International Association of Crime Analysts (IACA)

# Effective Responses: High Crime and Disorder Areas

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## About the IACA Standards, Methods, and Technology Committee

The International Association of Crime Analysts (IACA) is committed to a continuing process of professionalization through standards and knowledge development. In 2011, the IACA chartered the Standards, Methods, and Technology Committee (SMT) for the purpose of defining "analytical methodologies, technologies, and core concepts relevant to the profession of crime analysis."[i] This document is part of a series of white papers produced by the SMT Committee that executes this purpose. The methodology for formulating the positions reflected in the white paper series includes 1) development of a draft paper through in-depth meetings and discussions of Subject Matter Experts[ii], 2) review and feedback by the IACA Executive Board, 3) review and feedback from an independent editor with knowledge of crime analysis, and 4) review and feedback by IACA members facilitated through the IACA website (www.iaca.net). Any questions about this process can be directed to the chair of the SMT Committee at SMT@iaca.net.

## Overview

There are a variety of ways to define high crime and disorder areas.  For the purposes of this paper (as in the previous IACA Identifying High Crime Areas [2013] white paper), we will rely on three primary characteristics to define high crime and disorder areas. These include:

1. a relatively high volume of crime and disorder,

2. evidence of spatial clustering, and

3. an observable pattern of time occurrence and/or duration.

We recognize that this characterization of high crime and disorder areas shares many similarities with the definition of hot spots.  Due to the large number of similarities between the two, in this paper high crime and disorder areas and hot spot areas will be treated as the same concept.  Our goal is to help the reader identify these areas, understand contributing factors, develop interventions, and then evaluate their effectiveness in reducing crime and disorder.

Police agencies and their communities experience both short term and long-term high crime areas. The cost of sustaining effective solutions in tackling high crime areas is a persistent challenge. The current paper follows up on the IACA's white paper on Identifying High Crime Areas (2013) describing various methodologies to identify high crime areas.  It will provide police agencies and their analysts with both examples and resources for identifying sustainable solutions that will help reduce high crime and disorder areas. The purpose of this paper is not to provide an exhaustive evaluation of various strategies used to address high crime areas.  Rather,

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[i] This quote comes from the mission statement as written in the initial Standards, Methods, and Technology Strategic Plan completed April 2011.

[ii] Subject Matter Experts are identified by the Standards, Methods, and Technology Committee based on special knowledge obtained through publications, presentations, and practical experience and their willingness to participate.

this paper highlights promising and successful interventions that may be used as a template for developing and evaluating solutions to high crime areas.

## Role of Analyst

The crime analyst plays a pivotal role in addressing high crime areas. The crime analyst is "absolutely necessary for identifying and specifying the problem at hand, analyzing data to understand why the problem is occurring, helping to develop when and where responses would be best implemented, and helping to assess the impact of the response on the problem" (Santos, 2012, p. 45). Crime analysts may not serve as the final decision-maker, but it is clear that their involvement in a problem solving team could be extensive, particularly during the scanning, analysis, and assessment phases of problem solving. Crime analysts should seek and encourage long-term solutions and be well versed in current research on problem-solving and effective policing tactics and strategies (Clarke & Eck, 2005, Step 38). Crime analysts not only assist their agencies with designing, implementing, and evaluating crime control efforts, but their reach may also extend to a larger audience through the presentation of their efforts and results at national and international forums, as well as in academic and practitioner publications.

## Diagnosing a High Crime Area

The first step in determining an appropriate solution to a high crime area is identifying the factors contributing to the high level of crime and disorder in that area. The IACA's white paper (2013) on Identifying High Crime Areas suggests that analysts and their agencies consider both police and non-police sources of data in understanding high crime areas.  These data sources can be classified into a few general categories including incidents, people, places, and things. Calls for service (CFS), crime reports, field interviews, arrests, traffic citations, and traffic collisions are good examples of police incident data. People data involves persons listed in police reports, as well as non-police data, including corrections data, probation information, parole records, and sex offender registry information. Place data includes such things as locations (addresses or boundaries) for places such as schools, pawn shops, neighborhoods, and information about locations within the city that the analyst might use. Place data might include non-police material such as census or auditor files.  Items of interest to the analyst, such as stolen vehicle information or physical evidence associated with a crime scene, comprise "things" data that come from police files (Hill & Paynich 2013). All of these datasets can be used to develop comprehensive and actionable analyses for police administrators.

## Defining the Problem

It is imperative that the crime analyst have a good understanding of the underlying causes of high crime and disorder areas in order to recommend strategies and evaluate the impact of solutions. Before identifying solutions, the following questions should be considered:

*What are the hottest addresses in the high crime and disorder area and what kinds of properties are they?*
Often, crime hot spots stem from the presence of several individual problem places, such as problem bars, apartment complexes, convenience stores, parks, or other facilities conducive to crime and disorder. The best way to identify the hottest addresses is to extract a CFS dataset for

the high crime area, create a pivot table on the address field (which may require some data cleaning), and sort the addresses from most common to least common. Since CFS include all types of activity recorded by a police agency (including crime, disorder and traffic issues from both a citizen and officer perspective), they provide the best overview of activity in a high crime and disorder area. Some departments maintain a problem properties list or spreadsheet complete with a location type (bar, convenience store, park, etc.) as well as brief updates about the property including any pertinent communication with the property owner and/or manager. Lastly, analysts must be cognizant of the difference between CFS vs. crime locations as the CFS location may designate where the call came from instead of where the actual crime/incident occurred. There may be some locations that appear to be high crime and disorder locations simply because of the type of location they are, for example, hospitals and police stations and there may be internal policy that guides which address is captured.

*What proportion of the high crime problem is attributable to the hottest addresses?*
Once the CFS analysis has been conducted, it will be possible to identify if a few locations are the source of the problems in the high crime areas. These findings will drive the potential responses. Depending on the available resources, it may be necessary to just focus on a small section (or even a few addresses) of the hottest part of a high crime area. Problem-solving teams need to be realistic and define their focus area as something that is manageable with the given resources.

*Why are these specific locations generating excessive levels of crime and CFS?*
Often, low- and high-crime facilities are located in the same general area. For this reason it can be helpful to compare and contrast management practices and the people who frequent or live in these locations. Are the buildings or surrounding areas poorly designed or are they managed differently compared to similar properties in the same general area?

*What are the most common types of crime and CFS in the high crime area?*
A simple analysis such as creating a pivot table on call type from most to least frequent will enable an analyst to identify the most prevalent problems in a high crime area. By identifying specific problems (e.g., assaults in and around bars), rather than broader problems (e.g., violent crime), it will be easier to identify effective solutions.

*What percentage of the incidents is occurring indoors versus outdoors?*
Finally, the crime analyst should consider whether a large proportion of crimes are occurring indoors versus outdoors. In a high crime area with a robbery problem are the majority of the robberies occurring inside places such as convenience stores and fast food restaurants or in parks, on sidewalks, or in parking lots? If domestic assaults and disturbances committed indoors are among the most common types of incidents in the high crime and disorder area, then effective responses to this type of problem will be very different from those aimed at serious assaults and disturbances committed outdoors (e.g., gang assaults).

Once these types of questions about the nature and scope of the problems in the high crime areas have been answered, a more specific definition of the problem can be developed. This

refined definition will then help the analyst and other members of the problem-solving team to identify more focused responses.

## Analyzing the Problem(s) in the High Crime and Disorder Area

Once the definition of the problem has been narrowed, the analyst should conduct an in-depth analysis of the problem or problems that were identified. The analyst should review pertinent 911 call narratives and incident report narratives to better understand the dynamics of the problem. The purpose of the problem analysis phase is to develop an even more refined understanding of the nuances of the problem(s).  The Center for Problem-Oriented Policing (POP Center) has developed more than 70 problem-specific guidebooks (See http://www.popcenter.org/problems/).  These guidebooks are excellent resources for analysts seeking to conduct comprehensive problem analyses.

For example, if the problem-solving team has decided to focus on drug dealing at apartment complexes in the high crime area, the POP guide on that topic, *Drug Dealing in Privately Owned Apartment Complexes* (Sampson, 2001), suggests analysts answer a number of questions before selecting tailored responses.  A brief excerpt of this list includes:

1. Who owns the apartment complex? Check tax records to determine ownership.

2. Is the owner aware of the problem?

3. How is the property managed? What techniques are used to find tenants? What methods are used to prevent and address illegal activity on the property?

4. Is the property owner well-intentioned but in need of better skills to address the problem? Is the property manager participating, intentionally overlooking the problem or in need of better skills?

5. Does the current visitor policy (or lack thereof) provide a ready excuse for buyers' presence on the property?

6. What do calls for police service reveal about the problem? Compare several similar apartment complexes nearby to see if this apartment complex uses a disproportionate share of police services. A further refinement is to look at the number of calls for service per apartment unit. Divide the total number of calls from the apartment complex by the number of rental units, and compare this number with those for similar complexes nearby. If there is a recent ownership change and sudden appearance of drug dealing, compare the call history during the current owner's tenure with that during the prior owner's (Sampson, 2001, p. 12).

Clarke and Eck (2005, Step 23) also suggest that clarifying the nature of the hot spot helps to inform the response.  Specifically, they note:
1. Hot dots (hot addresses) suggest changing the physical environment of particular places or changing their management. They also suggest intervening with high-risk victims.

2.  Hot lines (hot street segments) suggest changing streets, paths and other routes, or the environments along them.

3.  Hot areas suggest large-scale partnerships to change neighborhoods (Clarke and Eck, 2005, Step 23).

## Identifying Stakeholders

Identifying stakeholders to partner with in any comprehensive problem-solving project cannot be over-emphasized. One question to ask in the process is: "who owns [a piece of] the problem?" (Clarke & Eck, 2005, Step 44). Your answers will identify the people and organizations that should be included in the process from the beginning conversations through decision-making and into the evaluation stage. For example, in High Point, NC, a thorough analysis of the drug and crime problem in the community identified a multitude of stakeholders.  The stakeholders included community groups, church groups, volunteers, friends and family members of key offenders, federal and state law enforcement agencies, the District Attorney's office, and employment and social service agencies, among others (Kennedy, 2009).

## Reliability of Predictive Hot Spot Mapping

A comprehensive discussion of hot spot mapping methods is beyond the scope of this paper (see IACA's "Identifying High Crime Areas" for a discussion of this topic).  It is important to note, however, that hot spot mapping is a key tool in identifying high crime areas.  Further, it is important for analysts to be aware of the research and practice that exists surrounding the reliability of the methods in this area. In choosing an appropriate hot spot method, the analyst must address three components: what factors influence reliability; which hot spot techniques are most reliable, and how sensitive are the results to data quality (Zandbergen, 2011). Zandbergen has done extensive research on hot spot robustness and his findings suggest that the factors that most influence the reliability include:  type of crime, time period utilized, urban morphology, geocoding quality, type of hot spot technique chosen, and hot spot parameters. Of this group, the most influential factors were the choice of hot spot technique and specific hot spot parameters (for example, bandwidth) (Zandbergen, 2011). This suggests that hot spot techniques will need to be tweaked or optimized for best results. That is, choice of hot spot technique and parameters will change based on the crime type and study area characteristics—one hot spot technique may be a better fit for one high crime problem area than another. Analysts must be careful to choose a hot spot technique that makes sense for their specific project. There is not a "one size fits all" approach that can be used in mapping high crime and disorder areas. How a problem area is defined must be accounted for when choosing any hot spot mapping method.

## Spatial & Temporal Considerations

As discussed in Identifying High Crime Areas (IACA, 2013), high crime areas can be acute or chronic (Clarke & Eck, 2005). They can be defined using temporal criteria and can change shape over time producing periods of emergence, persistence, and decline of crime (Gorr & Kurland, 2012; Harries, 1999). Understanding these spatial and temporal characteristics is imperative in

the development of responses as research suggests that some types of hot spots respond better to specific types of strategies (Ratcliffe, 2004).

Ratcliffe (2004) provides a useful framework for thinking about possible solutions based on spatial and temporal characteristics of a hot spot. The analyst must keep in mind, however, that problem-oriented policing requires interventions to be problem-specific. Each crime type will likely have its own signature and opportunity structure – and different crime problems require problem-specific solutions (even if they are occurring in the same area).

Ratcliffe's hot spot framework is based on two dimensions: spatial and temporal. First, hot spots can be dispersed (general hot spot area with no particular area(s) of density); clustered (general hot spot area containing smaller and denser areas of crime); and hot point (A hot address for example or problem property explaining the bulk of the hot spot). In addition, each of these types of hot spots vary temporally with some being diffused (no particular pattern concerning time and no time period experiencing higher rates of activity than another); focused (some period of time(s) where the hot spot experiences higher rates of activity than others); and acute (a distinct period of time accounting for most of the activity). Based on the level of spatial and temporal dispersion, then, Ratcliffe argues that police departments can make smarter choices about the strategies that might be best employed to interrupt a high crime area hot spot.

| Policing Hotspot Matrix | Dispersed | Clustered | Hotpoint |
|---|---|---|---|
| **Diffused** | Uniform vehicle patrols, architectural changes, public education campaign | Random breath tests, foot patrols, architectural changes, publicity campaign | Roadblocks, plain clothes patrols, random breath tests, private security, CCTV |
| **Focused** | Uniform vehicle and foot patrols, improved lighting, public education campaign | Vehicle and foot patrols, random breath tests, private security, improved lighting | Surveillance units, plain clothes foot patrols, CCTV, surveillance of entry/exit points |
| **Acute** | Unmarked vehicle patrols, private security, improved lighting | Surveillance and plain clothes patrols, CCTV | Surveillance, arrest squads, CCTV, unmarked police units |

Source: Ratcliffe, 2004, p. 17

## Complicating and Contributing Factors

Some high crime areas are characterized by compounded, correlated problems. An example might be an area that involves interrelated problems of prostitution, gun crime, drugs, and gangs. Efforts undertaken to reduce one crime could cause a displacement or diffusion of benefits effect on the related crimes. For example, in examining a prostitution problem in a high crime area, an analyst may determine that there is a strong connection between the prostitutes in the area, the drug dealers that sell to the prostitutes, and the gangs that control the drug flow. Addressing the prostitution problem could cause an increase or a decrease in the related drug and violent crime in the area.

## Theoretical Underpinnings of Hot Spot Interventions

The theories of environmental criminology serve as the basis for some of the different strategies that police can employ in high crime areas. Environmental criminology examines how places can influence criminal behavior. Theories of environmental criminology include: crime pattern theory, crime prevention through environmental design, routine activities, and situational crime prevention. These theories help to explain why crime opportunities are clustered in time and space, provide guidelines for analyses, and assist in developing a systematic approach to identifying and evaluating solutions.

While a comprehensive examination of theory is beyond the scope of this paper, it is an important piece of the problem-solving process. Environmental criminology focuses not on why an offender commits a specific offense, but rather examines how offender motivation can be influenced by the physical characteristics of a space and can lead to variations in opportunities for crime (Hill & Paynich, 2013; Santos, 2012). It is a perspective that "attempts to explain why crime is concentrated at particular places or among particular victims/targets" (Madensen, 2013). An analyst should seek to understand factors contributing to the crime setting and recommend ways in which the setting and victim behavior could be altered to reduce such opportunities (Santos, 2012).

## Social Disorganization and Related Approaches

Shaw and McKay's (1942) findings of their research in high crime neighborhoods in Chicago suffered from high residential instability, a heterogeneous population, and a concentration of high poverty levels. Although police may not have direct influence over these factors, they can incorporate them into their overall strategy by including community and neighborhood stakeholders. Community partnerships can be a wealth of untapped knowledge and resources that may significantly enhance the likelihood of success. When community members invest in their neighborhoods, good things tend to happen. Sampson et al. define collective efficacy as the perceived willingness to intervene in efforts to achieve a shared goal of social order which depends on the "mutual trust and solidarity among neighbors" (Sampson, Raudenbush, and Earls, 1997, p. 919). Neighborhoods with higher levels of social efficacy have less crime and disorder. Likewise, many have noted the importance of a well-functioning, cohesive community social network in reducing or even defending against crime and disorder (Newman, 1972; Wilson & Kelling, 1982). The importance here is to emphasize the value of including community stakeholders in any approach.

## Offenders, Victims, and Space

Originally proposed by Brantingham and Brantingham (1991), crime pattern theory considers the overlap of activity spaces between potential offenders and potential targets/victims that give rise to crime opportunities. An activity space is comprised of multiple locations where people live, work, and play (nodes) and the routes (paths) they take to travel to and from these places. Crime pattern theory explains why and how crime clusters in particular areas. Thus, analysts and police agencies seeking solutions to address high crime and disorder areas, may need to first understand how offenders and victims share similar activity spaces.
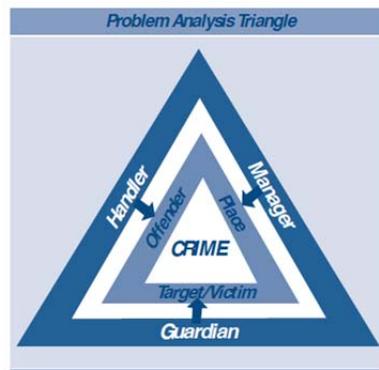


Source: Clarke and Eck, 2005

Routine Activities Theory (Cohen & Felson, 1979) contends that the likelihood of crime increases when a motivated offender and suitable targets come together in space and time in the absence of capable guardianship. The Problem Analysis Triangle suggests some possible avenues to seek preventative responses by affecting the mechanisms that control victims/targets, places, and offenders (Santos, 2012). Specifically, guardians are people who protect victims/targets, managers are responsible for places, and handlers are those who know potential offenders and are able to monitor or control their actions (Felson, 1995). To utilize such a theory in high crime places, police agencies would seek greater participation from place managers in controlling behavior at key locations (Eck, Chainey, Cameron, Leitner, & Wilson, 2005).

Brantingham and Brantingham (1995) also highlight three types of hot spot places and their causes in terms of the interaction between potential offenders and targets/victims: Crime generators, crime attractors, and crime enablers (See also Clarke and Eck, 2005, Step 17). A crime generator is a location where both offenders and victims will come together for noncriminal purposes. Such a location gives lots of opportunity for both offenders and victims/targets to interact. An example would be a shopping mall. The cause of a crime generator is the high number of vulnerable targets. A suggested response might be improving protection for the number of targets. A crime attractor is a location that is well known to offenders as a place for criminal activity. Examples are locations typically known for prostitution and drug activity. Such locations may be first known by locals but then gradually start to bring in other potential offenders. The cause of a crime attractor is the attraction of potential offenders to the location. The response then would be discouraging offenders from coming to the location.

A crime enabler is a location where there is little regulation of behavior. The cause of a crime enabler is the lack of controls. The suggested solution then is to identify place managers and encourage the improvement of place control.

## Crime Prevention through Environmental Design (CPTED)

In a nutshell, "…the basic concept of crime prevention through environmental design (CPTED) is that by changing the environment (stimulus) we can change the behavior of the offender (response)" (Paynich & Hill, 2010, p. 103). CPTED has its roots in Oscar Newman's "defensible space." (Newman, 1972) CPTED is "a set of principles based on the theory that the physical environment can be designed in such a way as to reduce or eliminate opportunities for crime" (Santos, 2012, p. 311). "The basic idea is that the planning and design of our communities has a significant impact on the opportunity for crime to occur and fear of crime" (City of Saskatoon, 2010, p. 5). Solutions based on CPTED principles include first generation CPTED principles which emphasize getting "local citizens to take formal or informal ownership of places where they work, live, and play" (City of Saskatoon, 2010, p. 5). Solutions from first generation CPTED involve improving natural surveillance, controlling access, and the overall management and maintenance of places. Advanced first generation CPTED extends such principles on a larger scale to incorporate "land use, how crime is displaced, urban features and places that might generate crime opportunities, creating positive activities in certain places, and paying careful attention to how people move from one place to another along stairways, walkways, and paths" (City of Saskatoon, 2010, p. 5-6) Second generation CPTED principles focus on developing social cohesion and ensuring that the environment is conducive to developing relationships and culture. This includes strategies that "connect people to surrounding neighbourhoods and groups; sustaining a careful balance of activities, housing, or business types; and providing opportunities for the cultural growth of neighbourhoods, what is often called placemaking" (City of Saskatoon, 2010, p. 6)

## Situational Crime Prevention

Situational crime prevention seeks to modify offender perceptions about opportunity. In particular, it suggests that opportunities for crime can be less attractive for offenders by (1) increasing the effort or making the crime more difficult to commit, (2) increasing the risk of getting caught, (3) reducing or removing the rewards associated with committing the crime, (4) reducing or removing the provocations encouraging people to commit crimes, and (5) removing excuses to commit crimes. Based on these categories, Cornish and Clarke (2003) updated a classification system of 25 situational crime prevention responses.

**Table 2: Twenty-five Techniques of Situational Prevention**

| Increase the Effort | Increase the Risks | Reduce the Rewards | Reduce Provocations | Remove Excuses |
|---|---|---|---|---|
| 1. *Target harden:*<br>• Steering column locks and immobilisers<br>• Anti-robbery screens<br>• Tamper-proof packaging | 6. *Extend guardianship:*<br>• Take routine precautions: go out in group at night, leave signs of occupancy, carry phone<br>• "Cocoon" neighborhood watch | 11. *Conceal targets:*<br>• Off-street parking<br>• Gender-neutral phone directories<br>• Unmarked bullion trucks | 16. *Reduce frustrations and stress:*<br>• Efficient queues and polite service<br>• Expanded seating<br>• Soothing music /muted lights | 21. *Set rules:*<br>• Rental agreements<br>• Harassment codes<br>• Hotel registration |
| 2. *Control access to facilities:*<br>• Entry phones<br>• Electronic card access<br>• Baggage screening | 7. *Assist natural surveillance:*<br>• Improved street lighting<br>• Defensible space design<br>• Support whistleblowers | 12. *Remove targets:*<br>• Removable car radio<br>• Women's refuges<br>• Pre-paid cards for pay phones | 17. *Avoid disputes:*<br>• Separate enclosures for rival soccer fans<br>• Reduce crowding in pubs<br>• Fixed cab fares | 22. *Post instructions:*<br>• "No Parking"<br>• "Private Property"<br>• "Extinguish camp fires" |
| 3. *Screen exits:*<br>• Ticket needed for exit<br>• Export documents<br>• Electronic merchandise tags | 8. *Reduce anonymity:*<br>• Taxi driver IDs<br>• "How's my driving?" decals<br>• School uniforms | 13. *Identify property:*<br>• Property marking<br>• Vehicle licensing and parts marking<br>• Cattle branding | 18. *Reduce emotional arousal:*<br>• Controls on violent pornography<br>• Enforce good behavior on soccer field<br>• Prohibit racial slurs | 23. *Alert conscience:*<br>• Roadside speed display boards<br>• Signatures for customs declarations<br>• "Shoplifting is stealing" |
| 4. *Deflect offenders:*<br>• Street closures<br>• Separate bathrooms for women<br>• Disperse pubs | 9. *Utilize place managers:*<br>• CCTV for double-deck buses<br>• Two clerks for convenience stores<br>• Reward vigilance | 14. *Disrupt markets:*<br>• Monitor pawn shops<br>• Controls on classified ads<br>• License street vendors | 19. *Neutralize peer pressure:*<br>• "Idiots drink and drive"<br>• "It's OK to say No"<br>• Disperse troublemakers at school | 24. *Assist compliance:*<br>• Easy library checkout<br>• Public lavatories<br>• Litter bins |
| 5. *Control tools/ weapons:*<br>• "Smart" guns<br>• Disabling stolen cell phones<br>• Restrict spray paint sales to juveniles | 10. *Strengthen formal surveillance:*<br>• Red light cameras<br>• Burglar alarms<br>• Security guards | 15. *Deny benefits:*<br>• Ink merchandise tags<br>• Graffiti cleaning<br>• Speed humps | 20. *Discourage imitation:*<br>• Rapid repair of vandalism<br>• V-chips in TVs<br>• Censor details of modus operandi | 25. *Control drugs and alcohol:*<br>• Breathalyzers in pubs<br>• Server intervention<br>• Alcohol-free events |

Source: Cornish and Clarke, 2003: p. 90

Implementing effective responses that target both the environment and people first requires a comprehensive understanding of the causes of problems plaguing high crime and disorder areas.

## Implementation

Proactive, tailored, evidence-based, place-based solutions are commonly cited in the empirical literature as the most successful types of interventions. "Empirical findings from two decades of research related to place-oriented policing strategies have indicated that focused intervention at hot spot places is associated with crime reduction" (Hoover, 2014, p. 105). Indeed, the National Research Council, in its careful review of police practices and policies, concluded that "studies that focused police resources on crime hot spots provide the strongest collective evidence of police effectiveness that is now available" (Skogan and Frydl 2004: 250).

The implementation literature is vast and deep relative to organizational and programmatic factors that correlate to higher levels of success. Clarke and Eck (2005) offer a few suggestions about challenges to implementing law enforcement based solutions. One consideration is that finding a solution can be challenging. It may be too expensive, too difficult, or difficult to find cooperation. Clarke and Eck (2005, Step 45) suggest that a team working on a problem should set some basic requirements including ensuring that:

1. It is not too ambitious or costly.

2. It focuses on near, direct causes rather than on distant, more indirect ones, which gives it a good chance of making an immediate impact.

3. The process through which each response should impact the problem has been clearly articulated. (Clarity on how the response or intervention works.)

Even still, there can be challenges to implementing a solution that analysts and police agencies should consider when seeking a solution. Agencies can anticipate implementation problems when a response (Clarke & Eck, 2005, Step 45):

1. Requires coordinated action among a number of separate agencies.

2. Will take a long time to introduce and involves a number of steps to be completed in sequence.

3. Must be implemented by staff with little understanding of its purpose.

4. Has no major supporter among the partnership team.

5. Lacks the support of senior administrators.

6. Involves a response implemented by an agency that is outside the partnership, that is poorly resourced or in turmoil, and that will gain little direct benefit from the solution.

## Evaluation
In assessing responses to problems, the problem-solving team should first consider whether the problem has been getting better or worse, whether to end any existing efforts or to perhaps move in another direction. If the problem has not been getting better, then it may be necessary to revisit the scanning and analysis stages of the SARA process (Eck, 2002). If a decline in the problem is observed, the team should then assess whether the response contributed to the decline which helps in understanding whether the response should be applied to similar problems (Eck, 2002).

There are two important aspects of assessing responses: process and impact evaluations. Both are discussed below.

### Process Evaluations
"Process evaluations ask the questions: Did the response occur as planned? Did all the response components work? Or, stated more bluntly, did you do what you said you would do? This is a question of accountability" (Eck, 2002, p. 11). In other words, "a process evaluation tells what happened, when and to whom" (p. 14). Clarke and Eck (2005) suggest a checklist for process evaluations.

**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 ☐ ?

Source: Clarke and Eck, 2005, Step 46

Process evaluations are important because sometimes good programs are implemented poorly and may not yield the intended effects. There are many reasons why programs or strategies may not be implemented properly including: resource allocation issues, vague directives, human error, and politics (to name but a few).  In evaluating solutions, analysts must have a good understanding of how a program was implemented in order to be able to state with some validity that the program or intervention contributed to impacts. If the problem-solving team determines in the process evaluation that the strategy was not implemented properly, they can use this information to make recommendations for the future.

## Impact Evaluations

"An impact evaluation asks the following questions: Did the problem decline? If so, did the response cause the decline?" (Eck, 2002, p. 11). Furthermore, it is important to consider whether or not it is necessary to concretely determine if the response caused the decline. If one wishes to continue to apply the same strategy to another similar problem, it would then be necessary.

There are essentially two components to impact evaluations: the first is measuring the problem itself, the second is systematically comparing changes in measures. "In evaluation design, the goal is to provide the most reliable evidence that the strategy or intervention was the primary contribution to the comparative change (i.e., the solution reduced the problem)" (Eck, 2002, p. 15). Measures can be qualitative and/or quantitative in nature. Examples of qualitative measures are crime maps, demonstrating the continued presence or absence/reduction of crime. An in-depth discussion of methodology is beyond the scope of this paper, however, Eck's (2002) work is a good starting point for interpreting the results of both process and impact evaluations. Eck (2002, p. 13).

Determining cause requires four criteria to be met, with the last criterion more difficult to establish.

| Evaluation Designs | Single Measurement Before and After | Multiple Measurements Before and After |
|---|---|---|
| No Control Group | Pre-post | Interrupted Time-Series |
| Control Group | Pre-post with a control group | Multiple Time-Series |

Source: Eck, 2002: p. 25

1. There is a plausible explanation of how the response reduces the problem.

2. The response and the level of the problem are related (there is a relationship between the presence of the response and a decline in the problem, and there is a relationship between the absence of the response and an increase in the problem).

3. The response occurs before the problem declines.

4. There are no plausible alternative explanations; you do this by carefully examining the most obvious counterclaims and assessing evidence for them.

Choosing an appropriate evaluation design is important. As with everything, some are generally better than others, they all have varying types and degrees of weakness and the decision will often depend on the sample and data that are available and the stage of the evaluation process you are examining. A detailed analysis of evaluation methodology is beyond the scope of this paper but the following discussion summarizes the most commonly chosen and accepted designs in the field. (Eck, 2002, p. 18-24)

| Interpreting Results of Process and Impact Evaluations | | | |
|---|---|---|---|
| | | **Process Evaluation Results** | |
| | | Response implemented as planned, or nearly so | Response not implemented, or implemented in a radically different manner than planned |
| **Impact Evaluation Results** | Problem Declined | A. Evidence that the response caused the decline | C. Suggests that other factors may have caused the decline, or that the response was accidentally effective |
| | Problem did not decline | B. Evidence that the response was ineffective, and that a different response should be tried. | D. Little is learned. Perhaps if the response has been implemented as planned, the problem would have declined, but this is speculative |

Source: Eck, 2002: p. 13

A single measurement before and after cannot conclusively determine whether the response caused the decline. For example, even if a post-response single measurement was lower than a

pre-response single measurement, it's possible that this post-measurement "decline" is in fact part of a normal fluctuation in the trend or due to another spurious factor. Furthermore, responses tend to occur at the peak of a problem and would naturally decline (Eck, 2002).

One possible way of exploring this is by reviewing a few periods before and after the response. Using an interrupted time series analysis involves taking multiple measures before and after a response, allowing the problem solving team to observe trends before and after a response. It involves determining a projected forecast of the trend based on pre-intervention data. If there is a significant and negative difference between the forecasted level and the post-intervention level, then there is an indication of effectiveness. The important consideration when taking measurements in an interrupted time series analysis is to make it meaningful in that the research and analysis questions guide the methodology. For example, using monthly changes might be more appropriate and useful than weekly changes when looking at one crime type versus another.

The primary flaw with an interrupted time series analysis is that it cannot help determine if something else caused the decline. This is where using a control group, and adding a second time series, can be useful. It is also suggested that analysts use multiple measures of a problem, to show the response's effectiveness and to assist with ruling out alternatives. For example, if examining drug related problems, the analyst might measure success as a reduction in CFS; an increased perception of safety in the high crime area by members of the business community or area residents; and a reduction in visible signs of disorder (counts of people loitering in the area, amount of drug paraphernalia found, if working on a drug problem, etc.)[iii]

## Best Practices in Evaluation

To frame a systematic approach to evaluating problem solving efforts, Eck (2002, p. 46-53) assembled a problem-solving checklist that serves as a general guideline a problem solving team should consider. It should be used from the beginning of the problem-solving effort to the assessment stage of the problem-solving process. (See http://www.popcenter.org/tools/assessing_responses/). Checklists are useful in reducing error, maximizing success, and manage the complexity that comes with addressing some complex high crime areas (Sidebottom, Tilley, & Eck, 2012). They are also useful because:

1. They serve as research-based guides outlining the necessary steps to successfully implement a solution.

2. They facilitate the adherence to the needed processes and procedures to achieve success.

3. They remind the team about critical elements to consider as they move through the scanning, analysis, response, and assessment phases.

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[iii] A problem solving team should consult Clarke and Eck (2005, Step 47) as well as Guerette (2009) for a discussion on the use and selection of control areas.

4. They can provoke discussion and refine the implementation process.

Problem-solving teams developing checklists should ensure that they are "concise, unambiguous, sharply defined, specific, and easy to follow" (Eck, 2002, p. 12). In sum, "a checklist… documents the implementation of the response and provides valuable information for its assessment" (Eck, 2002, p. 12).

One concern regarding the use of strategies and tactics at a high crime area is the potential spatial displacement of the crime problem, moving the problem of crime and disorder from one area to another. Currently, research suggests that this potential concern is not as great as it is often thought (Braga, Papachristos, and Hureau, 2014; Clarke and Weisburd, 1994; Eck, 2002; Guerette, 2009; Hoover, 2014; Weisburd, 2008). In addition, there is evidence to suggest that the positive spatial diffusion of crime benefits is more likely (Weisburd 2008). Problem-solving teams should consider both (Eck, 2002).

Displacement: "Crime displacement is the relocation of crime from one place, time, target, offense, or tactic to another as a result of some crime prevention initiative" (Guerette, 2009, p. 3). Various forms of displacement include temporal, spatial, target, tactical, functional, and perpetrator (Santos, 2012; Clarke & Eck, 2005, Step 13; Guerette, 2009, p. 3; Hill & Paynich, 2013).

Diffusion of crime benefits: The ways in which a diffusion of benefits can occur mirrors that of displacement (Clarke & Weisburd, 1994). "Crime diffusion entails the reduction of crime (or other improvements) in areas or ways that are related to the targeted crime prevention efforts, but not targeted by the response itself" (Guerette, 2009, p. 4).

The effectiveness of a solution may be affected by an offender's ability to adapt to police responses. "Whether displacement occurs is largely determined by three factors: offender motivation, offender familiarity, and crime opportunity" (Guerette, 2009, p. 7). Offenders motivated by addictions and/or money, and offenders who are career offenders are less likely to adapt their actions. For offenders who do modify their behavior in some way, they are "more likely to relocate their behavior to crime targets, places, times, and tactics with which they are most familiar." (p. 8) Locations that are close to those where initial offenses occurred and are unprotected are more likely to be displacement locations. Offenders will seek those opportunities where the risks, costs, and efforts are low and the rewards are high. Using this knowledge, a problem-solving team can anticipate potential avenues for displacement but also suggests how a modification to the opportunity structure can result in a diffusion of crime benefits at or near a high crime area. Accurately evaluating both displacement and the diffusion of crime benefits is important to determining the effectiveness of a solution (see Clarke & Weisburd 1994, for their original discussion of diffusion of benefits; see Guerette, 2009 for an in-depth understanding on how to assess and manage displacement and diffusion of benefits; see Clarke and Eck, 2005, Step 51 for evaluating diffusion of benefits).

## Sustainability Factors

Before moving to our final section of discussion in this paper in which we will briefly review best practices in addressing high crime areas, we want to touch upon the importance of sustainability. Offender behavior and adaptability is only one factor that a problem solving team should consider when developing a long-term solution. We live in a time of ever decreasing resources, and increasingly unwieldy demands on law enforcement. In designing, implementing, and evaluating solutions, analysts must be mindful of a variety of factors that are often not within our immediate control. These may include (but are not limited to); resources—monetary, technology, personnel, as well as the limits of the criminal sanction (as discussed in Herbert Packer's seminal work, 1968). As emphasized earlier, identifying and collaborating with key stakeholders in the community can help mitigate many of these challenges. Sustainability factors also speak to the importance of multiple points of evaluation (both impact and process) to determine whether or not the strategy has been implemented correctly and is working effectively.

Hot spot policing (see Sherman & Weisburd, 1995 for a great discussion) is one possible, sustainable solution to high crime and disorder areas. Recently, much discussion has shifted to using the street segment as a unit for thinking about crime. Some of the more utilized hot spots techniques smooth out crime across areas, identifying larger area hot spots. But the reality for police is that crime occurs at specific places and there is a lot of heterogeneity for hot spots of even a few blocks. The idea here is that police ought to look for hot spots by first defining a street map that allows them to see crime activities at street segments intersection to intersection. Under this approach, one can also begin to see the hot spot in terms of its social structure. That is, social factors like collective efficacy or poverty etc. that are influencing crime become more apparent and they also become issues for the police. (Weisburd, Groff, & Yang, 2013)

## Best Practices

This last section briefly highlights the relevant research on best practices in addressing high crime areas. These studies were included based on their ratings as "effective" at crimesolutions.gov or a meta-analysis conducted by Braga, Papachristos, and Hureau (2012), although the relative impact of each varies. Note that not every study rated as "effective" in either of these sources is included below. The goal was to provide a basic summary and resources for further exploration.

Rather than summarize each study individually, brief information is provided in the table below including complete citations and web-links where available. The reader should note that several common denominators exist across most or all of these studies. First, these strategies are data-driven. In addition, multiple types and sources of data were utilized to both define the problem and to evaluate the solution. Second, as evident in the table below, the crime problems tackled in each of these approaches were theorized to be linked to a number of contributing factors. Third, the strategy that was developed was based on the data that defined the problem and the contributing factors thought to be influencing the problem. Strategies were also developed based on collaborating entities and the resources that were available. Last, the evaluation

designs, although not all were "experimental" were strong designs that included at least a pre and post-test of the study area (many with an examination of possible displacement effects). Some included control areas and a randomized approach.

| Study Area | Data Utilized | Problems | Strategy | Evaluation Design | Results |
|---|---|---|---|---|---|
| Chula Vista, CA Schmerler, K. (2009) Reducing Crime and Disorder at Motels and Hotels in Chula Vista, California. http://www.popcenter.org/library/awards/goldstein/2009/09-47(W).pdf | CFS, Incident Data, Surveys of Motel Users, Interviews of Motel Managers, Officer Observations, Environmental Surveys | Disorder at budget motels (most motels were in high crime and disorder areas) | Place regulation through CFS per room ratio performance standards | Quasi-experimental with comparison areas outside the city; pre and post measures | Strong. Crime was reduced 70% citywide at motels and hotels. Impact has been sustained since 2008. |
| High Point, NC Kennedy, D.M., & Wong, S.L. (2009). The High Point Drug Market Intervention Strategy. Washington, D.C.: U.S. Department of Justice, Office of Community Oriented Policing Services. http://cops.usdoj.gov/files/RIC/Publications/e08097226-HighPoint.pdf | CFS and Incident Data Persons Data Officer Observations | Drug markets associated with drug, traffic, violence, property crime, and quality of life issues in the area | Focused Deterrence - Targeted repeat, non-violent drug offenders Collaboration with multiple community and CJ agencies | Quasi-Experimental Targeted locations, pre and post measures | Strong. Significant and sustained reductions in drug and violent crime |
| Kansas City, MO An evaluation of a police patrol project to reduce gun violence, drive-by shootings, and homicides in a patrol beat where the homicide rate was 20 times higher than the national average(pg.1). https://www.ncjrs.gov/pdffiles/kang.pdf See also http://www.cops.usdoj.gov/Publications/041218459_CPRS7_Crime_Hot_Spots.pdf | CFS and Incident Data | High number of drive-by shootings in targeted area | Proactive Patrol Intensive enforcement of firearms laws | Quasi-Experimental hot spots in targeted location matched comparison area | Proactive patrols yielded strongest results. Community Relations also improved |
| Lowell, MA Braga, A. & Bond, B. (2008). Policing Crime and Disorder Hot Spots: A Randomized Controlled Trial, Criminology: 46(3) pg. 577-607. See also https://www.crimesolutions.gov/ProgramDetails.aspx?ID=208 | CFS Observation | Physical and social disorder issues in high crime areas | Increased misdemeanor arrests Situational prevention strategies Social service actions | Experimental Control and experimental areas. Pre and post measures | Strong. Rated as Effective at Crimesolutions.gov |
| Los Angeles, CA Lasley, James. 1998. "Designing Out" Gang Homicides and Street Assaults. Research in Brief. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice. http://www.ncjrs.gov/pdffiles/173398.pdf See also https://www.crimesolutions.gov/ProgramDetails.aspx?ID=124 | Incident report data on drive-by shootings | Gang violence primarily in a few residential areas | Installed barriers to key roads with high number of drive-by shootings | Quasi-Experimental Targeted areas, measures before, during, and after intervention | During 1st year of program, gang crime and property crime fell-also, fear of crime was reduced. |

| Study Area | Data Utilized | Problems | Strategy | Evaluation Design | Results |
|---|---|---|---|---|---|
| Minneapolis, MN<br>Sherman, L.W., & Weisburd, D. (1995). General deterrent effects of police patrol in crime "hot spots": A randomized, controlled trial. Justice Quarterly, 12:4, 625-648.<br><br>See also<br>http://www.cops.usdoj.gov/Publications/041218459_CPRS7_Crime_Hot_Spots.pdf | CFS and Incident Data<br>Field Observations | Hot spots of crime | Directed and aggressive patrol | Experimental Randomized assignment of hot spot areas into different levels of patrol | Modest reduction in crime and disorder in treatment areas |
| Philadelphia, PA<br>Temple University. N.d. "The Philadelphia Foot Patrol Experiment." Ambler, Pa.: Temple University College<br>of Liberal Arts, Department of Criminal Justice. http://www.temple.edu/cj/FootPatrolProject/<br><br>See also:<br>https://www.crimesolutions.gov/ProgramDetails.aspx?ID=234 | CFS and Incident Data | Increase in violent crimes, primarily shootings in the summer months | Increased police visibility with foot patrols | Experimental Randomized assignment of Strong. Rated as Effective at Crimesolutions.gov experimental and control locations. Pre and post measures | Strong. Rated as effective at crimesolutions.com |
| Port St. Lucie, FL<br>Over the past eight years, Port St. Lucie has had a "practice-based" collaborative partnership with Dr. Rachel Santos, funded by two separate grants from the COPS Office. The result of this work is called the "Stratified Model of Problem Solving, Analysis, and Accountability" (hereafter "Stratified Model"), an approach that supports the institutionalization of evidence-based crime reduction strategies, data-driven analysis, and accountability processes into a police organization's day-to-day activities (Boba and Santos, 2011).<br><br>http://www.smartpolicinginitiative.com/SPIsites/port-st-lucie<br><br>http://www.smartpolicinginitiative.com/spi-events/case-study-sustainability-port-st-lucie-florida | CFS<br>Offender Data | Residential burglary and thefts from vehicles in high crime areas | Targeted repeat offenders living in hot spot areas | Randomized assignment of treatment and control areas | Sustained reduction of crime in treatment areas |

## Summary

The purpose of this paper was to provide problem-solving teams with a practical guide to diagnosing high crime and disorder areas, to present key theoretical approaches useful for understanding the causal mechanisms underlying such areas, and to identify effective solutions, while considering both implementation and evaluation methods. Police agencies are indeed challenged by factors that may not necessarily be in their realm of control and therefore should seek innovative, non-traditional approaches where appropriate and possible. We encourage such agencies to search not only actively and deeply to understand their high crime and disorder areas, but to seek sustainable, tailored, specific, place-based, evidence-based solutions which

draw both from the strengths of collaboration with external partners and are informed by existing best practices in the  literature. While this paper is not exhaustive, it attempts to provide problem-solving teams with preliminary resources to develop their own solutions.

## General Resources
    a. https://www.crimesolutions.gov/
    b. http://www.smartpolicinginitiative.com/
    c. http://www.popcenter.org/ (The POP guides are a wealth of knowledge on different crime problems and solutions)
    d. http://www.campbellcollaboration.org/
    e. http://cebcp.org/one-pagers/

## Implementing and Evaluating Solutions
    a. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=45 (Challenges to Implementation)
    b. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=44  (Find the owner of the problem)
    c. http://www.popcenter.org/tools/assessing_responses/ (Assessing responses to problems, pg. 31 regarding spatial displacement, Eck, 2002)
    d. http://www.popcenter.org/tools/displacement/ (Analyzing Crime Displacement and Diffusion, Guerette, 2009)
    e. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=48 (Consider geographical and temporal displacement)
    f. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=13 (Expect diffusion of benefits)
    g. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=51 (Be alert to unexpected benefits)
    h. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=38 (Embrace your key role at response)
    i. http://www.popcenter.org/tools/assessing_responses/ (Assessing responses to problems)
    j. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=49 (Examine displacement to other targets, tactics, and crime types)
    k. http://www.popcenter.org/learning/60steps/index.cfm?stepNum=50 (Watch for offenders moving in)

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