages of incidents starting with the most involved person, place, or product (or in this example, home builders).

5. Add up the percentages of the people, places, or products (in our example, the cumulative percentage of home builders in column 5).

6. Compare the cumulative percentages of people, places, or products (column 5) to the cumulative percentage of outcomes (column 4). This shows how much the most involved people or places contribute to the problem.

These kinds of calculations can be very helpful at the scanning stage in directing preventive effort. Thus, in the Jacksonville example, just five builders experienced more than 50 percent of the incidents. In theory, focusing preventive action on these five builders, rather than on the total group of 55, could be a very efficient strategy for reducing the city's overall problem of theft and burglaries in construction sites.

At the analysis stage, these kinds of tables can help in determining if there are important differences among people, places, or products at the top and those at the bottom of the list. In our example, Stacy Belledin found that an approximate measure of the numbers of homes built correlated fairly well with the numbers of thefts and burglaries experienced by each builder, but it did not explain all the differences in risk. Other possibly important sources of these differences could be the neighborhoods where builders were operating, their police reporting practices, and their standard security precautions.

Reported thefts and burglaries at construction sites—
55 home builders, Jacksonville, Florida, January – September 2004

Column 1 Home builder	Column 2 Incidents	Column 3 % of incidents	Column 4 Cumulative % of incidents	Column 5 Cumulative % of builders
#1	60	15.5	15.5	1.8
#2	39	10.1	25.6	3.6
#3	38	9.8	35.5	5.5
#4	34	8.8	44.3	7.3
#5	34	8.8	53.1	9.1
#6	31	8.0	61.1	10.9
#7	29	7.5	68.7	12.7
#8	26	6.7	75.4	14.5
#9	19	4.9	80.3	16.4
#10	11	2.8	83.2	18.2
#11	8	2.1	85.2	20.0
#12	7	1.8	87.0	21.8
#13	7	1.8	88.9	23.6
#14	6	1.6	90.4	25.5
#15	5	1.3	91.7	27.3
#16 3 builders, 4 incidents	12	3.1	94.8	32.7
#17 3 builders, 3 incidents	9	2.3	97.2	38.2
#18 1 builders, 2 incidents	2	0.5	97.7	40.0
#19 9 builders, 1 incident	9	2.3	100	56.4
#20 24 builders, 0 incidents	0	0.0	100	100
55 builders	**386**	**100***	**100***	**100***

Numbers may not add up to exactly 100 percent because of rounding.

80–20
rule applies

19. Research your problem

19

Other police agencies might already have dealt with the problem you are tackling, or researchers might have studied it. You could save a lot of time by finding out how they analyzed it and what they did—in particular which responses seemed to be effective and which did not. Studying the efforts of others can provide you with useful hypotheses to test on your problem (step 20).

Begin with the Problem-Oriented Guides for Police (POP Guides) available online at www.cops.usdoj.gov and www.popcenter.org. Each guide summarizes the research on a particular problem and discusses ways of responding to it. (The online versions of the guides include links to source materials that are not available with the print versions.) New guides are continually being produced, but if there is not one on your problem, look for related guides. For example, there is presently no guide on drug dealing in public housing, which might be the problem you are tackling. However, guides are available on "Drug dealing in privately-owned apartment complexes" and "Open-air drug markets," and reading them could be helpful.

Useful websites

To expand your search, visit the websites listed below. Don't be tempted to skip those from Australia and the United Kingdom, because problem-oriented policing is widely practiced in those countries and the crime problems are similar to those here. In fact, crime in San Francisco may be more like that in Sydney, Australia, than in a small town in Louisiana or Tennessee.

- **Center for Problem-Oriented Policing** (www.popcenter.org). Apart from the POP Guides, the web site also contains hundreds of reports of problem-oriented projects submitted over the years for the Goldstein and Tilley Awards. The web site's search engine allows you search these projects by topic, and you can read and download them.

- **NCJRS Abstracts Database** (abstractsdb.ncjrs.gov). Only a small proportion of the abstracts on this huge database deal directly with policing, but it might contain material useful to you. Abstracts are sometimes linked to the full text of the article or report, which you can

download. In other cases, you can ask to borrow a copy. This service is free and efficient—it generally takes no more than two to three weeks to receive the material.

- **The Home Office, United Kingdom** (www.homeoffice.gov.uk). The Home Office, roughly equivalent to the U.S. Department of Justice, undertakes and sponsors excellent research on police topics. Start with a "quick search" using the search box on the home page. A summary is given for each entry. Clicking on this will take you to the full text.

- **Crime Reduction Website, Home Office** (www.crimereduction.gov.uk). Browse the "toolkits" and "mini-sites," which provide practical guidance in dealing with many crimes including robbery, residential burglary, domestic violence, street crime, and victimization of college students.

- **Australian Institute of Criminology** (www.aic.government.au). Begin searching this web site from the opening page. A short description is provided of each entry yielded by the search. You can get a fuller description by clicking on the title. Full text downloads are available of many of the documents.

Other useful resources

- **Google.** If the web sites yield little of value, try googling the problem. Google is considered the premier search tool on the Internet. To enter a query, just type in a few descriptive words and click on the search button for a list of relevant web pages. These are listed in order of importance as calculated by the number of links to the site. Narrowing your search is as simple as adding more words to the search terms that you have already entered. Your new query will return a smaller subset of the pages found for your original too-broad query.

- **Other police departments.** If you find that other police departments have tackled the same problem as yours, try calling them. Try to speak to the crime analysts or officers originally involved in the project. Unless a report is available, do not rely too heavily on what you are told, because memory is notoriously unreliable.

- **Local faculty.** Particularly when your local college has a criminal justice program, you might obtain useful advice from a faculty member. Learn about faculty interests from the college web site before attempting to contact anyone. For anything more than an hour or so of consultation, the faculty member might expect compensation, although some state universities consider assistance to government agencies as part of their faculty's regular service mission.

Scanning academic articles

Most academic articles begin with a short abstract. If this looks interesting, read the summary, discussion, and conclusions. If these also seem useful, scan the literature review at the beginning of the article. You can usually skip the methods sections dealing with data, analysis, and results. Even if the article is not directly relevant, you might still find useful material listed in the references.

- **National experts.** If you repeatedly see an expert's name during your search, try e-mailing that person for advice. Ask only for specific information that the expert can provide quickly. When asking for references, list those that you have already found, which will let the expert see whether you have missed anything important.

- **Interlibrary loan.** Most large public libraries and college libraries subscribe to this service, which allows them to obtain books and articles that you might need from other libraries. You must complete a form, which the library will supply, and expect to wait about two weeks for the material to arrive.

- **Criminal Justice Abstracts (CJA).** Online access to CJA is a vital resource that you will usually find only at colleges with a criminal justice program. Try to persuade your department to subscribe to it. It covers the major journals, books, and reports in the field. It provides greater coverage of the academic literature than NCJRS Abstracts, though the latter provides more coverage of government research and professional magazines.

Limitations of the information

Your best sources of information are likely to be (1) articles by researchers who have studied the problem you are facing and (2) reports of police projects dealing with the problem. However, both have their limitations, as follows:

- Most criminologists are more interested in crime and delinquency in general than in specific forms of crime. They are also more interested in distant causes of crime, such as social disadvantage and dysfunctional families, than the near causes of a problem, such as poor security or lack of surveillance. So even when you find academic articles dealing with your problem, you might find the causes they identify help little in developing an effective response.

- Unless your problem is very common, do not expect to find many relevant police projects. Be skeptical about claims of success unless supported by evaluative data. Even projects that have received Goldstein or Tilley awards may not have been well evaluated. Be warned also that a response that worked in a particular town or neighborhood might not work in yours because of specific circumstances that make your situation different. However, past police experience of dealing with the problem is always an important source of ideas about what might be helpful in your situation.

If you need more detailed information for a response (for example, CCTV surveillance), returning to your computer and the library again should let you find the facts you need and enable you to profit from the experience of others.

Read more

Clarke, Ronald, and Phyllis Schultze. 2004. *Researching a Problem*. No. 2 of Problem-Oriented Guides for Police: Problem Solving Tool Series. Washington, DC: Office of Community Oriented Policing Services. http://ric-zai-inc.com/ric.php?page=detail&id=COPS-W0744.

Identifying responses

Summarize the responses you identify by constructing a table like that found in the POP Guides, with one row for each response and five columns as below:

	Response	Source	How it works	Works best if...	Considerations
1					
2					

20. Formulate hypotheses

Whenever we confront some new and perplexing crime pattern, we form hypotheses about its causes, often based on incomplete information. Experience and theory are good sources of hypotheses. You should (1) clearly state your hypotheses, (2) not be wedded to them, and (3) use data to objectively test them. Expect all hypotheses to be altered or discarded once relevant data have been examined, because no hypothesis is completely right. For this reason, it is often best to test multiple conflicting hypotheses.

A set of hypotheses is a roadmap for analysis. Hypotheses suggest types of data to collect, how this data should be analyzed, and how to interpret analysis results. If you were investigating drinking-related assaults in bars, you might begin with the question, "How many bars are problem locations?" Based on the 80–20 rule (step 18), you would state the hypothesis that some bars will have many fights, but most will have few or none. You would then test this hypothesis by listing the licensed drinking places and counting the number of assault reports at each over the last 12 months.

If your hypothesis was supported, you might ask the question, "What is different about the bars with many fights compared to the bars with few assaults?" The concept of risky facilities (step 28) would help you form a set of three hypotheses:

1. Risky bars have more customers.

2. Risky bars have features that attract assaulters.

3. Bar staff in risky bars either fail to control behaviors, or provoke fights.

You can test these hypotheses by gathering data on the number of customers at high- and low-risk bars, analyzing the number and rate of assaults per customer, observing the interactions of people at troublesome and trouble-free bars, and interviewing staff and customers.

If your first hypothesis was contradicted by the data and you found that there was no great difference in numbers of assaults across drinking establishments, then you might ask the question, "Why are so many bars troublesome?" This suggests another hypothesis: It's a perception problem; the

city has about as many bar assaults as other comparable cities. This hypothesis suggests that you will need data from comparable cities.

If, after you collected the relevant data, you found that your city has an abnormally high number of problem bars, you might ask the question, "What is common to most bars in the city that produces a large number of assaults?" One hypothesis is that it is the way liquor licenses are dispensed and bars regulated. Another hypothesis is that there is something about the nature of bar customers in your city. Testing each would require you to collect relevant data and assess the validity of the hypothesis.

Paralysis by analysis

The lack of explicit hypotheses can lead to "paralysis by analysis"—collecting too much data, conducting too much analysis, and not coming to any useful conclusion.

Notice how the questions and hypotheses structure the analysis. Test results—positive or negative—reveal new, more specific questions. The objective is to start with broad questions and hypotheses and, through a pruning process, come to a set of highly focused questions that point to possible responses.

Hypotheses suggest the type of data to collect. In the bar assaults example, the test of each hypothesis requires specific data. Sometimes the same data can test multiple hypotheses (as is the case with choosing among the three alternative explanations for risky bars). Often a variety of data is required to select among alternative hypotheses (as is the case with the last set of hypotheses). The more specific your hypotheses, the more focused your data collection will be. This is why it is more important to have a clear hypothesis you personally dislike than an unclear hypothesis you approve of or, worse, no hypothesis at all.

Hypotheses can help direct the analysis of data. Every clear hypothesis suggests a pattern of data that you should be able to observe if the hypothesis is correct. In the example above, the hypotheses derived from the concept of risky facilities

can be tested using a simple analytical procedure. If a bar is a crime generator, then you should see a high number of assaults and a high number of customers, but a low assault rate (see step 17). Failure to find this pattern suggests the hypothesis is wrong. So it is important to have a clear idea of what you should observe if your hypothesis is correct and what you should observe if your hypothesis is wrong (see third column of the table in the sidebar). If you cannot do this, then this is an indicator that your hypothesis may be too vague.

Hypotheses help interpret the analysis results. Let's assume that the analysis of bar fights showed that a few bars had most fights and that observations of the high- and low-risk bars indicated that the security staff of the risky bars provoked fights. This immediately suggests a possible avenue for intervention. In short, the validity of a hypothesis must make a difference. That is, if the hypothesis is true, you will take a different decision than if it is false. If you will make the same decision regardless of the test results, then the hypothesis and its test are irrelevant.

In summary, hypotheses are important for guiding analysis. To formulate hypotheses you need to ask important questions then create simple and direct speculative answers to these questions. These answers are your hypotheses. These speculations must be bold enough that they could be wrong, and there must be a way of showing whether they are right or wrong. If possible, create competing hypotheses.

Hypothesis formation is a useful group exercise, as it allows participants with contrary views to put their perspectives on the table in a way that allows clear and objective tests. In this way, participants contributing invalid hypotheses make substantial contributions to the analysis of the problem. If each hypothesis is linked to a potential solution, the test of these hypotheses simultaneously directs attention to feasible responses and rules out ineffective approaches.

Questions, hypotheses, and tests		
Question	**Example hypothesis**	**Possible test**
Why is this place risky?	It is due to a large number of targets being available.	Count the targets at the location and calculate the crime rate. Compare this rate to rates for the surrounding area. If the risky place has a higher rate, the hypothesis is false; if it is about the same or lower, then the hypothesis is true.
Why are there more car thefts in the problem area than in nearby areas?	Residents park their cars on the street, unlike residents of other areas.	If the problem area has similar or lower on-street parking rates than the others, reject the hypothesis. If higher, accept it.
Why did the theft of copper piping from new construction suddenly increase?	A new owner bought a nearby scrap metal dealership.	Compare the thefts of piping before and after the change in owners. If the theft rate is the same before and after, or the trend in thefts was already going up before the change, then the hypothesis is probably false. If otherwise, the hypothesis appears reasonable.

21. Collect your own data

In the course of your routine analytic work, you probably use mainly crime incident and arrest data, but for problem-oriented projects, you will need to use a much wider array of data. For example, calls-for-service data could give you a better handle on the amount of drug dealing at troublesome locations than arrest data. And data kept by the city and by businesses could be helpful in analyzing problems of vandalism or shoplifting, both of which are poorly measured by police reports. But for most problem-oriented projects, you will find it necessary to go into the field—to use research terminology—and gather data yourself. For example, you and your project team might have to make systematic observations of the environmental features of crime sites, you might have to survey victims, and you might have to interview offenders or persuade officers to do this for you. The need for your own data collection can arise at any one of the four stages of SARA, as the following examples show:

- Ronald Clarke was involved in a project focused on vehicle-related thefts in downtown parking lots in Charlotte, North Carolina. It turned out that the city did not have up-to-date maps showing the location of every parking lot because new lots were continually being opened on the sites of demolished buildings and new buildings were being erected on the sites of former lots. Consequently, police officers working on the project had to survey the entire downtown area to make a complete inventory of lots. Later in the project, officers counted the spaces in each lot so that the risks of theft per parking slot could be calculated. This enabled the lots to be ranked for their risks of theft, from highest to lowest. Then, in order to explain these variations in risk, officers collected detailed information about the security of each lot, including the adequacy of its lighting and fencing and the use of attendants or security patrols.

- In another Charlotte project focused on thefts from construction sites, two police officers working on the project, Dan Cunius and Eric Rost, regularly checked each house in the project to make sure that builders were implementing the agreed-upon preventive measures. By the time that the study was completed, the officers had completed a total of 8,050 separate checks on individual houses—a truly enormous data-gathering exercise conducted in all kinds of weather.

- In a report for the National Law Enforcement & Corrections Technology Center, Karin Schmerler, a public safety analyst in Chula Vista, California, has collected some other examples of primary data collection in projects submitted for the Goldstein Award for Excellence in Problem-Oriented Policing, including the following:

  – For a project that reduced prostitution-related calls for service in Buffalo, New York, the police conducted 15 in-depth interviews with prostitutes and 116 surveys of customers. The information obtained was used to garner community support for increased enforcement against johns and increased drug treatment and court options for prostitutes.

  – In the course of a California Highway Patrol project that reduced deaths by 35 percent on a deadly stretch of rural roads, a 30-member task force spent five hours by bus inspecting 20 miles of roadway. A key recommendation made by the task force was to adopt a 24-hour "headlights on" policy.

  – In a project to reduce school bullying in South Euclid, Ohio, police conducted focus group interviews with students to determine where and when they felt unsafe. The students identified hallways and class changeovers as being high-risk times and places for bullying, which the police confirmed by looking at school incident records. Based on these findings, class changeover times were staggered and teachers worked in teams to increase supervision of hallways. This led to a 60 percent drop in bullying in hallways.

In her article, Karin Schmerler points out that even ad hoc data collection can be useful—she gives the example of a quick visit to a frequently targeted ATM to inspect the location and the lighting. In other cases, data collection might require the help of a local university in designing and conducting the exercise.

Be careful in collecting your own data

Problem-oriented policing makes many demands on you, but it does not require you to expose yourself to the risk of mugging or assault.

While you might resist collecting your own data because of the difficulties and time involved, it is sometimes essential for a problem-oriented project, and it always brings benefits:

- Getting into the field can give you an understanding of the problem that you would never get from sitting in front of your computer, however rich the data that you manipulate.

- Designing a data-collection instrument can force you to think very hard about the nature of the problem, about the kind of responses that might be effective, and about how best to evaluate your efforts.

- Involving police officers in data collection (and in the design of the exercise) provides a valuable opportunity to train them in the need for a rigorous, systematic approach in a problem-oriented project.

- Undertaking your own data collection gives you the opportunity to hone your research skills and be genuinely creative.

Read more

Schmerler, Karin, and Mary Velasco. 2002. "Primary Data Collection: A Problem-Solving Necessity." In *Advanced Crime Mapping Topics*. Denver: University of Denver.

Tabulating temporary tags

Matt White and Charles Dean, working in the Charlotte-Mecklenburg (North Carolina) Police Department, became convinced that many offenders were using forged temporary tags on their vehicles. These tags allowed the offenders to operate untaxed, uninsured vehicles for months or even years and made it safer for them to use the cars in committing other crimes. To build a case for reform of the temporary tag system, White and Dean undertook an evening's informal survey of two same-sized, contiguous neighborhoods in Charlotte—one high crime and the other low. The high crime area (Belmont, on the left of the map) had 6.4 times as many reported violent offenses in the 12 months prior to the survey and 5.6 times as many resident arrests as the low crime area (Plaza-Midwood). As expected, they spotted 12 cars (black dots on map) with temporary tags in Belmont and none in Plaza-Midwood. This was despite similar on-street parking in both neighborhoods and a higher proportion in Belmont of cars backed into driveways—whose tags are not visible to passing patrols.

Source: White, Matt, and Charles Dean. 2004. "Abuse of Temporary License Tags in North Carolina." In *Understanding and Preventing Car Theft*, edited by Michael Maxfield and Ronald Clarke. Vol. 17 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_17/.

22. Examine your data distributions

After collecting your data, you need to know what it is telling you. Suppose you collected incidents of assaults on taxi drivers. Are assaults concentrated among a very few drivers? Are the assaults concentrated on some days of the week or times of day?

To answer these questions, you need to look at the distribution of the data. The figure below displays the distribution of homicides across Cincinnati's 53 neighborhoods for a 36-month period. The horizontal axis shows the number of homicides in a neighborhood. The vertical axis shows how many neighborhoods had each of these numbers (so in the first column, 13 neighborhoods had zero homicides). Most neighborhoods had few homicides, but there is a long tail stretching to the right where a few neighborhoods have many homicides.

Often you need to summarize a distribution. There are two basic descriptions of distributions: the typical, or average, case and the variation, or spread, of cases.

**The average case.** The average can be calculated three ways:

1. **Mean.** This is the most common measure of average. The mean number of homicides in the Cincinnati neighborhoods is 3.7 homicides per neighborhood— calculated by dividing the 198 killings by the 53 neighborhoods.

2. **Median.** This is the value that divides the cases into two equal groups. Half the Cincinnati neighborhoods have two or more homicides and half have two or fewer.

3. **Mode.** This is the value representing the greatest number of cases. In this example, the mode is 0 homicides because the biggest group of neighborhoods have no homicides.

The spread of cases. There are three common methods to measure spread:

1. **Range.** This is most basic measure of spread. This is the lowest and highest value. In our example, the range is 0 to 27 homicides.

2. **Inner quartile range.** This measure looks at the lower and upper bounds of the middle 50 percent of the cases. In the Cincinnati example, the inner quartile range is one to five homicides. Half the neighborhoods fall into this bracket. Another 25 percent of the neighborhoods have one or no homicides and the last 25 percent have 5 or more homicides. To find the inner quartile range, rank the cases and divide them into four equal groups. The two middle groups are the inner quartiles. The inner quartile range is the lowest and the highest value of these two middle groups.

3. **Standard deviation.** This measure of spread indicates the mean difference from the mean of the distribution. The smaller the standard deviation, the smaller the average spread around the mean. The formula is rather tedious, but any spreadsheet or statistical software package can calculate it. Two thirds of the cases fall within one standard deviation on either side of the mean. In the Cincinnati example, the standard deviation is 5.2 homicides.

Frequency distribution of homicides in Cincinnati neighborhoods

Range 0 to 27 homicides
Mode=0 homicides
Inner quartile 1 to 5 homicides
Median=2 homicides
66.7% of neighborhoods within one std. deviation of mean (std. dev.=5.2)
Mean=3.7 homicides

Number of neighborhoods

Number of homicides
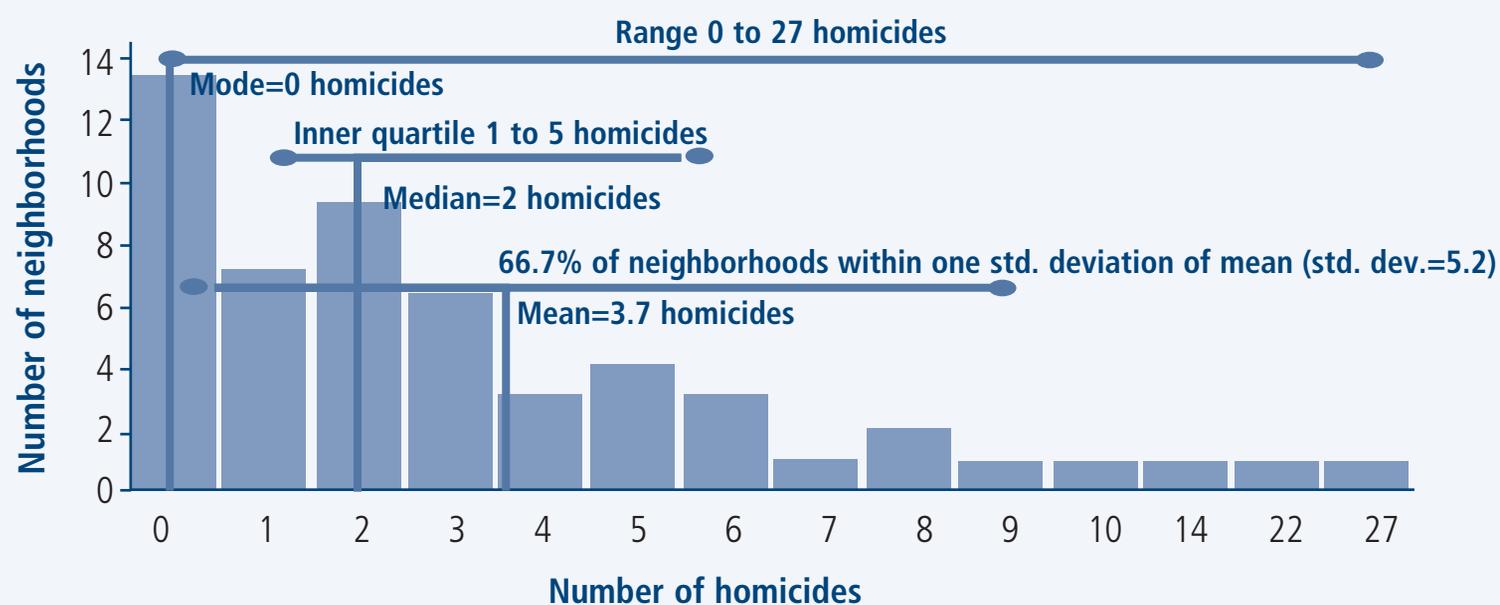
Which measures of typicality and spread are best depends on two characteristics of the data. The first is the symmetry of the distribution. In a symmetrical distribution, the shape on one side of the mean is mirrored on the other side. The mean equals the median in symmetrical distributions. If the value with the most cases is in the center, then the mode will be the same as the other two measures of average. But the mode need not equal the median or the mean. The distribution could have two modes, one on each side of the median. If the distribution is roughly symmetrical, the mean and standard deviation may be appropriate.

If the distribution is asymmetrical, then the mean and standard deviation should not be used. Use the median or the mode and the inner quartile or full range. In problem analysis, asymmetry is very common.

The second characteristic used to select measures of typicality and spread is the measurement scale used for the data. There are three common types of scales.

1. **Nominal scales** simply apply labels. Gender (male=1, female=2) is measured with a nominal scale because the numbers simply substitute for word labels, and the categories could be relabeled, male=2, female=1 without creating a problem. If your data is nominal, then only a mode is appropriate.

2. **Ordinal scales** rank cases as well as label them. An ordered list of Cincinnati neighborhoods, from most to fewest homicides, produces an ordinal scale (first, second, third, and so on through fifty-third). You cannot add and subtract, multiply and divide ordinal data. You can only determine if a case has a greater, lesser, or equal rank to another case. If the data is ordinal, neither the mean nor the standard deviation can be used. Use the median and inner quartile range.

3. **Ratio scales** allow you to add, subtract, multiply, and divide because the difference between each value is equal and there is a meaningful zero. The number of homicides in a neighborhood is measured with a ratio scale: the difference between 0 homicides and 1 homicide is the same as the difference between 26 homicides and 27 homicides, and 0 homicides has meaning. You can use a mean and standard deviation with this type of data.

Read more

Lane, David M. n.d.. HyperStat Online Textbook. Accessed November 4, 2014. http://www.davidmlane.com/hyperstat/index.html.

Types of data, their use, and their limitations

	Nominal	Ordinal	Ratio
Description	Names categories	Ranks & names categories	Has equal intervals between numbers, and zero is meaningful.
Example	0= not victim 1= victim *is as valid as* 0= victim 1= not victim	0= no crime 1= one crime 2= more than one crime	Number of crimes: 0, 1, 2, … (0= no crimes)
Scales to the right have all the properties of those to their left, plus their own properties (e.g., anything you can do with nominal and ordinal data you can do with ratio data, plus more).			
Allowable math	Same or not same	Greater, lesser, or equal	Addition, subtraction, multiplication, and division
Allowable average	Mode	Median and mode	Mean, median, and mode
Allowable spread	Range	Inner quartile range and range	Standard deviation and others
Comments	Used when dealing with categories (e.g., gender) and groups (e.g. chain stores, not chain stores).	Use when there is a natural ranking or order to categories (e.g., police ranks) but the differences between ranks is not always the same or unclear.	Use for percents, counts, and a host of other measures.

23. Diagnose your hot spot

When mapping crime, it is helpful to distinguish between acute and chronic hot spots (step 17). *Acute* hot spots show abnormal spikes in crime, which may decline naturally, while *chronic* hot spots have persistently higher crime levels than other areas and are unlikely to decline unless something is done. There are three basic forms of chronic hot spots, each of them linked to particular theories and types of responses.

1. **Hot dots** are locations with high crime levels. These show crime concentrated at facilities or at addresses of repeat victims (see steps 28 and 29). Multiple crime events at places are represented by dots.

2. **Hot lines** are street segments where crime is concentrated. These might occur, for example, if vehicles parked along particular streets suffer high rates of break-ins. Multiple crimes along street segments are shown with lines.

3. **Hot areas** are neighborhoods where crime is concentrated. Hot areas arise for a variety or reasons. Area characteristics may give rise to crime. Or a hot area may contain many separate and discrete problems. On maps, hot areas are shown as shaded areas, contour lines, or gradients depicting crime levels. Jerry Ratcliffe's hot spot typology (see sidebar) differentiates between two kinds of area hot spots:

   – Those that have a tightly grouped pattern of events

   – Those that have a relatively even spread of events over the hot spot area

The figure on the next page depicts these three forms of hot spots. Troublesome entertainment locations are shown as dots because the assaults are located at addresses. Vehicle break-ins, however, are along continuous street segments, so this concentration is shown as two intersecting lines. Finally, the graduated contours for the residential hot spot suggests that risk for break-ins is highest in one small area but declines as one goes away from the center. The dots within this graduated area depict repeat burglary locations.

- Clarifying the nature of your hot spot gives an inkling of response.

- Hot dots suggest changing the physical environment of particular places or changing their management. They also suggest intervening with high-risk victims.

- Hot lines suggest changing streets, paths, and other routes, or the environments along them.

- Hot areas suggest large-scale partnerships to change neighborhoods.

The table below shows how crime concentration is related to the way it is mapped and where the response is focused.

Analysis of hot spots should begin with places, then move to streets and finally to areas. Consider, for example, the problem of burned-out cars. Are they repeatedly found at specific addresses? If yes, then you should ask why these places are chosen instead of other nearby sites. If no, you should move on to examine streets. If you find street-level concentration, you should compare streets to find out why

Concentration, mapping, and action			
Concentration	**Hot spots shown as:**	**Action level**	**Action examples**
Places - at specific addresses, corners, or facilities	Dots	Facility, corner, address	Closed circuit television in a parking garage, changing the way alcohol is served in bars.
Victims	Dots	Victims' addresses	Helping victims prevent further crimes through target hardening.
Streets - along streets or block faces	Lines	Along paths, streets, and highways	Creating cul-de-sacs, changing traffic patterns, altering parking regulations.
Area - neighborhoods	Shaded areas	Neighborhoods, regions and other areas	Community partnerships, neighborhood redevelopment.

Types of hot spots

Hot lines representing thefts from vehicles along a side street parallel to an arterial route

One of four hot dots representing entertainment venues with a high numbers of assaults

A hot area represented as a gradient of risk for residential burglary

One of five hot dots showing repeat burglary locations
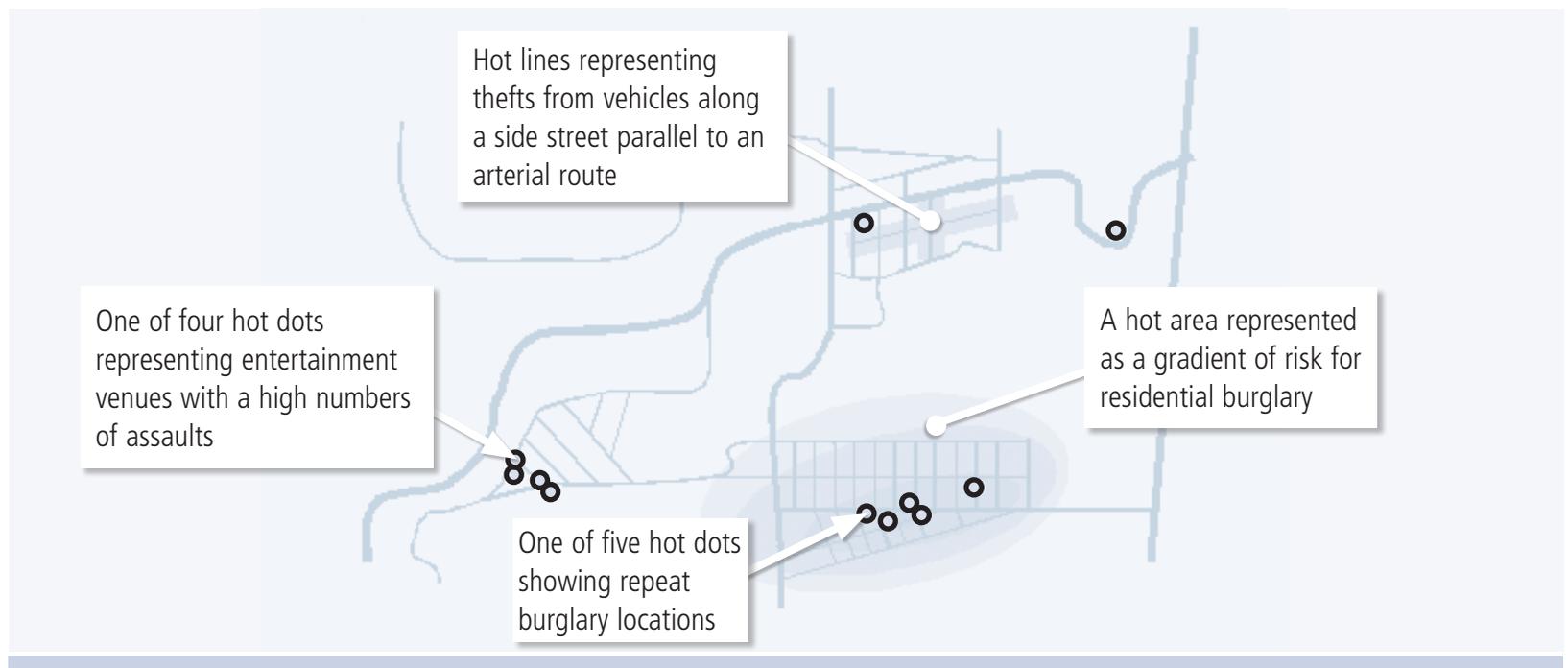
Ratcliffe's hot spot typology

Jerry Ratcliffe differentiates among three types of hot spots. He begins with a hot spot area and then examines the point pattern. If all events occur at the same location then the hot spot is a *hot point*. Hot points describe the same phenomena as hot dots. If the events are tightly grouped within the overall area, Ratcliffe calls this a *clustered* hot spot. Finally, if the events are spread relatively evenly across the hot spot area, he calls the hot spot *dispersed*. Clustered and dispersed hot spots are subcategories of our category of *hot area*. Ratcliffe's approach draws attention to the concentration of the events and requires the analyst to define the perimeter of the hot spot area prior to classifying the hot spot.

Source: Ratcliffe, Jerry. 2004. "The Hotspot Matrix: A Framework for the Spatio-Temporal Targeting of Crime Reduction." *Police Practice and Research* 5(1):5–23.

some attract burned-out cars and others do not. If there is little street-level concentration (i.e., crime is spread relatively evenly across many streets), then you should consider community concentration and compare high- and low-concentration neighborhoods. This approach assures a highly focused response.

In the figure, the hot burglary dots indicate repeat victims within the overall neighborhood problem. An area hot spot alone would not reveal this. Before proceeding further, you should determine if the area hot spot is largely due to the few repeat burglary spots. You can do this by treating each crime location as if it had only a single event and then looking at the area. If it is no longer hot, then the problem is driven by a few hot places. If the area is still hot, then these repeat burglary dots are fragments of an area concentration of burglaries.

Hot spot analysis can be a valuable tool early in the problem-solving process, but having discovered hot spots, you need to ask why some spots are hot and others are not. Stopping analysis after the discovery of hot spots can result in superficial analysis and the implementation of ineffective responses. If there is no geographical component to the problem, hot spot mapping has little utility and you must use other analytical approaches.

Read more

Eck, John, Spencer Chainey, and John Cameron. 2005. *Mapping Crime: Understanding Hot Spots*. Washington, DC: National Institute of Justice.

24. Know when to use high-definition maps

Conventional software is of little use when mapping crime in a downtown area, a college campus, a public housing project, or any site with many large buildings. This is because most buildings, however large, have only one street address, and crimes occurring anywhere in the building are assigned to that address. Mapping might therefore suggest that a particular building or facility has a crime problem, but this may only be because it is so large. When account is taken of the many people working in the building or using the facility, it could prove to be relatively safe. For example, George Rengert showed that a parking garage in central Philadelphia identified as an auto crime hot spot actually had a lower rate of auto crime than the surrounding streets, once account was taken of the large number of cars that could be parked in the facility.

In fact, many large buildings are not safe. In his devastating critique of 1960s American public housing, Oscar Newman showed that the taller an apartment building, the higher the rate of crime per 100 residents. He argued that very large building invited crime because residents did not know their neighbors and the design and layout of the buildings made it difficult for them to exercise any supervision of the public spaces, including corridors, elevators, and play areas. His ideas have since been developed into a set of principles—Crime Prevention through Environmental Design (CPTED)—for designing and laying out secure buildings and public spaces.

To understand why a particular building is insecure, crimes need to be divided into specific categories and their locations within the building need to be charted. This is where high-definition or 3-D mapping comes into play. Unfortunately, high-definition mapping is difficult and time consuming. It suffers from two principal problems:

1. Police records of crime rarely give the precise location of incidents within the building, though building managers or security departments can sometimes supply this information. When they cannot, special crime-recording procedures may have to be established for a period of time in order to obtain this information (step 21).

2. For new buildings, it may be possible to obtain plans in digitized format, which can make mapping easier. But when the building is old, it may be difficult to obtain up-to-date plans, so you may have to get these drawn.

In many cases, these problems will simply rule out high-definition mapping, but they can be overcome, as George Rengert and his colleagues showed in their study of crime on Temple University's campus in Philadelphia. They developed a high-definition GIS by combining mapping software with AutoCAD drawings of the campus. Features such as water pipes and electrical wiring were eliminated, and the maps were altered so that streets were represented as lines (with lines on either side representing sidewalks), while polygons were used to represent the footprints of buildings and the shapes of athletic fields and parking lots. Shrubbery, fences, lighting, and other physical features were also represented on the maps. Crimes recorded by the campus police were then plotted exactly where they occurred, allowing them to be related to environmental features such as poor lighting or a blind corner allowing the attacker to lie in wait.

Crime was mapped for the floors of each building and a picture of the horizontal arrangement of crime within the building was projected onto its ground floor footprint. Figure 1 shows the result for one of the buildings—Gladfelter Hall. Crime is distributed among all floors, with the exception of the 10th floor. The map also shows a clear cluster of crime common to most floors, the area closest to the bank of four elevators near the center of the building. This is where each academic department's fishbowl offices for secretaries and receptionists are located—fishbowls because they are surrounded by glass windows, which allow thieves to look into them to see if anyone is there and if anything is worth taking. The Department of Criminal Justice—Rengert's own department—has now installed blinds, which can be lowered in the evenings to prevent people seeing into the fishbowl.

Commercial software is already available that will produce photo-realistic city models, and technological developments such as 3-D laser imaging will simplify the production of computer maps like those of Gladfelter Hall. Meanwhile, when the number of incidents is small, good, clear drawings with the location of crimes clearly indicated can sometimes do just as well. Figure 2 is a plan of the Lisson Green public housing estate in London, drawn by Barry Poyner, showing the locations of robberies and purse snatches on the walkways connecting the buildings for two six-month periods: *before* any preventive changes were made and *after* four of

the buildings were fitted with call boxes. In effect, the call boxes closed access to the walkway system from the main street entrance. In this case, high-definition mapping assisted with the assessment of preventive action. But figure 2 also helped with diagnosis of the problem because it showed that robberies and purse snatches tended to occur on those parts of the walkway system that lacked surveillance from neighboring buildings or ground level.

Read more

Crowe, Tim. 1991. *Crime Prevention Through Environmental Design.* Applications of Architectural Design and Space Management Concepts. Boston: Butterworth-Heinemann.

Rengert, George, Mark Mattson, and Kristin Henderson. 2001. *Campus Security: Situational Crime Prevention in High-Density Environments*. Monsey (New York): Criminal Justice Press.

Figure 1. Schematic of Gladfelter Hall, Temple University Campus

Location of crimes plotted using a high definition geographic information system

Crime projected on building footprint

Crime on building floors
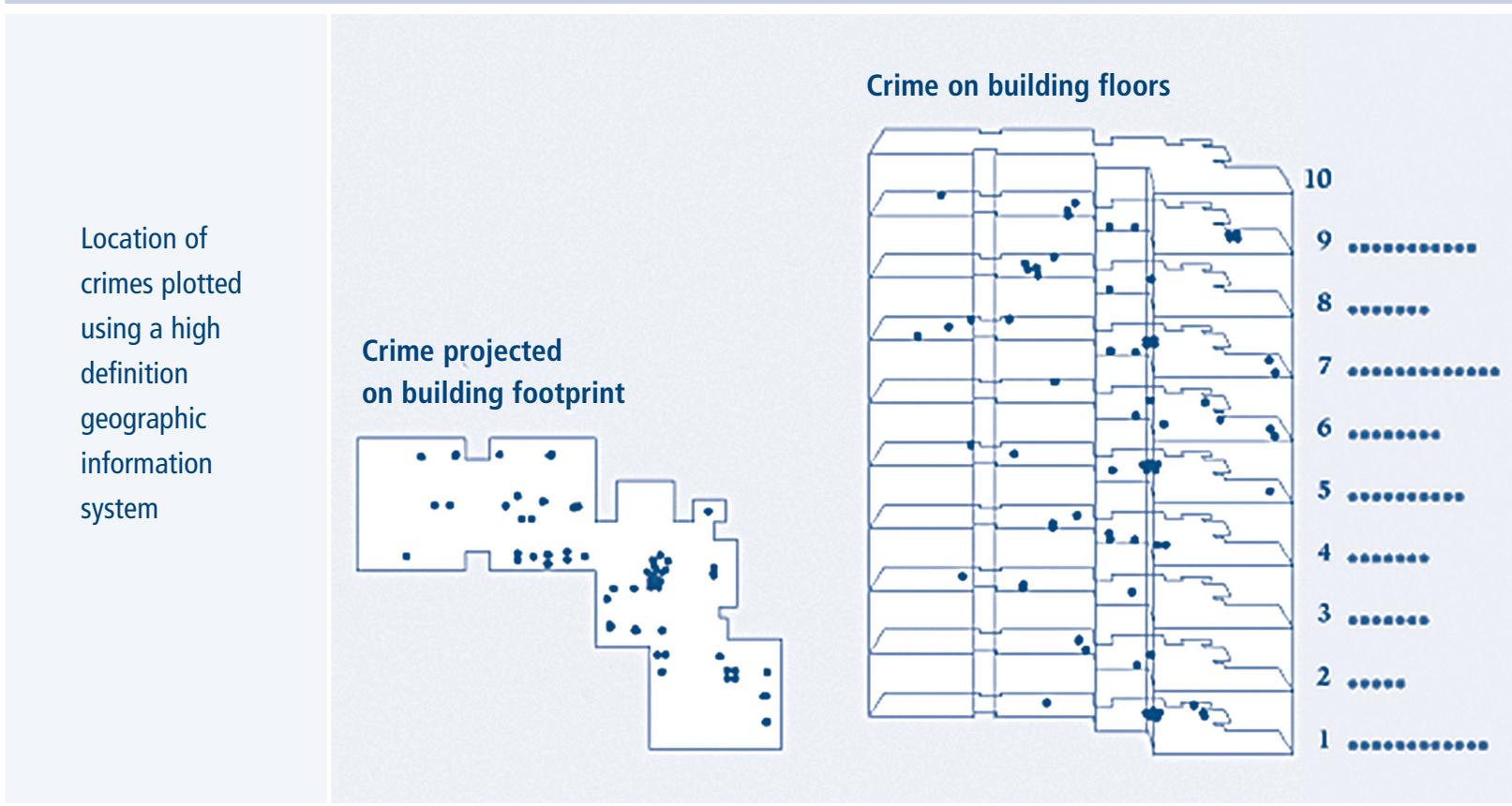
Figure 2. Locations of robberies and snatches on the walkway system on the Lisson Green Estate

Before Entry Phones

After Entry Phones

Housing blocks

Blocks fitted with entry phones

Walkways

Robbery or snatch

Elevator and stair towers
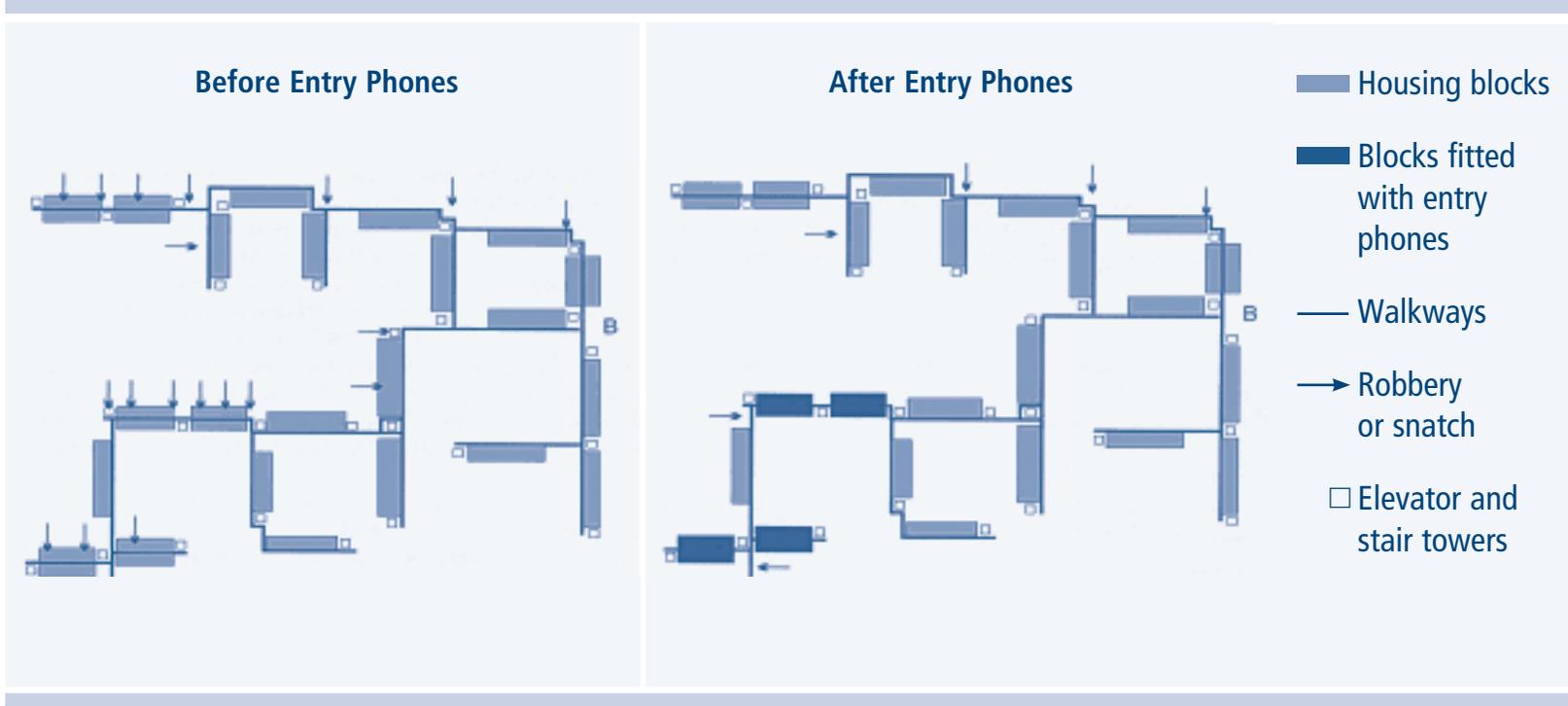
25. Pay attention to daily and weekly rhythms

Cycles of activities have tremendous influences on problems. The ebb and flow of vehicles caused by commuting and shopping rhythms, for example, change the number of targets and guardians in parking facilities. This, in turn, influences when vehicle thefts and break-ins are most frequent. Robberies of drunken revelers may be more likely around bar closing time on Fridays and Saturdays, because the number of targets is higher. In this example, two important rhythms concentrate problem activities. The first is the workday/weekend cycle that makes Friday and Saturday nights so popular for entertainment and recreation. The second involves the daily cycle of opening and closing of bars. In this step we will discuss short-term fluctuations occurring over hours and days. In step 26, we will look at longer time periods covering months and years.

Different facilities have different cycles of activities that can contribute to their associated problems. School rhythms are similar though distinct from job rhythms. Bus stops are influenced by the rhythm of commuting and shopping, but also by the more frequent coming and going of buses.

Charting the rhythm of crime or disorder events helps identify important activity cycles that may contribute to a problem. As shown in the figure below, calculate the mean (average) of the number of events occurring in each hour (or other time interval) over several days (bottom row), then plot the results (chart A). Chart B shows the percentage of the week's events occurring on each day. Because some days routinely have very different rhythms than other days, Rachel Boba recommends charting days and hours together (chart C). The result shows hot time periods throughout the week. Such charts are easy to produce; all three of these charts were created on a spreadsheet using standard graphing routines.

Temporal analysis is easiest when problem events are frequent. So temporal analysis will be more useful for common minor events like noise complaints and minor traffic accidents than for uncommon serious events like murder. If there are few events, then you can look at a longer period to collect more events. But if the problem changes in the longer period, the picture that emerges may be distorted or out of date.

Having reasonably exact times of occurrence helps temporal analysis. Contact crimes such as robbery, rape, and assault can be accurately pinpointed as victims can often describe when these crimes took place. Property crimes such as vehicle crimes, burglary, and vandalism are much harder to pin down because victims usually provide only a time range during which such crimes could have occurred. Though it is common to use the midpoints in these ranges to estimate the times crimes occurred, this can lead to distortion and should be avoided for long periods (e.g., more than eight hours).

Jerry Ratcliffe has also identified three forms of temporal clustering. First, events may be relatively evenly spread over the entire day. He calls this a diffused pattern. Second, focused patterns show clustering within distinct time ranges. Events clustered around rush hours follow focused patterns. Third, acute patterns are tightly packed within small periods. Disturbances immediately following bar closing time might be an example. Focused and acute patterns immediately suggest temporal cycles that should be investigated.

Though Ratcliffe developed his typology for daily patterns, the basic idea can be applied to weekly cycles. If no particular day of the week is routinely troublesome, this indicates a diffused weekly pattern. A cluster of days showing a marked increase in troublesome events indicates a focused pattern. Finally, if one or two days have a marked concentration of events, this indicates an acute pattern.

Read more

Boba, Rachel. 2005. *Crime Analysis and Crime Mapping: An Introduction*. Thousand Oaks (California): Sage.

Example of number of crime or disorder events charted by hour and day of the week

Day		Hour																							Mean by day
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mon	7	3	6	9	9	11	10	17	16	17	5	6	12	7	9	5	20	18	16	8	7	10	8	7	10.1
Tues	10	9	10	11	7	6	13	15	15	18	6	12	7	7	8	5	16	18	17	12	5	11	10	4	10.5
Wed	4	11	12	6	8	3	18	17	24	14	10	7	4	2	4	9	23	24	24	7	5	12	3	4	10.6
Thur	8	8	7	9	4	10	17	21	20	11	10	5	4	3	9	6	17	24	18	4	5	4	10	6	10.0
Fri	3	12	6	7	9	12	13	19	20	19	3	4	3	4	9	3	15	16	17	8	10	18	12	13	10.6
Sat	10	12	3	1	1	1	1	1	2	3	4	3	4	5	6	4	7	8	7	5	10	21	24	23	6.9
Sun	21	22	10	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3.1
Mean by hour	9.0	11.0	7.7	6.4	5.6	6.3	10.4	13.0	14.0	11.9	5.6	5.4	5.0	4.1	6.6	4.7	14.1	15.6	14.3	6.4	6.1	11.0	9.7	8.3	

Examining temporal rhythms

### Chart A. Mean number of crime or disorder events by time of day
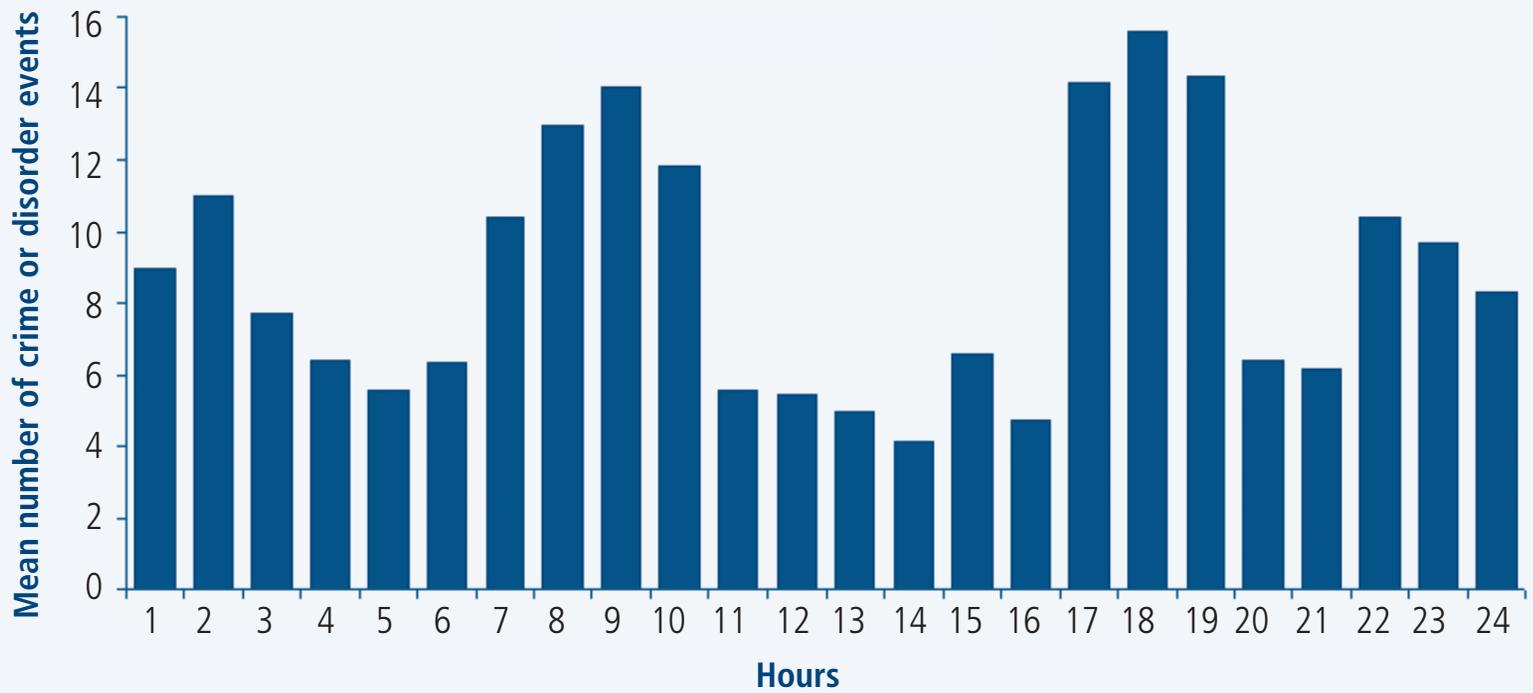
### Chart B. Percent of week's crime or disorder events by day
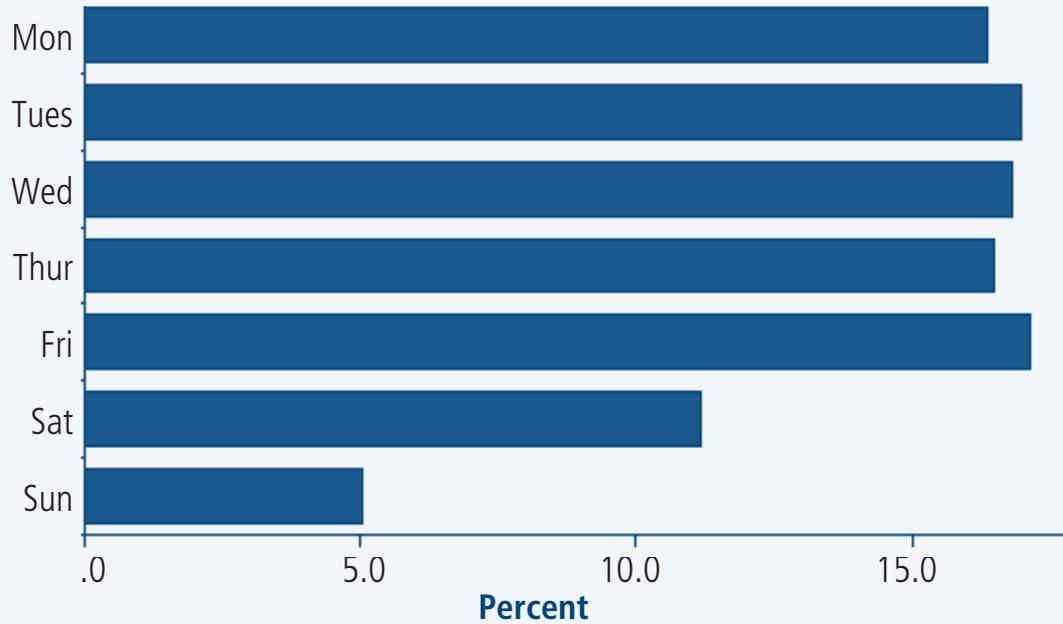
Chart C. Daily and hourly rhythms

Number of crime or disorder events

- 20-25
- 15-20
- 10-15
- 5-10
- 0-5
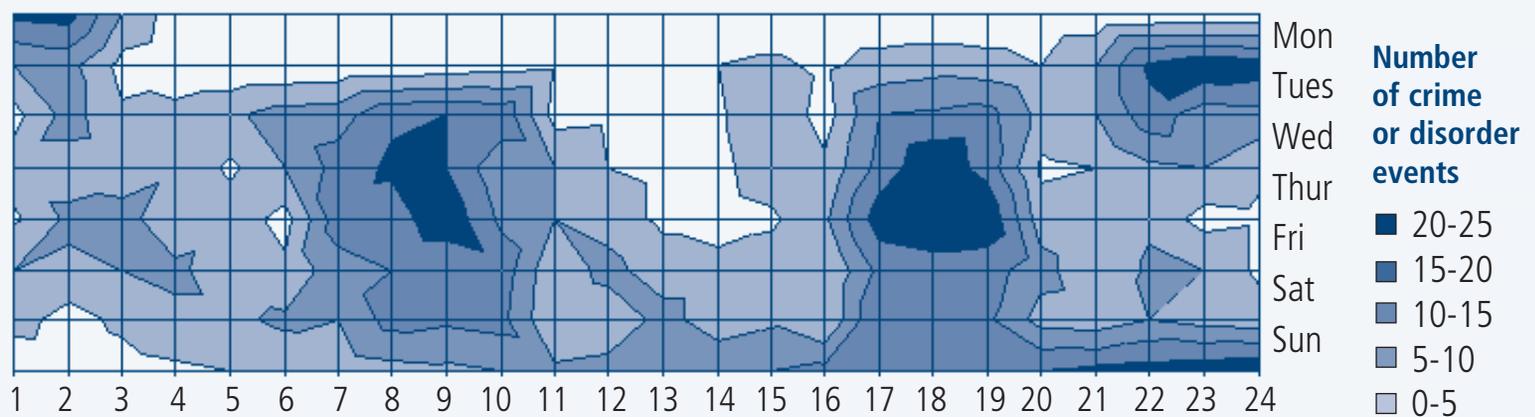
26. Take account of long-term change

Is your problem getting worse or better? Does it fluctuate regularly or randomly? To answer these questions, you need to study your problem by graphing either the number of events or a rate against time. A rate is typically the number of crime or disorder events divided by the number of targets at risk (step 27).

The time course of a problem can be divided into three basic components:

1. The overall trend, which may be obvious from visual inspection and which shows whether the problem is getting worse, getting better, or staying the same over a long period

2. Seasonal, daily, and weekly cycles

3. Random fluctuations that are caused by a large number of minor influences

4. Systematic study of the time course of crime is called "time series analysis."

Figure 1 shows homicides in Buffalo, New York. The dashed line through the middle of the chart shows the overall trend. It is virtually flat, indicating very little upward trend (though it is increasing slightly at about 1 homicide per 100 months).

May 2001 was a particularly bad month, and October and November of 2000 were particularly low months.

Throughout the 58 months there is considerable monthly variation, shown by the jagged peaks and valleys. Low frequency problems tend to have this characteristic, whereas problems with many events per time period often show smoother changes. These random fluctuations can hide systematic variation. One method for revealing a trend obscured by random variation is to use a moving average. This is called "smoothing." A three-month moving average was used in this example. The July value, for example, is the average of June, July, and August, while the August value is the average of July, August, and September. Notice that there is no data for the first and last months of the series because we do not have three months of data for those months. Moving averages fill in the valleys and knock off the peaks. Longer moving averages produce smoother graphs than shorter ones, but they can also hide useful information by making the graph too smooth.

Cycles can be detected by comparing the same months of the year (or same weeks of the month, or same days of a week, or same hours of a day, depending on the time periods you

Figure 1. Homicides in Buffalo, New York
January 2000 through October 2004
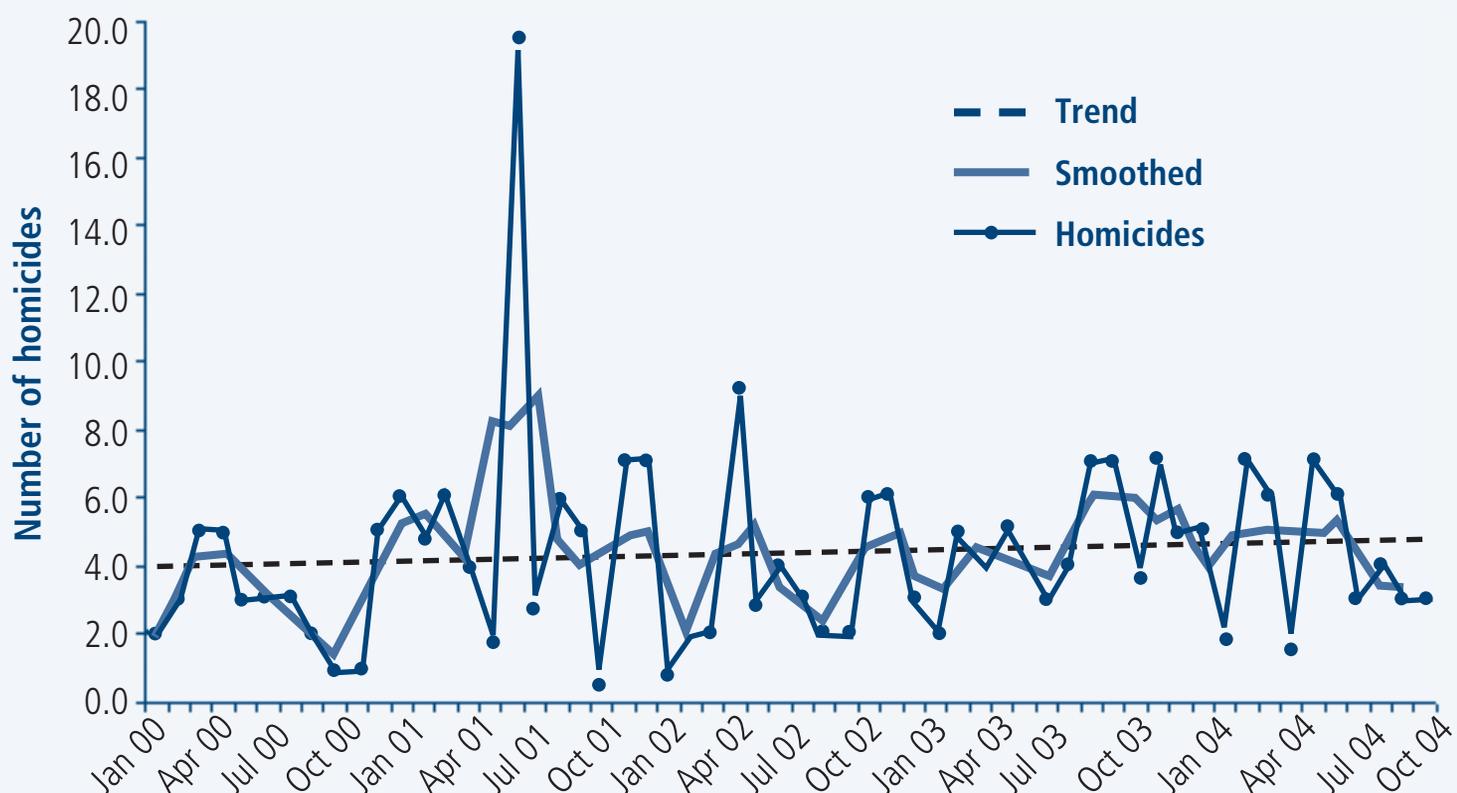
are examining). It is important to note that months are of different lengths (and do not forget February in leap years), because this might influence the number of problem events. Some analysts use four-week periods, rather than months, to address this issue.

Obvious seasonal cycles can be seen in figure 2. Here we see the number of bicycle thefts per month over 32 months. Thefts consistently peak in July and August and consistently reach their minimum in January and February. We can also see that on a month-to-month basis, 2001 was usually worse than 2002 and the months of 2003 for which we have data. This makes some sense, as there are more bicycles available to steal in the summer and even thieves have little use for bicycles in the winter (especially in Buffalo!).

Separating a time series into component parts is very useful for revealing possible causes of a problem. The homicide trend, for example, could be decomposed into two charts showing domestic homicides and nondomestic homicides (or firearm and nonfirearm). So if the nondomestic homicides

were trending upward while domestic homicides were declining, this would suggest that attention should be focused on nondomestic homicides.

Time series analysis is a powerful tool for evaluating the effectiveness of a response. The basic principle is to obtain a good idea of a problem's natural trends, cycles, and variation before the response is implemented, using the techniques just discussed. This tells you what you can expect from the problem in the future *if you do nothing about the problem*. This provides a basis for examining time frames after the response. Changes in the trend, the cycles, or even the random fluctuation suggest the response had an impact. The longer the time frames before and after, the greater the confidence you can have in your conclusions.

Time series analysis can also be very complex, so if there is a great deal depending on a precise answer to a time frame analysis, it may be useful to seek the help of a statistician specializing in this area.

**Figure 2. Seasonal effects in Buffalo bicycle thefts
January 2001 through August 2003**
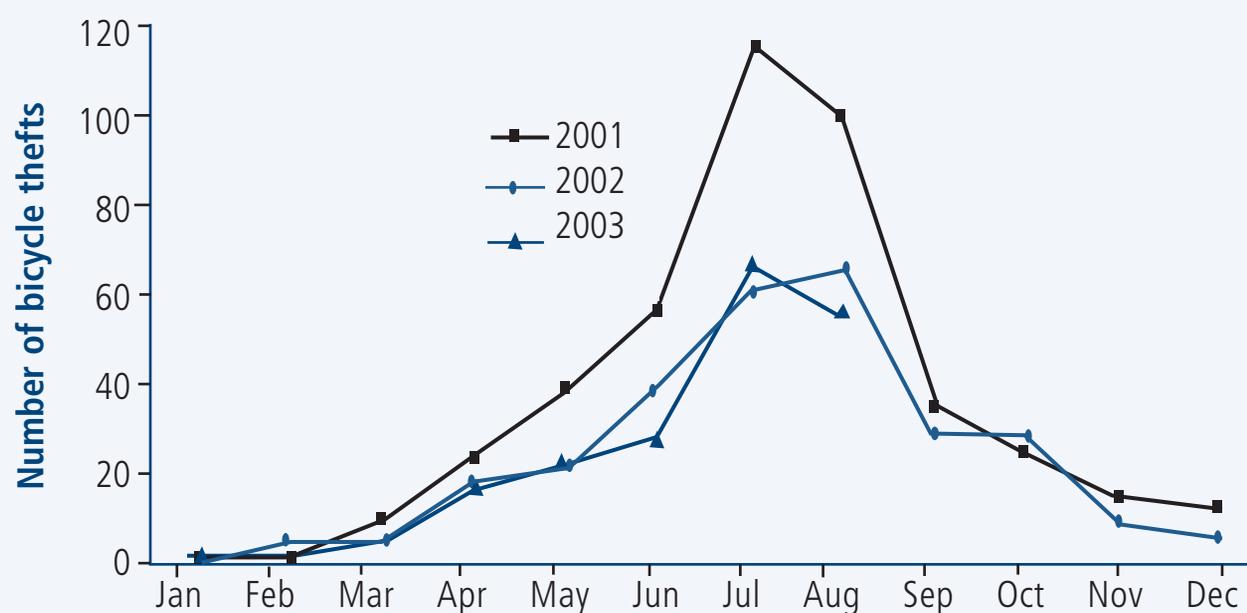
27. Know how to use rates and denominators

When one place has more crimes than another place, one possible reason is that one has more targets than another. Examining rates helps you understand if number of targets contributes to your problem (see step 17).

Rates describe the number of crimes per target at risk during a period of time: one burglary per 1,000 households during 2002, for example. Target rates show the risk the average target has of being involved in a crime during the time period.

To calculate target rates you will need to do the following:

- Define the type of event you are interested in (e.g., thefts from vehicles).

- Define the at-risk population (e.g., vehicles).

- Define the locations and time period (e.g., downtown area parking lots in 2004).

- Find sources of data that provide counts of events of interest and targets for each location being examined (e.g., police reported crime data has information on address of theft, which can be associated with specific parking lots, and observations of downtown parking lots can provide estimates of the number of vehicles in each lot).

- For each location, divide the number of events (the numerator) by the number of targets (the denominator) to obtain rates.

Defining the targets at risk requires careful thought. If you are analyzing burglaries, is your target people or homes? "Homes" is the more reasonable answer. Everything else being equal, if a population of a 1000 people lived in 500 units, we would expect it to have more burglaries than if the same population lived in 250 units. If you are analyzing street robberies then the at-risk population is the number of pedestrians in the area being examined.

Police incident reports usually contain data describing the events of interest, including address information, so counts of events at locations can be obtained. However, it is often difficult to obtain information describing the number of targets at risk at locations. For example, reported thefts from vehicles may be available for parking lot addresses, but the number of vehicles using the lots may not be readily available (see box).

To overcome this problem, you might have to find proxy measure of targets. The number of vehicles using parking lots, for example, may be proportional to lot size. Thus, a proxy measure for vehicles at risk might be square footage or number of parking spaces. The table gives some examples of estimating at-risk target rates.

Proxy measures of targets must have two characteristics. First, they must be logically associated with the targets. One would expect spaces to be associated with the volume of vehicles, but we would not expect number of feet of parking lot street frontage to be associated with number of vehicles, because very deep lots could have little street frontage but contain many vehicles. Second, the association between the proxy and at-risk targets cannot vary too greatly across locations. If all parking lots in the downtown area are about two-thirds

Example of rates for different crimes			
Type	**Location**	**Rate**	**Comments**
Apartment burglaries	Apartment buildings	Burglaries per apartment or per household	Burglaries per resident places too much emphasis on large families
Shoplifting	Retail stores	Thefts per item on shelves or per square foot of retail space	Thefts per customer gives an offending rate
Motorcycle theft	Neighborhood	Motorcycle thefts per registered motorcycle	Problematic for areas cyclists use but do not live in
Graffiti	Commercial areas	Graffiti per square foot	Difficult to measure
Taxi robberies	Company	Robberies per cab, per driver, or per driver-hour	Hours of exposure is preferable, but data may not be available
Disorder calls from motels	Motels	Disorder calls per guest or per room	Might also look at numbers of non-guest visitors

full during the week, number of spaces is a useful proxy. But if some lots are used to capacity and others get little use, then number of spaces is not a good indicator of targets.

Even with proxy measures, it can be difficult to obtain target data. Government agencies might have some of the information you need. For example, the Hamilton County, Ohio, auditor has information on every land parcel in the county, including the square footage and location. Businesses and business associations sometimes have information about sales volume. And state supplied sales tax information can be used as proxy for the numbers of customers (when comparing stores selling similar items).

Calculating rates can be very helpful in finding risky facilities (step 28). Karin Schmerler and her colleagues in the Chula Vista (California) Police Department investigated calls from the city's motels. The 10 national chain and 16 local independent motels generated similar numbers of calls, but the national chains contained more rooms.

When they added up all the calls for the local independents and divided this by the rooms in these motels, Schmerler found that the average call rate for the independent motels was 1.8 per room. Doing the same for the national chains yielded a call rate of 0.5. Clearly, the local independents generate many more calls per room.

Should you put more emphasis on high numbers or high rates? If your objective is to reduce the volume of crime, then focusing on numbers may the best choice. But if your objective is to reduce the chances of harm, then focus on rate.

Read more

Clarke, Ronald, and Herman Goldstein. 2003. "Thefts from Cars in Center City Parking Facilities." In *From Innovation to Mainstream*, edited by Johannes Knutsson. Vol. 15 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_15/.

Using rates to identify risky parking facilities – Charlotte, North Carolina, 1999

The value of calculating rates is illustrated by a project in Charlotte, North Carolina, on which one of us (Clarke) worked with Herman Goldstein. Assisted by local analysts and police officers, we examined larcenies from autos (LFA) in parking facilities in the downtown area of the city (locally known as Uptown). Hot spot analysis had shown a large undifferentiated cluster of these thefts centered in the middle of the area, but a map based on rates of theft was far more revealing. This map was produced by crime analyst Matt White, who enlisted the help of precinct officers in counting the number of parking spaces in each facility. He then calculated theft rates for each lot and parking garage. The resulting map revealed a much more detailed picture of risk. Further analysis showed that cars parked in lots were six times more at risk than ones in garages and that some lots were crime enablers due to inadequate security.

Uptown study area and analysis

Rates of larcenies from autos by block

Lower

Higher
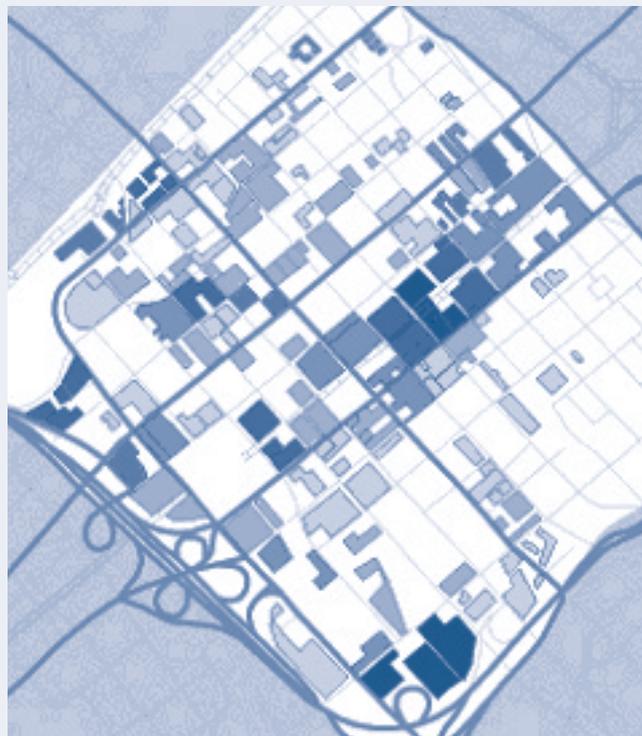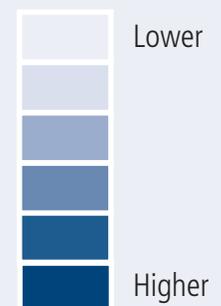
28. Identify risky facilities

Facilities are environments with special functions (step 15). Educational facilities involve teaching and study. Industrial facilities produce and process materials. Office facilities process information. Retail facilities involve sales and monetary transactions. Some facilities are frequent sites for crime and incivilities. These include taverns, parks, railway stations, pay-phone booths, convenience stores, and public housing projects. These facilities make a disproportionately large contribution to crime and disorder—they are "risky facilities."

But the term has also a more precise meaning. It refers to the fact that *within each type of facility, a few of them are especially risky*. When we described the 80–20 rule in step 18, we mentioned that 5 percent of the stores in Danvers, Massachusetts, accounted for 50 percent of the reported shopliftings (see the table provided by Christopher Bruce, crime analyst in the Danvers Police Department). Here are some other documented examples of risky facilities:

- **Convenience stores.** A national survey found that 6.5 percent of convenience stores experience 65 percent of all robberies.

- **Gas Stations.** Ten percent of Austin, Texas, gas stations accounted for more than 50 percent of calls for drive-offs and drug crimes in 1998–1999.

- **Banks.** Four percent of UK banks have rates of robbery four to six times higher than other banks.

- **Schools.** Eight percent of Stockholm schools suffered 50 percent of the violent crimes reported in the 1993–1994 school year.

- **Bus stops.** Andrew Newton's recent doctoral dissertation reported that 9 percent of the shelters at bus stops in the British city of Liverpool experienced more than 40 percent of the vandalism incidents.

- **Parking facilities.** In another British city, Nottingham, just one parking deck (the Royal Moat House) accounted for about 25 percent (103) of the 415 crimes reported for all 19 downtown lots in 2001.

There are at least eight reasons why facilities are "risky," and different analysis procedures can help determine which reasons are operating in particular circumstances:

1. **Random variation.** It is possible to get concentrations of crime in a few places through some fluke of randomness. This is more likely to occur when you are looking at only a few facilities with few incidents. Try checking the same facilities for a different time period. If the rank order of incidents is roughly the same in both periods, then the variation is not random.

2. **Reporting practices.** Some facilities might always report crimes to the police, while others experiencing the same number of incidents might report many fewer of them. This can be difficult to check, but you should ask officers who are familiar with the facilities whether the recorded crime rates match their own perceptions of the crime problems in the facilities.

3. **Many targets.** Some facilities contain many targets. The store with the most shopliftings in Danvers was one of the largest in the city. But this was not the whole story, because when account is taken of its size by calculating shopliftings per 1,000 square feet (see the final column of the table), it is still one of the riskiest for shoplifting (see step 27).

4. **Hot products.** A risky facility may not have a large number of targets, but it might have targets that are particularly "hot." Store 15 in the Danvers list had the highest rate of shoplifting in the city per 1,000 square feet. This store specializes in selling small, high-value electronic items that meet the CRAVED criteria described in step 31.

5. **Location.** Facilities located in high-crime areas, perhaps where many habitual offenders live, are more likely to be crime risks. This is because offenders prefer not to travel far to commit crime (step 16).

6. **Repeat victimization.** Some places attract people who are particularly vulnerable to crime. Compare the people being victimized in risky and nonrisky facilities. If the revictimization rates are different, then repeat victimization may be the cause of the elevated risk (step 29).

7. **Crime attractors.** Facilities that draw in large numbers of offenders are crime attractors (step 15). Crime attractors have high numbers of offenses and high offense rates. Additional diagnostic checks involve analysis of arrest records and other information containing offender names.

8. **Poor management.** When owners or managers do not exercise proper control or management, a risky facility can develop. The box shows how a slumlord's negligent management turned the properties he acquired into risky facilities (step 44).

Read more

Eck, John, Ronald Clarke, and Rob Guerette. 2007. "Risky Facilities: Crime Concentration in Homogenous Sets of Facilities." In *Imagination for Crime Prevention:* Essays in Honour of Ken Pease, edited by Graham Farrell, Kate J. Bowers, Shane D. Johnson, and Michael Townsley. Vol. 21 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_21/.

Slumlords, crime in low rent apartments and neighborhood blight

Property	Year acquired	No. of units	Average yearly arrests	
			Pre-owning	Post-owning
#1	1977	4	0	1.6
#2	1982	15	0	16.9
#3	1983	8	0	2.3
#4	1985	8	0	4.5
#5	1985	10	0.1	6
#6	1986	16	0.2	27.9
#7	1986	6/8	0	3.4
#8	1987	5	0	8.3
#9	1987	12	0	11.3
#10	1988	6	0.4	8.1
#11	1991	10	0.2	9.3
#12	1991	10+	2.3	21.8
#13	1992	4+	1.1	0.7
#14	1992	4	0.2	10.7

In every large city, a few low-cost rental apartment buildings make extraordinary demands on police time. These "risky facilities" are often owned by slumlords—unscrupulous landlords who purchase properties in poor neighborhoods and who make a minimum investment in management and maintenance. Building services deteriorate, respectable tenants move out, and their place is taken by less respectable ones—drug dealers, pimps, and prostitutes—who can afford to pay the rent but who cannot pass the background checks made by more responsible managements. In the course of a problem-oriented policing project in Santa Barbara, California, Officers Kim Frylsie and Mike Apsland analyzed arrests made at 14 rental apartment buildings owned by a slumlord, before and after he had purchased them. The table clearly shows a large increase in the number of people arrested at the properties in the years after he acquired them. There was also some evidence that the increased crime and disorder in these properties spilled over to infect other nearby apartment buildings—a finding that supports the widespread belief that slumlords contribute to neighborhood blight.

Source: Clarke, Ronald, and Gisela Bichler-Robinson. 1998. "Place Managers, Slumlords, and Crime in Low Rent Apartment Buildings," *Security Journal* 11(1): 11–19.

Reported shopliftings by store, Danvers, Massachusetts
October 1, 2003 to September 30, 2004

Store	Shopliftings	% of shopliftings	Cumulative % of shopliftings	Cumulative % of stores	Shopliftings per 1000 sq. ft.
#1	78	26.2	26.2	1.3	1.54
#2	42	14.1	40.3	2.6	0.70
#3	28	9.4	49.7	3.8	0.22
#4	16	5.4	55.0	5.1	0.24
#5	15	5.0	60.1	6.4	0.28
#6	12	4.0	64.1	7.7	0.31
#7	11	3.7	67.8	9.0	0.09
#8	11	3.7	71.5	10.3	0.16
#9	9	3.0	74.5	11.5	0.28
#10	7	2.3	76.8	12.8	2.82
#11	5	1.7	78.5	14.1	0.16
#12	5	1.7	80.2	15.4	0.10
#13	4	1.3	81.5	16.7	0.35
#14	4	1.3	82.9	17.9	0.12
#15	3	1.0	83.9	19.2	3.32
#16	3	1.0	84.9	20.5	0.90
#17	3	1.0	85.9	21.8	0.02
#18. 7 stores with 2 incidents	14	4.7	90.6	30.8	0.08
#19. 28 stores with 1 incident	28	9.4	100.0	66.7	0.06
#20. 26 stores with 0 incidents	0	0.0	100.0	100.0	0.00
78 stores	**298**	**100.0***	**100.0***	**100.0***	**0.15**

Note: The top 17 stores were (in alphabetical order): Best Buy, Boater's World, Circuit City, Costco, CVS Pharmacy, Galyan's, Home Depot, Kohl's, Linens & Things, Lowe's, Marshall's, Old Navy, Radio Shack, Stop & Shop, Target, and Wal-Mart

*Numbers may not add up to exactly 100 percent because of rounding.

29. Be ready for repeat victimization

Some people are repeatedly victimized and, in conformity with the 80–20 rule (step 18), a small proportion of victims account for a large proportion of all victimizations. Ken Pease and Graham Farrell carefully documented this fact in a seminal Home Office publication called "Once Bitten, Twice Bitten." Using British Crime Survey data (see the table below), they showed that about 4 percent of people experience about 40 percent of all victimizations in one year. They showed that repeat victimization occurs for a variety of crimes including domestic violence, sexual assault, burglary, and car-related thefts. They also showed that repeats occur quite quickly, often within a week of the first victimization, though this varies with the offense.

About four percent of people experience about 40 percent of all crimes		
Number of crimes experienced	Percent of respondents	Percent of incidents
0	59.5	0.0
1	20.3	18.7
2	9.0	16.5
3	4.5	12.4
4	2.4	8.8
5+	4.3	43.5

Source: British Crime Survey, 1992, all offenses

Research has shown that it is easy to miss the extent of repeat victimization for several reasons:

- Many victims do not report crimes to the police, which means that repeat victimization is undercounted in official police records. This is why researchers have tried to use surveys, in which people can be asked about crimes they did not report to the police. Unfortunately, the National Crime Victimization Survey, the U.S. equivalent to the British Crime Survey, undercounts repeat victimization because it uses only a six-month recall period and does not count all the crimes committed in a series against a particular victim.

- Crime analysts often look for repeat victimization by counting the number of crimes at addresses, but police data often contains incomplete address information, especially for apartment units. This leads to higher estimates of one-time-only victimizations than is actually the case. This difficulty is being reduced by the greater availability of GIS systems and through the use of address matching in mapping software (i.e., geocoding).

- Repeat victimization can be underestimated because of the "time-window effect." If only victimizations during a specific time period are counted—a time window of January 2002 through June 2002, for example—then someone who had been victimized in December 2001 and once during the six-month window would not be counted as a repeat victim. If they had the misfortune to be victimized in July 2002, we would not know that this person had three victimizations. Ideally, a moving window should be used where each new victim is followed for a year after the first reported event.

"Lightning never strikes twice in the same place"

Well-intentioned police officers sometimes say this to reassure burglary victims that they won't be victimized again. Unfortunately, the research reviewed here shows that it is not true.

In explaining repeat victimization, Ken Pease distinguishes two kinds of accounts:

1. Boost accounts explain repetitions in terms of positive experiences at the initial offense. A burglar, for example, learns a great deal about a home during a break-in. This knowledge may encourage him to come back for another break-in. A burglar may also tell others about goods he left behind, leading to subsequent break-ins by other burglars.

2. Flag accounts explain repetitions in terms of the unusual attractiveness or vulnerability of particular targets that result in their victimization by a variety of offenders. Some occupations have much higher victimization rates than others (taxi drivers, for example), and people who spend time in risky facilities (such as convenience store clerks) are also more prone to repeated victimization. Finally, the ownership of hot products, such as cars attractive to joyriders (step 31), will also increase the probability of repeat victimization.

"Virtual" or "near" repeats involve victims with character-istics similar to the original victim or target. After successfully attacking the first target, offenders generalize to targets with similar characteristics. Houses with the same layout and in the same neighborhood as the first burglary, for example, can be expected to have higher risks because the offender has learned something about them from breaking in before.

Knowledge of repeat victimization is useful for predicting who is most at risk and when they are at risk. This means that crime prevention resources can be focused on these people, rather than spreading resources over a number of people, most of whom have a very low risk of crime.

Many police agencies now also use a "graded response" when dealing with repeat victims. This means that the more often someone has been victimized the more intensive the

preventive action taken by the police. Knowing the time period between repeats also makes it possible to temporarily deploy crime prevention for short periods when the risk of crime is the greatest. For example, some police agencies will install temporary burglar alarms where the risk is high of a repeat burglary occurring soon.

Read more

Weisel, Deborah L. 2005. *Analyzing Repeat Victimization*. No. 2 of the Problem-Solving Tools Series. Washington, DC: Office of Community Oriented Policing Services. http://ric-zai-inc.com/Publications/cops-p078-pub.pdf.

Johnson, Shane, and Kate Bowers. 2004. "The Burglary as Clue to the Future: The Beginnings of Prospective Hot-Spotting." *European Journal of Criminology* 1(2): 237–255.

Neighbor beware!

Repeat victimization tells of an elevated risk that the same victim will suffer again, most often in the immediate days or weeks following the preceding crime. But risk can be communicated to nearby places. Kate Bowers and Shane Johnson of the Jill Dando Institute of Crime Science have shown how burglary risk is communicated down a street. This is illustrated in the graph below. A home is burgled, which we will call the reference burglary. The numbers at the bottom are a measure of distance from the reference burglary. A distance of one tells of a home next to a burglary location on the same side of the street or the

home immediately opposite; a distance of two refers to homes two doors down on the same side of the street or diagonally opposite; and so on. The ordinate shows the number of burglaries following reference burglaries. The data come from Merseyside Police in the United Kingdom. You can see that the risk of another burglary declines the further the distance from the reference burglary. For any given distance, the risk is greater for homes on the same side of the street. This shows which homes one should seek to protect in the wake of a burglary. Priority should be given to homes close to the burgled home and especially on the same side of the street.
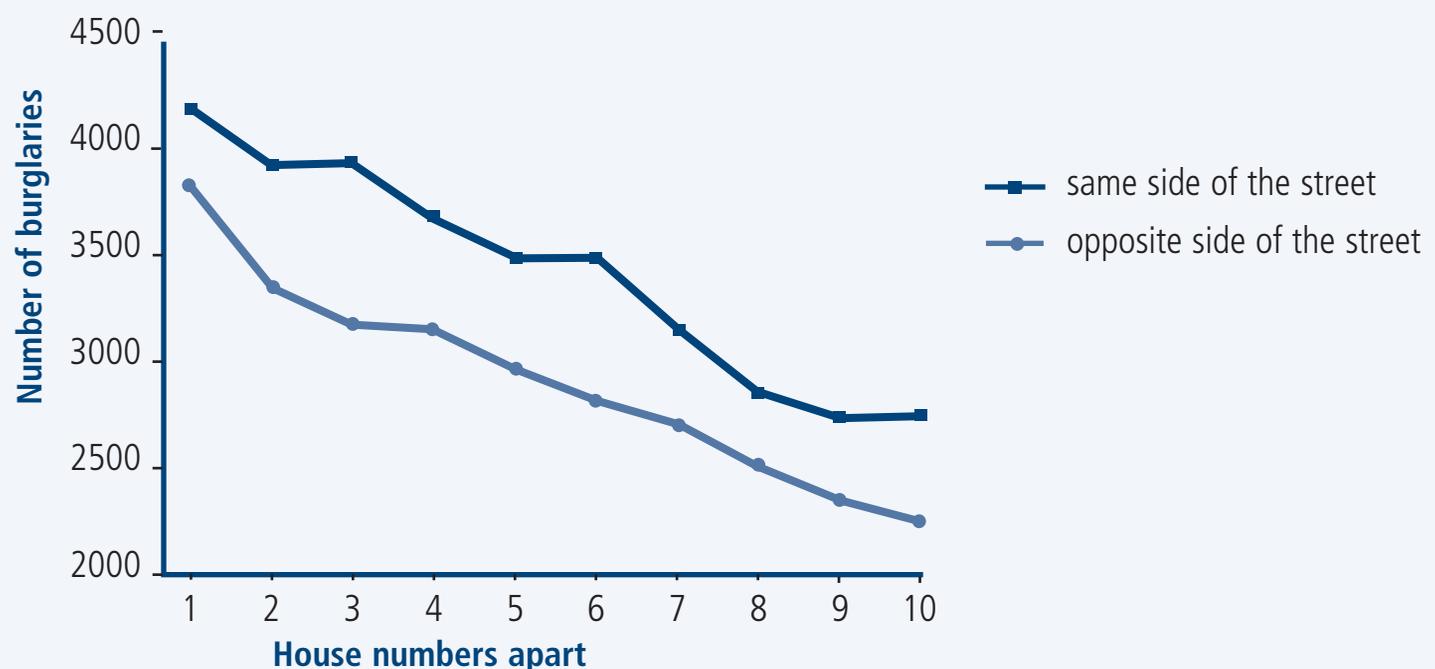
30. Consider repeat offending

One of the fundamental facts of criminology is that a small proportion of individuals commit a large proportion of crime. Data from Marvin Wolfgang's famous Philadelphia cohort study suggested that around 5 percent of offenders account for 40 percent of crimes. There are two explanations for repeat offending, the first of which is that impulsive individuals with weak social attachments to others tend to get into trouble more frequently than less impulsive and more attached individuals. The second explanation is that people exposed to more crime and disorder opportunities take advantage of them and adjust accordingly (see step 9). Both of these theories can be true. Impulsive individuals with weak attachments require routine exposures to crime opportunities to become repeat offenders.

Repeat offending can be detected by testing for the presence of the 80–20 rule (step 18). This can be difficult in practice because offenders try to remain anonymous, so the data are seldom comprehensive and may not even exist. Intelligence information can provide evidence of repeat offending, but the quality of this information is highly variable and seldom comprehensive about the offender population. We often know far more, and know it with greater validity, about places and victims than we know about offenders. Nevertheless, systematic interviews with offenders and their associates can reveal very useful information for understanding and addressing problems (step 10).

Understanding repeat offenders' objectives and motives can help create prevention strategies. It can make a difference to the solution of a vehicle theft problem if the thieves want to have a good time riding around in a fancy car, to obtain transportation home after a late night of partying, or to sell it for cash to support a drug habit. It can make a difference to the solution of a graffiti problem if the offenders are marking gang territories, creating "public art," displaying their affection, or trying to terrorize local residents of a different religion, race, or ethnicity.

Successful offending can lead to more offending. This occurs in three ways:

1. Offenders, like others, learn from doing. A successful crime teaches important lessons. This can lead to the offender attacking the same target again (see sidebar). But offenders, like everyone else, can generalize. So they learn that they may be successful if they attack similar targets (see step 29).

2. Offenders learn from each other. Information can spread through individuals working in small groups, group breakup, and new group formation. This underscores the need to understand offender networks. Police can use networks to spread information that enhances offenders' perceptions of risks or of the undesirability of the target or place. Part of the effort to reduce juvenile homicides in Boston, Massachusetts, for example, involved highly targeted messages to gang members.

3. Successful offending can erode prevention, thus making subsequent offending easier. A small break in a fence, for example, will become larger with use. If the influx of offenders and offensive behaviors is faster than the responses of guardians and place managers, then a small problem will become worse.

Catch prolific criminals by focusing on repeat victimization

Ken Pease has written about the benefits for detection resulting from a focus on repeat victimization. Evidence is accumulating that repeat victimizations are the work of the most committed offenders. He points out that this raises the intriguing possibility that offender targeting may be achieved simply by detecting repeated offenses against the same household or person, since these offenses are committed by offenders whom one would in any case wish to target. This kind of offender targeting avoids allegations of violations of civil liberties, since it focuses on the most troublesome subset of acts that prolific offenders commit.

Many crime prevention techniques rest on the assumption of a credible threat (step 40). Closed circuit television (CCTV) provides a deterrent threat to the extent that potential offenders believe either that someone is watching who will take action should they see misbehavior or that offenders can be identified and arrested later based on CCTV recordings. This does not mean that there have to be many arrests, but a few well-publicized arrests can reinforce an important message. And the message may be powerful if it is communicated through offender networks.

When there is specific information that a few people are responsible for most of a problem, it can be productive to focus on these individuals. The Boston Police Department reduced homicides among young males by monitoring a relatively few gang members. Francis Cullen and colleagues suggest that probation and parole authorities should learn the specific circumstances under which each offender gets into trouble, then help offenders develop plans to avoid these circumstances, and finally monitor compliance with these plans.

Tackling repeat offending by removing facilitating environments can be effective. For example, in Staining, a village in England, a scrap yard served as a receiver for stolen vehicles and parts and other loot from thefts. Many of the associated offenders were known. But despite police enforcement efforts, this problem could not be resolved. The local constable was able to close the site using laws governing pollution and other environmental hazards. This substantially reduced crime in the village. Similarly, police in the United States often use civil laws to close down facilities that foster drug dealing, prostitution, and other crimes and disorder.

Conversely, creating crime opportunities to catch offenders can make things worse. In the late 1970s and early 1980s, a number of U.S. police departments experimented with sting operations in which they created fake markets for stolen goods, documented who sold such goods to them, and then arrested many thieves. A number of these operations were evaluated. There is no evidence that these operations reduced crime. There is some evidence that they may have increased crime by providing lucrative and convenient ways to sell stolen goods. Throughout this manual, we have noted the strong influence facilitating environments can have on promoting criminal behavior. So one should be very cautious about creating artificial crime opportunities to round up unknown prolific offenders.

Information from repeat offenders and their confederates can be used to identify features of the environment that facilitate offending. Much of the early crime prevention implemented in convenience stores was developed from offender interviews (step 9). In the early 1970s, the Lakewood (Colorado) Police Department interviewed convicted burglars and learned a great deal about how they targeted dwellings and handled stolen goods. The Newport News (Virginia) Police Department used offender interviews to help analyze thefts from vehicles. An important piece of intelligence they gained was that thieves targeted vehicles that the thieves believed contained drugs. More recently, when the Chula Vista (California) Police Department interviewed car thieves, they found that the thieves had a much simpler method for stealing cars than investigators had suspected. This alerted investigators to an unknown vulnerability of older cars of a particular make. Such information is available from no other source.

Read more

Cullen, Francis, John Eck, and Christopher Lowenkamp. 2002. "Environmental Corrections—A New Framework for Effective Probation and Parole Supervision." *Federal Probation* 66(2):28–37.

Kennedy, David, Anthony Braga, Anne Piehl, and Elin Waring. 2001. *Reducing Gun Violence: The Boston Gun Project's Operation Ceasefire*. Washington, DC: National Institute of Justice. https://www.ncjrs.gov/pdffiles1/nij/188741.pdf.

31. Know the products that are CRAVED by thieves

In line with the 80–20 principle (step 18), not all products are equally at risk of theft because thieves are very picky about what they will steal. They focus on relatively few hot products such as cars, laptop computers, DVD players, and cell phones. The hottest product of all is cash, which Marcus Felson describes as "the mother's milk of crime." It is the most frequently stolen item in larcenies, burglaries, and robberies. It fuels robberies of banks and off-track betting shops, attacks on payphones, and muggings near ATMs.

People's possessions can help explain their victimization risks. For example, owning a car doubles the risk of becoming a crime victim, even when account is taken of relevant demographic and social variables. And the particular model of car owned can raise this risk many times over. To inform people about high-risk cars and to put pressure on manufacturers to improve security, the Highway Loss Data Institute in Washington, D.C., publishes annual data showing the number of theft-related insurance claims made for each model on the road. The table below shows the five models with the highest and lowest theft claim frequencies (per 1,000 vehicles on the road) from among the 305 new models during 2001–2003. The Cadillac Escalade and Nissan Maxima had claim frequencies about 30 times higher than the five models with the lowest claims. Escalades were targeted for their custom wheels and Maximas for their high-intensity headlights, which also fit earlier models supplied without such lights.

Useful as these data are, they do not show which cars are most at risk from specific forms of theft. However, research undertaken in the 1980s found that the models preferred by joyriders were muscle cars with powerful acceleration, such as the Chevrolet Camaro. Those most often stolen and never recovered were expensive cars such as Lincolns and Mercedes, and those most often broken into and stripped of contents were European models, such as Volkswagens, with good radios that fit a variety of models. Domestic station wagons, the staples of family transport, were not at risk of any form of theft. These were inexpensive and had terrible radios, and joyriders wouldn't be seen dead in them.

Surveys undertaken by the Loss Prevention Research Council show that shoplifters consistently choose CDs, cigarettes, liquor, and fashion items such as Hilfiger jeans and Nike sneakers. Many of these things can readily be sold on the street or door-to-door in some places. Police have paid little attention to the fencing of stolen goods because it is difficult to prove and attracts relatively light sentences, but many departments now receive regular electronic reports on pawn shop transactions. Scanning these reports will help you keep informed about what burglars and others are stealing in your area. It will also help you think about how stolen goods are sold and ways of disrupting the market.

Auto theft claim frequencies, 2001–2003		
		Claim frequency per thousand vehicles
Highest theft claim frequencies, 2001–2003		
Cadillac Escalade EXT (2002-03)	Large luxury pickup	20.2
Nissan Maxima (2002-03)	Midsize 4-door car	17.0
Cadillac Escalade (2002-03)	Large luxury SUV	10.2
Dodge Stratus/Chrysler Sebring	Midsize 4-door car	8.3
Dodge Intrepid	Large 4-door car	7.9
Lowest theft claim frequencies, 2001–2003		
Buick LeSabre	Large 4-door car	0.5
Buick Park Avenue	Large 4-door car	0.5
Ford Taurus	Large station wagon	0.5
Buick Rendezvous 4WD (2002-03)	Midsize SUV	0.7
Saturn LW	Midsize station wagon	0.7
Average all cars		2.5

Source: Highway Loss Data Institute (www.hldi.org)

The acronym CRAVED will help you remember which goods are most stolen. These goods are concealable, removable, available, valuable, enjoyable, and disposable.

- **Concealable.** Things that can be hidden in pockets or bags are more vulnerable to shoplifters and other sneak thieves. Things that are difficult to identify or can easily be concealed after being stolen are also more at risk. In some cases, thefts may even be concealed from the owners of goods, as when lumber or bricks left lying around on building sites are stolen.

- **Removable.** The fact that cars and bikes are mobile helps explain why they are so often stolen. Nor is it surprising that laptop computers are often stolen since these are not only desirable but also easy to carry. What is easy to carry depends on the kind of theft. Both burglars and shoplifters steal cigarettes, liquor, medicines, and beauty aids from super-markets, but burglars take them in much larger quantities.

- **Available.** Desirable objects that are widely available and easy to find are at higher risk. This explains why householders try to hide jewelry and cash from burglars. It also helps explain why cars become more at risk of theft as they get older. They become increasingly likely to be owned by people living in poor neighborhoods with less off-street parking and more offenders living nearby. Finally, theft waves can result from the availability of an attractive new product, such as the cell phone, which quickly establishes its own illegal market (see sidebar).

- **Valuable.** Thieves will generally choose the more expensive goods, particularly when they are stealing to sell. But value is not simply defined in terms of resale value. Thus, when stealing for their own use, juvenile shoplifters may select goods that confer status among their peers. Similarly, joyriders are more interested in a car's performance than its financial value.

- **Enjoyable.** Hot products tend to be enjoyable things to own or consume, such as liquor, tobacco, and DVDs. Thus, residential burglars are more likely to take DVD players and televisions than equally valuable electronic goods, such as microwave ovens. This may reflect the pleasure-loving lifestyle of many thieves (and their customers).

- **Disposable.** Only recently has systematic research begun on the relationship between hot products and theft markets, but it is clear that thieves will tend to select things that are easy to sell. This helps explain why batteries and disposable razors are among the most frequently stolen items from American drug stores.

Read more

Clarke, Ronald. 1999. *Hot Products: Understanding, anticipating and reducing demand for stolen goods*. No. 112 in Police Research Series. London: Home Office. http://www.popcenter.org/problems/burglary_retail/PDFs/fprs112.pdf.

The rise and fall of the cloned phone

When cell phones became popular, criminals found ways to clone them so that they could use them without paying any bills. They used scanners near airports and hotels to capture the numbers that each phone trans-mits in order to send and receive calls. They then created "clones" of the original phones by reprogramming the numbers into phones they had stolen. The original phone would then be charged for calls made by the clone. This rapidly became big business. The top line in the graph shows that the cloning losses for all cell phone companies increased quite rapidly from June 1992 to June 1996, when they totaled nearly $450 million for the previous 6 months. (The losses were the charges that the phone companies wiped off the bills of legitimate subscribers whose phones were cloned.) At this point, the phone companies began to introduce a variety of technologies that made it much more difficult to steal phone numbers and to use a clone. There was a rapid reduction in cloning so that, by December 1999, it was all but eliminated. Incidentally, the second most common form of cell phone fraud, "subscription fraud" (opening an account with a false name and address), did not skyrocket when cloning was closed down, as displacement doomsters would predict. This could be because cloning was easy to "mass-produce" by organized criminals, whereas subscription fraud is not.

Semi-annual fraud dollar losses
United States, June 1992 – December 1999

- ■ Tumbling and cloning losses
- ■ Subscription frauds
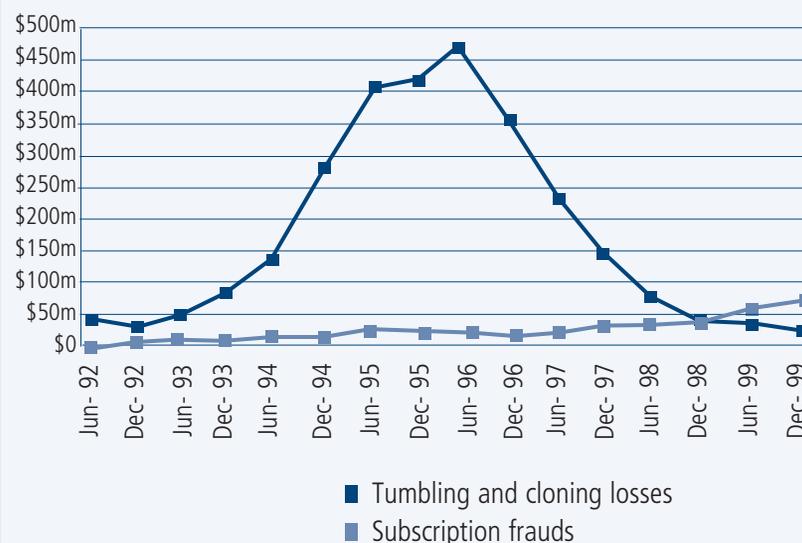
Source: Clarke, Ronald, Rick Kemper, and Laura Wyckoff. 2001. "Controlling Cell Phone Fraud in the US: Lessons for the UK 'Foresight' Prevention Initiative." *Security Journal* 14(1): 7–22. http://www.palgrave-journals.com/sj/journal/v14/n1/pdf/8340070a.pdf.

32. Conduct case-control studies

When analyzing a problem, it is always useful to ask, "Why are these persons, places, times, or events troublesome when other similar entities are far less troublesome?" Answering such questions requires you to compare problem cases to nonproblem cases.

This kind of comparison is called a *case-control study*. A case-control study involves comparing troublesome persons, places, times, or events with untroublesome persons, places, times, or events. The troublesome cases are called the *cases*. The cases to which they are compared are called the *controls*.

An example comes from data supplied by Susan Wernike, a crime analyst for the Shawnee (Kansas) Police Department. For every bar in Shawnee, she calculated the calls per 100 persons of rated capacity. This adjusted for bars of various sizes (see step 27). The figure on the next page shows the bars ranked from highest to lowest rate. A basic case-control study could be applied here. The bars with the highest rates would be compared to those with the lowest rates to see if there are systematic differences in the ways they operate, the behaviors in the bars, and the types of customers they attract.

Case-control studies are very helpful when the troublesome cases are rare relative to the untroublesome ones. This is frequently the situation in problem solving.

To conduct a valid case-control study, you should do the following:

- Define your cases precisely.
- Select a representative sample of these cases.
- Define a group of controls that could have been troublesome but did not become troublesome even though they were exposed to similar conditions (e.g., in the same neighborhood or city, serve the same types of clients, etc.).
- Select a representative sample of these controls.
- Compare the characteristics of the cases to the characteristics of the controls.

Substantial differences indicate characteristics that might be contributing to the problem. Similarities indicate characteristics that are probably not contributing to the problem. Let's explore these steps with an example.

The simple example of Shawnee bars illustrates the first four steps for a very small number of locations. We can also examine a more complex example to point out some of the details of case-control studies.

Define the cases precisely. In the early 1990s, John Eck was interested in why a few places were persistent drug dealing locations and most other nearby places were not. With the help of the San Diego (California) Police Department, over 300 cases of persistent drug places were identified in one San Diego neighborhood. These were identified based on citizen calls, drug enforcement actions, field interrogation records, arrest data, and patrol officer observations. To be classified as persistent, each site had to have more than one drug arrest, call, or field interrogation on separate days; or a warrant for a raid; or be identified by a patrol officer. Because multiple indicators were used to locate these sites, it was reasonable to believe that most persistent sites were located.

Select a representative sample of cases that were troublesome. For each block in the neighborhood with a single dealing location, the dealing location was selected for study. If two dealing locations were on the block, both were selected. If there were more than two, two were randomly selected. This provided a representative sample of 189 locations. Selecting all the cases was another valid option, but that would have raised the costs of the study. Simple random sampling could also have been used, but would not have guaranteed coverage of all affected blocks.

Define a group of controls that could have been troublesome. Controls were places in the neighborhood that showed no evidence of drug dealing. Nearby places were useful because drug sellers looking for a dealing site would know them. Therefore, the nearby places were exposed to dealers but had not been selected by dealers. Controls should be entities that could have been cases, but for mysterious reasons did not become so. The objective of the study is to solve the mystery.

Select a representative sample of controls. On each block, the same number of nondealing places was selected as dealing places. These sites were randomly selected (as would be the case if they were in a lottery) from a list of places on each block that had no indicators of drug activity. Selecting all nondealing locations would have been impractical, since

there were thousands of nondealing locations. By making sure cases and controls were from the same block, the selection process assured that the controls were exposed to drug dealers. Random selection assured us that the controls were representative of all nondealing locations.

Compare the cases to the controls. Observers were sent to the cases and the controls to record information about the sites. This included information on the type of structure (business, apartment building, single family home, vacant lot, etc.); the type of street it was on (number of lanes, one-way/two way, etc.); the distance from the nearest interstate highway; the types of surrounding buildings; the proximity of lighting; the number of apartment units; the presence of fences and other security; adjacency to alleys and paths; and many other factors. The objective was to see if the dealing locations differed substantially from the nondealing locations with regard to any of these characteristics. Two patterns were found, one for crack-dealing sights and the other for methamphetamine sites. Compared to controls, crack locations were more likely to be in small apartment buildings and have a lockable gate in a fence. Compared to controls, methamphetamine sites were more likely to be in single-family homes and adjacent to paths. The seeming preference of drug dealers for rental units in small buildings (either buildings with few apartments or single family homes) suggested that they were looking for places with low place management. In a later experiment, Eck found that intervening with landlords did reduce drug-related crime.

Case-control studies are different from most other studies and require special techniques to analyze data. Step 33 describes one technique that is particularly useful.

Case-control studies are very useful in problem analysis. The approach is flexible enough to be applied to a small number of places (as in the Shawnee example) or a very large number (as in the San Diego example). Though the examples focused on places, the same process can be applied to people, times, and events.

Read more

Loftin, Colin, and David McDowall. 1988. "The Analysis of Case-Control Studies in Criminology." *Journal of Quantitative Criminology* 4(1): 85–98. http://link.springer.com/article/10.1007/BF01066886.

Comparing high and low call rate bars–Shawnee, Kansas
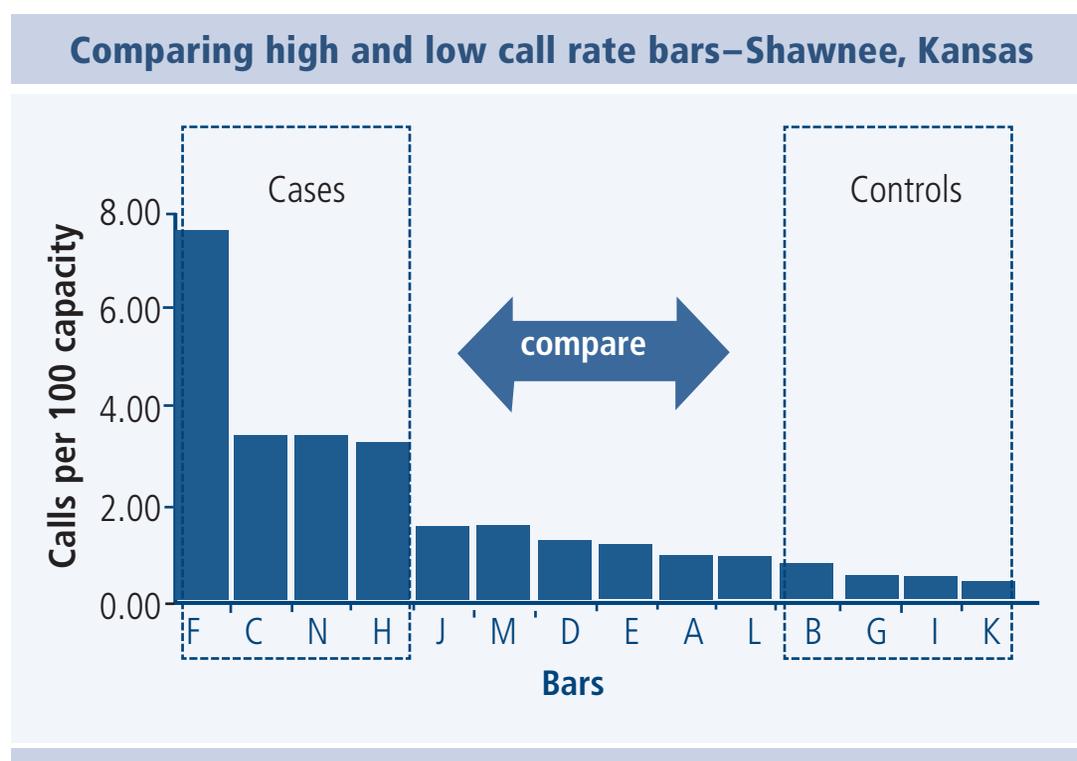
Do not perform an uncontrolled case study

A common mistake is to collect data only on the persons, places, times, or events that are troublesome. This can provide misleading results, because you learn only about characteristics common among the troublesome cases but not if or how they are different from untroublesome cases. An example of this is a study conducted by the FBI in the early 1990s to understand killings of police officers. The researchers collected information on officers killed in the line of duty but did not collect information on officers who were exposed to similar conditions but not killed. Consequently, we do not know which, if any, of the characteristics of the dead officers contributed to their killing. Living officers exposed to the same conditions may share many of these same characteristics.

33. Measure association

D o parking lots with gate attendants, for example, have fewer thefts from vehicles than parking lots without gate attendants? Are apartment buildings with onsite managers at less risk of having drug dealing than ones without such managers? To answer questions like these, you will need to determine if there is a statistical association between some characteristic of persons, places, or events and some measure of the problem (crime, injury, etc.).

There are many ways to calculate association. Often a *correlation coefficient* is used. Correlation coefficients range from -1 to 1. A negative correlation means an increase in one characteristic is associated with a decline in the other (and a decline is one associated with an increase in the other). A positive correlation means that an increase in one characteristic is associated with an increase in the other (and a decline in one is associated with a decline in the other). Big coefficients mean strong associations (positive or negative). If a correlation coefficient is near zero, there is an absence of association—a change in one characteristic is unrelated to a change in the other. Any spreadsheet or statistical analysis program can perform the calculations.

The Crime Analysis Unit of the Jacksonville-Duval County (Florida) Sheriff's Department examined apartment complexes of over 50 units. They found that for the 269 apartment complexes, the correlation between number of units and number of crimes is about .57: a modest positive correlation. There is a very high positive correlation (.91) between the number of property crimes and the number of violent crimes in these apartment complexes.

You cannot use a correlation coefficient to measure association in a case-control study (step 32). Instead, you should use an *odds ratio*.

Odds ratios can be any number greater than zero. When an odds ratio is equal to one, there is no association between the characteristic and the outcome. That is, the risk of the outcome is the same whether or not the characteristic is present. If the odds ratio is between 0 and 1, risk is higher when the characteristic is absent than when it is present (a

negative association). An odds ratio of .1 indicates that the risk of the outcome when the characteristic is present is one-tenth of the risk of the outcome when that characteristic is absent. If an odds ratio is greater than 1, the risk is higher when the characteristic is present than when it is absent (a positive association). An odds ratio of 3 means that the risk of the outcome is three times as large when the characteristic is present as when it is absent.

To use an odds ratio both the outcome and the characteristic must have only two values. For example, for the outcome, 1 means that a bar is a high crime bar, and 0 means that it is a low crime bar. For the characteristic, 1 means that the staff has been trained how to prevent assaults, and 0 means that the staff has not been so trained. The odds ratio would tell you whether there is an association between bars that have staff trained to prevent assaults and a bar having a great deal of crime. Here we would expect a negative association, so the odds ratio would have to be less than one to meet our expectations.

Table 1 shows how to calculate an odds ratio. The outcome is in the row and the characteristic is in the column. The number of cases with the appropriate value for both outcome and characteristic is in each cell. Cell A contains the number of cases that have the characteristic in question. Cell C contains the number of cases without the characteristic. Cell B contains the number of controls that have the characteristic. Cell D contains the number of controls without the characteristic. The odds ratio can be computed with a hand calculator using the formula at the bottom of the table, but many statistical software packages will also calculate it.

Table 2 illustrates the application of odds ratios in a case control study of drug dealing places in San Diego (see step 32). The outcome is persistent cocaine or heroin dealing. There were 58 apartment buildings in the study that had indicators of persistent dealing (cases). There were also 47 apartments in the study that showed no indication of any drug dealing (controls). Does the presence of locked or unlocked gates or onsite managers influence whether a drug dealer will select the location? When apartments with

unlocked gates were compared to those with locked gates or with no gates, the odds ratio was greater than one, but this was not significantly different from one (see step 53), so we cannot rule out the possibility that there is no relationship between unlocked gates and drug dealing (recall, when an odds ratio is one, there is no association). The association between locked gates and drug dealing is significantly positive. Buildings with locked gates were almost three and a half times more likely to have cocaine or heroin dealing than other apartment buildings. Apartment buildings with onsite managers had about three-tenths the chance of becoming dealing sites as the apartments without onsite managers.

This is a statistically significant negative association. But remember, correlation is not the same as causation. A correlation suggests that the characteristic in question might be a contributing cause, but by itself a correlation is insufficient to demonstrate causation.

Table 1. Calculating odds ratios—base table			
Characteristic			
Outcome	**Yes (1)**	**No (0)**	**Total**
Yes (1) — Cases	Cell A	Cell C	Cell A+Cell C
No (0)— Controls	Cell B	Cell D	Cell B+Cell D
Formula to calculate odds ratio = (A/B)/(C/D) = (A*B)/(C*B)			

Table 2. Apartment building security and drug dealing			
	Unlocked gates	Locked gates or no gates	Odds ratio
Dealing	16	42	1.857
Nondealing	8	39	
	Locked gates	Unlocked or no gates	Odds ratio
Dealing	33	25	3.452
Nondealing	13	34	
	On-site manager	No on-site manager	Odds ratio
Dealing	14	44	0.305
Nondealing	24	23	

34. Look for crime facilitators

Crime facilitators help offenders commit crimes or acts of disorder. There are three types of facilitators:

1. **Physical** facilitators are things that augment offenders' capabilities or help to overcome prevention measures. Trucks extend offenders' capacity to move stolen goods, telephones allow people to make obscene phone calls, and firearms help overcome resistance to robberies. Some physical facilitators are tools, but others are part of the physical environment. Felson and colleagues describe how the old layout of the Port Authority Bus Terminal in New York facilitated a variety of crimes. Types of crimes had specific ecological niches created by the variety of design features in the old station.

2. **Social** facilitators stimulate crime or disorder by enhancing rewards from crime, legitimating excuses to offend, or by encouraging offending. Groups of young men, for example, can provide the social atmosphere that encourages rowdy behavior at sporting events. Gangs and organized criminal networks facilitate criminal activity by their members.

3. **Chemical** facilitators increase offenders' abilities to ignore risks or moral prohibitions. Some offenders, for example, drink heavily or use drugs before a crime in order to decrease their nervousness.

Each type of facilitator acts against particular forms of situational crime prevention (steps 39–43). This is shown in the table to the right. Each facilitator (in the columns) can counter specific prevention methods (marked by dots). Physical facilitators help offenders overcome preventive measures that increase risk or effort. They can also act as provocations to deviancy. Social facilitators can offset each of the prevention methods. Bribes, for example, offset risk. Some crimes require multiple offenders to offset the effort. Perceptions of target desirability are often influenced by what is desired by others. What is an acceptable excuse often depends on what others will accept. And acquaintances can provoke crime or disorder through encouragement. Chemical facilitators allow offenders to ignore the risk and effort involved in committing a crime, and to make unacceptable excuses.

Because of their capacity to blunt crime prevention, it is important to identify the role of facilitators in a problem. Evidence about facilitators can be found in investigative

reports and from investigators, by interviewing victims and offenders, and by observing social situations. Analysis of crime reports can be used to determine the association between crimes and various facilitators.

Facilitators used by offenders to counter crime prevention methods

Crime prevention method	Type of facilitator used		
	Physical	Social	Chemical
Increase risk	●	●	●
Increase effort	●	●	●
Reduce rewards		●	●
Remove excuses		●	●
Reduce provocations	●	●	

Measures to prevent use of public phones by drug dealers in U.S. cities

Before cell phones became widely available, drug dealers often relied on the use of public phones to make contact with suppliers and customers. Many ways to stop them were tried, including the following:

- City ordinances to license public phones and ban them or limit their number at specific locations or categories of location

- Installation of rotary dials that do not permit outgoing calls to pagers

- Modification of phones to block incoming calls

- Community pressure on local phone companies or the city government to remove public phones or relocate them in better-lit or -supervised areas

- Permitting only operator-assisted calls or emergency calls during night hours by blocking coin operation of the phones

- Removal or modification of public phones by businesses such as convenience stores and gas stations

- Other types of intervention such as increased police patrols, warning labels on phones, and "hotlines" to report problems

Source: Natarajan, Mangai, Ronald V. Clarke, and Mathieu Belanger. 1996. "Drug Dealing and Pay Phones: The Scope for Intervention." *Security Journal* 7(4): 245–251.

If facilitators do play a role in the problem, then the next step is to find the sources of the facilitators. Sources will, of course, vary by type of facilitator. Physical facilitators might be readily available, as in the case of rocks for rioters or public phones for drug dealers. Or they may be purchased legitimately, as is the case for many burglary tools. Or they may be stolen, as is sometimes the case with vehicles used in serious crimes. Once their source is found, it may be possible to do something about them. The sidebars show measures taken to address the use of public phones in drug dealing and facilitating environments around cash machines. Social facilitators depend heavily on whom offenders associate with and the settings for the association. Risky facilities (step 28),

for example, can provide settings for social facilitation. Gangs provide the social support for crime. But even legitimate activity can on occasion spark social facilitation, as in the case with some politically motivated violence, or college student disturbances following games against historical rivals.

Chemical facilitators are abundant and frequently associated with crime and disorder. Alcohol is particularly implicated as a facilitator. Various mixtures of facilitators are common, particularly social and chemical in entertainment venues. Several of the 25 techniques of situational crime prevention are designed to reduce the effect of the three kinds of crime facilitators (steps 39–43).

Security provisions for bank cash machines in New York City and Los Angeles		
	New York City	**Los Angeles**
Enclosed cash machine within a secured vestibule	✓	
Increased lighting	✓	✓
Transparent windows in facility enclosure		
Elevated mirrors for users	✓	
Reduced vegetation near machine		✓
Surveillance cameras	✓	✓✓
Safety reminders to users	✓	✓
Security provisions notice to potential offenders	✓	✓
Crime assessment prior to installation of cash machine		✓
Security guard personnel	✓ *	
Reduced cash machine operational hours based on temporal crime patterns in area.		✓✓

✓   Required by legislation.

✓✓   Not required under legislation, but commonly implemented at bank's discretion.

*   Required only during non-banking hours for ATMs located inside bank buildings open for customer use.

Source: Guerette, Rob, and Ronald Clarke. 2003. "Product Life Cycles and Crime: Automated Teller Machines and Robbery." *Security Journal* 16(1): 7–18, http://www.palgrave-journals.com/sj/journal/v16/n1/pdf/8340122a.pdf.

35. Understand the crime from beginning to end

We think of crime as over in a flash. It takes just a few seconds to snatch a necklace in the street, pick a pocket, or break into a car. And rare are the burglars who search every conceivable hiding place. Instead, they try to leave as soon as they have found something worth stealing—usually within a few minutes of entering the house. Snatching the necklace or breaking into the house is, in fact, just one step in a series of steps needed to complete each of these crimes.

You should try to understand the sequence of steps involved in your crime or disorder problem. There are several approaches that you can follow:

- Leslie Kennedy of Rutgers University and his colleague Vincent Sacco separate the steps into precursors, transactions, and aftermath and have produced a criminology textbook, *The Criminal Event*, organized around these three stages.

- William Haddon has developed a similar classification to assist thinking about road accident prevention. He divides preventive actions into precrash, crash, and postcrash.

- Derek Cornish uses the concept of crime "scripts" to guide analysis. The underlying idea is that any particular category of crime requires a set of standard actions to be performed in a particular order, just as in the script of a play. The scenes are the sequential stages of the crime; the cast consists of the criminals, victims, and bystanders; and the tools they use are the props.

Whichever of these approaches you use, try to list the sequence of steps the offender must make to complete the crime. The table below is Cornish's simplified representation of the many steps that joyriders must complete, but it shows that the specific act we consider to be the crime (in this case, taking the car) is preceded by preparation and followed by escaping and enjoying the proceeds. This brings us to the reason for analyzing crimes in this careful, step-by-step manner: understanding clearly the sequence of actions required for the successful completion of the crime will reveal to you many more points of intervention. In other words, this will broaden the choice of responses for to you consider in your project. The final column of the table lists the possible responses, keyed to each stage of joyriding.

Joyriding is one of the simpler crimes, but you can follow the same process of breaking the crime down into its constituent steps for more complex crimes as well. One example is crowd disturbances (including riots). Clark McPhail, a leading expert on crowds, created a three-step process for analyzing all gatherings: the assembling process, the assembled gathering, and the dispersal process. Tamara Madensen, a graduate student at the University of Cincinnati, added two earlier steps: initial planning and preassembly preparation. Police might send out warnings about hosting large drinking parties to forestall initial planning. To prevent bonfires, easily burnable trash should be removed during the preassembly preparations. Police might greet arriving students to encourage lawful behavior during the assembling process. When the crowd is assembled,

Steps in joyriding and associated responses

Stages	Steps	Responses
Preparation	Get tools (e.g., screwdriver, duplicate keys, slide-hammer, short steel tube) Select co-offender	Control sales of equipment such as hand scanners and duplicate keys
Entering setting	Enter parking lot	Parking lot barriers, attendants, few entrances
Enabling conditions	Loiter unobtrusively	CCTV and/or regular patrols to deter loiterers
Selecting target	Reject alarmed cars Choose suitable vehicle	Visible protection of tempting vehicles
Completing the theft	Enter car (duplicate keys, use screwdriver) Break ignition lock (tube or slide-hammer) Hot wire ignition and start car	CCTV to monitor suspicious behavior, improve natural surveillance of lot, vehicle alarm to alert security, vehicle immobilizer
Exiting the setting	Leave parking lot	Attendants or other exit barriers
Aftermath	Use car to joyride Abandon car on wasteland Set fire to car	Vehicle-tracking system activated, vehicle curfew program, surveillance of dumping sites

Source: Cornish, Derek. 1994. "The Procedural Analysis of Offending and Its Relevance for Situational Prevention." In vol. 3 of Crime Prevention Studies, edited by Ronald V. Clarke. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_03/06_cornish.pdf.

police can monitor behavior and intervene if trouble develops. During the dispersal process, police want to make sure the crowd breaks up quickly and peacefully.

Preventing deaths of illegal migrants

In an unusual application of situational prevention, Rob Guerette of Florida International University has undertaken a careful study for the U.S. Border Patrol of the circumstances in which illegal migrants die crossing the U.S.-Mexico border. Each year, some 300 migrants die in tragic circumstances— for example, by drowning in canals and rivers, from heat exposure in desert regions, or as result of vehicle accidents. By tracing the steps that the illegal migrants take in crossing the border and trying to understand the circumstances that lead to loss of life, he came up with a number of life-saving suggestions. He classified these suggestions in a two-way grid:

- Across the top, he followed William Haddon's method and sorted the preventive suggestions into those that applied before, during, and after the life-threatening event.

- Down the side of the grid, he followed the crime triangle and sorted measures by whether they were aimed at (1) the migrant or the "victim," (2) the "coyote," who is employed by migrants to get them safely across the border (the "offender"), and (3) the "place" or environment, i.e., desert, rivers, urban areas, and so forth.

Some of these suggestions were extensions or improvements of measures already in place, but others were novel, which shows the value of his approach.

Most of the suggestions are self-explanatory, but more background is needed to understand some of them (the numbering follows the table):

1. His research showed that proportionately more females die from heat exposure.

2. Migrants typically gather in staging towns close to the border in Mexico where they make contact with "coyotes."

3. When highly trained search and rescue agents are dispatched to make a rescue, Guerette found migrants are more likely to survive than when regular line agents are dispatched.

4. To prevent immediate attempts to recross the desert in the very hot months, migrants apprehended at these times in the Arizona desert were laterally repatriated in 2003 to Mexican towns near the Texas border. This experiment was effective in saving lives.

5. In 2004, the Mexican authorities agreed to accept repatriations from Arizona to destinations in the interior of Mexico.

6. Motorists in Arizona commonly see small bands of illegal migrants attempting to cross the desert in the hot months. This campaign would seek their aid in saving lives by calling a 1-800 number to report the sighting.

7. Border Patrol agents in Arizona told Guerette that they often had great difficulty in locating a migrant reported to be in distress by other migrants whom they had apprehended. This is because large swaths of the desert are quite featureless and the directions given by apprehended migrants are often vague. A systematic program of temporary desert markings using color-coding or symbols could ameliorate this difficulty.

Sixteen life-saving suggestions for preventing deaths of illegal migrants		
Before life threatening event	**During life threatening event**	**After life threatening event**
Migrant 1. Inform female migrants about dangers of crossing the desert 2. Implement alert system for hazardous conditions	3. Distribute instructions in staging towns for migrants to follow when in distress 4. Expand Border Patrol search and rescue capacity	5. Lateral repatriation 6. Interior repatriation
Coyote 7. Implement alert system for hazardous conditions 8. Warn coyotes of prosecution in event of migrant deaths	9. Target coyote for arrest	10. Create task force to prosecute coyotes when deaths occur
Environment 11. Target problematic times and places 12. Erect barricades at dangerous crossing points 13. Post visible warning signs in risky areas	14. "Save a life/report a migrant" publicity campaign 15. Desert markers	16. Continually review data to detect new patterns of hazard

36. Be sure to answer the five "W" (and one "H") questions

When you have completed your analysis using the concepts discussed in the previous steps, you should ask whether it meets the test of a good newspaper story. Does it adequately answer the 5 W and one H questions: **what, where, when, who, why, and how?**

These same questions structure Barry Poyner's method of crime analysis by breaking up a larger problem into its constituent parts. For example, when he was asked by the Home Office to study "street attacks" in downtown Coventry and Birmingham (two large cities in England), he found that the police classified these as robberies and thefts from the person, but he found that the majority of incidents fell into a number of quite distinct problems:

- Robbery from street vending booths
- Robbery of drunks
- Money snatched while being taken to the bank
- Snatching women's purses
- Wallets/money snatched from the victim's hand after a verbal ploy
- Thefts from shopping bags
- Pickpocketing at bus stops

This was a much more meaningful characterization of "street attacks" and was an important first step in understanding the events. He then began to sort through the incident reports, trying to arrive at a picture of each problem that would help him find a response.

- **Incident reports are quite variable in the information recorded, especially when the victim is not present and there are no witnesses.** However, Poyner tries to piece the reports together to get a picture of the particular problem (see sidebar). For each incident he tries to discover the following:

- **What happened?** This entails spelling out the sequence of events and the actions of those involved (step 35).

- **Where did it happen?** Sometimes the sequence of events takes place in several locations. For example, a car might be stolen from a parking lot, moved to a garage for stripping of valuable parts, and then dumped on a piece of wasteland. Information may only be available about the first and last locations. Visiting these can help explain why the offender selected them.

- **When did it happen?** Householders or car owners might know only that their car was stolen or their house burgled "sometime during the weekend." For many interpersonal crimes, however, the victim will be able to report precisely when the crime occurred, which may permit inferences about such matters as whether the streets were deserted.

- **Who was involved?** There is always at least one offender; there may be one or more victims even if they have no direct contact with the offender; there may be witnesses and other third parties. Statements in police records made by witnesses and victims can provide much useful information, but it might sometimes be important to question a sample about the event.

- **Why did they act as they did?** It is important to understand the specific benefits that a particular kind of crime brings to the offender. In many cases of theft, the motive will be obvious, but for interpersonal crimes and for vandalism, the motives may only emerge from interviewing offenders (step 10). Equally important for prevention may be to understand why victims and witnesses behaved as they did and to answer such questions as "What causes some victims to respond by attacking the offender?" and "Why do witnesses often fail to intervene?"

- **How did the offender carry out the crime?** Crime can be thought of as a process with several steps from initiation to completion, rather than a circumscribed act occurring at a specific point in time. At each step, the offender must make decisions, might need to work with others, and might need to employ specific knowledge and tools. This is essentially the idea underlying Cornish's "script" approach discussed in step 35. It may not always be possible to develop detailed scripts, but the analysis should give a clear picture of how the crime was accomplished.

Poyner's analysis of pickpocketing at bus stops illustrates the approach. He was able to construct a detailed description of the crime by supplementing the rather sketchy incident report

with observations of the lines waiting for the bus. He found that the peak time for pickpocketing was the afternoon rush hour, particularly on Fridays when lines were long. Groups of three or four youths would hang around near the lines, looking in the windows of nearby stores to avoid arousing suspicion, while watching at the same time for suitable victims. These were invariably middle-aged or older men who kept their wallets in the back pockets of their trousers. (Younger men wore tighter-fitting trousers and did not keep their wallets in their back pockets.)

As their victims began to board the bus, which used a pay-as-you-enter system, the youths would run to the front of the line, jump on the boarding platform of the bus and jostle the riders. They would ask the driver some irrelevant question about the destination of the bus. Meanwhile, one of the youths would pick the pocket of the victim. The victim would be irate at being jostled and would not realize what was happening. The driver would shout at the youths to get off his bus and other passengers would be complaining. The youths would step off the bus and slip away into the crowd. The youths were never caught. The victim would find out only later that his wallet was gone.

This analysis suggested four possible responses:

1. Instead of pay-as-you-enter, tickets might be sold in advance for use at these stops.

2. Bus stops might be re-sited away from main sidewalks and organized in bays more like a bus station. This would make it difficult for offenders to lie in wait.

3. Use a bus shelter to screen the waiting lines so the offenders would be unable to identify potential victims in advance.

4. Construct line-marshalling barriers at the boarding point so offenders could not jump onto the bus platform.

Note that all these solutions are outside the normal remit of the police. Officers rarely consider that their role involves, for example, redesigning bus stops. But as a problem-solving crime analyst, your job is to cut crime, and you may need gently to persuade police colleagues that, in the widest sense, it is their job, too.

Working like an archaeologist

"There is a further advantage of combining incidents. In some cases we may have much less detail than other cases but otherwise the facts we do know about are the same. It may be possible to reconstruct the missing data in these less well-reported incidents in much the same way as the archaeologist reconstructs broken pottery from an excavation. He may only have a few pieces of the broken pot but from knowledge of other similar pots he can be reasonably sure about the form of the whole pot. This archaeological approach is quite helpful when, for example, we may have some detailed accounts of what offenders do in a few cases where they have been caught. It seems reasonable to believe that similar behavior occurred in similar crimes even though the offenders were not caught."

Source: Poyner, Barry. 1986. "A Model for Action." In *Situational Crime Prevention*, edited by Gloria Laycock and Kevin Heal. London: Her Majesty's Stationery Office.

37. Know that to err is human

Crime prevention often involves predictions. Will offenders associated with the problem continue to offend as they have done in the past? Will recent victims become victims again in the near future? Will hot spot places become cold spots, or will they stay hot? Though past behavior may be our best predictor of future behavior, it is not a perfect predictor.

The examples above deal with predicting the future. But we also try to probe the unknown in other ways, including in our responses to problems. A polygraph examiner tries to assess whether the subject is lying or not. Drug tests are used to determine if people have recently used illicit drugs. Metal detectors and baggage screening devices at airports are used to determine if passengers have weapons on their person or in their luggage. In all these examples, the examiner is trying to draw a conclusion about an unknown condition. And just like predictions of the future, the examiner may make an accurate assessment or an inaccurate one. Consequently, it is very important to understand how predictions and other judgments can fail.

A useful way to examine errors of prediction and judgment is to compare the prediction to what actually occurs. The columns in table 1 show two possible predictions: Yes, the

outcome will occur; and No, the outcome will not occur. The rows show two actual outcomes: Yes, the outcome did occur; and No, the outcome did not occur.

Imagine a large number of predictions. When a prediction corresponds to the reality, then it is accurate. Cells A and D contain counts of accurate predictions. You can calculate an accuracy rate by adding the number of predictions that fall into these two categories and dividing by all the predictions made.

Let's look at cells B and C. When the decision maker predicts that the outcome will not occur, but it does occur, then it goes into cell B. This is called a *false positive*. Cases in cell C represent situations in which the decision maker has predicted that the outcome would occur, but it did not. These are *false negatives*. You can calculate error rates for both types by dividing the number of predictions in each cell by the total number of predictions.

Let's look at a hypothetical example. To curb crime in rental housing, a police department facilitates and encourages landlords to conduct background checks. Prospective renters with recent histories of criminal behavior are not accepted. Such a policy implies a prediction that people with recent histories of criminal involvement will continue

Table 1. Types of prediction errors

Actual outcome	Yes	No
Yes	A. Accurate true positives	B. False negatives
No	C. False positives	D. Accurate true negatives

Accuracy rate   (A+D)/(A+B+C+D)

False negative rate   B/(A+B+C+D)

False positive rate   C/(A+B+C+D)

Table 2. Example of prediction error analysis

Later criminal involvement	Prior criminal involvement		
	Yes	No	Total
Yes	35	10	45
No	35	496	531
Total	70	506	576

Accuracy rate   92.2%

False negative rate   1.7%

False positive rate   6.1%

that involvement on or nearby the rental property and that people without such backgrounds will not engage in this type of behavior. Even advocates of such a policy would agree that such predictions are not perfect, but it would be useful to know two things. First, does such a policy reduce rental property crime? An evaluation could answer this question. But second, even if it does reduce crime, what are the negative consequences? To answer this question requires an analysis of the prediction errors.

If we were able to collect the relevant data, we might be able to create a table like table 2. We see that the policy's predictions are accurate. But how do we feel about the errors? Should something be done about people without a recent history of prior criminal involvement who commit crimes? Are too many former offenders who are not engaging in criminal behavior being denied housing?

Tighter restrictions to curb offending by people who have no recent criminal record might reduce the false negative rate, but it could increase the false positive rate, particularly if the information for making the decisions is less accurate than the information currently used. On the other hand, making distinctions among applicants with a recent criminal history could decrease the false positive rate but at the expense of increasing the false negative rate. Such tradeoffs are quite common.

Further, we may regret one type of error more than another. If the types of crimes being prevented by the landlords are relatively minor, then the false positive rate might be too high. But if these are crimes of serious violence being averted, then the false negative rate may be of greater concern. The consequences of the errors are very important and people often disagree over these.

Another source of disagreement is the error rates themselves. Such rates are often very difficult to estimate. Consider the shaded boxes in table 2. Under most circumstances, these figures will be unknown. The landlords might count how many people they turned away because of a criminal record, but they cannot tell us what such people would have done if they had not been turned away. In other situations, the shoe is on the other foot; false positives may be known with some precision, but false negatives are unknown. In airport screening, false positives are known because predictions of having contraband are followed by closer scrutiny. A passenger who security personnel believe is carrying a firearm will be subject to a very careful search, thus revealing if the initial prediction was accurate or inaccurate. However, false negatives are not known with much reliability. A passenger who carries contraband past airport security may not be checked again, so we cannot learn that she was a false negative.

In some circumstances, it is possible to use a pilot test to accurately estimate the errors by making the predictions, not acting on them, and carefully observing what happens. This might be difficult to do with offenders, who prefer to keep their misdeeds hidden, but it could work with potential victims or crime places. For example, a response to a problem might involve predicting which places are most likely to be crime sites and then intervening at those locations. Prior to implementing this response, a pilot study could be conducted in which the predictions are made, but no action is taken. If the error rates are unacceptably high, then it might not be worth implementing the response.

38. Embrace your key role at response

The first inclination of police, even when they have been involved in a detailed analysis of a problem, is to try to solve it by beefing up enforcement. You should expect this and not oppose it, even if the impact is usually short-lived. But from the beginning, you should be helping your police colleagues find more permanent solutions. Local community partners could provide this help, but instead they often promote their own agendas and push solutions with limited impact. The result is often a compromise package of measures, none of which is effective, but each of which may satisfy one or another of the parties. In fact, the disagreements over solutions may lead to a loss of momentum and nothing may be properly implemented.

You can help to stop this from happening, but you must first become an expert on solutions. For example, if the problem is one of car theft, you must be able to speak authoritatively about the ineffectiveness of decoy vehicles or "lock your car" campaigns. If it is a burglary problem, you must know the results of research on burglar alarms or improved street lighting, both of which may be suggested as solutions. You should also be thoroughly familiar with findings on displacement, since innovative solutions are often blocked by knee-jerk invocations of this theory.

To become an expert on solutions, you must know how to find out more about particular responses by undertaking rapid literature searches (step 19). You must also become an expert

on situational crime prevention, the science of reducing opportunities for crime. Situational prevention uses the same action-research methodology as problem oriented policing and has dozens of evaluated successes to its credit. Much of the knowledge about displacement, diffusion of benefits, repeat victimization, and many other concepts discussed in this manual have been developed by situational prevention researchers. The next five steps discuss the 25 techniques of situational crime prevention, which fall into five main groups (see sidebar). These are defined by what Nick Tilley of the University of Nottingham Trent in the United Kingdom calls the mechanism through which the techniques achieve their preventive effect: increasing the effort of crime, increasing the risks, reducing the rewards, reducing provocations, and removing excuses.

At this point, you might be asking yourself why you should assume this responsibility for identifying solutions. Isn't it enough that you carry most of the burden at the scanning, analysis, and assessment stages? And even if you did take on this role, why should anyone pay attention to you? But to become a problem-solving analyst you must go beyond your traditional analytic function. You must become a full and equal member of the problem-solving team. You may be relatively junior, but your authority comes from your expert knowledge, not your position. People will listen if you make novel suggestions or if you provide supporting evidence for other people's good ideas.

Twenty-five techniques of situational crime prevention

Increase the effort
1. Target harden
2. Control access to facilities
3. Screen exits
4. Deflect offenders
5. Control tools/weapons

Increase the risk
6. Extend guardianship
7. Assist natural surveillance
8. Reduce anonymity
9. Use place managers
10. Strengthen formal surveillance

Reduce the reward
11. Conceal targets
12. Remove targets
13. Identify property
14. Disrupt markets
15. Deny benefits

Reduce provocations
16. Reduce frustrations and stress
17. Avoid disputes
18. Reduce arousal and temptation
19. Neutralize peer pressure
20. Discourage imitation

Remove excuses
21. Set rules
22. Post instructions
23. Alert conscience
24. Assist compliance
25. Control drugs and alcohol

Seven criticisms of situational crime prevention and rebuttals	
Criticism	**Rebuttal**
1. It is simplistic and atheoretical.	It is based on three crime opportunity theories: routine activity, crime pattern, and rational choice. It also draws on social psychology.
2. It has not been shown to work; it displaces crime and often makes it worse.	Many dozens of case studies show that it can reduce crime, usually with little displacement.
3. It diverts attention from the root causes of crime.	It achieves immediate results and allows time for finding longer-term solutions to crime.
4. It is a conservative, managerial approach to the crime problem.	It promises no more than it can deliver. It requires that solutions be economic and socially acceptable.
5. It promotes a selfish, exclusionary society.	It provides as much protection to the poor as to the rich.
6. It promotes Big Brother and restricts personal freedoms.	The democratic process protects society from these dangers. People are willing to endure inconvenience and small infringements of liberty when these protect them from crime.
7. It blames the victim.	It empowers victims by providing them with information about crime risks and how to avoid them.

You should always opt for solutions that could bring a rapid reduction in the problem. This means that you must focus on the immediate, direct causes of a problem rather than the more distant, indirect ones. This important distinction has been developed by Paul Ekblom of the Home Office and can be illustrated by the problem of bar fight injuries caused by broken bottles and glasses. Distant root causes might include racial discrimination producing a generation of disaffected minority youths, lack of local employment opportunities resulting in widespread social exclusion, and the premium placed on a tough reputation in a deprived and lawless community. More immediate, situational causes might include irresponsible serving practices promoting drunkenness in local bars and taverns and the immediate availability of bottles and glasses that can easily be used as deadly weapons.

Rapid and sustained reductions in crime can only result from addressing situational causes; addressing root causes, even if we knew what to do about them, can only pay off in the comparatively distant future—long after the current stakeholders have any remaining interest in the problem. Meanwhile, unless the immediate causes are dealt with, broken glasses and bottles will continue to claim victims.

Some situational solutions can also take a long time to implement. For example, the danger posed by glasses and bottles could be addressed by legislation requiring bars

and taverns to use only toughened glasses and bottles that disintegrate into crumbs when broken. This would probably take years to accomplish. Much more realistic would be to bring community pressure to bear on local taverns to serve beer only in toughened or plastic glasses and to refuse to sell bottles at the bar. This ought to be achievable in a much shorter time. You might have a particular analytic role in promoting this solution by assembling data about the likely costs for the bars and the reduced costs of injuries and emergency care. In fact, it will probably fall to you (who else?) to collect data about the feasibility, costs, and public acceptability of any of the measures that are being seriously considered by the problem-solving partnership.

The bottom line is that you must acquire knowledge of a broad range of solutions and be prepared to fight for good ideas if your careful analytic work is to bear fruit.

Read more

Clarke, Ronald V., ed. 1997. *Situational Crime Prevention: Successful Case Studies*, 2nd edition. Guilderland (New York): Harrow and Heston.

Von Hirsch, Andrew, David Garland, and Alison Wakefield, eds. 2000. *Ethical and Social Perspectives on Situational Crime Prevention*. Oxford: Hart Publishing.

39. Increase the effort of crime

Here we describe the most basic category of situational measures—those designed to increase the difficulties of crime—beginning with target hardening. Situational prevention is sometimes dismissed as being nothing more than this, though it is only one of the 25 techniques that the approach encompasses. Note that there is considerable overlap between the techniques. For example, target hardening makes crime more difficult, but it can also slow up offenders and increase their chances of getting caught. Some measures can also serve more than one purpose. When using this classification, do not spend time worrying where a particular measure fits—use it only to ensure that you consider the widest possible repertoire of situational responses to a particular problem.

Harden targets. An obvious, often highly effective way to obstruct the vandal or the thief is through physical barriers such as locks, screens, or reinforced materials. The introduction more than 30 years ago of steering locks in the United States and overseas brought about long-term reductions in car theft, and ignition immobilizers are now reinforcing these benefits. Antirobbery screens in London post offices have reduced robberies by 40 percent and bullet-resistant passenger screens have cost-effectively reduced assaults and robberies committed against cab drivers in New York City.[1]

Control access to facilities. Keeping people out of places they have no right to be, such as military camps, factories, and apartment blocks, has a long pedigree—think only of the portcullises, moats, and drawbridges of medieval castles. It is also a central component of Oscar Newman's concept of defensible space, arguably the start of scientific interest in situational prevention. Barry Poyner has demonstrated that the installation of call boxes and the demolition of walkways linking buildings significantly reduced muggings at a London apartment complex (step 24). In some cases, access controls are intended to ensure the possession of tickets and documents. The redesign of tickets to make them easier to check produced a sharp reduction in fare evasion

on Vancouver, Canada, ferries. In the most famous example, baggage and passenger screening at airports in the early 1970s contributed to a reduction in the number of airline hijackings worldwide from about 70 to 15 per year.

Screen exits. The purpose of exit screening is to ensure that those leaving a building, a facility, or some other place have not stolen anything or have paid all fees and taxes. Passengers on the Washington, D.C., metro must insert their tickets in the automatic gates not only when entering the system but also on leaving. This provides two opportunities to check that the fare has been paid. On the New York City subway, passengers must insert their tickets in the gates only once, when entering the subway, thus reducing the chances of detecting fare evasion. Other examples of exit screening include border controls on leaving a country and the use of electronic tags in library books and merchandise. These tags activate an alarm if books have not been checked out or if

Increase the effort of crime
Harden targets
• Steering column locks and ignition immobilizers
• Antirobbery screens in banks and post offices
• Bullet-resistant shields for cab drivers
Control access to facilities
• Call boxes for apartment complexes
• Electronic card access to garages and offices
• Defensible space designs for public housing
Screen exits
• Ticket needed to exit
• Export documents
• Electronic tags for stores and libraries
Deflect offenders
• Separation of rival fans in stadium
• Street closures
• Separate restrooms for women
Control tools and weapons
• Safer guns
• Toughened beer glasses
• Stop incoming payphone calls to foil drug dealers
• Photos on credit cards and thumbprints on checks

1. Martha Smith, *Robbery of Taxi Drivers,* no. 34 of Problem-Oriented Guides for Police (Washington, DC: Office of Community Oriented Policing Services, 2005), http://ric-zai-inc.com/ric.php?page=detail&id=COPS-P072.

a thief tries to remove a tagged item from the store. Studies have shown that they significantly reduce shoplifting and theft of library books.

Deflect offenders. Rival groups of soccer fans in the United Kingdom are segregated in the stadium to reduce fighting, and their arrival and departure are scheduled to avoid the waiting periods that promote trouble. Scheduling the last bus to leave immediately after pub closing time is intended to interfere with another of Britain's less admirable traditions, the closing time brawl. These are examples of deflecting offenders away from crime targets, a situational technique suggested by routine activity theory. Other examples are provided by road closure programs that have produced reductions in many kinds of crime.[2] Even drive-by shootings in Los Angeles have been reduced by street closures (see sidebar).

Control tools and weapons. Saloons in the Wild West routinely required customers to surrender their pistols on entry because of the risk of drunken gunfights. More recently, so-called "safer" handguns have been developed that can only be fired by the owner or that shoot wax bullets or tranquilizers. To prevent glasses being used as weapons when broken, many pubs in the United Kingdom now use toughened beer glasses. The first commercial use of caller ID (in New Jersey at the end of the 1980s) produced a 25 percent reduction in obscene telephone calls. Step 34 lists the different ways in which cities have attempted to control the use of public phones in drug dealing, including blocks on incoming calls and banning them from specific locations. Reprogramming of public phones at the Manhattan bus terminal prevented illegal access to international phone service, thus wiping out a multi-million dollar scam perpetrated by hustlers. Improved security procedures for delivering credit cards produced a substantial drop in credit card frauds in this country in the mid-1990s (step 11).

A designer solution to drive-by shootings

Rival gangs often settle disputes by shooting at members of the other gang from moving cars. These "drive-by" shootings are difficult to prevent through youth work or by intensified policing. A novel solution, Operation Cul-de-Sac, was tried in one 10-block area in Los Angeles, which had experienced the city's highest level of drive-by shootings and gang homicides. The police installed traffic barriers on the most affected streets. These dead-end streets prevented cars from entering at one end and required those that did enter at the other end to return the same way. This not only made it more difficult for shooters but also increased their risks because when they returned the same way, their targets could have their own guns ready.

The barriers brought about an immediate reduction in drive-by shootings and homicides. In the year before Operation Cul-de-Sac, 1989, seven homicides were committed in the area. In the two subsequent years, after the barriers were installed, only one homicide was recorded. There was no evidence that homicides had been displaced to another neighborhood. At the conclusion of Operation Cul-de-Sac, when the barriers were removed, homicides increased again to their previous level.

Source: Lasley, James. 1998. "'Designing Out' Gang Homicides and Street Assaults." *Research in Brief* (November). Washington, DC: National Institute of Justice. http://www.popcenter.org/problems/drive_by_shooting/PDFs/Lasley_DesigningOut_1998.pdf.

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2. Ronald V. Clarke, *Closing Streets and Alleys to Reduce Crime: Should You Go Down This Road?*, no. 2 of Problem-Oriented Guides for Police (Washington, DC: Office of Community Oriented Policing Services, 2004), http://ric-zai-inc.com/ric.php?page=detail&id=COPS-P060.

40. Increase the risks of crime

According to interviews with offenders, they worry more about the risks of being apprehended than about the consequences if they are caught. This makes sense because they can do little to avoid punishment if caught, but they can do a lot to reduce the risks of capture by being careful. This is why situational prevention seeks to increase the risks of being caught and makes no attempt to manipulate punishment.

Extend guardianship. Cohen and Felson showed that the increase in residential burglary during the 1960s and 1970s was partly due to the increasing numbers of women working outside the home. This meant that for much of the day many homes, if not entire suburbs, had no capable guardians. Other research has found that burglars prefer to commit their crimes on weekday afternoons when people are likely to be out. This explains why people should cancel newspapers and inform their neighbors when they go on vacation. Carrying a cell phone or going out at night in a group are other ways to extend guardianship. Little is known about the effectiveness of these routine precautions, and evaluations of neighborhood watch, the only systematic effort to extend guardianship, have not been encouraging. However, "cocoon" neighborhood watch, under which surrounding homes were alerted after a burglary, was an important element of a successful project in Kirkholt in England.

Assist natural surveillance. Homeowners trim bushes near their windows and doors and banks light their interiors at night to capitalize on the natural surveillance provided by people going about their everyday business. Enhancing natural surveillance is also the prime objective of improved street lighting and defensible space architecture. Studies in the United Kingdom have found that improved lighting in public housing reduces crime with little evidence of displacement. One component of an early CPTED intervention to reduce burglary in a commercial strip in Portland, Oregon, was improved lighting of the outside of stores. Oscar Newman has reported successes in reducing crime in public housing through the application of natural surveillance principles. Finally, informant hotlines and crime stopper programs are attempts to capitalize on the natural surveillance provided by the public.

Reduce anonymity. Expanded car ownership has allowed people to work far from their homes. The development of out-of-town malls has led to the decline of downtown shopping. Low-cost travel has led to increased tourism both at home and overseas. As a result, people spend increasing periods of time among anonymous strangers. The building of large schools has contributed to this trend because pupils are less well known to staff and other pupils. Reducing anonymity is a promising but rarely used situational technique. Some schools are now requiring uniforms, partly to reduce the anonymity of pupils on their way to and from school. Cab driver ID badges and "How's my driving?" decals with 800 numbers on trucks are two further ways of reducing anonymity.

Use place managers. In addition to their primary function, some employees also perform a surveillance role. These "place managers" include sales assistants, hotel doormen, and parking lot attendants. Canadian research has found that apartment complexes with doormen are less vulnerable to burglary. Rewarding cashiers for detection of forged or stolen credit cards helped to reduce annual fraud losses by nearly $1 million at an electronics retailer in New Jersey. Vandalism on a large fleet of double-decker buses in northern England was substantially reduced when a few of the buses were fitted with video cameras for drivers. Having two clerks on duty, especially at night, has consistently been found effective in preventing robbery of convenience stores (see the table on the next page).

Strengthen formal surveillance. Formal surveillance is provided by police, security guards, and store detectives, all of whom furnish a deterrent threat to potential offenders. Burglar alarms, video cameras, and speed cameras can enhance this surveillance. A study of an affluent community near Philadelphia found that widespread ownership of burglar alarms reduced police costs by lowering burglary rates for the community at large. Home Office studies have found appreciable reductions in a variety of crimes following

installation of video cameras in British cities.[3] An evaluation of photo radar deployed statewide in Victoria, Australia, showed that it reduced speeding and contributed to a 45 percent reduction in traffic fatalities. A well-publicized bike patrol provided by a private security company in a large park-and-ride lot in suburban Vancouver, Canada, led to a substantial drop in theft of cars. When security personnel began systematic, daily counts of high-risk merchandise, such as VCRs and camcorders, thefts by employees dropped by more than 80 percent in the warehouse of a New Jersey electronics superstore. Powerful new ways of enhancing formal surveillance are provided by linking data sets on individuals, as shown in a study by Eckhart Kuhlhorn. He

demonstrated that computerized crosschecking of statements of personal income made by claimants to two separate Swedish government departments reduced welfare frauds. When people claimed for rent allowance, they were tempted to understate income, but when they claimed sickness benefits, they were tempted to overstate it. The ability to crosscheck the income statements substantially reduced these frauds.

Read more

Painter, Kate, and Nick Tilley, eds. 1999. *Surveillance of Public Space: CCTV, Street Lighting and Crime Prevention.* Vol. 10 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_10/.

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3. Jerry Ratcliffe, *Video Surveillance of Public Spaces,* no. 4 in Problem-Oriented Guides for Police (Washington, DC: Office of Community Oriented Policing Services, 2011), http://ric-zai-inc.com/ric.php?page=detail&id=COPS-P097.

Measures that reduce robbery of convenience stores
(Results of 14 Studies)

	No. of supporting studies*
Two or more clerks	10
Good cash handling	8
No concealed entrances	6
Nearby stores	5
Clear view of store front	5
Closed at night	5
Security technology	5
Cashier in secure booth	4
Employee training	4
Clear view inside store	3
Gas pumps at front	3
Cashier in center of store	3
Store on busy street	2
Security guard present	2

*Not all studies included all measures.
Source: Hunter, Ronald D., and C. Ray Jeffrey. 1997. "Preventing Convenience Store Robbery through Environmental Design." In *Situational Crime Prevention: Successful Case Studies*, 2nd edition, edited by Ronald V. Clarke. Monsey (New York): Criminal Justice Press.

Increase the risks of crime

Extend guardianship
- Promote routine precautions such as leaving signs of occupancy when away from the house, carrying a cell phone, and going out at night in a group
- "Cocoon" neighborhood watch

Assist natural surveillance
- Improved street lighting
- Defensible space design
- Neighborhood watch and informant hotlines

Reduce anonymity
- Cab driver IDs
- "How's my driving?" decals
- School uniforms

Use place managers
- Train employees to prevent crime
- Reward vigilance
- Support whistleblowers

Strengthen formal surveillance
- Speed cameras and random breath testing
- Video surveillance of downtowns
- Focused bike patrols in parking lots

41. Reduce the rewards of crime

Rational choice theory holds that offenders are always seeking to benefit themselves by their crimes. These benefits may not simply be material, as in theft, because there are many other rewards of crime, including sexual release, intoxication, excitement, revenge, respect from peers, and so forth. An important strand of situational crime prevention is therefore to understand the rewards of any particular category of offending and to find ways of reducing or removing them.

Conceal targets. Householders often try to foil burglars by hiding jewelry or other valuables. They also keep their curtains drawn to stop thieves from looking through the windows to see what they own. Some people don't wear gold chains in public, and others avoid leaving their cars overnight on the streets if these are models attractive to joyriders, such as Hondas and Acuras. The table below presents British Crime Survey data showing that cars left on the street are at very much greater risk of theft than those left in the owner's garage or driveway. These are all ways to conceal targets and reduce temptation. Some other concealment strategies are less obvious. For example, gender-neutral phone lists can help protect women from obscene phone calls, and unmarked armored trucks can reduce the risk of in-transit robbery.

Remove targets. The installation of a machine that accepted credit cards in a Spanish church brought several benefits: donors received receipts for tax purposes, the church received larger gifts, and, since cash was not deposited, the church reduced its theft risk through removing targets. An earlier

Car thefts and parking place, England and Wales, British crime survey	
Where parked	Car crimes* per 100,000 cars per 24 hours
Garage at home	2
Drive/carport	40
Other street	327
Public parking lot	454

*Includes theft of, theft from, attempts, and deliberate damage.
Source: Clarke, Ronald V., and Pat Mayhew. 1998. "Preventing Crime in Parking Lots: What We Know and Need to Know." In *Reducing Crime through Real Estate Development and Planning*, edited by Marcus Felson and Richard Peiser. Washington, DC: Urban Land Institute.

application of this same situational technique comes from the days of the California Gold Rush. Plagued by robberies of stagecoaches, one mine started casting gold in 400-pound cubes. These were too heavy for robbers to carry away on horseback. More up-to-date examples of target removal are provided by changes made to pay phones. To stop people from smashing glass, wall-mounted booths have been substituted for kiosks in high-risk locations in the United Kingdom, and prepaid cards that dispense with the need to store large sums of cash have removed an important target for theft. Perhaps the most striking example of target removal is the introduction of exact fare systems and safes on buses, which dramatically reduced robberies of bus drivers in New York and in 18 other cities in the late 1960s.

Identify property. Motor vehicles in developed countries must be registered and must carry a unique vehicle identification number (VIN). This is to assist taxation, but these measures also reduce theft. One of the last states to require vehicle registration was Illinois in 1934, whereupon vehicle thefts declined from 28,000 in the previous year to about 13,000. More recently, the federal Motor Vehicle Theft Law Enforcement Act of 1984 has mandated the marking of all major parts of high-risk automobiles with VINs. Police "operation identification" programs have had limited success in the United States, but Gloria Laycock of the Jill Dando Institute of Crime Science found that property marking undertaken in three small communities in Wales, combined with extensive media publicity, halved the number of reported domestic burglaries.

Disrupt markets. Criminologists and police have devoted rather little attention to understanding and disrupting markets for stolen goods. Criminologists have found it difficult to obtain data about these markets, and the police have preferred to pay more attention to catching thieves and burglars than fences, partly because the penalties for fencing stolen goods are relatively light. However, if there were no market for stolen goods, there would be few persistent burglars and few thefts of trucks carrying large loads of tobacco and alcohol. Recent work for the Home Office by Mike Sutton has awakened interest in disrupting markets for stolen goods. The disruptive measures need to be tailored to the nature of the market and they include systematic monitoring of pawn shop transactions by the police,

crackdowns on illegal street vendors, and monitoring of small ad sales in newspapers to detect repeat vendors. Police sting operations—such as bogus used goods stores—should be avoided because research has found that they may stimulate theft in the area around the sting.

Deny benefits. Installing speed humps is a sure way to deny the benefits of speeding. Security-coded car radios and ink tags provide further illustrations of crime prevention techniques. Security-coded radios cannot be used unless the thief knows the PIN and, according to studies undertaken in the United States and in Australia, cars with these radios have lower theft rates. Ink tags are used in clothing stores to prevent shoplifting. They release ink if tampered with and indelibly stain the garment to which they are attached. The thief cannot wear the garment or sell it, which removes the incentive for theft.

Read more

Sutton, Mike, Jacqueline Schneider, and Sarah Hetherington. 2001. *Tackling Stolen Goods with the Market Reduction Approach.* No. 8 in Crime Reduction Research Series. London: Home Office.

Reduce rewards

Conceal targets
- Off-street parking for cars attractive to joyriders
- Gender-neutral phone directories
- Unmarked armored trucks

Remove targets
- Removable car radios
- Women's shelters
- Pre-paid cards for payphones

Identify property
- Property marking
- Vehicle licensing and parts marking
- Cattle branding

Disrupt markets
- Checks on pawn shops
- Controls on classified ads
- License street vendors

Deny benefits
- Ink merchandise tags
- Graffiti cleaning
- Disable stolen cell phones

Denying the benefits of graffiti

Graffiti-covered subway trains became almost a trademark of New York City in the 1970s and 1980s, and they frequently appeared in the opening sequences of movies that were set there. The subway authorities had tried innumerable law enforcement and target-hardening strategies to rid the subway cars of graffiti, but with little result. Eventually they hit upon a simple idea that brought them success: Once a car had been cleansed of graffiti and put back into service, it would immediately be withdrawn from service and cleaned again if it attracted fresh graffiti. This effectively denied "taggers" the benefits of "gettin up" and seeing their handiwork on public display. Because of the huge number of subway cars, it took six years before all the cars were clean. Nowadays, they are no worse than subway cars in other cities.

Clean cars

Year	1984	1985	1986	1987	1988	1989
Goal	–	1720	3434	4707	5946	6221
Actual	400	1915	3454	4839	6077	6245

Source: Sloan-Howitt, Maryalice, and George Kelling. 1997. "Subway Graffiti in New York City: 'Gettin up' vs. 'Meanin it and Cleanin it.'" In *Situational Crime Prevention: Successful Case Studies*, 2nd edition, edited by Ronald V. Clarke. Guilderland (New York): Harrow and Heston.

42. Reduce provocations

When studying prisons and pubs, Richard Wortley noticed that crowding, discomfort, and rude treatment provoked violence in both settings. This led him to argue that situational prevention had focused too exclusively on opportunities for crime and had neglected features of the situation that precipitate or induce crime. As a result of his work, Clarke and Cornish have included five techniques to reduce what they called "provocations" in their new classification of situational techniques. These techniques are explained below, drawing on Wortley's examples.

Reduce frustration and stress. Everyone gets angry when treated rudely by waiters, when people push in front to be served, or when trains are delayed with no explanation. Sometimes they get so angry they become violent. This could be avoided by improved service, which is increasingly being demanded and delivered. However, complaints may be ignored when those mistreated have little power. For example, prisoners are often ignored when they complain that they cannot eat when hungry or choose their TV programs, even though these complaints could be met quite easily by staggering meal times and providing more TVs. Waiting one's turn to use the phone, another source of frustration for prisoners, can be reduced by computerized systems to ration phone use (see sidebar). Outbursts of anger and violence can also result from people being subjected to extreme discomfort—too much noise, being jostled, and having nowhere to sit. These conditions exist in many clubs, bars, and delayed passenger airline flights and have consistently been found to induce trouble. More seating, soothing music, and muted lighting are all ways to reduce stress in these settings.

Avoid disputes. In the United Kingdom, rival groups of fans are segregated in soccer stadiums, and their arrival and departure are scheduled to avoid the periods of waiting around that promote trouble. Taxi fares from New York City's John F. Kennedy Airport to Manhattan are fixed at a standard $45 to prevent cheating and disputes over fares. In an attempt to produce consensual crowd management at the Australian Motorcycle Grand Prix, riders were allowed to operate campsites for their fellow motorcyclists and

were encouraged to develop rules for use of the facilities. This helped to eliminate the brawls between police and motorcyclists, which had marred the event in previous years.

Reduce arousal and temptation. Male doctors should not conduct detailed physical examinations of female patients without a nurse or receptionist present. This protects the doctor from false accusations, but it also reduces the temptation to sexually abuse the patient or make inappropriate advances. Laws that prohibit convicted pedophiles from taking jobs involving contact with children not only protect children but also help adults to manage their sexual desires. That the very sight of a gun has been found to trigger feelings of aggression provides one good reason for regulating the display of weapons. Similarly, the fact that high proportions of sex offenders own or use violent pornography provides a rationale for controlling these materials. Finally, reducing temptation is the basis for advice about being careful with one's money in public as well as advice to young women about being careful when out alone at night.

Neutralize peer pressure. Many parents discourage friends who are a bad influence on their children and schools disperse groups of troublemakers into different classes. But adults as well as children are subject to peer pressure. Existing staff may induct new workers into stealing from their employers, and young men are often encouraged to drink too much by friends. One publicity campaign mounted in Australia to reinforce the powerful deterrent impact of random breath testing made use of the slogan, "Good mates don't let mates drink and drive." A publicity campaign in the United States used "Friends don't let friends drive drunk."

Discourage imitation. All new television sets contain a "V-chip" so that parents can program their TVs to prevent children from viewing violent programs. Though the link between violent movies and violence in society is much disputed, there is some evidence of copycat crimes because media reports of unusual crimes sometimes provoke imitation elsewhere. It has also been shown, for example, that students who see their teachers engaging in illegal computer activity are more likely to commit computer crimes themselves and that other pedestrians will follow someone crossing against

a red light. Indeed, how often have you "run the red" only to find when glancing in your rearview mirror that so has the car behind you? It has also been shown that picnic tables in parks that had been scratched and carved are more than twice as likely to attract further damage. Findings such as these provide the rationale for rapid repair programs to deal with vandalism. Wilson and Kelling extended this principle in their famous "broken windows" article by arguing that the failure to deal promptly with minor signs of decay in a community, such as panhandling or soliciting by prostitutes, can result in a quickly deteriorating situation as hardened offenders move into the area to exploit the breakdown in control.

Read more

Wortley, Richard. 2001. "A Classification of Techniques for Controlling Situational Precipitators of Crime." *Security Journal* 14(4): 63–82. http://www.palgrave-journals.com/sj/journal/v14/n4/pdf/8340098a.pdf.

Reduce provocations

Reduce frustration and stress
- Efficient lines and polite service
- Expanded seating capacity
- Soothing music and muted lighting

Avoid disputes
- Separate enclosures for rival soccer fans
- Reduced crowding in pubs
- Fixed cab fares

Reduce arousal and temptation
- Controls on violent pornography
- Prohibitions on pedophiles working with children
- Advice about avoiding sexual victimization

Neutralize peer pressure
- "Idiots drink and drive"
- "It's OK to say No"
- Disperse troublemakers at school

Discourage imitation
- Rapid repair of vandalism
- V-chips in TVs
- Censor details of modus operandi to avoid "copycat" crimes

Phone fraud, slot time, and Victoria's Secret at Rikers Island

Rikers Island, a stone's throw from New York City's La Guardia Airport, is a huge system of 10 jails. These house different categories of inmates, whose phone privileges vary with their status. Corrections officers were supposed to use log books to record phone use and to regulate the amount of time each inmate spent on the phone. In the early 1990s, this system had broken down. Inmates had developed their own system, known as "slot time," and the annual cost of calls had escalated to more than $3 million. The most powerful inmates controlled the phones, which they often used to access their beepers and maintain their drug businesses in the outside world. Inmates were also accessing "sex lines" and were using stolen credit card numbers to make long distance calls and purchases. Nancy La Vigne, who studied this problem as a graduate student at Rutgers University, notes, "The female inmates did just this, accessing the Victoria's Secret catalogue, which resulted in a jail that could boast the best-dressed inmates in the country—until officials caught on."

The officials introduced a high-security computerized phone system that put strict limits on phone use, in line with the status of the caller. Detainees gained access to the phones through bar codes on their ID cards and by entering a PIN. This system immediately cut phone costs in half, but it was also noticed that fewer fights were erupting over access to the phones. In fact, La Vigne's study showed that the monthly rate of these fights dropped from 6.7 per 1,000 inmates in the year before the new phone system to 3.6 per 1,000 after its introduction.

Source: La Vigne, Nancy. 1994. "Rational Choice and Inmate Disputes over Phone Use on Rikers Island." In vol. 3 of Crime Prevention Studies, edited by Ronald V. Clarke. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_03/04_nancy.pdf.

43. Remove excuses for crime

This fifth category of situational techniques recognizes that offenders make moral judgments about their behavior and that they often rationalize their conduct to neutralize what would otherwise be incapacitating feelings of guilt or shame. They make such excuses as: "He deserved it," "I was just borrowing it," and "I only slapped her." These excuses may be especially important for ordinary people responding to everyday temptations to evade taxes, drive when drunk, sexually harass junior employees, and steal employers' property.

Set rules. All organizations make rules about conduct in their fields of governance. For example, businesses regulate employees' timekeeping, and stores require sales assistants to follow strict cash-handling procedures. Organizations such as hospitals, public libraries, and hotels must, in addition, regulate the conduct of the clients they serve. Any ambiguity in these regulations will be exploited if it benefits the client. One important strand of situational prevention, therefore, is rule setting—the introduction of new rules or procedures (and the clarification of those already in place) to remove any ambiguity concerning the acceptability of conduct. For example, in attempting to reduce no-shows, many restaurants will now only accept reservations if callers leave a telephone number where they can be reached. Some also require a credit card number so that a charge can then be made for no-shows. Requiring anglers in California to wear their fishing licenses was successful in getting more of them to comply with license purchase rules.

Post instructions. Work rules are often set out in employment contracts, and rules established by credit card companies, telephone providers, and insurance companies are contained in the service contracts. Regulations governing public places or facilities may be publicly posted either to prevent people claiming ignorance of the rules or to show precisely where these apply. The roads, in particular, make extensive use of signs governing driving or parking. Studies have found that warning signs significantly reduce illegal parking in spaces reserved for drivers with disabilities. Many other facilities—parks, colleges, transit lines, and housing projects—also post signs to govern a wide range of behaviors. Despite their wide use, there have been few evaluations of the preventive effectiveness of posted instructions—but they are an essential tool of law enforcement and are often used in problem-solving efforts.

Alert conscience. This situational technique differs from informal social control in two important respects. First, the focus is on specific forms of crime occurring in discrete, highly limited settings; and second, the purpose is to alert conscience at the point of committing a specific kind of offense rather than attempting to bring about lasting changes in generalized attitudes to law breaking. For example, signs at store entrances announce "Shoplifting is stealing," and in Manhattan's Port Authority Bus Terminal, signs proclaim "Smoking here is illegal, selfish, and rude." Roadside speed boards give immediate feedback (without issuing fines) to motorists traveling above the speed limit.

Assist compliance. When Italian criminologist Cesare Lombroso suggested in the 19th century that people should be locked up for urinating in the streets, his pupil Enrico Ferri suggested a more practical way to solve the problem: build public toilets. This constitutes an example of facilitating compliance, a technique of wide application. It includes subsidizing taxi rides for those who have been drinking; providing litter baskets and graffiti boards (for people's public messages); and improving checkout procedures in libraries, which reduces delay and thus excuses for failing to comply with rules for book borrowing. In a classic paper on Walt Disney World, Shearing and Stenning provide a fascinating glimpse into the ways in which sophisticated crowd control and management—involving the use of pavement markings, signs, physical barriers (which make it difficult to take a wrong turn), and instructions from cheerful Disney employees—greatly reduce the potential for crime and incivility in the theme park (see sidebar).

Control drugs and alcohol. Crime is facilitated by alcohol and drugs, which undermine inhibitions or impair perception and cognition so that offenders are less aware of breaking the law. The value of situational controls on drinking has often been demonstrated. Johannes Knutsson, research director

at the Norwegian Police College, has shown that limiting the amount of alcohol that individuals could bring into a Swedish resort town on Midsummer Eve helped to reduce drunkenness and disorderly conduct. The small community of Barrow, Alaska, instituted a total ban in 1994 on the sale of alcohol to curb binge drinking, which led to an 81 percent drop in alcohol-related calls for service, a reduction of 43 percent in felonies, and a drop of more than 90 percent in removals of drunken people from public places (see Goldstein Award submission at www.popcenter.org/library/awards/goldstein/1995/95-56(W).pdf). Voluntary agreements reached among local drinking establishments to promote responsible drinking have reduced alcohol-related crime in numerous nightlife areas in Australia. Rutgers University has decreed that beer must be served from kegs instead of cases at dorm parties because cases are easier to hide and, as one student said: "If you have one keg and a line of 20 people behind it, people will get less alcohol than if you had a refrigerator and people were throwing out beer."

Remove excuses

Set rules
- Rental agreements
- Harassment codes
- Hotel registration

Post instructions
- "No Parking"
- "Private Property"
- "Extinguish camp fires"

Alert conscience
- Roadside speed display boards
- Signatures for customs declarations
- "Shoplifting is stealing"

Assist compliance
- Easy library checkout
- Public lavatories
- Litter bins

Control drugs and alcohol
- Blood alcohol self-testing in bars
- Server intervention
- Alcohol-free events

Arriving at Disney World

- Signs tell visitors arriving by car to tune into Disney radio for information.
- Signs direct them to the parking lot they must use and road markings show the way.
- Smiling parking attendants direct visitors to their space and loudspeakers remind them to lock their cars.
- Visitors are directed to rubber-wheeled trains to take them to the monorail.
- Recorded announcements direct them to stand safely behind guardrails.
- They are reminded about the location of their parking space (e.g., Donald Duck 1).
- They are (politely) asked to sit, to keep their arms and legs within the confines of the carriage, and to make sure children do the same.
- Before disembarking, they are told how to get to the monorail and barriers stop them from going the wrong way.
- On the platform, attendants guide them into corrals the right size to fill one compartment of the monorail.
- Safety gates at the platform edge open only when the monorail arrives.
- Any delays in service are announced and expected times of arrival are given.
- On board, passengers are asked to remain seated "for your own safety."
- Passengers are told how to disembark and how to move to the first entertainment.
- They are once again reminded to look after their children and to take their possessions.
- While waiting to enter each exhibit, visitors are marshaled in lines, which indicate waiting times; those in line are entertained by Disney characters.
- On leaving the exhibit, they are guided by signs, barriers, and attendants to the next one.

Source: Shearing, Clifford, and Phillip Stenning. 1997. "From the Panopticon to Disney World: The Development of Discipline." In *Situational Crime Prevention: Successful Case Studies,* 2nd edition, edited by Ronald V. Clarke. Guilderland (New York): Harrow and Heston.

44. Find the owner of the problem

Many problems arise through the failure of some institution—business, government agency, or other organization—to conduct its affairs in ways that prevent crime rather than cause it. In short, many problems occur because one or more institutions are unable or unwilling to undertake a preventive strategy, or because these institutions have intentionally established a circumstance that stimulates crimes or disorder. This creates risky facilities (step 28) and other concentrations of crime.

Solving problems usually requires the active cooperation of the people and institutions that have failed to take responsibility for the conditions that lead to the problem. These problem owners have shifted responsibility for the problem from their shoulders to the shoulders of the public and the police. Consequently, an important objective of any problem-solving process is to get them to assume responsibility. So for any problem, you need to answer three ownership questions:

1.   Who owns the problem?

2.   Why has the owner allowed the problem to develop?

3.   What is required to get the owner to undertake prevention?

Who owns the problem? When a problem is located at a specific place, it is usually easy to identify who is responsible. The owner of the problem is the owner of the location. A problem in a park, for example, belongs to the body with the responsibility for operating the park—usually a local government or some private agency.

It is more difficult to identify those responsible for problems that are spread over larger areas. If a widespread problem is focused on a specific location, then that location may be the source for the events in the surrounding area, and the owner of the central location may be responsible. A real estate speculator who owns many derelict properties in a neighborhood owns the crime associated with these properties.

If there is a special group of individuals—the elderly, children with special needs, or victims of domestic violence—and these individuals are targets of crime or disorder, then potential owners of the problem are family members. If there

are agencies charged with seeing to the well-being of these special groups, these service agencies are possible co-owners of the problems. While trying to reduce the highway deaths of migrant workers, the California Highway Patrol identified businesses that specialized in the transportation of migrant workers. They owned the problem but were not being responsible. Fixing responsibility entailed stepped up regulation of these businesses, including vehicle inspections, requiring seats and seat belts for certain types of migrant transport vehicles, and greater enforcement of safety violations. The result was a large reduction in fatal accidents involving migrant farm workers. This effort received the Goldstein Award for Problem-Solving Excellence in 2002.

Why has the owner allowed the problem to develop? There are four generic explanations that alone or in combination fit most problems:

1.   An institution may be unable to prevent crime. This might be due to ignorance as to the effect of its operations on crime or ignorance as to how to prevent crime. Or this may be due to lack of resources, even when the institution knows its operations help create crime. It is also important to recognize the importance of institu-tionalized procedures. Changing procedures can be time consuming and costly in both monetary resources and staffing. A new inventory control procedure to prevent shoplifting and internal theft may be difficult to implement because it requires disruptive changes in the ways employees conduct their normal business.

2.   Some institutions may be unwilling to prevent crime facilitated by their operations because they believe that fixing crime is the exclusive responsibility of the police (e.g., gas stations with a high rate of gasoline drive-offs may see gas thieves as the problem rather than their own lack of a prepay policy). Rather than recognize the role of opportunity in creating crime, some people dwell exclusively on the role of offenders. From this perspective, it is the function of police to reduce crime by stricter enforcement. The limitations of this approach have been noted in step 3. Another source of unwillingness is the belief that the police are intruding on the property owner's rights. A retailer might claim that he has the right

to display goods any way he wants and that the police should not compel, or even suggest, alternative displays that might reduce shoplifting.

3. Some institutions are unwilling because of the costs of addressing the problem; they gain more by ignoring crime than they lose. They may perceive that the costs of prevention outweigh any benefits to them. Security personnel at an entertainment venue are costly, and quality security personnel are more costly. If the costs of the problem are not borne by the facility, then there is little perceived need to bear the costs of prevention. In essence, such facilities are exporting the costs of crime and prevention onto others, and thereby reducing their own costs.

4. Some institutions may profit from the crimes, as can happen when a used goods shop does little to verify legitimate ownership of the merchandise they display. Auto repair garages can purchase stolen car parts cheaper than legal car parts, thus increasing their profit margin.

What is required to get the owner to undertake prevention? Herman Goldstein has outlined a rough hierarchy of interventions designed to shift responsibility for problems from the police back to the institutions that own them (see sidebar).

Moving from the bottom to the top of Goldstein's list, interventions become less cooperative and increasingly coercive. Because of this, the difficulty of intervention increases, along with the costs of failure to the police, as one moves up the list. Consequently, the value of information and thorough analysis increases from the bottom to the top. As Goldstein notes, this hierarchy is a rough indicator of these trends rather than an exact description. Nevertheless, it is useful for planning a layered set of responses to a problem—beginning with the most cooperative and working upward only if needed and only when supported by information.

Shifting responsibility back to the owner of the problem can create legal and political conflicts. Institutions that had gained from the problem or foresee a cost in taking responsibility for it are unlikely to simply agree to a suggestion that they do something about it. The problem of false alarms has been a plague for over two decades, but in many jurisdictions it is difficult to overcome the political and financial clout of the alarm industry, who are principally responsible for the high level of false alarms. Clearly, the least costly and intrusive prevention measures will meet the least resistance (step 45). But if these responses turn out to be ineffective, then the police often face a difficult choice: demand greater responsibility from problem owners and risk a political conflict, or continue to spend the public's money on a problem created by a few individuals. In the abstract the answer seems clear, but in practice it is often a difficult decision.

Read more

Scott, Michael. 2005. "Policing for Prevention: Shifting and Sharing the Responsibility to Address Public Safety Problems." In *Handbook of Crime Prevention and Community Safety*, edited by Nick Tilley. Cullompton (UK): Willan.

Herman Goldstein's hierarchy of ways to shift ownership

Least cooperative / Most difficult

↑

Bringing a civil action
Legislation mandating adoption of prevention
Charging a fee for police service
Withdrawing police service
Public shaming
Creation of a new organization to assume ownership
Engaging another existing organization
Targeted confrontational requests
Straightforward informal requests

↓

Most cooperative / Least difficult   Educational programs

45. Choose responses likely to be implemented

Finding a suitable response can be a troublesome process. You may be repeatedly disappointed when promising interventions are vetoed because of expense or difficulty or because of lack of cooperation. But there is more than one way to solve a problem. So eventually your team will agree on a response that meets some basic requirements:

- It is not too ambitious or costly.

- It focuses on near, direct causes rather than on distant, more indirect ones, which gives it a good chance of making an immediate impact.

- The mechanism through which each response should impact the problem has been clearly articulated.

So at last your worries are over and you can relax, right? Wrong! Even more difficult than agreeing on a good response is making sure that it is actually implemented. You cannot ensure this on your own, but if you know the pitfalls of implementation, you can steer the partnership away from choosing responses that can fall prey to these. Tim Hope and Dan Murphy identified these pitfalls when studying a vandalism prevention project in 11 schools in Manchester, England.

The responses to be implemented at each school were selected by groups of local government officials, school staff, and police. Much of the damage was more careless than malicious. This suggested two different solutions: situational responses to protect the buildings or providing recreational activities to divert children into less harmful activities. Only one of the 11 groups recommended improved leisure provision. The situational responses recommended were mostly basic target hardening (window grills, toughened glass, and high fences), though proposals also included a plan to encourage local residents to keep an eye on two adjacent schools and a plan to move a playground to a less vulnerable area.

At only two schools were all the recommendations implemented. In three, none was put in place, and at the remaining six schools, one or more recommendations failed to materialize. These failures to implement meant there was little impact on vandalism. Hope and Murphy identified five main obstacles to implementation, all of which have been encountered in U.S. problem-solving projects:

1. **Unanticipated technical difficulties.** For eight schools, the groups recommended the replacement of vulnerable windows with polycarbonate glazing or toughened glass. However, not a single pane of either type was installed. The city architects had prohibited polycarbonate glazing because in case of fire it would prevent escape and might give off toxic fumes. Toughened glass had to be cut to size before it was toughened, but the panes came in many sizes and it would have been difficult to store a few of each size in readiness. The alternative of supplying a pane to order was ruled out by the long time (six weeks) it would take to do this.

2. **Inadequate supervision of implementation.** At one school, it was agreed to move the playground to a less vulnerable area. The original playground was to be replaced with flowerbeds, but this had to be done by a government agency that got no further than providing an estimate for the work. The relocation of the playground was subcontracted to a private builder, but because of a misunderstanding, only half the proposed area was resurfaced. After two years, therefore, vandalism was unchanged, there were no flowerbeds, and the school had acquired a useless, narrow strip of pavement.

3. **Failure to coordinate action among different agencies.** Every recommendation that was the sole responsibility of the building maintenance section of the school system was implemented, while none of those involving other departments or agencies ever materialized. For example, it was recommended that people living near two schools should be encouraged to keep an eye on them after hours and report anything suspicious to the police. This required the cooperation of the school system administration; the principal, staff, and pupils of the schools; and three branches of the police—crime prevention, community relations, and local police. All liked the idea, but no one would take the lead.

4. **Competing priorities.** During the implementation period, many other demands were placed on the school system as a result of widespread labor unrest by local government employees and a school reorganization made necessary by a declining school-age population. School staffing changes resulted in the reassignment of staff members who were involved in the vandalism project. It is not surprising that the staff gave the vandalism project low priority.

5. **Unanticipated costs.** In some cases, the wider consequences of a particular course of action outweighed its immediate benefits. For example, at the school with the most serious vandalism problem, it was decided to mount a security patrol for the upcoming vacation period. The school maintenance workers were employed to patrol the school for payment during their spare time. This was immediately successful in reducing vandalism and was extended beyond school breaks to provide coverage on evenings and weekends. Other schools demanded the same protection, and more maintenance workers wanted the additional overtime opportunities. Ultimately, the cost became too high and the project was scrapped.

You can see from the list above that some implementation problems cannot be anticipated and that a proportion of all responses selected will never be implemented. However, it is also clear that certain kinds of responses can be expected to encounter problems, and these are summarized in the side-bar. In some cases, of course, a response may be so promising that it is worth pursuing despite the risks of implementation failure. But to be forewarned is to be forearmed.

Read more

Hope, Tim, and Daniel Murphy. 1983. "Problems of Implementing Crime Prevention: The Experience of a Demonstration Project." *The Howard Journal of Criminal Justice* 22: 38–50. http://onlinelibrary.wiley.com/doi/10.1111/j.1468-2311.1983.tb00469.x/pdf.

Laycock, Gloria, and Nick Tilley. 1995. "Implementing Crime Prevention." In *Building a Safer Society,* edited by Michael Tonry and David Farrington. Chicago: University of Chicago Press.

Expect implementation problems when a response

- requires coordinated action among a number of separate agencies;

- will take a long time to introduce and involves a number of steps to be completed in sequence;

- must be implemented by staff with little understanding of its purpose;

- has no major supporter among the partnership team or senior administrators.

### Also expect problems when the response must be implemented by an agency

- that is outside the partnership;

- that is poorly resourced or in turmoil;

- that will gain little direct benefit from the solution.

46. Conduct a process evaluation

46

The first critical step in assessment is to conduct a process evaluation. It answers the question, "Was the intervention put into place as planned and how was it altered for implementation?" As shown in the figure, a process evaluation focuses on the resources that were employed by the response (inputs) and the activities accomplished with these resources (results), but it does not examine whether the response was effective at reducing the problem (outcomes). For that you need an impact evaluation. An impact evaluation tells you whether the problem changed (steps 47 to 53).

Roles of process and impact evaluations

Both types of evaluations are needed in a POP project. The table summarizes possible conclusions based on the findings of both types of evaluation. (A) The response was implemented in accordance with the plans, and there are no other reasonable explanations for the decline. So there is credible evidence that the response caused the reduction. (B) The response was implemented as planned, but there was no reduction in the problem. So there is credible evidence that the response was ineffective.

Focus of process and impact evaluations

Inputs
- personnel
- equipment
- expenditures
- other resources

Process evaluation focus

Results
- arrests
- people trained
- barriers installed
- other tasks accomplished

Outcomes
- crimes reduced
- fear abated
- accidents reduced
- other reductions in problems

Impact evaluation focus ⟶
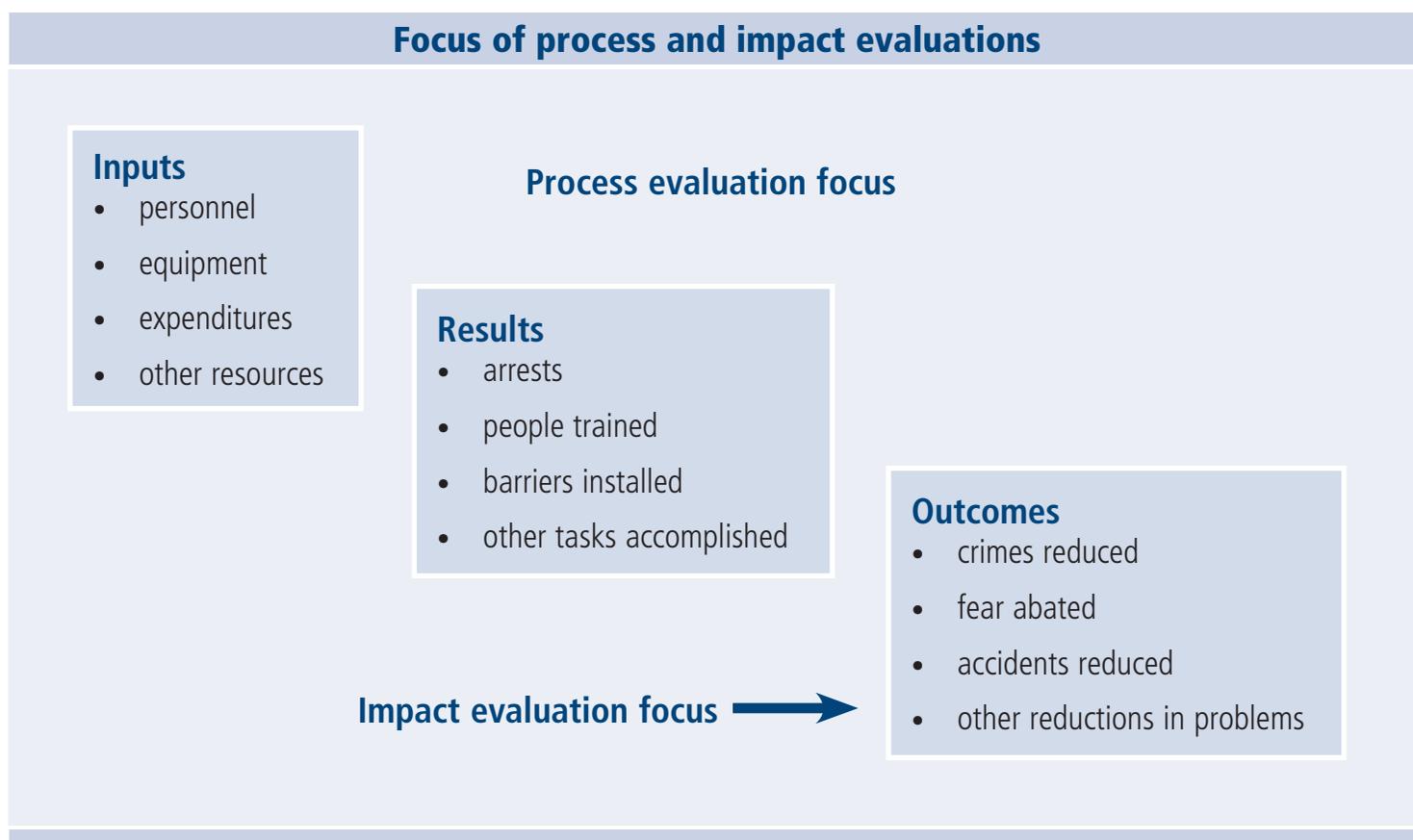
Interpreting results of process and impact evaluations

		Process evaluation results	
		Response implemented as planned	Response not implemented as planned
Impact evaluation results	Problem declined and no other likely cause	**A.** Evidence that the response caused the decline	**C.** Suggests that the response was accidentally effective or that other factors may have caused the decline
	Problem did not decline	**B.** Evidence that the response was ineffective	**D**. Little is learned

But what if the response was not implemented as planned? In this case, it is hard to come to a useful conclusion. (C) If the problem declined, it might mean that the response was accidentally effective or some other factor was responsible. (D) If the problem did not decline, then no useful conclusion is possible. Perhaps the implemented response is faulty and the original response would have been effective, or perhaps neither is effective. Unless the planned response was implemented, it is hard to learn from an impact evaluation.

A response is a complex piece of machinery with a variety of components, any of which can go wrong (step 45). A process evaluation examines which components were carried out successfully. The process evaluation checklist highlights the questions that you should ask.

Scheduling of activities in a problem response is often critical. For this reason, it is useful to create a project timeline showing when key components were implemented. It is also useful to show when other unexpected events occurred and noting publicity so you can check for anticipatory benefits (step 52).

Though unexpected developments can force you to modify a response, some of these developments can be anticipated by understanding what can go wrong with responses. Some of the possible answers are as follows:

- You may have an inadequate understanding of the problem. You may have focused too little on repeat victims, for example. This can be caused by invalid assumptions about the problem or insufficient analysis (you did not look for repeat victimization, for example).

If, while developing the response, you can identify weak spots in your analysis, then you can create contingency plans (a plan to address repeat victimization should this prove to be needed).

- Components of the project have failed. The process evaluation checklist shows that there are many potential points of failure. However, not all components are equally important for success. Further, it is sometimes possible to anticipate components with high failure rates. Citizen groups in general are quite variable in their ability to carry out tasks, for example. Building in redundancy or formulating backup plans can mitigate component failure.

- Offenders may react negatively to your response (step 11). Some forms of negative adaptation can be anticipated and planned for. Sometimes geographical displacement locations can be identified before the response, for example, and advanced protective actions can be taken to immunize them.

- There are unexpected external changes that have an impact on the response. A partner agency's budget may be unexpectedly cut, for example, forcing it to curtail its efforts on the problem. As the problem will not dissipate on its own, the only recourse is to alter the plans.

Process evaluations require information. This information will come largely from members of the problem-solving team, so it is important that they document their activities. Which activities they document and who records it in what detail are questions that should be resolved while planning the response.

A process evaluation checklist

Who is supposed to act?
Police units ☐   Government partners ☐   Community groups ☐   Businesses ☐   Others ☐
What are they supposed to do? _____

Do they have the capability to act?
Legal authority ☐   Local authority ☐   Resources ☐   Expertise ☐

When were they supposed to act?
Date and times_____   Coordination with others _____

Who or what is supposed to receive action?
People_____   Places_____

Was the action delivered appropriately?
Type _____   Intensity_____   Duration_____

Are there back up plans for . . .
Faulty plans ☐ ?   Component failure ☐ ?   Adaptation ☐ ? External changes ☐ ?

47. Know how to use controls

You should address three questions when assessing a response:

1. "What was the implemented response?" A process evaluation answers this question (step 46).

2. "Did the problem decline?" Comparing the level of the problem after the response to the level of the problem before answers this question.

3. If the response declined, then ask "Did the response cause this decline, or was it something else?" There are usually many alternative explanations for the decline in the problem.

Answering the third question requires the use of controls. The purpose of controls is to rule out alternative explanations. Different alternative explanations require different types of controls as described below:

Changes in size. If there had been a decline in the number of tenants in an apartment building, we would expect the number of burglaries to decline because there are fewer potential victims. A reduction in targets is an alternative to the explanation that the drop was due to the intervention. To control for changes in size, divide the number of burglaries before and after the response by the number of occupied apartments before and after the response. In the table, what appears to have been a decline in burglaries was partially caused by the drop in occupied units. When this is accounted for, we still notice a response effect. If the time periods before and after are of substantially different lengths, we control for this by dividing again by the number of months before and the number of months after to get burglaries per occupied unit per month.

Cycles of activity. Human activity oscillates over days, weeks, and months. Some of the most common cycles include commuting and attendance at school, work, and leisure, as well as seasons and holidays. Such cycles cause regular changes in problems. To control for cycles, compare the same part of the cycle before the response to the same part of the cycle after the response.

Long-term trends in the problem. Problems may be getting worse (or better) before the response (step 26). Without accounting for trends, one could conclude that the response was responsible, when in fact this might have occurred anyway. There are two ways of controlling for trend. The first method is to measure the problem for a long period before the response so that any trend can be identified. Substantial deviations from the existing trend after the response are evidence of a response effect. Anticipatory effects (step 52) are drops in the problem due to the response, but occurring before the response is fully implemented. These need to be distinguished from longer trends prior to implementation.

The second method is to compare the people or places getting the response to a similar group of people or places not getting the response. This is called a control group or a comparison group. A control group must be similar to the response group with regard to the problem but cannot receive the response. A control group tells you what would have happened to the response group if the response group had not received the intervention. If the response group changes differently from the control group, this is evidence of a response effect.

Other unexpected events. Many other things are changing as the response is implemented, one or more of which could have caused the decline in the problem. Instead of an accident-reduction response causing a decline in accidents on a road, for example, slow traffic from the road repairs going on about the same time as the response might have been the cause. The standard approach is to use a control group, as we discussed for examining trends. The control area is only useful if it is affected by the same factors as the response area. So counting accidents on the response and control roads, both of which are influenced by the road repairs, could tell you whether the road repairs contributed to the decline in accidents.

Change in problem measurement. A before-and-after comparison is only valid if the problem was measured in the same way before and after the response. Measurement differences can cause a perceived change in the problem.

Using rates to control for changes in size			
	6 months before	6 months after	Change
Burglaries	41	20	-21
Occupied units	83	73	-10
Burglaries/ occupied unit	.494	.286	-.208

Use the same measurement procedures before and after. Before-and-after observations should occur at the same sites at the same times, watch the same things, and record things in the same way. Before-and-after photographs and videos should be taken in the same light, from the same angles, at the same distance, and with the same size image area. Interviewers should be the same before and after, asking the same questions, in the same order. Examine official records to determine if recording practices are stable over time.

Natural decline from an extreme high. Many problems are addressed because things have become extremely bad. So the response is implemented when the problem is abnormally high. But even a relatively stable problem will fluctuate. A problem that is now abnormally bad will return to its normal level, even if nothing is done (this is called "regression to the mean," and it applies to abnormal lows as well). Comparison area controls may not be useful here, if the response area is at a peak and the control area is not. Instead, examine the long-term fluctuation prior to the response to see if the problem was abnormally bad.

The figure illustrates some of the uses of controls. Moving clockwise around this figure, panel A shows a 24-month time series with a response implemented in early November of the first year. There is a pronounced yearly cycle and a downward trend that are not due to the response. The spike in November following the response suggests that it backfired.

Panel B shows a before and after comparison (the average of August–October 2003 compared to the average of November 2003–January 2004) that suggests a worsening of the problem following the response.

In panel C, a comparison area has been added. The immediate before-and-after comparison shows the response area doing better than its comparison area, but because of cyclical effects we would not have much confidence in these findings. Comparing the three months before the response to the same three months a year later accounts for the cyclical behavior of the crime series.

But because some of the decline in both groups may be due to the general downward trend, panel D provides a better picture of the impact of the response. Before the response, the area being treated is consistently worse than the comparison area. After the response, both do about the same. Also, the troublesome November spike seems to be unrelated to the response because it shows up in the control trend, too. The response seems effective, but is not dramatic, so its improvements were easily hidden by factors that need to be controlled—trends, cycles, and unexpected events.

Some applications of controls

A. Monthly time series for response area

Response begins
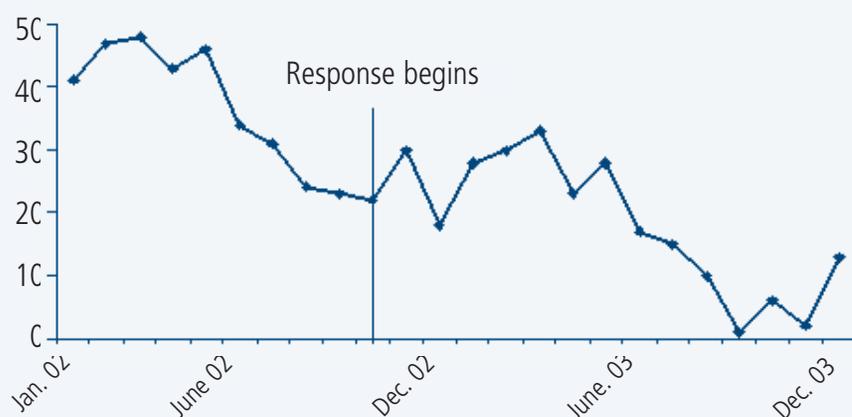
B. Before 3 month average to after 3 month average

23.0   25.3

Aug. '02–Oct. '02   Nov. '02–Jan. '03

D. Monthly time series for response and control areas

Response begins

Resp
Contr
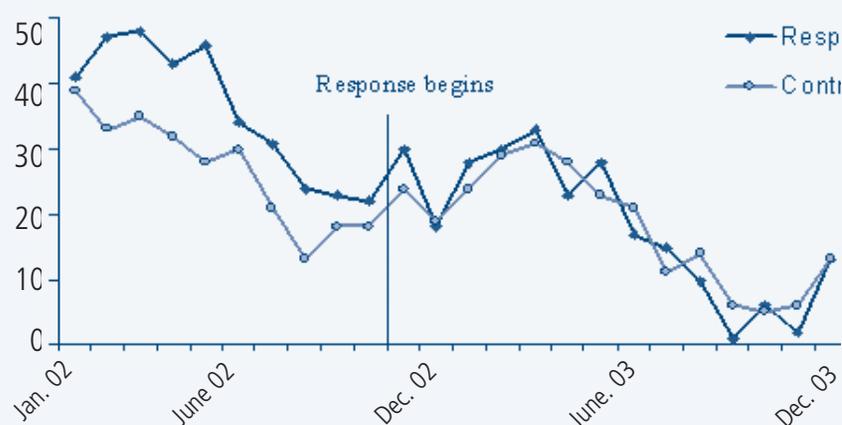
C. Before 3 month average to same after 3 month average

23.0   25.3
16.3   22.3
Response
Control
5.7   8.3

Aug. '02–Oct. '02   Nov. '02–Jan. '03   Aug. '03–Oct. '03
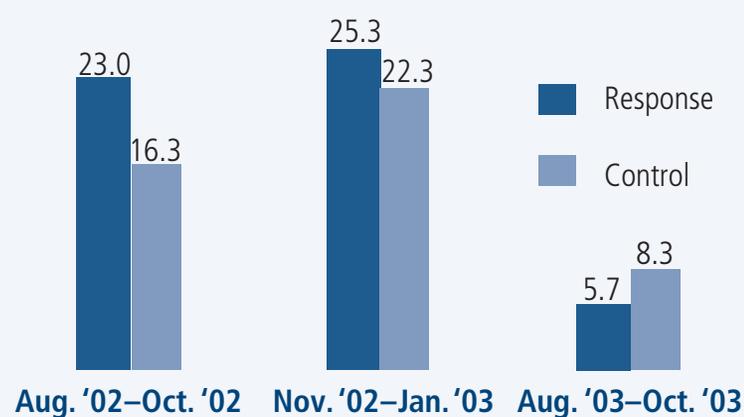
48. Consider geographical and temporal displacement

Geographical displacement occurs when the intervention blocks crime or disorder opportunities at a facility or in an area, and offenders move to other facilities or areas to offend. Temporal displacement also stems from successful prevention, but in this case offenders shift offending in time to other hours or days.

Offenders can find it difficult to move to some other location because easy crime or disorder opportunities are limited (step 16). Targets may be concentrated at some places and not others (step 16). Vulnerable potential victims can be found at some locations, but not others (step 29). Some facilities have low behavioral controls, but others do not (step 28). Opportunities that exist are either already hot spots or are hidden from offenders—either far away or not recognizable as fruitful places to offend.

Offenders will not usually spend time searching far from their hot spot when it is suppressed. So if offenders move, they are most likely to move to a place close to the original hot spot. The likelihood that offenders will move to an opportunity declines the further the opportunity is from the original hot spot, as illustrated in the figure. Also, not all spaces are suitable to offenders. Opportunities are not spread evenly across the map.

In this map, the diamonds are places with characteristics like the original hot spot. Those closest to the original location are most likely to be affected most by displacement. In addition to distance, natural barriers to movement can limit displacement. In the figure, the river flowing northeast/southwest reduces the chances of displacement to the east. Knowing this, displacement countermeasures can be applied with the response at the most vulnerable locations.

If geographical or temporal displacement occurs, it is most likely to shift crime to locations and times very similar to the locations and times affected by the prevention. Such shifts require less effort, learning, and risk for offenders than shifting to very different places and times. It is more likely that offenders will try to outwait the response, which explains Lawrence Sherman's finding that the effects of crackdowns decay. If offenders cannot outwait a response, it will be the most familiar locations and times that will have the greatest chance of receiving displaced crime. As Paul and Patricia Brantingham note, it is possible to predict the most likely areas for displacement. But this requires detailed knowledge of the crime opportunities in the current situation.

If geographical displacement occurs, it can distort conclusions about effectiveness. Table 1 illustrates how this can happen. In this example, there are three similar areas with equal numbers of crimes before treatment: (1) a treatment area, (2) an area adjacent to the treatment area, and (3) an area distant from the treatment area. The treated area has a decline of 25 crimes. However, the adjacent area has a 10-crime increase. This seems to suggest that if nothing had been done in the treatment area it too would have experienced a 10-crime increase. So the net reduction is 35 (the 25 crimes reduced in the treatment area and the 10-crime increase that was averted).

Decline of geographical displacement with distance from hot spot epicenter
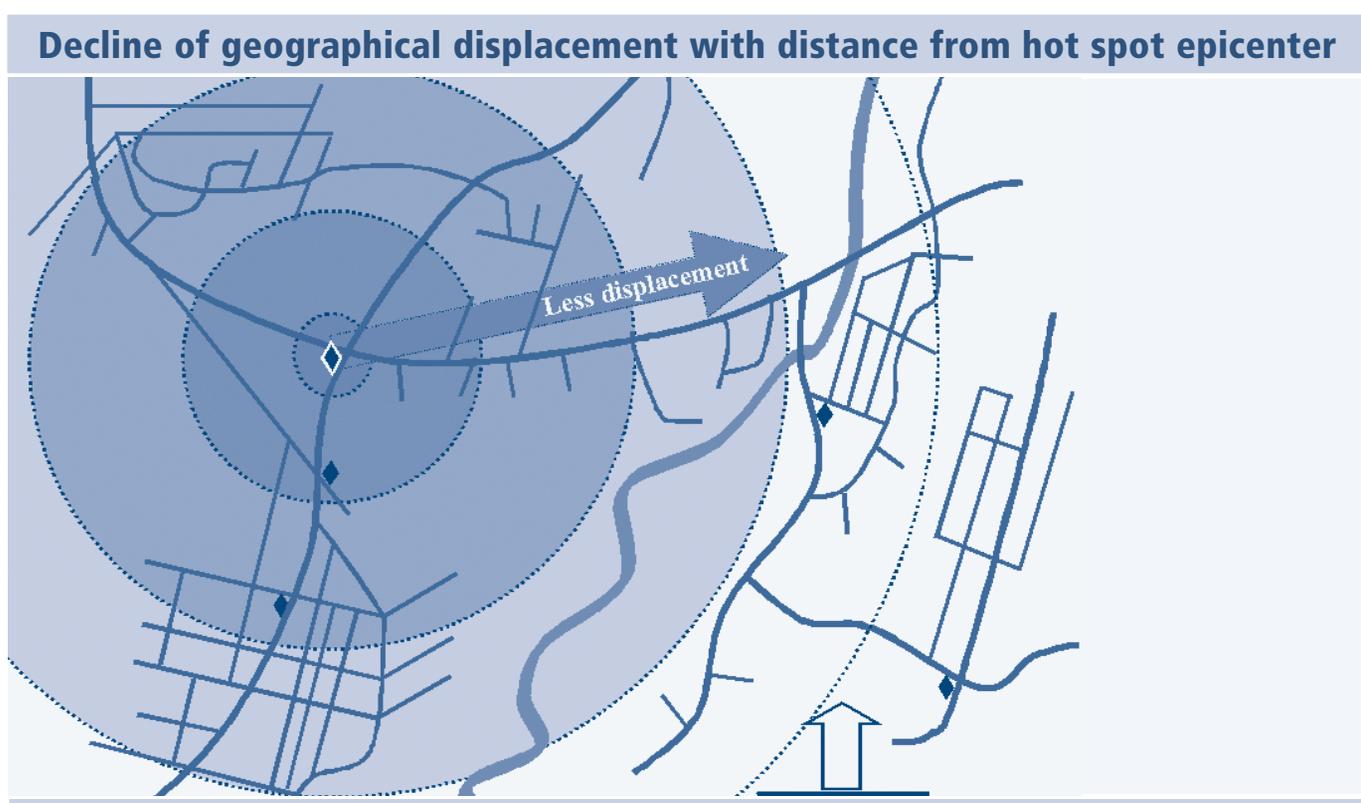
Less displacement

Table 1. Use of adjacent and distant control areas in controlling for geographical displacement

	Before	After	Difference	Estimated net effect
Treatment	100	75	-25	
Adjacent area	100	110	+10	-35
Distant area	100	100	0	-25

But these extra 10 crimes could have been due to geographical displacement. One would be better off using the distant control area for comparison. As a control, the distant area suggests that if no treatment were implemented, crime would not have changed in either the treatment or the adjacent areas. The implication is that the treatment caused a 25-crime decline in the treatment area but a 10-crime increase in the adjacent area (displacement) for a combined reduction of 15 crimes. Though effective, the program is not as effective as originally estimated. Step 51 describes formulas to take account of displacement when assessing effectiveness.

Try to select two comparison areas as part of evaluations: one near the treatment area that has similar crime opportunities to detect geographical displacement (and diffusion, step 51) and the other to serve as a control area. The control area should be protected from displacement contamination by distance or some other barrier (e.g., a highway or river). Valid selection of control and displacement areas requires you to have some idea of offenders' normal movement patterns, as the control area needs to be outside their roaming territory while the displacement area should be within it.

Temporal displacement may be easier for offenders than geographical displacement because it requires less effort. Temporal displacement can occur within a 24-hour day, if, for example, the prevention is restricted to certain times but leaves other times unprotected. It can also occur over a week. Or it can occur over longer periods.

If the evaluation compares times with a prevention response to times without a prevention response, contamination of temporal controls can take place. In table 2, a treatment takes place on Saturday and Sunday. The average number of crimes on these days dropped by 25 crimes after treatment, while crimes on Mondays and Fridays increased by 10. Was this due to temporal displacement? Midweek days may be more valid controls because they have less in common with weekends than do Mondays and Fridays.

Waiting out the prevention is a common form of temporal displacement. Enforcement crackdowns are particularly vulnerable to this form of time shifting because they are temporary by definition. If an intervention can be maintained (unlike a crackdown), then offenders cannot wait it out. They then face the difficult option of moving to less attractive places or targets or undertaking new tactics or other crimes. If these options are too difficult, unrewarding, risky, or otherwise unattractive, they may commit fewer offenses.

Read more:

Brantingham, Paul, and Patricia Brantingham. 2003. "Anticipating the Displacement of Crime Using the Principles of Environmental Criminology." In *Theory for Practice in Situational Crime Prevention,* edited by Martha J. Smith and Derek B. Cornish. Vol. 16 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press.

Eck, John. 2013. *Assessing Responses to Problems: An Introductory Guide for Police Problem-Solvers.* Washington, DC: Office of Community Oriented Policing Services. http://ric-zai-inc.com/ric.php?page=detail&id=COPS-P034.

Table 2. Using days of the week to control for temporal displacement

	Days of week	Before	After	Difference	Estimated net effect
Treatment	Sat & Sun	100	75	-25	
Adjacent area	Mon & Fri	100	110	+10	-35
Distant area	Tues–Thurs	100	100	0	-25

49. Examine displacement to other targets, tactics, and crime types

In addition to geographical and temporal displacement, offenders can switch targets, change their tactics, or change crimes.

Target displacement involves offenders shifting from newly protected targets to other targets. In 1970, steering column locks became required in all new cars sold in Britain; thefts of new cars dropped from 20.9 percent of all cars stolen in 1969 to 5.1 percent in 1973. However, the overall theft rate of automobiles stayed roughly constant because offenders switched from the newer protected vehicles to older unprotected vehicles. This is one of the few documented cases where displacement wiped out most prevention gains, at least in the short run. Over a longer period, these devices appeared to have curbed theft for temporary use. As this case illustrates, it is easy for offenders to switch to very similar targets. Target displacement is less likely when the alternative targets are unlike the old targets.

Step 42 shows how geographical or temporal displacement can contaminate control groups. If the evaluation of a prevention effort uses a target control group, then a similar form of contamination can take place. Imagine a response to curb theft of purses from women over 60 years old in a shopping center. To estimate what the trend in elderly purse theft would be if nothing had been done, the theft of purses from middle-aged women of 45 to 59 is measured. If, unknown to us, the thieves displaced from the protected older women to unprotected middle-aged women, we would conclude that purse theft would have gone up without a response. When we compare this control target group change to the treatment group change we would mistakenly inflate the treatment effectiveness. A better control group might be even younger women shoppers (ages 30 to 44, for example), or even better, wallet theft of male shoppers. Though neither of these alternatives is perfect, they are improvements because one would expect far less displacement to dissimilar targets. Or select another shopping district as a control area—in which case you would have to guard against geographical diffusion or displacement contamination (steps 48 and 51).

Tactical displacement occurs when offenders change their tactics or procedures. They might use different tools to defeat better locks, for example. Or computer hackers might alter their programs to circumvent improved security. In medicine, some bacteria can mutate quickly so a drug that is effective against one form of the bacteria becomes less effective as mutant strains become more prevalent. One way of countering this is to use broad-spectrum treatments that are effective against a wide range of mutations. Similarly, broad spectrum responses protect against existing methods used by offenders and many modifications of these tactics. Broad spectrum interventions require offenders to make big changes in their behavior that they may not be able to achieve. Paul Ekblom describes attempted tactical displacement following the installation of barriers in British post offices to prevent over-the-counter robberies; some offenders tried using sledgehammers. This change in tactics was not particularly successful, however, and displacement was limited. These barriers are an example of a broad spectrum intervention as they were able to defeat new tactics.

Switching crime type is another type of displacement you should look for. Offenders might switch from vehicle theft to vehicle break-ins or carjacking. We sometimes evaluate responses to one type of crime by comparing the trend in a similar type of crime that did not get a prevention response. For example, we might select theft from vehicles as a control in the evaluation of a theft of vehicles intervention.

The same principles of contamination and protection apply to tactical and crime type displacement as we found with other forms of displacement. If the tactic or crime type is very similar to the tactic or crime type being addressed, then displacement could contaminate these controls. Dissimilar tactics or crime types are less likely to suffer contamination. But if they are too dissimilar it is not a useful control.

There is no perfect solution to this problem and compromises must be struck. The consequence is that it is often difficult to know if displacement is occurring and difficult to judge the effectiveness of the intervention. Compounding these difficulties is that multiple forms of displacement can occur simultaneously. Indeed, sometimes one form of displacement will necessitate another form as well. Target displacement may require a change in tactics, and if the new targets are not in the same places as the old targets, geographical displacement will occur as well.

You cannot find displacement unless you look for it. This means that you should examine a problem closely and imagine the most likely forms of displacement. Are there other opportunities for crime or disorder that are similar to the opportunities your efforts are trying to block? Will your offenders easily discover these opportunities? Looking for displacement opportunities prior to finalizing a response gives you two advantages. First, you can develop measures for detecting it should it appear. More important, you may be able to develop countermeasures that prevent displacement.

Read more

Ekblom, Paul. 1987. *Preventing Robberies at Sub-Post Offices: An Evaluation of a Security Initiative*. Crime Prevention Unit Paper 9. London: Home Office.

Webb, Barry. 1994. "Steering Column Locks and Motor Vehicle Theft: Evaluations from Three Countries." In vol. 2 of Crime Prevention Studies, edited by Ronald Clarke. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_02/.

A study of target displacement: helmet laws and the reduction in motorcycle theft

In Germany (as elsewhere) the enactment of helmet laws was followed by large reductions in thefts of motorcycles. After the laws were brought into place in 1980, offenders wanting to steal a motorbike had to bring a helmet or they would be spotted quickly. The figure shows that by 1986 thefts of motorbikes had dropped to about one-third of their level in 1980, from about 150,000 to about 50,000. (The gradual decline probably reflects stronger enforcement and growing knowledge about the requirement.) This fact suggests that motorbike theft has a much larger opportunistic component than anyone would have thought. The existence of excellent theft data in Germany allowed researchers to investigate whether the drop in motorcycle theft had resulted in target displacement to theft of cars or bikes, other forms of personal transportation.

The other two lines show the national totals for car and bike thefts during the same years. These provide some limited evidence of displacement in that thefts of cars increased by nearly 10 percent between 1980 and 1986, from about 64,000 to 70,000. Thefts of bicycles also increased between 1980 and 1983, but by the end of the period had declined again to a level below that for 1980. Altogether, it is clear that at most only a small proportion of the 100,000 motorbike thefts saved by the helmet laws were displaced to thefts of other vehicles.

A little thought shows why this may not be surprising. Motorbikes may be particularly attractive to steal. They are much more fun to ride than bikes for the young men who comprise most of the thieves. Even if the intention is merely to get home late at night, a motorbike offers significant advantages, especially if the distance is more than a few miles. Motorbikes may also be easier to steal than cars since the latter have to be broken into before they can be started. Like bikes, cars also offer less excitement than motorcycles and they may require more knowledge to operate.
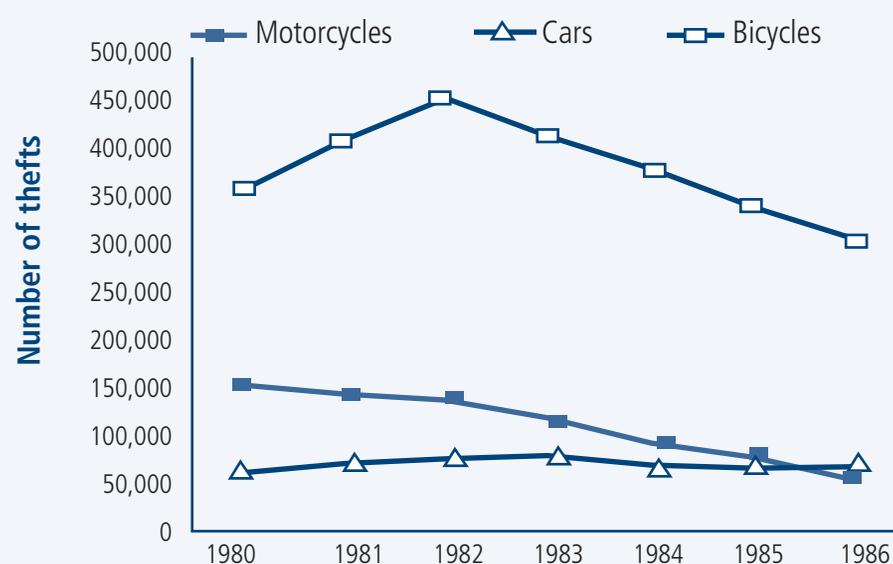
Source: Mayhew, Pat, et al. 1989. "Motorcycle Theft, Helmet Legislation and Displacement." *Howard Journal of Criminal Justice* 28(1): 1–8.

50. Watch for other offenders moving in

Three principles of this manual are (1) it takes more than offenders to create problems, (2) people cannot offend if there is no opportunity structure to support this behavior, and (3) altering the opportunity structures can dramatically reduce problems. It follows that responses focusing on only removing offenders have limited effects on problems. After some offenders are removed, there may be a decline in the problem for a short time—then either the old offenders return to take advantage of the opportunities or new offenders start taking advantage of them. This is sometimes called perpetrator displacement. Natural replacement of offenders can be slow, particularly if the opportunities are obscure. But if someone discovered the crime opportunities in the past, others will rediscover them in the future. And if the old offenders were removed through imprisonment, some may return to take advantage of the opportunities upon their release.

New offenders attracted by opportunities might contribute to long-term crime cycles. Bank robberies in parts of the United States may be an example of this. For a few years there will be a large number of these crimes, and then they will decline for several years only to surge again later to start the cycle over again. One hypothesis for these cycles is that during peak robbery years, banks begin instituting a host of preventive measures and most offenders are caught and imprisoned. These efforts drive bank robbery down. After several years with few bank robberies, bank security becomes lax and the opportunities for bank robbery increase. Then new offenders start to take advantage of the lower security, beginning a new wave of robberies and prevention. This hypothesis draws attention to the fact that it takes more than enforcement to be effective, and prevention gains must be maintained to stay effective.

In fact, it is quite common to read descriptions of problem-solving efforts that begin with a description of failed enforcement efforts. In every situation either old offenders

keep coming back or new offenders have replaced them. There are three ways in which new people are exposed to offending opportunities:

1. They are exposed to them through their normal daily routines. Police arrest young men stealing items from unlocked cars in a city center, for example, but unlocked cars with things in them remain there. Of the many people who use the city center on a daily basis, a few will notice these cars and try their hand at theft. If successful, some of these individuals will continue to steal from cars.

2. They are exposed to crime opportunities through informal networks of friends and acquaintances. People already experienced in taking advantage of an opportunity to commit crime or disorder may invite others in to help them or enjoy the experience. Since we are seldom 100 percent successful at removing all the offenders for long periods, there are usually many people around who can introduce new people to the opportunities.

3. They discover offending opportunities through recruitment. A criminal receiver may employ new burglars if the old ones can no longer supply him with goods. If prostitution is organized, then a pimp may recruit new prostitutes to fill the jobs left vacant by the former prostitutes. Gangs may bring in new members to replace old ones. It has been suggested that adult drug dealers, faced with stiffer penalties for drug convictions, started hiring juveniles to carry out the riskiest tasks because the penalties for juveniles caught with drugs were much less than for adults.

How do you find out if offenders are moving in? The most straightforward method is to compare the names of offenders associated with the problem before the response to the names of offenders associated with the problem after the response. If the names are different, then offenders may be moving in. The difficulty with this approach is that a complete roster of the offenders involved is seldom available. So it is not clear if the new names are really new offenders or if they have been part of the problem for some time but have only recently been discovered.

Offender interviews can also be helpful. Offenders may tell you when they became involved in the problem, how they became involved, and who else is involved. They can also provide information on tactical and other forms of displacement. However, offenders can be uncooperative and unreliable (step 10).

Sometimes detailed examination of the methods used to commit crimes can provide insights into whether new offenders are involved. If the tactics are radically different than those used earlier, there is a possibility that new offenders are working. However, it is also possible that the old offenders have switched tactics.

Read more

Matthews, Roger. 1997. "Developing More Effective Strategies for Curbing Prostitution." *Situational Crime Prevention: Successful Case Studies*, 2nd edition, edited by Ronald Clarke. Monsey (New York): Criminal Justice Press.

Combining crackdowns with environmental modifications: controlling "away day" prostitutes in Finsbury Park

Roger Matthews describes a London prostitution problem in the Finsbury Park neighborhood of London. Repeated crackdowns by the police over many years had failed to control the prostitution market as the prostitutes simply returned to the same area. When crackdowns were combined with street barriers to make it difficult for men to find prostitutes by driving around the area in their cars, the level of prostitution activity dropped dramatically. Matthews suggests that it was the combination of strategies—offender removal through enforcement and opportunity blocking through street barriers—that was responsible for the decline. One important reason why these interventions were successful was that the prostitutes were not deeply committed to this way of earning a living. Few of them were addicts or under the control of pimps. In fact, the most common reasons they gave for working as prostitutes was that they could earn more money than in other forms of work, they enjoyed the independence, and they enjoyed meeting a variety of men. Many of them came to Finsbury Park from outlying areas on cheap train tickets. Together with other women, they rented rooms in one of the many boarding houses or residential hotels in the area, or they conducted business in the cars of clients. When not working as prostitutes, many of them worked as barmaids, go-go dancers, or store clerks. Their relatively light commitment to prostitution and their alternative ways of making money might help explain why the researchers could find little evidence of displacement of the Finsbury Park prostitutes to other nearby areas in London.

Source: Shearing, Clifford, and Phillip Stenning. 1997. "From the Panopticon to Disney World: The Development of Discipline." In *Situational Crime Prevention: Successful Case Studies,* 2nd edition, edited by Ronald V. Clarke. Guilderland (New York): Harrow and Heston.

51. Be alert to unexpected benefits

You can drastically underestimate the effects of your intervention if you do not take account of diffusion of benefits (step 13). You may conclude that the intervention is not worth the effort or that it failed to suppress the problem. This is particularly true when diffusion contaminates your control group.

Control groups show what would have happened to problems if you did nothing (step 47). They need to be as similar to the treatment group as possible, but they must not be influenced by the treatment. If prevention diffuses into the control area, you will get the misleading impression that things would have gotten better if no response had occurred. This invalid conclusion will cause you to underestimate the effectiveness of your program. (See step 48 for related issues with displacement.)

Kate Bowers and Shane Johnson suggest two ways to select control areas when displacement or diffusion of benefits are possible. The first is to create two concentric zones around the treatment area. Prevention may diffuse into the adjacent buffer zone but does not contaminate the outer control area. This is feasible if the control and treatment areas are very similar and diffusion or displacement does not reach the control zone. If these conditions are not met, then option 2 should be used. Here a displacement/diffusion site near the treatment area is used, but the control areas are widely separated from the treatment and diffusion/displacement area. Controls are selected specifically for their similarity to and isolation from the treatment area. Multiple control areas can be selected and their crime rates averaged.

The figure shows an example of option 2. Imagine a response to the theft from vehicles in downtown Charlotte, North Carolina, parking lots (step 27). One theft hot spot site is selected for a response. The neighboring hot spots are good diffusion/displacement sites. Earlier analysis showed that a rail line through these lots facilitated the problem, so a third hot spot lot to the south and west on this rail line is also a useful diffusion/displacement site. Control lots are not on the rail line and far enough from the response site that diffusion and displacement are unlikely.

Selecting control and diffusion/displacement sites – Charlotte, North Carolina, 1999

Uptown study area and analysis

Rates of larcenies from autos by block

Lower
Higher
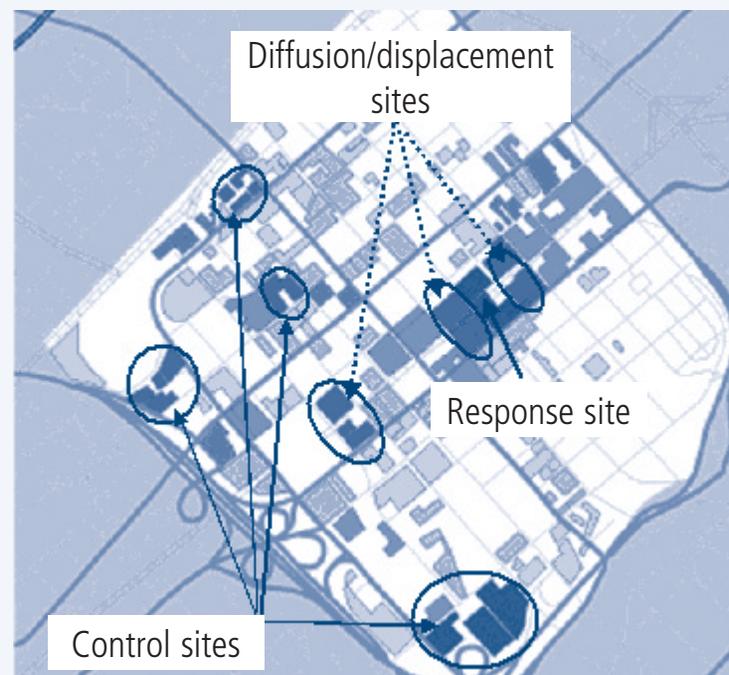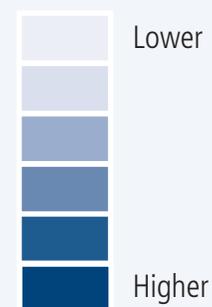
To determine the overall effect of the response on the problem (including any diffusion or displacement effects), you need to answer four questions. Each question has a simple formula. The letters in the formulas follow this pattern.

- R is the number or rate of crimes in the response area.

- D is the number or rate of crimes in the displacement/ diffusion area.

- C is the number or rate of crimes in the control area.

- The subscripts, a and b, indicate when crime is counted; after or before the response began. For example, R_a is the rate of crimes in the response area before the response was implemented, and C_b is the rate of crimes in the control area after the response was implemented.

1. **Did the problem change from before to after the response?** Subtract the crime in the treatment area before the response from the treatment area after the response to get the gross effect (GE):

$$GE = R_b - R_a$$

A positive number indicates a decline in the problem. Zero indicates no change. And a negative number indicates things got worse.

2. **Was the response a likely cause of the change?** Bowers and Johnson suggest looking at the difference in the ratios of the treatment area to the control area before and after; that is, divide the before response by the before control minus the after response divided by the after control. This is the net effect (NE):

$$NE = \frac{R_b}{C_b} - \frac{R_a}{C_a}$$

If the net effect is close to zero, the response probably was ineffective, and if NE is negative the response may have made things worse. In either case, displacement and diffusion are irrelevant so you can stop with the answer to this question. But if NE is positive, there is reason to believe the response may have caused the improvement. This raises the possibilities of diffusion and displacement. So you need to answer the next question.

3. **What is the relative size of the displacement or diffusion?** Bowers and Johnson propose the weighted displacement quotient (WDQ) to measure this:

$$WDQ = \frac{\dfrac{D_a}{C_a} - \dfrac{D_b}{C_b}}{\dfrac{R_a}{C_a} - \dfrac{R_b}{C_b}}$$

D_a is the crime rate in the diffusion/displacement area after the program and D_b is the crime rate in this area before the program. The bottom term (denominator) is a measure of the effectiveness of the response, relative to the control. An effective program will produce a negative number in the denominator. The top term (numerator) shows the relative amount of diffusion or displacement. The numerator is negative when diffusion is present and positive when displacement is present. If it is near zero, neither is present and the WDQ is zero (so you can skip question 4). If the WDQ is positive, there is diffusion (remember, a ratio of two negative numbers is positive), and if it is greater than one, then the diffusion effect is greater than the response effect. If the WDQ is negative, there is displacement. When the WDQ is between zero and negative one, displacement erodes some, but not all, of the response effects. Theoretically, the WDQ could be less than negative one, indicating the response made things worse. However, research suggests that this is an unlikely occurrence.

4. **What is the total net effect of the response (including diffusion and displacement)?** Bowers and Johnson suggest using the following formula to calculate the TNE:

$$TNE = \left[R_b \frac{C_a}{C_b} - R_a \right] + \left[D_b \frac{C_a}{C_b} - D_a \right]$$

The first part shows the effect of the response in the response area. The more effective the treatment, the bigger this term. The second part shows the level of diffusion or displacement. It will be positive when there is diffusion and negative when there is displacement. The more positive the TNE, the more effective the response.

Read more

Bowers, Kate, and Shane Johnson. 2003. "Measuring the Geographical Displacement and Diffusion of Benefit Effects of Crime Prevention Activity." *Journal of Quantitative Criminology* 19(3):275–301.

52. Expect premature falls in crime

Offenders often believe that preventive measures have been brought into force before they actually have been started. This leads to what has been called the "anticipatory benefits" of prevention. Though these anticipatory effects can occur by accident, the police can make deliberate efforts to create or intensify them. To do so successfully, police must have useful insight into how offenders perceive the situation and have methods for deceiving offenders as to the true nature of the intervention.

Martha Smith and her colleagues found evidence of anticipatory benefits in 40 percent of situational prevention studies whose data could have revealed such benefits. They have suggested six possible explanations for observed anticipatory benefits:

1. **Preparation-anticipation** effects occur when offenders believe the program is operational before it is actually working. For example, a property-marking program may be announced to the public, but residents have not yet been mobilized, or closed circuit television cameras may be installed but not yet monitored.

2. **Publicity/disinformation** effects occur when offenders believe covert enforcement exists as the result of publicity or rumor. Offenders' perception can be manipulated, at least in the short run, through disinformation. Rather than disinformation, targeted communications can sometimes be effective. A Boston project to reduce youth homicide used direct communications with potential offenders to warn them that certain specified behaviors would result in crackdowns.

3. **Preparation-disruption** effects occur when preparation for the prevention program causes surveillance at the prevention sites. Surveys of residents might alert offenders. Problem-solving projects can create anticipatory responses during their analysis stage if there is considerable visible enquiry in the community. In the late 1980s as part of the analysis of a burglary problem, members of the Newport News (Virginia) Police Department conducted door-to-door surveys in a high burglary neighborhood. This may have contributed to the subsequent fall in burglaries. In their review of effective policing strategies, Sherman and Eck noted that door-to-door police contacts have generally been found to have a crime reduction effect.

4. **Creeping implementation** occurs when parts of the response are put into effect before the official start date. The evaluator may use June 1 as the beginning of the full program, but offenders detect staged implementation in the weeks leading up to June 1, and change their behavior accordingly.

5. **Preparation-training** effects occur when planning, training, and surveys make the public or police better prepared to address problems and they use this new knowledge prior to the program going into effect. A coordinated multibusiness antishoplifting program, for example, may be scheduled to begin on a particular date, but the discussions and training of employees makes them more attentive prior to that date.

6. **Motivation** of officers or public occurs for similar reasons as preparation training, except the people involved are more highly motivated rather than better equipped. The higher motivation leads to improved performance in advance of response implementation.

Using a timeline to carefully document when pieces of the response were implemented is helpful for showing that an anticipatory effect is plausible (see step 46).

Smith and her colleagues also identified four distinct circumstances that masquerade as anticipatory effects, but are really the results of misinterpretation or incomplete analysis:

1. Seasonal changes can create pseudo-anticipatory effects when an intervention begins shortly after a seasonal turndown in crime. Controlling for seasonality (steps 26 and 47) can eliminate this problem.

2. Regression effects refer to natural declines in crime from extreme highs that occur even if nothing is done (step 47). If a crime trend for a problem has just dropped due to a regression effect and a prevention program is implemented, the natural decline will look like an anticipatory effect. Examining the long-term average crime level (step 26) prior to the response, as suggested in step 47, can reveal a regression effect masquerading as an anticipatory effect.

3. If a crime type (A) has been overrecorded by changing the classification of another crime, it is possible to get what looks like an anticipatory effect. This might occur if one type of crime was inflated in order to gain funding to address that type of crime, and then following the receipt of funding, the classification was changed back to normal. This bogus anticipatory effect can be detected by looking at opposite trends in the other crime. Finding two similar crimes that have opposite trends provides a clue that classification changes may be responsible.

4. Smoothing data (step 26) to reveal a trend masked by random variation can produce results that look like anticipatory effects. The wider the moving average (five periods rather than three, for example) and the bigger and more abrupt the decline in crime following the intervention, the more likely smoothing could create a pseudoanticipatory effect. Comparing smoothed and unsmoothed data will reveal this pseudoanticipatory effect.

Read more

Sherman, Lawrence, and John Eck. 2002. "Policing for Crime Prevention." In *Evidence-Based Crime Prevention*, edited by Lawrence Sherman, et al., 295–329. New York: Routledge.

Smith, Martha, et al. 2002. "Anticipatory Benefits in Crime Prevention." In *Analysis for Crime Prevention*, edited by Nick Tilley. Vol. 13 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter. org/library/crimeprevention/volume_13/.

Anticipatory effects of publicity

Paul Barclay and colleagues evaluated the effects of bike patrols on auto theft from a large commuter parking lot outside Vancouver, British Columbia. Vehicle theft dropped after the response, but it had been dropping for several weeks prior to the bike patrols, since the implementation of a publicity campaign that preceded the bike patrols. In this case, an anticipatory effect may have added a great deal to the overall effectiveness of the patrols. Though a moving average was used to smooth out random variation, the drop in thefts between the beginning of the publicity and the beginning of the bike patrols is too large to be due to data smoothing.
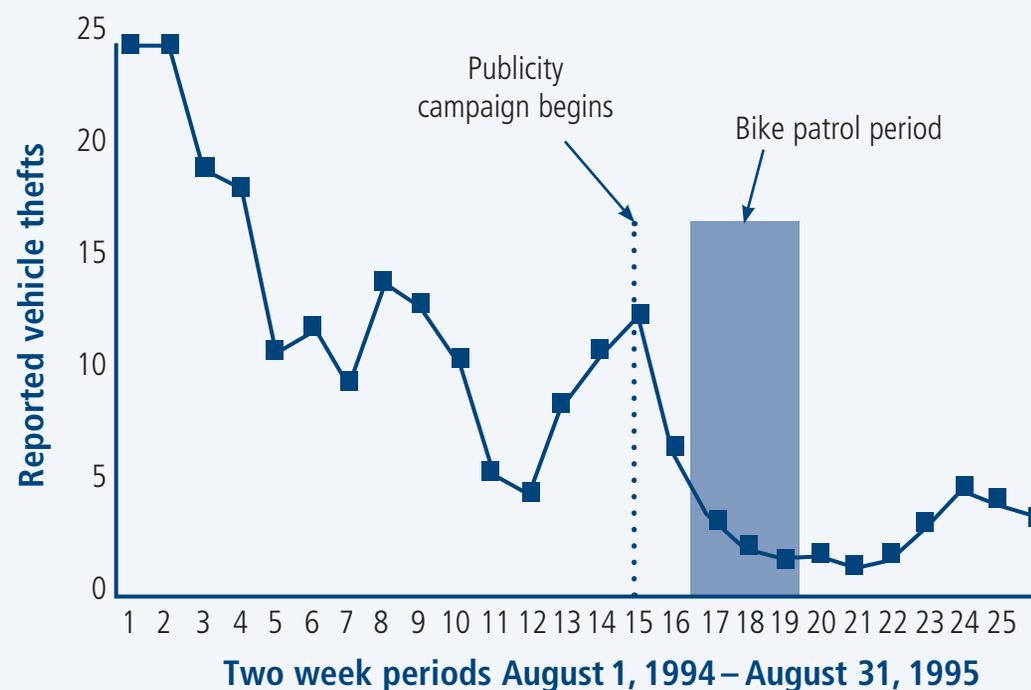
Source: Barclay, Paul, et al. 1996. "Preventing Auto Theft in Suburban Vancouver Commuter Lots: Effects of a Bike Patrol." In *Preventing Mass Transit Crime*, edited by Ronald V. Clarke. Vol. 6 of Crime Prevention Studies. Monsey (New York): Criminal Justice Press. http://www.popcenter.org/library/crimeprevention/volume_06/.

53. Test for significance

How do you know that a response caused a problem to decline? Most problems vary in intensity even when nothing is done about them. For example, on average there are 32 vehicle thefts per week in a particular city center, but seldom are there weeks with exactly 32 thefts. Instead, 95 percent of the weeks have between 25 and 38 thefts, and in 5 percent of the weeks fewer than 25 or more than 38 thefts are recorded. Such random variation is common. A reduction in vehicle thefts from an average of 32 per week to an average of 24 per week might be due to randomness alone rather than a response. Think of randomness as unpredictable fluctuations in crime due to a very large number of small influences, so even if the police do nothing crime will change.

A significance test tells us the chance that a change in crime is due to randomness. A significant difference is one that is unlikely to be caused by randomness. It is harder to discern whether a small difference is significant than it is to find significance in a large difference. It is also harder to find a significant difference in a normally volatile crime problem, even if the response is effective. And it is harder to find significance if you are only looking at a few cases (people, places, events, or times) than if you are looking at many (again, even if the response was effective.) You cannot control the size of the difference or the volatility of the problem, but you may be able to collect data on more cases.

Consider the following common situation. You want to determine if crime dropped in an area following a response. You have a number of weeks of crime data prior to the response and a number of weeks of data for the same area following the response. You calculate the average (mean) number of crimes per week for each set of weeks and find that crime dropped.

The figure shows three possible results. In each panel there are two distributions, one for the weeks before the response and one for the weeks after the response. The vertical bars in each chart show the proportion of weeks with 0, 1, 2, or more crimes (for example, in the top chart, 6 crimes occurred in 20 percent of the weeks after the response). In panel A, the distributions barely overlap because the difference in means is large and the standard deviations of the two groups are small (see step 22). Even with a few weeks of data, a significance test could rule out randomness as a cause. In panel B, there is greater overlap in the distributions, there is a smaller difference in the means, and the standard deviations are larger. It takes many more cases to detect a nonrandom difference in situations like this. In panel C, there is almost complete overlap, the mean difference is even smaller, and the standard deviations are even larger. Only a study with a very large number of cases is likely to find a significant

A. Clear difference

Before mean = 16 Standard deviation = 2

After mean = 5 Standard deviation = 2

B. Ambiguous difference

Before mean = 16 Standard deviation = 4

After mean = 10 Standard deviation = 4

C. Probably random difference

- Before mean = 16 Standard deviation = 8
- After mean = 12 Standard deviation = 8

(Chart y-axis: Proportion of crimes, 0.00 to 0.60; x-axis: Number of crimes, 0 to 25)
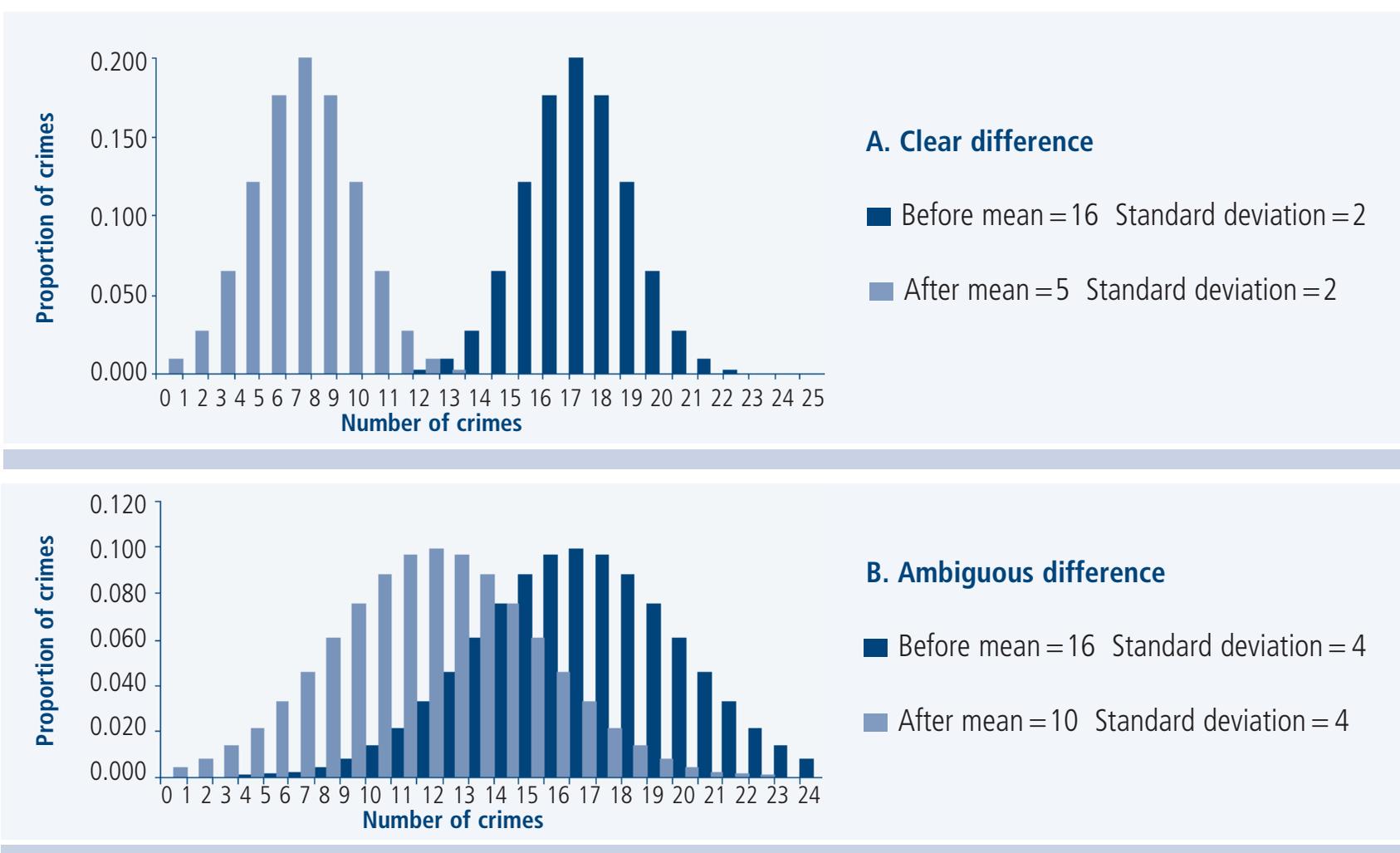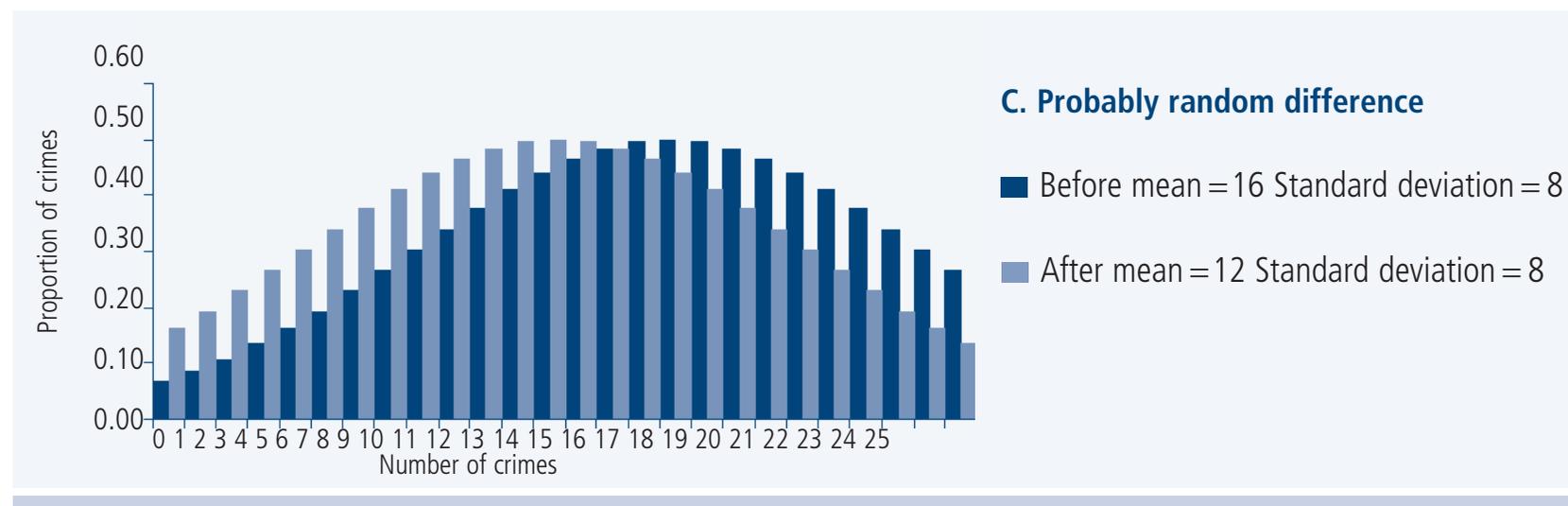
difference here. The moral is that the less obvious the crime difference, the more cases you will need to be sure randomness was not the cause of the difference.

Probability theory lets us use the mean, standard deviation, and number of cases to calculate the probability that randomness is the cause of the difference. If there is less than a 5 percent chance that the problem's change was due to random fluctuations, we reject the explanation of randomness as a cause of the change. Here, 5 percent is called the significance level. In short, because the probability that randomness is the cause is below the significance level (5 percent) we bet that something other than randomness caused the change. Though 5 percent is a conventional significance level, you can pick a more stringent level, such as 1 percent. The more stringent the significance level you select, the greater the likelihood you will mistakenly conclude that the response was ineffective when it actually worked. This type of mistake is called a "false negative" (see step 37). You might pick a stringent significance level if the cost of the response is so high that you need to be very certain it works.

Occasionally, analysts use a less stringent significance level, such as 10 percent. The less stringent the level you pick, the greater the possibility that you will mistakenly endorse a response that has no effect. This type of error is called a "false positive" (see step 37). You might want to pick a less stringent level if the problem is serious, the measures of the problem are not particularly good, and you are very concerned about accidentally rejecting a good response.

There are two ways of using significance levels. In the discussion above, we used them as rejection thresholds: below the level you reject random chance and above the level you accept it as the cause. Always pick the significance level before you conduct a significance test to avoid fiddling with the figures to get the desired outcome.

It is better to use the significance level as a decision aid, along with other facts (problem seriousness, program costs, absolute reduction in the problems and so forth), to make an informed choice. Many sciences, such as medicine, follow this approach. If you follow this approach, use a p-value instead of the significance test. The p-value is an exact probability that the problem's change is due to chance. So a p-value of 0.062 tells you that there is about a 6 percent chance of making a false-positive error by accepting the response. This can be roughly interpreted to mean that in 100 such decisions, the decision to reject randomness in favor of the response will be wrong about six times. Whether you or your colleagues would take such a bet depends on a many things.

It is important to distinguish between *significant* and *meaningful*. *Significant* means that the difference is unlikely to be due to chance. *Meaningful* means the difference is big enough to matter. With enough cases, even a very small difference is significant. But that does not mean it is worthwhile. Significance can be calculated. Meaningfulness is an expert judgment.

The investigation of randomness can become very complex, as there are many different types of significance tests for many different situations. There are some very useful web sites, as well as books, which can help you to choose among them, and there are many statistical software programs that can make the required calculations. But if there is a great deal riding on the outcome of a significance test, or a p-value, and you are not well educated in probability theory or statistics, you should seek expert help from a local university or other organizations that use statistics on a regular basis.

Read more

Crow, Edwin, et al. 1960. *Statistics Manual.* New York: Dover.

54. Tell a clear story

The purpose of your work is to help people make better decisions. To assist decision makers, you must tell a clear story that leads from an important question to possible answers and then to effective actions. To communicate effectively, you need to know who your audience is and the questions they want answered. Your story has to address their particular needs. This story can be told in a written report or in an oral presentation (see step 58).

Do not simply recount what you did to detect, analyze, respond, or assess. This is tedious and does not help people make actionable decisions from your work. You must translate your analytical work into a story that addresses the needs of your audience.

Your work can help answer four basic questions. These questions correspond to the stages of the SARA process:

1. What is the nature of the problem? (Scanning)

2. What causes the problem? (Analysis)

3. What should be done about the problem? (Response)

4. Has the response brought about a reduction in the problem? (Assessment)

Clearly, these questions must be made more specific based on the facts of the problem being examined. Local residents, for example, might complain about late night noise and finding litter along their street. Instead of the general scanning question, you could develop a set of specific questions, based on the CHEERS test (step 14):

- What is the nature of the noise incidents? (Events)

- In what ways are these incidents similar? (Similarity)

- Are there recurring instances of late-night noise and litter that disturb residents? (Recurring)

- Who, when, and where do these incidents occur? (Community)

- How do these incidents disturb people? (Harm)

- Who expects the police to address the problem? (Expectation)

Answering the general question—What is the nature of the problem?—requires you to answer a set of more specific questions.

Your first task in telling a coherent story is to decide which kind of question you are seeking to answer. Next, you should try to structure your account around the basic theories and approaches described in this manual (e.g., the CHEERS test, the crime triangle, or the 80–20 rule). These are frameworks. A framework is a general story shell linking multiple interacting factors and that can be applied to a variety of problems. Your choice of frameworks depends on the problem, your findings, and the needs of decision makers. Be sure there is a logical flow from the basic question, through the framework and findings, to the answers. Check for gaps in logic. Now outline your story. There are four basic story outlines that can guide your work. The details of the story will depend on the specifics of your problem.

Do not stick religiously to these outlines; we provide them as a starting point to prompt ideas. Instead, tailor them to the amount of time you have and, above all, to the concerns of the people whom you are addressing. Try to anticipate their questions and modify the appropriate outline accordingly. Though we have used technical terms from this manual in these outlines, you may need to use a common vocabulary in your presentation. If your audience is not already familiar with the terminology of problem analysis, you probably should use it sparingly or not at all.

Four story outlines

1. What is the nature of the problem?

    A. Organizing framework—e.g., CHEERS elements

    B. Systematic description of evidence about problem type and existence:

    – What is the nature of the events?

    – In what ways are these events similar?

    – How often do these events recur?

- When and where do these events occur?

- Who is harmed by these events and how?

- Who expects the police to address the problem?

C. Implications for analysis and collaborative problem solving:

- Questions that need answering

- Definitional and measurement issues

- Partners who need to become involved

D. Summary

2. **What causes the problem?**

A. Organizing framework for problem—e.g., problem analysis triangle

B. Systematic description of problem answering the following questions:

- Who are the offenders?

- Who or what are the targets?

- At what places and times does the problem occur?

- What brings the offenders and targets together at the same places?

- Why don't others step in to prevent these encounters?

- What facilitates or inhibits the problem?

- C. Implications for general form of responses that fit the information:

- Offender access or control

- Victim/target behaviors or protection

- Facility access or management

D. Summary

3. **What should be done about this problem?**

A. Organizing framework for response—e.g., situational crime prevention:

- Offenders

- Targets/victims

- Places

B. Systematic description of response strategy:

- Increasing risk or effort

- Decreasing reward, excuses, or provocations

- Who will carry out actions, when, and where?

- Additional resources required

C. Implications and anticipated outcomes:

- Direct results

- Displacement

- Diffusion

- Other side effects

- How evaluation should be conducted

D. Summary

4. **Has the response reduced the problem?**

A. Organizing framework—e.g., principles of evaluation

B. Systematic description of evaluation:

- Was the response implemented as planned?

- Did the problem change?

- Why it is likely that the response was a direct cause of change

- The magnitude of displacement, diffusion and other side effects

C. Implications for further action:

- Is this problem solving effort complete?

- What further actions are necessary?

- Should further analysis be conducted?

- Should the response be changed?

D. Summary

55. Make clear maps

Maps have an important role in telling compelling stories about problems. But they need to be clear to accomplish this. That is, maps must contain as much relevant information as possible and no irrelevant information. There are a number of guides to good cartographic principles available (see sidebar and Read more).

We will illustrate the use of maps to tell stories with a set of maps from a problem-solving project undertaken by the Norwegian police. Figures 1 and 2 illustrate how maps can be used to describe problems and solutions. Johannes Knutsson of the National Norwegian Police Academy and Knut-Erik Søvik of the Vestfold Police District were attempting to address a problem of illegal ("gypsy") cabs in a small coastal town of Tønsberg (population 36,000). On weekends, the 30 drinking establishments draw large crowds and people move back and forth across a highway, so the highway is closed on Friday and Saturday nights. A parking area is also closed. However, legal taxis and busses can move along the highway. Unlicensed gypsy cabs have taken over most of the business in this area, in part by intimidating the licensed cab operators. A number of serious crimes had been attributed to the drivers of these illegal cabs and they have been the subjects of numerous complaints.

The setting of the problem is shown on two maps in figure 1. The left panel is a street map. It shows many features irrelevant to the problem and fails to show many features that are important. The right panel is a highly edited version of this map. It contains only the relevant features of the base map and adds the important omitted features, giving a much clearer picture of the setting.

Figure 2 contains two maps summarizing conclusions from the analysis and important features of the response. The left map shows the primary travel routes of the gypsy cab drivers. The gypsy cabs make use of the street barricades and the parking lots to pick up customers. This map also shows that the bus stand and (legal) cab stand are too far from the people using the area. When the bars close after 3:00 a.m. there is great demand for transportation, and the illegal cabs are in the best position to fill the demand. The response

map on the right of figure 2 shows how the highway barrier was moved to prevent gypsy cabs from getting to potential customers, how the parking lots were blocked off late at night to keep those cabs out, and how the legal cab stand and bus stand were moved to locations more convenient for the customers. This map is an important part of the process evaluation (step 46).

Together, these three maps nicely illustrate the nature of the problem and what was done about it. The result of this project was the virtual elimination of the gypsy cab problem in Tønsberg without increasing disorder.

Knutsson and Søvik heavily annotated these maps to show features that a typical geographic information system would not show. This is good practice. Much information about problems is not contained in computers.

Still, there are a number of features of good maps that are missing. There is no compass direction. However, direction plays no part in the problem, so its absence does not detract from clarity of the maps. Also missing is a scale showing the relative size of map features. This impedes understanding of those who are unfamiliar with the area.

Read more

Boba, Rachel. 2005. *Crime Analysis and Crime Mapping: An Introduction*. Thousand Oaks (California): Sage Publications.

Harries, Keith. 1999. *Mapping Crime: Principle and Practice*. Washington, DC: National Institute of Justice, Crime Mapping Research Center. https://www.ncjrs.gov/pdffiles1/nij/178919.pdf.

Knutsson, Johannes, and Knut-Erik Søvik. 2004. *Gypsy Cabs in Tønsberg*. Submission to the Herman Goldstein Awards. http://www.popcenter.org/library/awards/goldstein/2004/04-35%28F%29.pdf.

Ratcliffe, Jerry H. 2004. "Jerry's Top Ten Crime Mapping Tips." Last modified October 22, 2014. http://www.jratcliffe.net/blog/ten-crime-mapping-tips/.

Creating useful maps

- Know what information your audience will find useful (and what information is confusing).

- Keep maps simple. Eliminate all features that do not contribute to understanding the problem.

- Avoid graphics that draw more attention to themselves than the data.

- Include details that help the viewer understand the problem, even if that means adding this information by hand.

- Include a scale and, if needed, a compass orientation (usually north is to the top).

- Use meaningful gradations to show intensity of hot spots. For example show colors becoming increasingly hot (yellow to red) as the problem worsens.

- Apply the correct dimension of crime concentration: dots for places (and sometimes victims); lines for concentrations along streets and highways; and areas for neighborhoods.

- Make use of tables and figures along with maps.

**Figure 1.
Locating the problem
and showing its setting**

Base map of problem setting
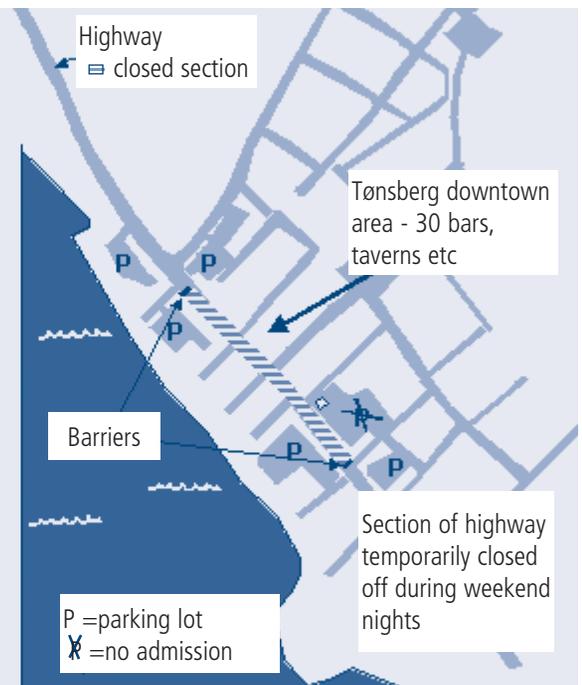
Edited map of problem setting

**Figure 2.
Analyzing the problem
and showing response**
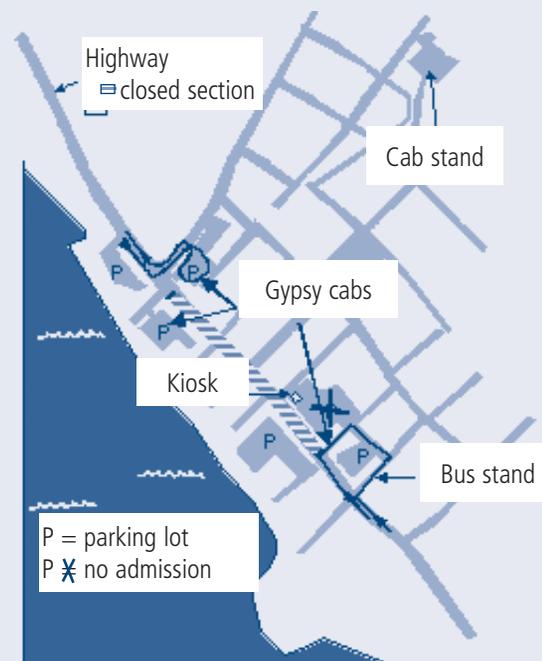
Description of problem based
on analysis
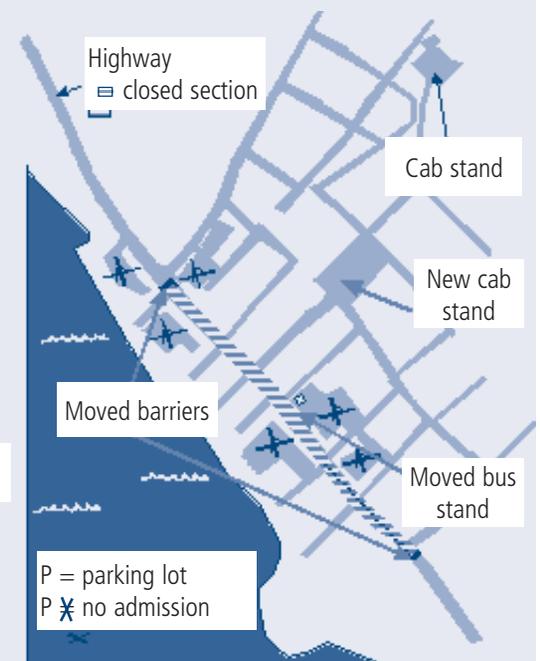
Description of response

56. Use simple tables

Tables are effective tools for telling a compelling story if they are made simple. But the software used to create tables adds unnecessary and distracting packaging—the lines and labels used to interpret the data—and analysts do not always organize tables in a way that makes intuitive sense.

Assume that you are trying to show that the way beer is displayed facilitates beer thefts from stores. Some stores display the beer near the front entrance and some at the rear. You are trying to show that rear display stores have fewer incidents of beer thefts than those where the display is in the front. Table 1 gets in the way of this message. The data are poorly organized and the packaging is distracting.

Table 2 properly organizes the data. The percentages are made central to the story. Because the raw numbers do not tell the main story, but may be useful to a reader who wants to look more closely, they are made subservient by enclosing them in brackets. Finally, instead of row percentages (as in the first table), table 2 uses column percentages.

Whenever we examine a relationship in which something may be causing something else, it is best to put the cause in the columns and use column percentages. Then, make comparisons across the rows. Here, we see immediately that 29 percent of the front-display stores had no thefts compared to almost 83 percent of the rear-display stores. At the opposite extreme, almost 46 percent of the front-display stores had three or more thefts, but none of the rear-display stores did.

Table 2 has less packaging. The bold borders have been removed and replaced by thin lines. Inside, the only remaining line separates the title from the content. Instead of lines, space is used to guide the reader's eye across rows and down columns. By informing the reader in the title that the important numbers are percentages (and the raw numbers are in brackets), there was no need to include a percent symbol in each cell. Only the column total remains. This tells the reader that the important sum is vertical. Finally, all percentages are rounded to one decimal place, thus allowing

the column figures to line up and making interpretation easier. With all of these changes, most of the content of the table is data rather than packaging.

A problem often has multiple causes. Though tables can be constructed to show large numbers of causes, a single table communicates poorly when you examine more than two causes. The basic principles of table construction remain the same:

- All the causes go in the same direction (usually columns).

- Summation goes in the direction of the cause (down columns).

- Comparison of causes goes in the opposite direction (across rows, if causes are in columns).

Table 3 is called a three-dimensional table because three things are examined (the earlier tables were two-dimensional). Table 3 answers the question: is the relationship between display location and theft different for two different store chains (Drink-Lots and Tippers)? The answer is that it is not. There is the same basic pattern for both chains that we saw in table 2. In both cases, we add the column data and compare front-display stores to rear-display stores. This implies that any store that displays beer at the rear will experience less theft, regardless of which chain it belongs to.

In effect, table 3 holds constant the type of store. Other factors can be held constant if we think they are important. For example, we could group stores by size (small, medium, and large) and separately analyze the relationship between display location and theft for each size category. This would require three panels, but otherwise the same principles apply.

Take note of several other features of table 3:

- If you add the raw numbers (in brackets) in the Drink-Lots cells to their corresponding cells under Tippers, you get the raw numbers in table 2. In other words, table 2 is a summary of table 3. But you cannot derive table 3 from table 2.

- Because table 3 contains two possible causes of the problem, we have added a vertical line to draw attention to the two types of stores.

Table 1. Location and beer theft (June)

Number of theft reports	Location of display		
	Front	Rear	Total
0	7 (17.5%)	33 (82.5%)	40
1–2	6 (46.15%)	7 (53.85%)	13
3 or more	11 (100%)	0 (0%)	11
Total	24 (37.5%)	40 (62.5%)	64

Table 2. Percent of stores with reported beer thefts (numbers in parentheses)

Thefts in June	Location of display	
	Front	Rear
0	29.2% (7)	82.5% (33)
1–2	25.0% (6)	29.2% (7)
3 or more	45.8% (11)	0.0% (0)
Total	100.0%* (24)	100.0%* (40)

Numbers may not add up to exactly 100 percent because of rounding.

Table 3. Percent of stores with reported beer thefts by retail chain (numbers in parentheses)

Thefts in June	Drink-Lots stores		Tippers stores	
	Front	Rear	Front	Rear
0	30.8% (4)	84.2% (16)	27.3% (3)	81.0% (17)
1–2	23.1% (3)	15.8% (3)	27.3% (3)	19.0% (4)
3 or more	46.2% (6)	0.0% (0)	45.5% (5)	0.0% (0)
Total	100.0%* (13)	100.0%* (40)	100.0%* (11)	100.0% (21)

Numbers may not add up to exactly 100 percent because of rounding.

- The row labels apply to both store types, so there was no need to duplicate them.

- Because of rounding in the percentages, they sometimes add up to more than 100. In some instances, these sums can be just less than 100, usually 99.9. Such small deviations are seldom of much concern.

If you routinely produce the same tables for the same decision makers, show them several different table formats with the same data. Determine which format helps them the most, and then use this standard format.

57. Use simple figures

Like tables and maps, figures and charts are effective tools for conveying information, but only if they are kept simple. All figures consist of two parts—packaging and content. Content is the information you are interested in conveying to others. The purpose of the packaging is to ensure that the content can be quickly, easily, and accurately interpreted. Simplicity means keeping the packaging to a minimum. The most common mistake is adding elements that get in the way of the story. To illustrate this, we begin with an example of a poorly designed figure. Then we will show how figures become clearer and more powerful by making them simpler.

Figure 1 is a pie chart that is supposed to show how burglars entered homes. The 3D image distorts the message. As we will see later, doors are the biggest problem, and the rear window ranks fourth, behind "Other," as the entry of choice for these burglars. The 3D effect inflates the importance of the slices in the front (in this example, front windows, the least likely point of entry) while deflating the importance of the slices in the back. The single valuable feature of a pie chart is that it shows how the parts contribute to the whole. This is lost when a 3D effect is used. Note that a variety of shades and patterns need to be used to display the six categories. This adds clutter.

Figure 2 shows the distortion that 3D effects can produce in bar charts. Comparing bar heights is difficult because one has to choose between the front top edge and the back top edge of the bar. Three-dimensional effects should never be used.

This chart has a number of other features that make it hard to use: surface shading that masks contrasts between the bars and background, redundant bar labels and vertical axis labels, and distracting horizontal lines. The frame around the figure is superfluous.

The simple bar chart in figure 3 communicates information very effectively because all the confusing features of figure 2 have been removed. If we wanted each bar to show the exact percentage, we could label the tops of the bars. But then we should remove the vertical axis, as this feature communicates the same information.

Additionally, the data in figure 3 have been reorganized. Instead of raw numbers of burglaries, the chart shows the percentage of the total. This communicates two points: (1) which methods are more frequent and (2) what part of the whole each method represents. If you need to show the relative contribution to a whole, use percentages in a bar chart rather than a pie chart.

Another feature of figure 3 is that the categories are arranged in a meaningful order: from most to least. This points to where your readers should focus their attention. Meaningful order is hard to communicate in a pie chart because it has no obvious beginning or end. There really is no need to use a pie chart because bar charts can communicate better. When you have data in categories, bar charts are simple and effective.

Figure 1. Methods of entry
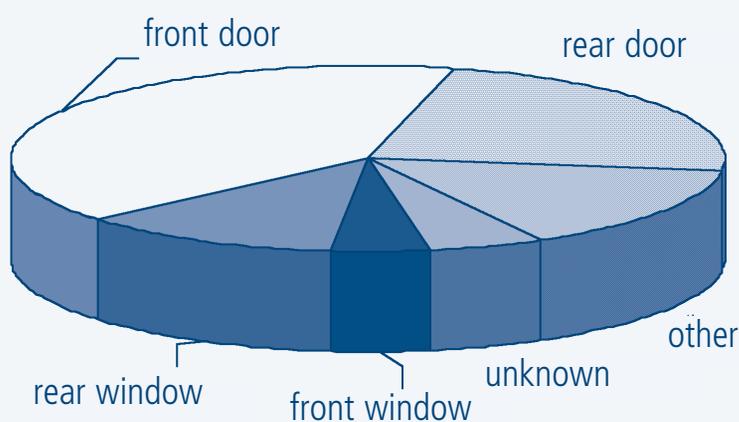
Figure 2. Methods of entry
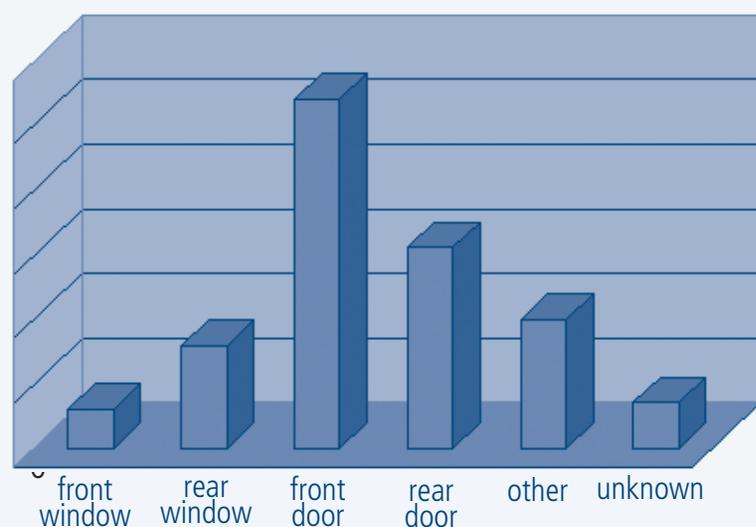
Do not forget the figure title. In figure 3, the title boldly tells a story. Not only is this far more interesting than "Methods of Entry," it makes the story unambiguous. In short, figure 3 can stand by itself. Without reading any accompanying text, the reader gets the point.

The final figure depicts a line graph. These are typically used when tracking data over time. In figure 4, the data cover six months. The dots symbolize the burglary count, and the lines indicate a continuous connection over time. You should label the vertical axis so the figure communicates the story on its own. In this figure, we know at a glance that the vertical axis shows the number of burglaries, rather than the burglary rate.

If you prefer to show the number of events at each time period, label the dots, but remove the vertical axis: it's now redundant. Be careful, however. Numerical labels at every time point can make a chart difficult to read. If multiple graphs are shown in the same figure (for example, the trend in burglaries for several police districts), make sure the different lines are clearly marked and easily differentiated over the chart.

Read more

Kosslyn, Stephen. 1994. *Elements of Graph Design*. New York: W. H. Freeman.

Figure 3. Doors are the problem
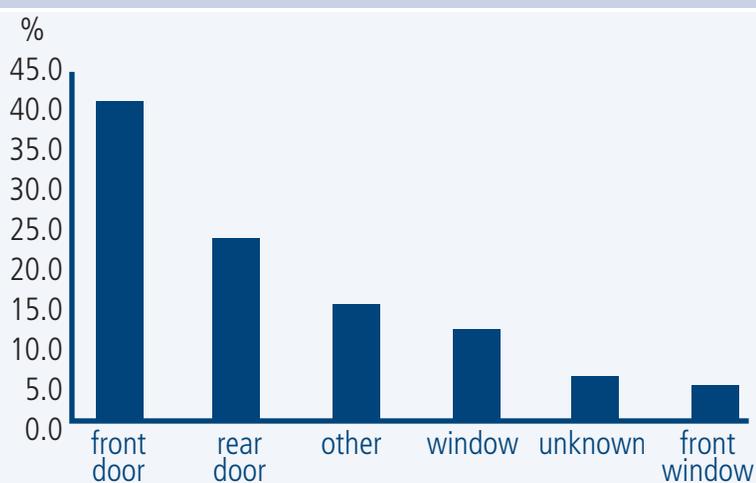
Figure 4. Burglary is declining
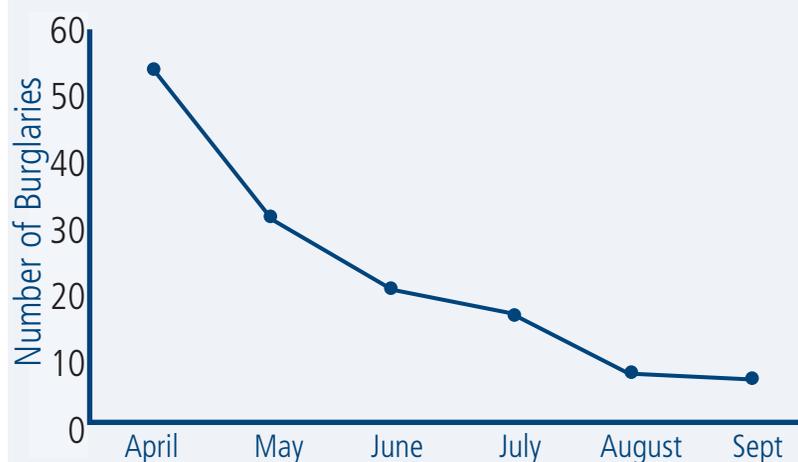
Designing effective figures

- Keep them simple. Don't over-package.

- Do not use superficial effects like 3-D.

- Avoid pie charts.

- Use bar charts for data that comes in categories.

- Use line graphs for trends over time.

- Use labels effectively.

- Choose titles carefully.

- Make them stand on their own without help from the text.

58. Organize powerful presentations

A presentation should begin with a basic question, use a framework to move through a description of findings, and end with a set of specific conclusions (see step 54). Graphical material should be prepared following the guidance in steps 55 through 57. In this step we will focus on the story you are telling. In step 59, we will look at how the presentation should be delivered, including the use of PowerPoint.

The main focus of your presentation should be to answer specific questions that will aid decision making, and it should consist of the following:

- A set of slides organized around your story

- A graphical motif or outline slide to keep your audience focused on the story

The slides illustrate a presentation of analysis findings. The presenter, Sgt. Smith, has two goals. The first is to answer the question, "What causes this problem?" The second is to open up a discussion of possible responses. The title slide asks the question (and introduces the presenter). This and slides 2 to 4 constitute the introduction. Slide 2 reinforces a set of already agreed points that serve as a foundation for what follows. Slide 3 outlines the presentation and slide 4 summarizes data collection.

The framework is presented in slide 5. Sgt. Smith uses the crime triangle. He keys all of the findings that follow to this triangle. (Note that this only works if Smith's audience is already familiar with the triangle. If they are not, then Smith should use a different framework.) To reinforce this message and to keep the audience from getting lost, Sgt. Smith uses the triangle motif throughout the presentation of findings with slight but important modifications: the shaded side and the color change as slides move from targets and guardians to places and managers and to offenders and handlers. The circular arrow in slide 5 indicates the counterclockwise order in which Sgt. Smith will present the findings. So in this slide, Sgt. Smith has simultaneously described his framework and provided an outline of the main findings.

Slides 6 to 13 present tables, figures, and maps that tell the audience about the elements described in the framework. A bar chart might show the actions used to protect targets. A location map might show the places where the problem is particularly prevalent in contrast to where it is absent. Photos might show particularly important features of these sites. A table might show the frequency with which offenders are arrested.

Slide 14 summarizes these findings. Here, the triangle shows all sides shaded, reinforcing the point that the separate findings are part of a larger whole. Slides 15 and 16 list response options that are consistent with the findings and options that are inconsistent. Though Sgt. Smith gives his expert opinion, these final slides are meant to open up a discussion that is informed by the earlier findings. It is the decision makers who have the final say in this matter.

It is important to keep your audience focused on the larger story and from getting lost in the details. Two methods for accomplishing this are to use an ongoing motif (like the triangle in the figure) or a highlighted outline slide. When using an outline slide, the outline is shown before each topic. The topic to be presented is highlighted on the outline and the other topics are dimmed. In Sgt. Smith's presentation, the outline slide would be shown four times—once before each of the main topics.

Handouts of your slides are useful, but there are some limitations. You can make last-minute changes in the slides more easily than in the handouts. If you expect major last-minute changes, handouts may not correspond to the images. Color slides are often not legible when photocopied in black and white. If you are using PowerPoint, then the "pure black and white" option in the "Print" menu will temporarily convert your color slides to black and white for printing.

Most decision makers are not as interested as you are in the methods you used to analyze your problem. Therefore, do not spend a great deal of time describing your methods, unless this is the objective of the presentation. Rather, summarize the main elements (see slide 4). You can prepare separate slides about methods, held in reserve, should audience members have questions about your methods.

Read more

RAND Corp. 1996. *Guidelines for Preparing Briefings*. Santa Monica (California): RAND Corporation.

Ratcliffe, Jerry H. 2004. "Jerry's Top Ten Crime Mapping Tips." Last modified October 22, 2014. http://www.jratcliffe.net/blog/ten-crime-mapping-tips/.

1   What causes the XYZ problem ?

Sgt. Rodney Smith
Problem Analysis Section

2   What is the XYZ problem ?

- High number of reported X events
- Concentrated in sector Y
- First documented in 1986
- Does not respond well to enforcement
- Common to other police forces

3   This presentation shows

- Data sources used
- How the data was organized
- Why we have this problem
- Possible responses

4   Analysis of XYZ problem

- Undertaken by Problem Analysis Section
- Data from a Variety of Sources
  - Reported X events
  - Interviews with Merchants & Shoppers
  - Offender Interviews
  - Review of CCTV recordings
- Experts from other Police Forces

5   Elements of the XYZ problem

6-13

 Slides describing targets and guardians

 Slides describing places and managers

 Slides describing offenders and handlers

14   Causes of the XYZ problem

 A bulleted summary
of the previous slides

15   Inconsistent responses

- Targets and Handlers
  a.
  b.
- Places and Managers
  a.
  b.
- Offenders and Handlers
- a.

16   Consistent responses

- Targets and Handlers
  a.
  b.
- Places and Managers
  a.
  b.
- Offenders and Handlers
- a.

COMMUNICATE EFFECTIVELY

59. Become an effective presenter

All professionals are required to make presentations, and presentation skills are becoming as important as good writing. The key to a good presentation is thorough preparation. The following points come from a variety of sources, including our own experiences—good and bad.

Preparation

Never try to wing it. Even experienced presenters are often nervous, so do not be concerned about pre-presentation jitters. Thorough preparation helps keep nerves under control.

- Know your topic.
- Know your audience, including who else is presenting.
- Establish presentation length.
- Prepare to finish a few minutes early, but take full time if you need it.
- Rehearse presentation and time it.
- Rehearse again, if necessary.

Check out the room on the presentation day. Making sure you understand your presentation environment accomplishes three objectives. First, it keeps you from being surprised. Second, it allows you to make contingency plans. Third, it helps you remain calm. This is particularly true when you are presenting at a conference or some other venue outside your agency. Hotel conference facilities vary considerably in their layout.

- Is the equipment you need in place?
  - Flip charts
  - Black/white boards
  - Chalk/marker
  - Projectors
  - Microphone
  - Laser pointer
- Do you know how to use the equipment?
- Have you tried it out?
- Do you know how to summon the technician?

- Do you know how to dim lights?
- Are there parts of the room where the audience will have trouble seeing or hearing you?

Projector

Modern presentation equipment is both complex and failure-prone. Be sure you know how it works and have backup plans. If time permits, we always conduct a trial run with the equipment in the room. And during this trial run, we have found it useful to sit in different parts of the room and view the most complex slides. Even if you cannot make adjustments, you can forewarn your audience later. (For example, "Those of you on the left might want to move to the center as there are some graphics that are hard to see from the left-most seats.")

- Locate the projector in the best position for the audience and yourself.
- Make sure it does not block the view of the screen.
- If necessary, get help with presenting slides.
- Make sure slides can be read from the back of the room.
- Draw curtains or blinds if necessary.
- Never assume things will work as planned!

Presentation style

Though knowing your material is critical, you need to have a style the audience appreciates. At minimum, make sure your audience does not have to work to overcome your style to understand your presentation. Treating your audience with respect is absolutely critical.

- Do not read your paper even if you have supplied a written version.
- Speak from notes (using cards prevents you from losing your place).
- Begin politely (thank chair, introduce yourself, greet audience, etc.).
- If possible, stand up and speak (this helps keep control of the audience).

- For lengthy presentations, you can vary where you stand (but don't walk about restlessly).

- Do not block the audience's view of the slide images.

- Make sure you can be heard.

- Don't speak too fast (about 120 words per minute is good).

- Maintain eye contact with the audience (but not just one person!).

- Make sure your audience knows when it is appropriate to ask questions—during the presentation or after.

- Repeat questions so others can hear, answer concisely, and ask the questioner whether you have addressed their question.

- Make sure handouts are clear (and that you have enough).

- End on time.

- Try to enjoy yourself!

Presentation software

PowerPoint and other similar presentation software allow the audience to receive the information simultaneously in two modes: visually and aurally. They are therefore more likely to understand and remember key points. There are four dangers from electronic presentations. First, they can result in standardized presentations that quickly become boring for more sophisticated audiences. Second, they can become so complex that the audience pays more attention to the media than the message. Third, breakdowns become more common with greater complexity. Fourth, they can stifle questions from the audience. Watching you fix a multimedia extravaganza bores your audience and wastes their time. Remember the KIS principle: Keep It Simple.

- Don't read your slides—your talk should not just be a repetition of the slides.

- Look at the audience—not at your slides!

- Begin with the title of the presentation, your name, and your affiliation (but not your qualifications).

- Use only one form of slide transition throughout, and only use a simple transition that does not distract the audience from your main points.

Individual PowerPoint slides

Keep each slide simple, too. Lots of text on a slide is hard to read. Your objective is to make each slide telegraphic. Each slide should focus attention on a critical point and avoid distractions from that point. So make them easy to read and understand.

- Make only one point.

- Present just enough detail to address the point and no more.

- Avoid distracting sound effects, animation, type fonts, and transitions.

- Use dark background (e.g., deep blue) and light colors for text (e.g., yellow).

- Use large fonts and contrasting colors (not clashing, e.g., blue and deep orange clash, but blue and yellow contrast).

- Avoid thin lines and letters that cannot be easily distinguished from the background. This can be a particular problem with line charts and maps.

- Avoid too much red—you should use red selectively to emphasize important points.

- Use visual graphics rather than words when possible.

- Use clear and simple pictures, maps, figures, and tables.

- Use short bulleted phrases, not narratives, on word charts.

- Ensure that each bullet is related to the main point of the slide.

Finally, be safe

Assume things will go wrong! If the projector fails, be ready with overhead projection slides and a projector. If that fails too, use your handouts as a substitute. If you are prepared for a breakdown, you will be less nervous and your audience will be sympathetic.

- Avoid technologies that break down frequently or ones that you are not familiar with.

- Have a backup plan for equipment and software failures.

- Provide handouts of slides as supplements.

Read more

Ratcliffe, Jerry H. 2004. "Jerry's Top Ten PowerPoint Tips." Last modified October 20, 2014. http://www.jratcliffe.net/blog/powerpoint-tips/.

60. Contribute to the store of knowledge

Much of what we know about problems today was unknown 20 years ago. This accumulation of knowledge is largely due to the sharing of knowledge by police practitioners and researchers in the United States, Canada, United Kingdom, and other countries. Steps 54 to 59 described how to communicate to decision makers in your police force and in your community. You also have a duty to improve your profession by sharing your work outside your local agency and community.

There are two approaches to communicating with your peers. The first is through written materials. These may be published in reports, professional periodicals, or popular press articles. The second is through presentations at professional conferences and meetings. The most effective strategy for communicating information is to use a combination of these approaches.

Written reports can present a wealth of detailed, useful information that others can use as reference material. There are a number of ways of disseminating written information. It can be made available in a downloadable format from web sites. It can be published in professional periodicals. Shorter pieces designed to capture people's attention can be published in professional newsletters and other periodicals. Finally, encouraging professional journalists to write about your efforts can reach even a wider audience. Shorter and more easily accessible pieces reach a wide audience, but contain less information.

Conferences allow face-to-face communications, questions and answers, and discussions of the latest developments. Informal discussions are useful for exchanging viewpoints on ideas that have not developed enough to be published. And they allow you to seek advice from peer experts on difficult problems.

The United States and the United Kingdom hold annual conferences on problem-oriented policing. There are also a host of crime analysis and other police conferences around the globe where you can present new information on problem solving.

Finally, you should also consider conferences of other professions, particularly if you have been working with partners from other fields. The principal drawbacks to conferences are the limited time available to present material, the lack of detailed permanent records of conference proceedings, and the relatively small numbers of people who attend. But attendees can spread information to those not present.

A comprehensive communications strategy should include the following:

- For people interested in the details, a technical report downloadable through an easily used web site

- For a large audience of general interest, one or more short articles in professional or popular periodicals, with references to the web site

- For professional colleagues and academics, a longer article in a professional journal

- For a small but influential group of professional colleagues, at least one presentation at a professional conference

In addition, it is helpful to send copies of articles to people who are interested in the topic you are investigating. This not only communicates your ideas but also allows you to solicit advice as to how to communicate your ideas to others.

Professionals are particularly interested in the following:

- Discoveries of new or changing problems

- Advances in analytical techniques that can answer new questions or answer old questions more precisely and with less error

- New responses to problems or new applications of old responses

- Evidence about the effectiveness, lack of effectiveness, or side effects of responses

Each of these topics can be written as a case study of your particular problem. The basic outline for a useful case study covers four points:

1. Dissatisfaction with the old situation—why the standard understanding or practice is insufficient in particular circumstances

2. Searching for alternatives—how a new understanding or practice was discovered

3. Evidence supporting alternatives—comparison of old and new approaches

4. Conclusions and implications—summary of what people should consider, given this new information

This outline follows the SARA process. Scanning reveals dissatisfaction with a particular circumstance. Analysis is a search for a new understanding of the problem. Response requires a systematic comparison of alternative approaches and the selection of a particular new approach. And assessment summarizes what one has learned from the experience.

The table shows how this outline can be applied to each of the four case study topics. These types of case studies can be combined as circumstances require. A new technique for problem analysis might reveal a new type of problem, for example. In such a circumstance, the first two types of case study can be combined.

Similarly, a description of a new response to a problem might include evaluation information, thus combining the last two types of case study. Other combinations are possible.

Finally, we offer a plea on behalf of crime analysis as a profession and crime science as a discipline. However much you want to make yourself clearly understood, never give in to the temptation to exaggerate your evidence. Nothing is more likely to damage your reputation and that of your colleagues than being seen to stretch the facts. Other people may cut corners or leap to conclusions. Crime analysts lend diligence and integrity to what is sometimes a haphazard process. If you don't know the answer or only partly understand the problem, say so. That way, when you do know the answer, people will be more willing to trust your professional judgment.

The 21st century is becoming the century of analysis in policing, and you can make a large contribution. A hundred years from now, analysis will be firmly established in policing, and much will have changed. The technology will certainly be different. But more importantly, our successors will know a great deal more about crime and its prevention than we do. And they will know this because you and people like you asked important questions, collected and analyzed data, and reported your results with honesty and clarity.

Four types of case studies				
Outline	1. New problem	2. New analytical technique	3. New response	4. New evidence on effectiveness
I. Dissatisfaction	Discovery of an anomalous situation	Why old technique is limited	Why old response is limited	Uncertainty of effectiveness of response under particular circumstances
II. Search	Exploration of what is different	How the new technique was discovered	How the new response was discovered	Difficulties in evaluating response in these circumstances
III. Evidence	Comparison of old problem to new problem	Systematic comparison of old technique to new based on objective criteria	Systematic comparison of old response to new based on objective criteria	Evaluation methods used and their results
IV. Conclusions	What this implies for problem solving	Circumstances where new technique is particularly helpful	Circumstances where new response is particularly helpful	Circumstances where response should be used and expected results

GLOSSARY AND INDEX

Term	Definition	Step
3-D mapping	High-definition mapping that portrays locations within buildings	24
80-20 rule	The principle that a few people or places are involved in a large proportion of events	18, 20, 22, 30, 31, 54
Acute hot spots	Hot spots that suddenly appear, i.e., have not been present for a long time, not chronic (See Chronic hotspots and Chronic problems)	23
Acute temporal clustering	A very high concentration of crime in a small part of 24-hour cycles	25
Acute troubles	Transient sets of recurring events that might go away without engaging in problem solving activities, but could also evolve into chronic problems	14
Adaptation	Long-term changes in offender population behaviors in response to crime prevention	11, 46
Analysis	The second stage in the SARA process, involving systematic examination of the problem to identify possible causes that might be susceptible to responses	4, 5, 6, 7, 8, 14, 15, 16, 18, 20, 23, 32, 33, 35, 36, 38, 44, 46, 52, 54, 55, 58, 60
Anticipatory benefits	Benefits from crime prevention that begin prior to initiation of crime prevention treatment	11, 46, 52
Anticipatory benefits, pseudo	The appearance of anticipatory benefits caused by smoothing data (i.e., the use of a moving average)	52
Aoristic analysis	A statistical method for determining the 24-hour rhythm of crimes when the exact time of crime commission is unknown	25

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Term	Definition	Step
Cases	The people, places, and events you are studying—offenders, targets, victims, facilities, time periods (e.g., months or weeks), crimes, and so forth. In case-control studies, cases are the problem people, places, or events (see Case-control study and Controls)	22, 32, 33, 37, 53
CHEERS	Acronym for elements of defining a problem: Community, Harm, Expectation, Events, Recurring, and Similarity	14, 15, 54
Chronic hot spots	Hot spots that persist for a long time (see Acute hotspots)	23
Chronic problems	Long-term sets of recurring events that show no sign of abating and are largely resistant to traditional police work	14
Community policing	Community policing focuses on crime and social disorder through the delivery of police services that includes aspects of traditional law enforcement, as well as prevention, problem-solving, community engagement, and partnerships	1, 3, 4, 5
CompStat	A police management system, pioneered in New York City, that uses up-to-date crime pattern information (often processed with a geographic information system) to hold geographic commanders (e.g., precinct and district) accountable for reducing crime	3, 4, 5
Content	The substantive information in a table or figure	56, 57

Term	Definition	Step
Control group	A group of people or an area that is similar to the treatment group or area, but does not receive treatment. Used in evaluations to control for the impact of other, non-treatment influences on crime	47, 49, 51
Controls (for analysis)	Statistical and evaluation design procedures to isolate the effect of one factor on some outcome from that of others. A group of people or areas not getting a response that are compared to those receiving the response to show what would have happened to the response group if the response group had not received the intervention (see Control group)	47, 48, 49, 51
Controls (in case-control studies)	In a case-control study, controls are those people, places, times, or events that do not have the outcome being studied, in contrast to cases which do have the outcome. For example, in a case-control study of high-assault bars, the cases are bars with many assaults and the controls are bars with few or no assaults (see Cases and Case-control study)	32, 33
Controls (on offenders)	People and situations that reduce potential offenders' willingness or capabilities to commit crimes	9, 15, 17, 39, 42, 43, 48
Correlation	A measure of association between two characteristics	33
Costs	Expenses or hardships associated with criminal events or prevention measures	6, 12, 38, 40, 44
CPTED	See Crime Prevention Through Environmental Design	

GLOSSARY AND INDEX

Term	Definition	Step
Diffusion contamination	Occurs when diffusion of benefits influences the control group or area during an evaluation. Leads to undervaluing the treatment (see Displacement contamination)	51
Diffusion of benefits	Reducing crime beyond the focus of the prevention scheme; a multiplier of effectiveness	11, 13, 38, 47, 49, 51
Diffusion of benefits, crime type	Additional crime types blocked	13
Diffusion of benefits, geographical	Additional prevention over space	13
Diffusion of benefits, tactical	Additional methods thwarted	13
Diffusion of benefits, target	Additional targets protected	13
Diffusion of benefits, temporal	Additional prevention over time	13
Diffusion-displacement sites	Areas used to detect diffusion of benefits and displacement that are separate from control group and treatment group	51
Displacement	Offenders changing their behavior to thwart preventive actions	1, 4, 11, 12, 13, 38, 40, 46, 48, 49, 50, 51, 54
Displacement contamination	Occurs when crime is displaced into the control group or area during an evaluation. Leads to inflation of effectiveness (see Diffusion contamination)	48, 49
Displacement countermeasures	Prevention implemented to prevent expected displacement	48
Displacement, crime type	Offenders change type of crime	12, 13, 49
Displacement, geographical	Offenders move spatially	12, 13, 46, 48
Displacement, tactical	Offenders switch method for committing crime	12, 13, 49

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Term	Definition	Step
Displacement, target	Offenders switch type of target or victim	12, 13, 49
Displacement, temporal	Offenders switch time or day	12, 13, 48, 49
Distribution	A distribution shows how many cases, or what proportions of the cases, have each of the values for a variable	22
Duck (sitting) problems	Problems characterized by substantial involvement of repeat victims (see Crime triangle). Occurs when victims continually interact with potential offenders at different places, but the victims do not increase their precautionary measures and their guardians are either absent or ineffective	8, 15
Edges	Boundaries between areas where people live, work, shop, or seek entertainment	16
Enablers, crime	Places with little regulation of behavior	17
Environments	A criterion for classifying problems describing where the problem takes place (see Behaviors)	15, 28, 30
Facilitators	Physical items, social situations, or chemical substances that help offenders commit crimes or acts of disorder	34
Facilitators, chemical	Substances that increase offenders' abilities to ignore risk, reward, or excuses	34
Facilitators, physical	Things that augment offenders' capabilities, help overcome prevention measures, or incite deviancy	34

Term	Definition	Step
Facilitators, social	Situations that provide support that stimulates crime or disorder by enhancing rewards from crime, legitimating excuses to offend, or by encouraging offending	34
Facilities	Places that have special functions, like schools, businesses, and restaurants	15, 18, 20, 23, 25, 27, 28, 30, 34, 38, 39, 42, 43, 44, 48
Facilities, risky	Facilities that are frequent sites for crime and disorder	18, 20, 23, 27, 28, 29, 34, 44
False negative	An error in which the decision maker predicts something will not occur, but it does occur. Also known as a Type 1 error	37, 53
False positive	An error in which the decision maker predicts something will occur, but it does not occur. Also known as a Type 2 error	37, 53
Flag accounts	An explanation for repeat victimization that suggests that some people are particularly vulnerable because of their occupation or their ownership of hot products (see Boost accounts)	29
Focused temporal clustering	Clustering of crime in distinct time ranges during 24-hour periods	25
Framework, story	A general "story shell" linking multiple interacting factors and that can be applied to a variety of problems	54, 58
Generators, crime	Areas to which large numbers of people are attracted for reasons unrelated to criminal motivation	17
Geographic Information System	See GIS	

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Term	Definition	Step
GIS	Abbreviation for Geographic Information Systems. These are computer databases where all information is linked to geographic locations so that the data can be mapped. This allows comparisons of different areas and places for the same information, and examination of how two or more types of information vary together geographically. GIS is at the heart of all modern crime mapping processes	2, 24, 29
Graded response	The response increases in intensity or form as the number of repeat victimizations increases. An intervention used to reduce repeat victimization	29
Handler	Someone who knows the offender well and who is in a position to exert some control over his or her actions	25, 28
Home Office	The British equivalent of the U.S. Department of Justice, which has funded much research on crime prevention	10, 19, 36, 38, 40, 41
Hot areas	Types of hot spots showing neighborhoods where crime is concentrated	23
Hot dots	Types of hot spots showing locations with high crime levels	23
Hot lines	Types of hot spots showing street segments where crime is concentrated	23
Hot products	Things that are particularly attractive for theft	18, 28, 29, 31
Hot spots	Geographic concentrations of crime	3, 5, 16, 17, 18, 23, 48, 55

Term	Definition	Step
Hypothesis	An answer to a question about a problem that can be true or false, and may or may not be supported by evidence	20, 50
Impact evaluation	A research study to determine if the response changed the problem	46
Inner quartile range	The upper and lower bounds of the 50 percent of the cases centered on the median	22
Input	Resources used in a response	46
Intervention	The response being applied to a problem (also called a treatment or response—see Response)	4, 7, 11, 20, 35, 40, 44, 45, 46, 47, 48, 49, 50, 51, 52
Manager	A person who has some responsibility for controlling behavior in a specific location	5, 8, 24, 28, 30, 33, 38, 40, 58
Mean	A measure of central tendency, also known as the arithmetical average, calculated by summing the values for all the cases and dividing the sum by the number of cases. Useful for ratio data and symmetrical distributions	22
Median	A measure of central tendency that divides the cases into two equal groups, half below the median value and half above	22
Mode	A measure of central tendency that shows the value that the largest number of cases possesses	22
Moving average	A method for reducing random fluctuation in a time series by recomputing the value for every data point based on the average of preceding time periods (see Smoothing)	26, 52
Near repeats	See Virtual repeats	29

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Term	Definition	Step
Nodes	Destination places such as home, work, shopping, entertainment, and school (see Paths)	16
Nominal scale	Values only name and cannot be ranked	22
Odds ratio	A measure of association between two characteristics; useful when a case-control study is used	33
Offender	A person who commits a crime or act of disorder	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 28, 29, 30, 31, 34, 35, 36, 37, 39, 40, 41, 42, 43, 44, 46, 48, 49, 50, 52, 54, 58
Offenders, repeat	People who commit many crimes or acts of disorder (see Wolf)	3, 18, 30
Opportunity	Short for "crime opportunity structure" and meaning the physical and social arrangements that make crime possible	9, 12, 38, 44, 48, 50
Ordinal scale	A measurement scale in which values can be ranked but no other mathematical process can be applied to them	22
Outcome	The impact of the response on the problem	11, 33, 37, 46, 54
Packaging	The lines and labels used in tables and figures (see Content). Small amounts are needed to help interpret content, but large amounts obscure content	56, 57
Paths	Routes connecting nodes	16
Perceptions, offenders'	How offenders view situations and prevention measures	11, 34

Term	Definition	Step
Place	A very small area, such as an address, street corner, or block face (see Crime triangle, Den)	8, 12, 13, 17, 18, 20, 27, 30, 32, 38, 39, 40, 48
POP	See Problem-Oriented Policing	4, 5, 6, 8, 14, 19, 46
POP Guides	Summaries of research and practice dealing with specific problems and recommending particular responses. Available from www.popcenter.org and www.cops.usdoj.gov	3, 19
Problem analysis triangle	A graphic showing the six principal elements of routine activity theory—offenders, handlers, targets/victims, guardians, places, and managers—and used to organized the analysis of problems	8, 16
Problem-Oriented Policing	Policing that changes the conditions that give rise to recurring crime problems, and does not simply rely on responding to incidents as they occur or forestalling them through preventive patrols	1, 3, 4, 5, 6, 7, 11, 15, 19, 21, 28, 38, 55, 60
Process evaluation	Assessing how a response was implemented	46, 47, 55
Provocations	Physical designs or the way places are managed that provoke misconduct	34, 38, 42, 54
p-value	The probability that the difference between two sets of statistics is due to randomness (see Significance test)	53
Random fluctuations	Short-term changes in problems caused by a large number of very small effects	26, 53
Range	A measure of dispersion showing the minimum and maximum value in a distribution	22, 25

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Term	Definition	Step
Rates, crime	The ratio of crimes to targets for an area. Used to control for differences in the number of targets (see Risk, crime)	9, 17, 20, 24, 26, 27, 28, 32, 37, 42, 44, 49, 51
Ratio Scale	A measurement scale in which there are equal intervals between the ranked values and a theoretically meaningful zero. Any mathematical procedure can be used on date measured on a ratio scale	22
Regression to the mean	The tendency for abnormal high or low levels of crime to move back to their normal levels	47, 52
Response	The third stage in the SARA process involving the development and implementation of an intervention designed to reduce a problem. Also a term for the preventive treatment or intervention being applied (see Intervention or Treatment	2, 4, 5, 6, 7, 14, 15, 17, 19, 20, 21, 23, 26, 29, 35, 36, 37, 38, 39, 40, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 58, 60
Response group	People or places receiving prevention, in contrast to control group	47
Results	Activities accomplished in a response	46
Risk, crime	The chance a target will be involved in a crime	6, 16, 17, 18, 20, 21, 23, 26, 27, 28, 29, 31, 33, 34, 38, 39, 41
SARA	An acronym for the problem solving process (see Scanning, Analysis, Response, and Assessment)	7, 21
Scanning	The first stage in the SARA process, involving problem identification, verification, and classification	1, 7, 14, 16, 18, 38, 54

Term	Definition	Step
Scripts	Standard actions carried out in a particular order by offenders to commit crimes	35, 36
Significance level	A threshold below which one rejects the possibility that the difference between two sets of statistics is due to randomness. Often, .05 (or 5 percent) is the rejection threshold (see Significance test)	53
Significance test	A statistical procedure used to determine whether the difference between two groups of numbers is due to randomness	53
Situational crime prevention	The science of reducing opportunities for crime	1, 13, 16, 34, 38, 41, 54
Smoothing	Removing random fluctuations from a time series by using a moving average (see Moving average)	26, 52
Standard deviation	A common measure of spread useful for symmetrical distributions and ratio data.	22, 53
Standard model	Policing that relies primarily on the use of patrolling, rapid response, and follow-up investigations to prevent crime	3
Target	The person or thing an offender attacks, takes, or harms (see Victim)	2, 8, 10, 12, 13, 14, 15, 16, 17, 20, 23, 25, 26, 27, 28, 29, 30, 31, 34, 35, 38, 39, 41, 44, 47, 48, 49, 52, 54, 58
Targets at risk	Persons or things vulnerable to being attacked, taken, or harmed	26, 27
Temporal clustering	Concentration of crime over 24 hours (See Acute, Diffused, and Focused temporal clustering)	25
Time-window effect	The underestimation of repeat victimization due to using a set time period	29

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Term	Definition	Step
Treatment	See Response or Intervention	48, 49, 51
Treatment area	Areas receiving the response in contrast to control areas (see Response group)	48, 51
Treatment group	See Response group	49, 51
Trend	A steady increase, decrease, or stable level of crime over some period of time	2, 20, 22, 26, 47, 49, 52, 57
Uncontrolled case study	A comparison of troublesome persons, places, times, or events without examining similar untroublesome ones. The results of such a study are often highly misleading.	32
Victim	A human target or the owner of stolen goods or damaged property (see Target)	1, 2, 4, 6, 8, 10, 14, 15, 16, 18, 21, 22, 23, 25, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 42, 44, 46, 47, 48, 54, 55
Victim, repeat	A person or place with multiple crimes or acts of disorder (see Duck)	18, 23, 28, 29
Victimization, repeat	The process leading to repeat victims	8, 28, 29, 30, 33, 38, 46
Virtual repeats	Victimization of targets that are very similar, though not identical (as in the case of repeat victims or places). Also called "near" repeats	29
Wolf (ravenous) problems	Problems characterized by substantial involvement of repeat offenders (see Crime triangle). Occurs when offenders are able to locate temporarily vulnerable targets and places	8, 15

This manual, written by two leading crime prevention experts, is intended for crime analysts and other police officials working on problem oriented policing projects. It covers the basics of problem-oriented policing and shows how many new concepts developed to analyze crime patterns can sharpen understanding of crime and disorder problems. It also shows how the 25 techniques of situational crime prevention can greatly expand the problem-solving capacity of police. Finally, it gives guidance on ways to assess the effectiveness of action taken, including ways of testing for displacement.