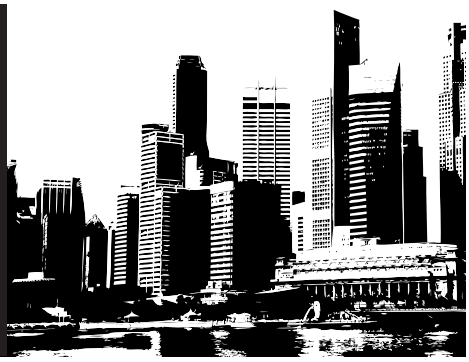
Geography & Public Safety



A Bulletin of Applied Geography for the Study of Crime & Public Safety

Volume 3 Issue 2 | August 2012

Criminal Justice and Public Health Approaches to Violent Crime: Complementary Perspectives

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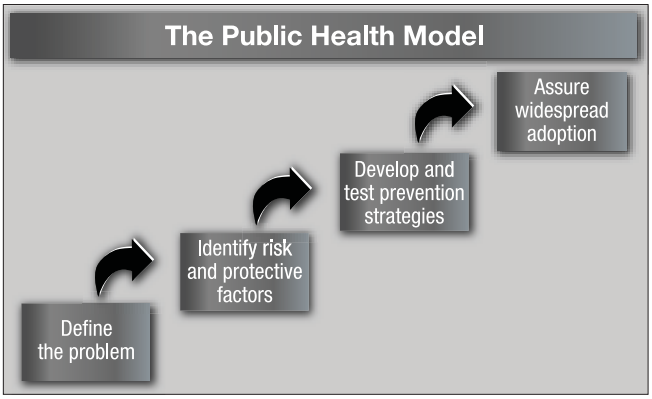
Geography & Public Safety readers, particularly those with crime analysis and mapping backgrounds, probably appreciate the close parallels and overlapping analytic techniques shared by criminal justice and public health approaches to social problems such as violence. Criminologists have long borrowed from public health. Many readers have seen the map, originally published in 1854, of cholera incidents relative to London's Broad Street water pump. Indeed, even after more than 150 years, this map is still being referenced by criminologists and crime analysts as an early exemplar of spatial visualization and problem solving.[1] Treating violence as if it were a contagious disease is implicit in many intervention and prevention programs aimed at disrupting its spread, including the "pulling levers" and "focused deterrence" approaches that characterize the original Boston CeaseFire program and its more recent replications. This is also true of Chicago's own CeaseFire strategy. Although Chicago's approach is distinct from the Boston strategy (and certainly not a replication), the Chicago CeaseFire expressly identifies itself as a public health approach focused on street savvy outreach workers acting as interrupters to halt the spread of retaliatory violence.

Theoretical, conceptual, and analytic parallels between the two perspectives are extensive. As envisioned by the **Centers for Disease Control (CDC)** and others, the four-step process outlined in the public health model (see Figure 1 below), often characterized as a problem-solving strategy, is very much in line with the four-step SARA problem-solving approach (scanning, analysis, response, and assessment) that is familiar to the criminal justice community and adherents of community policing. Likewise, the public health triangle (see Figure 2 on page 2) and the crime triangle (see Figure 3 on page 2), at the core of routine activities approaches, convey a similar message; essentially, that an actor and a target must converge in a conducive environment (i.e., one without the adequate

Figure 1. 4-Step Public Health Process



Source: Centers for Disease Control and Prevention's Injury Center. www.cdc.gov/ViolencePrevention/overview/publichealthapproach.html

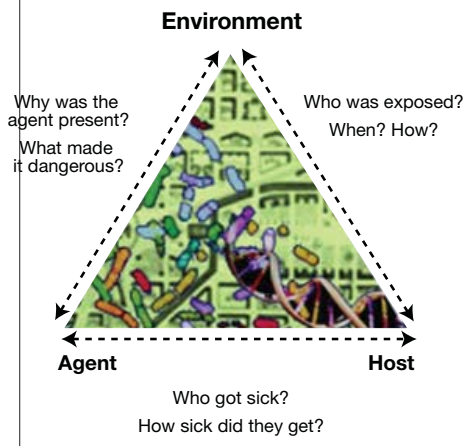
Contents

COPS COMMUNITY ORIENTED POLICING SERVICES U.S. DEPARTMENT OF JUSTICE

NIJ National Institute of Justice

maps

Figure 2. Public Health Triangle



Source: Centers for Disease Control website. http://blogs.cdc.gov/genomics/2011/09/22/genomics-in-public-health-preparedness-chance-favors-the-prepared-mind/

protective factors/guardianship/resiliency) as preconditions for an event (crime/disease) to occur. Whether speaking of disease or crime, disrupting any one of the elements of the triangle represents an opportunity for prevention.

As one unpacks the theoretical vantage points, empirical findings, and practical work stemming from both the public health and contemporary criminal justice perspectives, the synergies and parallels become more apparent. Most illnesses (as well as indicators of health) are not randomly distributed geographically or demographically. Certainly, we know the same is true about many types of crimes (or pro-social behaviors). We also have ample evidence that health risks and crime risks often co-exist, both at the individual level and spatially. As geographic evidence, maps have been proffered that illustrate the spatial correlation between crime and disease. Maps showing concentrations of aggravated assault look strikingly similar to maps showing concentrations of health problems such as asthma, drug addiction, or sexually transmitted diseases (STD). Maps showing concentrations of health risks such as lead exposure or the proportion of mothers experiencing low birth weight deliveries look quite similar to maps depicting risks of being an assault victim. Co-morbidity is the term that would be used by public health practitioners to describe this spatial convergence of adverse indicators.

As a collaboration effort of the Office of Community Oriented Policing Services (COPS Office) and the National Institute of Justice (NIJ), this publication has always embraced the principles of cross-disciplinary approaches and cross-fertilization. Public safety is a category broader than just crime. Crime analysts and criminologists have gained insights from the public health perspective and have often borrowed from its analytic toolbox.

This issue features articles that illustrate how public health and criminological perspectives can be combined to develop effective and synergistic strategies to address violence. Featured are four approaches to violence intervention and prevention that are informed by a cross-disciplinary input and assessments, that are evidence-based, and that are capable of being evaluated, replicated, and adapted.

The first article on the Cardiff Model perhaps speaks most directly these synergistic effects by illustrating how data about stabbings from two independent data sources—trauma admissions at hospital emergency departments and crime data on assaults from police—have been used strategically to reduce stabbing incidents in that city. As may be no surprise to readers that rely on administrative data themselves, neither the hospital data nor crime data by themselves are perfect, nor are either indicative of the universe of violent incidents. When the two sources of data are integrated, however, they lead to a more complete understanding of the distribution and concentration of stabbings, thereby providing a broader basis for a more encompassing and effective problem-solving response.

Figure 3. Crime Triangle

Source: Center for Problem-Oriented Policing. www.popcenter.org/about/?p=triangle

The article describing an innovative program in East Palo Alto, California, is perhaps the most hopeful and ambitious in its goals. Beyond a traditional enforcement and surveillance response to hot spots, the East Palo Alto initiative aspires to turn hot spots for gun shots fired into fitness zones. Gunshot detection technology and health data are being used to define high risk areas in which geographically targeted fitness programs designed to simultaneously improve the health of residents and officers will be instituted. In terms of the crime triangle, the initiate's design is meant to increase guardianship and reduce opportunities of crime. The next article on the Los Angeles County Sheriff's Department's (LASD) Community Based Information System

(CBIS) illustrates the value of a multi-user interactive mapping system that addresses gang violence and its context. CBIS is deliberately designed around the concept of the ecology of neighborhood violence, recognizing the interdependence between violent crime with public health, child development, job market conditions, and community development initiatives.

The final article is about Milwaukee's Homicide Review Commission (HMRC), which illustrates the value of a data-driven multidisciplinary case review process for the prevention and legal resolution of homicides and non-fatal shootings in that city. The HMRC approach underscores the compatibility of a public health perspective and the problem-solving approach commonly associated as a tenet of community policing. This highly adaptable approach is now being implemented in other urban jurisdictions. The HMRC article also illustrates that problem-solving approaches to violence prevention are not incompatible with legal processes that seek to hold perpetrators of serious violent crime accountable for their behaviors. ■

Notes

1 See for instance, Weisburd, David and Tom McEwen. 1998."Introduction." In *Crime Mapping and Crime Prevention*, ed. David Weisburd and Tom McEwen, Monsey, New York: Criminal Justice Press. 1–23

Integrating Emergency Department and Police Data to Locate and Prevent Violence: The Cardiff Model

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There is convincing evidence that targeted policing can be effective in reducing crime and disorder.[1] However, the locations of concentrations of violence ('hot spots') change, sometimes very rapidly—such as in urban night-time economies where the number and locations of premises licensed to sell alcohol vary over time—which implies that continuous access to and use of reliable data are important. Evidence indicates that much violence is not reported to the police. In a comparison of violence affecting adults (aged over 16) in 1999 in eight western countries, rates of reporting violence to the police varied from 24% in the Netherlands to 52% in the United States. The rates at which these events were officially recorded varied from 20% in Switzerland to 82% in the United States.[2]

In a program initiated in the United Kingdom and subsequently adopted in Scandinavia, Emergency Department (ED) and police data matching studies have demonstrated that only a quarter to one-third of violence that results in ED treatment appears in police records. Therefore, the ED represents a valuable source of information for violence prevention.

There is growing international evidence that collaboration between public health and the police can enhance violence prevention efforts. For example, in South Africa, a collaboration between public health orientated research groups led to the establishment of a nationwide violence and injury surveillance system, which has been used to inform police–crime information systems.[3] In the U.K., the Crime and Disorder Act (1998) placed a legal obligation on police, local government, and the health services to collaborate to develop and implement joint crime reduction strategies.

Evaluating a multi-agency violence prevention partnership—the Cardiff Violence Prevention Programme (CVPP)

The aim of this study was to test whether a partnership between health and police practitioners and city government officials using data collected in EDs as well as police intelligence to inform targeted policing and other strategies, would prevent violence to a greater extent than city partnerships in which ED data are not collected and used.

In July 1997, a prototype statutory partnership—a multi-agency violence prevention group, made up of representatives of the city government, police, city licensing regulators, and an ED consultant, and chaired by a professor of oral and maxillofacial surgery—was convened to implement such an approach in Cardiff, Wales (2010 population, 327,000). In time, membership expanded to include representatives of education, transport and ambulance services, and local bar and nightclub licensees. After careful refinement—particularly of arrangements to assure anonymity, and share, summarize, and use data derived from the ED—the mature CVPP became operational in January 2003.

In summary, for all patients reporting injury from violence, information about the precise violence location (name of bar, nightclub, school, park, street, etc.), and time, day, and weapon type that is captured electronically in the ED by reception staff when patients first attend, is stripped of personal identifiers and shared by hospital IT personnel on a monthly basis with the statutory partnership crime analyst. This analyst then combines data with police

intelligence to generate maps of violence 'hotspots' and summaries of weapon use and violence type (classified as "stranger," "acquaintance," and "domestic" to fit with national crime survey categorization). Integrated violence prevention is then based on this combined, continuously updated information.[5]

This prototype statutory partnership meets approximately every 6 weeks and, based on the combined data, has introduced and sustained a range of strategies designed to address specific risks and patterns observed in the data. These strategies comprise repeated adjustments to the routes of police patrols and moving police resources from suburbs to the city center on weekends to ensure that police are present and able to intervene at specific locations and times identified by the data, targeting problematic licensed premises (by police and city government officials responsible for alcohol licensing), and informing public space Closed Circuit Television (CCTV) deployment. Over the course of the experimental period, the statutory partnership (which became the statutory U.K. approach to crime prevention following the Crime and Disorder Act) initiated and coordinated violence prevention initiatives. Prevention strategies unrelated to targeted policing were also implemented by the city government, prompted by the combined data and other factors such as the need to improve traffic flow and public transport arrangements. These included pedestrianizing sections of a city center street where bars and nightclubs are mainly concentrated, mandatory use of plastic glassware in selected licensed premises, and more frequent late-night public transport services. The unique characteristics of the partnership, which were not present in any other U.K. city partnership during the period of the evaluation, were the systematic collection, summary, and use of ED data for violence prevention and the participation of ED and maxillofacial clinicians in statutory partnership meetings. The common attitudes of trauma specialists and police managers—both responsive, action orientated practitioners—was evident in the mature statutory partnership.

To test the effectiveness of this program on rates of police-recorded violence, Cardiff was compared to its 14 "most similar" cities—identified by the U.K. Home Office (the lead government department for police) over 84 months. Furthermore, in order to triangulate the analysis, violence-related ED attendance rates in Cardiff were also compared to those in three "most similar" cities over 72 months.

Information sharing and use was associated with a substantial and statistically significant reduction in violence-related hospital admissions, from 6.7 to 5.4 per month per 100,000 population in Cardiff compared to an increase from 5.3 to 8.4 per month in comparison cities; and substantially fewer woundings recorded by the police, from 53.8 to 82 per month per 100,000 population in Cardiff compared to an increase from 53.9 to 113.8 per month in comparison cities (see Figure 1). However, there was a statistically significant increase in violence resulting in no injury or very minor injury recorded by the police in Cardiff relative to comparison cities.

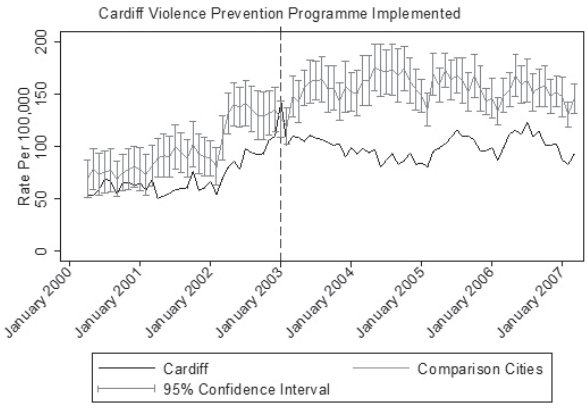

Figure 1. Total assault rates by month, Cardiff and mean of comparison cities

Source: Florence et al. 2011. Effectiveness of anonymised information sharing and use in health service, police, and local government partnership for preventing violence related injury: experimental study and time series analysis. *British Medical Journal* 342: d3313.

Conclusions and policy implications

It was concluded that the Cardiff Violence Prevention Programme (now widely known as, "The Cardiff Model") is associated with a substantial and sustained reduction in violence-related injury, whether recorded by health services or by the police. This effect was observed only for violence causing wounding and not for more minor violence; the intervention was associated with an estimated 42% fewer woundings recorded by the police 4 years after implementation. While other evaluations of violence prevention strategies frequently focus on changes in behavior (e.g., student reports of fighting) or impacts within a narrow target population, the outcomes reported here reflect community-level changes in violent injury.

This violence prevention model was adopted by the U.K. government and is being implemented across the country. It is advocated by the World

Health Organization and replication is underway in Holland and South Africa as well as the United States (in Milwaukee).[3] As a public health strategy the model is intended to be dynamic, interdisciplinary, and comprehensive (i.e., not dealing only with particular violence categories such as gang violence). Communities can use this partnership approach to identify gaps in local prevention strategies and to introduce appropriate programs and policies based on the best available evidence. For example, interventions to improve the social cognitive skills of youth and family-based programs to enhance parental monitoring of youth, as well as community level programs such as Ceasefire's efforts to diffuse escalating community violence and the Boys and Girls clubs' work to provide stable adult mentors, could be introduced on this basis.

These findings suggest that communities can achieve substantial reductions in the public health burden of violence through organized data-driven partnerships between health, law enforcement agencies, and local government. Furthermore, since police ascertainment of violence that results in injury is limited in all western countries where data matching studies and national crime surveys have been carried out,[2] and police ascertainment is even lower in low and middle income countries, it is likely that the principal conclusion of this study may well be generalizable globally.

Replication studies and wider implementation in the United States pose particular challenges, which include fragmentation of emergency services compared to the U.K. where cities the size of Cardiff are often served by just one ED. This means that the different ED catchment areas in a U.S. city would need to be taken into account and information relevant to targeting of violence locations dealt with cumulatively. However, there may also be advantages in terms, for example, of the ease with which ED software can be adjusted to capture the key information fields compared to the challenges of adjusting comparatively monolithic national systems in the U.K. But the most important potential benefit in a U.S. context is the prevention of fatal and very serious violence, which is much more prevalent in the United States than it is in the U.K.

This summary is based on:

Florence, C., J. Shepherd, I. Brennan, and T. Simon. 2011. Effectiveness of anonymised information sharing and use in health service, police, and local government partnership for preventing violence related injury: experimental study and time series analysis. *British Medical Journal* 342: d3313. ■

Access the full report at: www.bmj.com/content/342/bmj.d3313

Notes

1. Farrington D., P.A. Langan, and M. Tonry. 2004. *Cross-National Studies in Crime and Justice*. Washington D.C.: U.S. Department of Justice, Bureau of Justice Statistics.
2. World Health Organization. 2004. *Preventing Violence: A Guide to Implementing the Recommendations of the World Report on Violence and Health*. Geneva: World Health Organization.
3. Braga A.A. 2007. *The effects of Hot Spots Policing on Crime*. Campbell Systematic Reviews. 1–36.
4. Warburton A.L., and J.P. Shepherd. 2006. Tackling alcohol related violence in city centres: effect of emergency medicine and police intervention. *Emergency Medicine Journal* 23:12–17.
5. Goodwin V., and J.P. Shepherd. 2000. The development of an assault patient questionnaire to allow accident and emergency departments to contribute to Crime and Disorder Act local crime audits. *Emergency Medicine Journal* 17:196–98.

Using Public Health Strategies to Reduce Violence in "Hot Spots" in East Palo Alto, California

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Chief Ronald Davis
East Palo Alto Police Department

Brad Jacobson
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Introduction

Evidence of the relationship between geography and public health continues to grow. Urban areas of concentrated, chronic disease and high mortality rates are often the same areas where residents live in environments with extremely high levels of crime and violence. Despite this evidence, the number of partnerships between the law enforcement community and the public health community to jointly address the global and vitally important issues of public health and public safety is limited. The East Palo Alto (EPA) Police Department is working in partnership with the San Mateo County Health System, the Office of Community Oriented Policing Services (COPS Office), The Center for Court Innovation, and The California Endowment to explore new and creative strategies to reduce crime and violence in targeted neighborhoods while improving the health of those communities through partnerships with local health experts and service providers.

The City of East Palo Alto in San Mateo County, California, is a small, diverse community of approximately 30,000 residents with a serious violence problem. In 2010, EPA's violent crime rate was nearly 80% higher than the state of

California overall, at 790 per 100,000 compared to the state average of 441 per 100,000.[1] The City of East Palo Alto also has serious public health challenges. Preliminary analysis suggests that health disparities between the residents of the City of East Palo Alto and the rest of San Mateo County exist along a variety of metrics. For example, rates of bacterial sexually transmitted diseases are twice as high in East Palo Alto compared to the rest of the County.[2] These health challenges do not apply to adults only, but children as well. An example of this is that a significantly lower percent of 5th graders in EPA pass all of the Physical Fitness Standards compared to the County average.

The intersection of these significant community challenges is the genesis behind a project being led by the EPA PD and supported by The California Endowment, which is employing GIS technology and community-based strategies to identify and address health and violence problems. The initiative is being used as an opportunity to employ a place-based technology, which was designed as a law enforcement rapid response tool, in health promotion and crime prevention.

Gunshot Location and Detection System

Police departments across the country are trying to do more with fewer resources and are spending millions of dollars—much of it federal funding—to purchase various technologies that hold the promise of enhancing job quality and improving efficiency. Over the last decade, an increasing number of police departments have introduced gunshot location and detection systems (GLDS) to identify and convey the location of a gunshot through acoustic sensors, which are installed at approximately 20 sensors per square mile. When a gunshot or another loud sound occurs within a coverage area, the system detects, locates, identifies, and classifies the sound in just a few seconds. Information collected by the GLDS provides the police department with a more comprehensive understanding of the volume and nature of shootings and includes an audio recording of the event, the type of event (e.g., gunshot, firecracker, or another loud sound), the caliber of the weapon, the number of rounds fired, the precise location of the incident, and the time and duration of the incident. This information is immediately transmitted to dispatchers, well before any 911 calls for service are received. The City of East Palo Alto deployed such a system, "ShotSpotter," citywide at the beginning of 2009 and is the first jurisdiction in the United States to have total area coverage by this GLDS.

Building on the well-established research on crime "hot spots," GLDS can be viewed as a logical direction in which a technological application further advances law enforcement's utilization of place-based, anti-crime strategies. There are many potential benefits of this relatively new technology, including reductions in violent crime and shootings, shorter response times, increased clearance rates, and improved investigative capabilities, among others.

The number of shooting incidents detected by the acoustic sensors is significantly higher than the number of calls for service for gunshots. The East Palo Alto Police Department averaged 500 dispatched calls for service involving a firearm before the system was activated and the system records approximately 1,500 activations per year.[3]

To date, the ShotSpotter technology has primarily been used as a rapid response tool in the cities that have purchased and deployed the technology. As described below, the East Palo Alto project is using the technology as part of a place-based strategy and as a key tool for problem solving and crime prevention efforts above and beyond rapid response efforts.

Project Overview

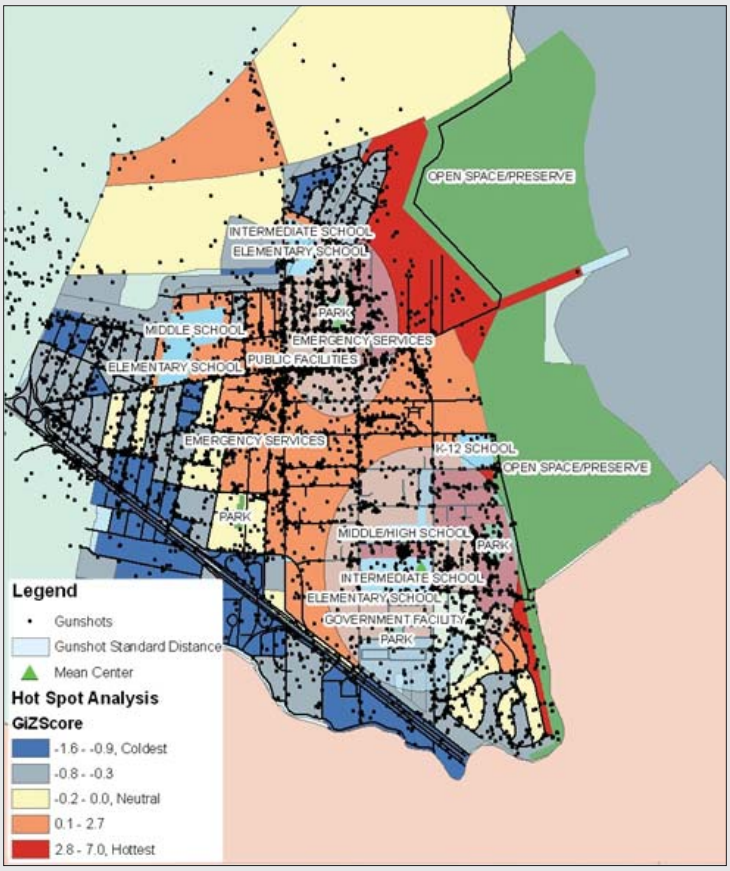
The project is using a combination of community partnerships, technology, spatial analysis, and problem-solving strategies to address some of the violence and health challenges facing the City.

Identify Shooting Hot Spots. The police department, San Mateo County Health System, and academic partners from the Warren Institute on Law and Social Policy at the Berkeley Law School have mapped nearly 3 years of shooting data from ShotSpotter system activations for the purpose of identifying shooting "hot spots." Figure 1 on page 7 maps over 5,200 shooting incidents as detected by the ShotSpotter system between January 2009, when the system was first launched citywide, and October 2011. East Palo Alto is approximately 2.5 square miles and this map suggests that there are few places within the City's borders where shootings do not occur. Using ESRI ArcView, the ShotSpotter data were used to statistically identify the census blocks that comprise the two "hottest" gunshot hot spots, which will then help guide the deployment of police department and health resources for this project.[4] Preliminary results indicate that the two hot spots are located in police beats 2 and 3 (see Figure 2 on page 7).

Figure 1. Shooting Incidents from ShotSpotter in East Palo Alto, January 2009 to October 2011

Source: Google Earth mapping of ShotSpotter activation data.

Figure 2. Gunshot Hot Spots in East Palo Alto Police Beats 2 and 3



Source: ShotSpotter activation data from East Palo Alto Police Department and San Mateo County GIS.

Incorporate Public Health Data. In addition to shooting data, health-related metrics will be collected, analyzed, and mapped with a focus on comparisons between the crime hot spots, FIT zones (see below), City, and County overall. Potential metrics include chronic disease-related deaths, heart disease, child physical fitness levels, obesity rates, mortality rates, sexually transmitted diseases, and hospitalizations.

Establish and Strengthen Partnerships. Engaging a diverse set of local partners is a cornerstone of this initiative. The City of East Palo Alto has a history of community partnerships and cross-agency collaboration. This initiative is building on some existing relationships but also providing an opportunity for collaboration among groups that have not done so in the past. In addition to law enforcement and county public health experts, other project partners will include residents, local health services providers, community advocates, schools, behavioral health, and city planning. To oversee the overall direction of the project and monitor progress, a multi-disciplinary Advisory Committee is being established that will include representatives from these and other groups.

Identify Fitness Improvement Training (FIT) Zones. Based on a combined assessment of shooting hot spots and neighborhood-based needs and resources, Fitness Improvement Training (FIT) Zones within the designated hot spots will be identified and these smaller geographic areas will be the targets of the intervention. Both law enforcement activities and health-related activities will be defined and the specific activities will be determined as the project progresses.

Law Enforcement Activities in the FIT Zones. The police department believes that as residents increase outdoor activities on the streets and in the parks, they will improve their health and regain control and ownership of their neighborhoods. The intent is that the officers' presence and participation will allow neighbors to exercise with a stronger sense of security and become acquainted with these police officers. A variety of police department activities in the FIT Zones will be implemented as the project progresses. One area of focus will be activities in which police officers help facilitate increased outdoor activity of the residents who live within the identified areas. For example, police officers will be assigned to the FIT Zones and participate in physical activities such as walking, jogging, and bike riding with the residents. The police department will assess options for temporary street closures with police officer presence that will provide more outdoor safe space for healthy

activity. In addition, police will work with local health service providers to identify ways in which the police can be involved in facilitating increased access to health services and health and fitness education.

Health-Related Activities in the FIT Zones. Specific health-related activities in the FIT Zones will also be further developed and refined as the project progresses. There will be increased coordination of health services in the targeted geographic areas. The local services provider based in East Palo Alto will be a key partner in designing and delivering public health interventions in the identified sites. Health Service Delivery Teams will be deployed in the designated FIT Zones to provide services to residents that typically have limited access to such services. Health Educators and Health Navigators, who are local residents and community advocates working in the community, will work to connect residents with health services and increase awareness and education related to health and fitness.

Integrate Into Overall Crime Reduction Strategies. Activities from this project are well matched with hot spot policing, problem-oriented policing, and community policing strategies and will be deployed in the targeted areas as part of the City's overall crime reduction strategy. Public health strategies may also be incorporated into offender-based strategies. For example, as part of East Palo Alto's Operation Ceasefire "call-ins" and home visits within the FIT Zones, the police may connect individuals with appropriate medical and dental services. Public health metrics may be incorporated into CompStat and other data-driven crime reduction efforts.

Monitoring and Evaluation. With a research partner as part of the core project team, a key component of this initiative is on-going monitoring and evaluation activities that will include an analysis of changes in crime and shootings in the identified hot spots before, during, and after the project is implemented; a survey of residents in the targeted hot spots to assess their experiences with violence and changes in fear of violence, levels of physical activity, and perceptions of police; and interviews and focus groups with local stakeholders including residents, community leaders, and health service providers.

Outcomes

The primary, desired outcome of this initiative is two-fold: to improve public safety in areas experiencing high levels of crime and violence and to improve the health of residents living in those areas. Through the efforts of this initiative and the partnerships upon which it is built, there is hope for additional, positive outcomes. Improvements in police and community relations and increases in police legitimacy in the eyes of the residents in the targeted areas are anticipated. The hope is that the work being done under this nascent initiative can be leveraged into a larger effort that will have longer-term, positive outcomes such as physical improvements to the built environment, sustained reductions in crime and violence, sustained improvements in healthy behavior, and changes in "community norms" around health and healthy behavior. Ultimately, the hope is that this GIS-based technology can be used as a crime prevention and problem-solving tool and can assist with longer-term, environmental and social changes that will make East Palo Alto a healthier and safer community in which to live and work. ■

Notes

1. FBI Uniform Crime Report Program, *Crime in the United States, 2010*. www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2010/crime-in-the-u.s.-2010
2. San Mateo County Communicable Disease Reports. www.smhealth.org/sites/default/files/docs/PHS/STD_2010_Annual_Report.pdf
3. San Mateo County Public Safety Communications Division and East Palo Alto Police Department.
4. Geospatial statistics used: standard distance area and the Getis-Ord Gi*.

Comprehensive Community Based Information System to Reduce Youth and Gang Violence in Los Angeles County and Beyond

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The Los Angeles County Sheriff's Department (LASD) initiated the Community Based Information System (CBIS), an extensive and expanding information management system with mapping capabilities, in July 2009. CBIS was conceived in response to *A Call to Action: A Case for a Comprehensive Solution to LA's Gang Violence Epidemic*, a 2007 report that squarely identified a "long-term epidemic of youth gang homicide and violence," noting that nearly 75% of youth gang homicides in the state of California had occurred in Los Angeles County.[1] Cast in the context of an epidemic, this problem called for a comprehensive response that went beyond traditional enforcement approaches by deliberately incorporating prevention and intervention approaches. The report noted gang violence must not only be addressed as a justice issue but also must be viewed more broadly as a public health problem.

> *The strategies must focus on the ecology of neighborhood violence using the public health and healing, child development, job development and community development models that address the major underlying drivers of violence and gang proliferation. In order to achieve this, the City must develop comprehensive, coordinated, multi-jurisdictional, schools-centered, neighborhood-based saturation strategies that do not leave children to fend for themselves on the streets. These strategies must be linked to problem-solving community policing that is designed to dovetail with neighborhood efforts. Comprehensive strategies have to be carefully and skillfully implemented to have any chance of avoiding chaos and achieving measurable reductions in gang activity and violence.*[2]

Speaking to the value of CBIS to the Sheriff's Department, Sheriff Lee Baca asserted, "We can provide the community with tangible solutions to their problems and create a cultural shift within law enforcement."[3]

CBIS Overview

CBIS is a web-based, password protected portal that is accessible only to law enforcement and data-sharing partners within the justice community. In contrast to reactive law enforcement technological systems that primarily are used to track criminals or analyze crime, the purpose of this first-of-its-kind system is to allow law enforcement agencies to better understand the socio-economic dynamics that underlie troubled neighborhoods. In addition, the system allows agencies to identify community prevention and intervention services to which gang-involved and at-risk youth can be referred. CBIS also is designed to enhance and expand data available for analysis. Crime analysts from across the county can gain access to a plethora of additional data sets to review and create integrated views of this data on a digital map. By specifically assessing how community dynamics change, crime analysts can use CBIS to enhance their predictive policing capabilities.

The underlying CBIS database is comprehensive with respect to the data it allows end users to access and integrate. CBIS combines crime, demographics, social service referrals, school dynamics, and other relevant data. It has become an influential information-led policing tool that empowers local law enforcement agencies in making operational decisions and improving services.

CBIS has been used to address a wide range of gang- and youth-violence related solutions, ranging from prevention, intervention, enforcement, and problem solving. Its utility extends beyond the issue of addressing gang crime. Its purposes as originally envisioned are specified as follows:

- Enhance understanding of the community, its resources, and crime trends through GIS mapping
- Strengthen prevention and intervention service referral through easy law enforcement access to local business and service provider resources
- Facilitate law enforcement partnerships across jurisdictions and with community stakeholders
- Expand knowledge about local, statewide, national, and transnational gang trends and research through the CBIS Resource Library

CBIS Components

CBIS is divided into four functional sections: (1) service referral, (2) mapping, (3) charting communities, and (4) resource library. As part of the resource library, CBIS includes one of the largest gang-related open-source intelligence document libraries in the nation.

The GIS capabilities of CBIS allow users to assess community capacity and resource data and to assess crime trends. Layers available for mapping include community and school demographics, cross-jurisdictional crime data, parole data, as well as Section 8 and public housing data. Capitalizing on the versatility of GIS, other layers are continually being added.

Figure 1. CBIS "Find a Service" Interface

The GIS service referral and mapping capabilities of CBIS have proven to be a big draw to users from law enforcement agencies. A series of screenshots captured from CBIS illustrate just a small portion of the functionality that registered users can access. The "Find a Service" interface, with an embedded map showing the location of services, is illustrated in Figure 1. The mapping capacities of CBIS are versatile and allow users to show social service resources relative to law enforcement jurisdictional boundaries (Figure 2), to depict crime patterns across jurisdictions (Figure 3), and to examine locations of alcohol outlets (Figure 4).

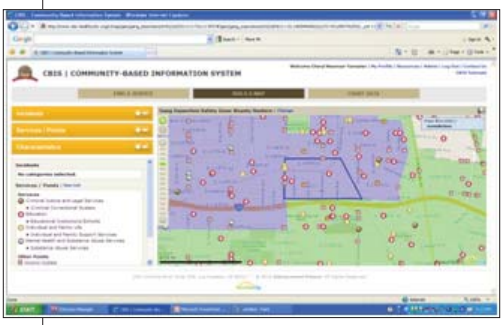

Figure 2. Map of Social Service Relative to Law Enforcement Agency (boundaries shaded)

CBIS in Action

The comprehensiveness of CBIS as a tool for law enforcement is reflected in the diversity of ways that it has been used by partner law enforcement agencies for practical solutions and problem solving.

- The mapping capabilities have been used to inform decisions about the issuance and denial of Alcohol Beverage Control (ABC) licenses.
- The service referral component has been used to refer gang members to job training programs and for referring at-risk and underserved youth to needed social services.
- The mapping component has been used to solve and clear a number of burglary series based on assessments of cross-jurisdictional patterns.
- Deployment decisions have been made based on crime patterns, including the strategic placement of bait cars to address a surge in auto thefts.
- Two CBIS law enforcement partnership agencies have used the system to help obtain grant funding.

A tutorial of the CBIS system with practical examples is available a www.cbis-training.org/.

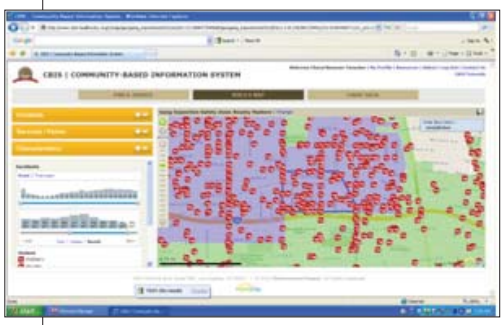

Figure 3. Map of Crimes Relative to Law Enforcement Agency (boundaries shaded)

Figure 4. Map of Alcohol Outlets

Expanding Partnerships

To date, CBIS has more than 45 partners across California and the nation. It continues to attract interest from local, state, and federal level law enforcement agencies. A training module has been developed with the support of The California Endowment, and LASD is in the process of seeking California-POST certification for CBIS. Readers interested in learning more about the system may contact Lieutenant Cheryl Newman-Tarwater of the Los Angeles Sheriff's Department at canewman@lasd.org. More information about this innovative tool can be obtained from the CBIS factsheet.[4] ■

Notes

1. This report is available at www.advanceproj.com/index.php?q=/c/resource/sc/up_call_to_action
2. This comment is from page 2 of the Executive Summary available from the link in the previous endnote.
3. http://sheriff.lacounty.gov/wps/portal/lasd/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3hLAwMDd3-nYCN3M19LA0_nEDPvMJMAQ39jA_2CbEdFAFVdgp4!/?WCM_GLOBAL_CONTEXT=/wps/wcm/connect/lasd+content/lasd+site/home/lasd+family/lasd+relevant+links/cbis
4. www.calgrip.ca.gov/documents/CBIS_Fact_Sheet_PDF.pdf

What Can We Learn from Public Health? – An Example of Sharing Law Enforcement Spatial Data with Community Partners

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Introduction

Law enforcement agencies have an abundance of important data that are used to identify and respond to a variety of social problems. For their own internal purposes, law enforcement agencies collect and track information about calls for services (both criminal and non-criminal), incident reports, and arrests. These data are used to assess patterns across dimensions such as crime types; the dates, times, and locations of incidents; victim and suspect demographics; environmental factors (e.g., poor lighting, vacant properties); and types of weapons used. Law enforcement agencies monitor—in real time—changes in crime trends for their entire jurisdiction as well as at the neighborhood and block levels. Unfortunately, these data are not frequently made available to community partners on a regular basis.

Sharing this information with community partners, including other governmental agencies such as health departments and nonprofit organizations, can not only increase the utility of the data, it can also help create partnerships to address crime and disorder and can be used to improve the quality of life for residents, particularly in disadvantaged urban communities. Monthly and annual reports may be available on the police agency's website but such reports usually lack sufficient detail to address the specific concerns of community partners and most cannot be merged easily with existing organizational datasets. Some community partners have established relationships with a police agency and may be able to request specific information. However, most community organizations do not have such relationships with law enforcement, and they may find it hard to navigate the department bureaucracy. Police agencies can quickly become inundated with individual requests from community groups and may not have sufficient resources to meet demands. In short, community organizations often cannot rely on having their specific data requests met consistently or in a timely manner.

The Milwaukee Approach

The Milwaukee Homicide Review Commission (MHRC)[1] fills the police–community information gap by collecting, analyzing, and disseminating law enforcement data to community partners—as well as to other municipal agencies and members of the criminal justice system—for strategic problem identification and response. MHRC is an action-oriented research program aimed at reducing the number of homicides and other violent crimes using a blend of public health and criminal justice philosophies and strategies. Started in 2005, it is physically located within the Milwaukee Police Department and assists the entire criminal justice sector, as well as community partners, with accessing and interpreting law enforcement data for the purpose of identifying and responding to community problems, monitoring changes in neighborhood-level crime trends, and merging law enforcement data with community sector data for the purpose of evaluation.

MHRC is rather unique. Although it relies heavily on criminal justice sector data, it approaches its mission from a public health perspective. One distinguishing characteristic of the public health perspective is that it is principally proactive. Public health practitioners aim to prevent disease and promote the health of entire communities. Public health is especially concerned with the social and behavioral factors related to health and prioritizes strategies that strengthen community resiliency by building support systems that directly involve community residents. This includes direct engagement of community members as part of the planning and problem-solving process.

Drug dealing, prostitution, shootings, and homicides are public health issues as well as criminal justice issues. Although public health and criminal justice conceptual perspectives of these problems are often divergent there are clear parallels—particularly when the focus is on problem solving rather than traditional reactive enforcement responses. With its emphasis on holistic solutions involving partnerships with the community, the public health approach is distinct from historically reactive law enforcement approaches, yet it aligns closely with community-oriented and problem-solving approaches to policing. In Milwaukee, the multidisciplinary approach has resulted in clear benefits.

Block Watch Club Example

Law enforcement data can be used to evaluate the effectiveness of non-law enforcement initiatives. A recent MHRC project to measure the reach and effectiveness of resident-led block clubs demonstrates the importance of information sharing (particularly spatial data) with community partners and the importance of law enforcement data in the evaluation of community initiated efforts. MHRC's work with a nonprofit organization is just one example of a multidisciplinary—public health and criminal justice—approach to addressing social problems. The example illustrates how law enforcement data can augment the evaluation of community efforts because the data is more comprehensive and includes detailed individual-level and neighborhood-level information on larger geographic areas; most community partners have data on a limited number of individuals such as clients served or households surveyed.

Safe & Sound is a nonprofit organization in Milwaukee. Its mission is to reduce violent crime by blending neighborhood organizing, youth development, and law enforcement strategies.[2] Safe & Sound organizers over the years have helped to establish, sustain, and (in some instances) staff over 160 volunteer block watch clubs[3] that respond to neighborhood issues, including standard crime problems and community capacity building such as after-school activities for youth and mentoring. These block clubs lead youth violence prevention activities, neighborhood clean ups, and planting of community gardens. Some are directly involved in re-entry of formerly incarcerated persons.

In the spring of 2011, Safe & Sound sought to develop a profile of each block club that would answer a variety of key evaluation questions. When was the club established and why? How many active volunteers did the club have? How often did they work with the police? How many and which neighborhoods did the club cover? Are there areas that need a club? Are there opportunities to link clubs together? Which violent crimes did the club target and how? This information would be used to identify the capacity building needs of block clubs in the city, determine potential service gaps, and assess each club's impact on local crime rates.

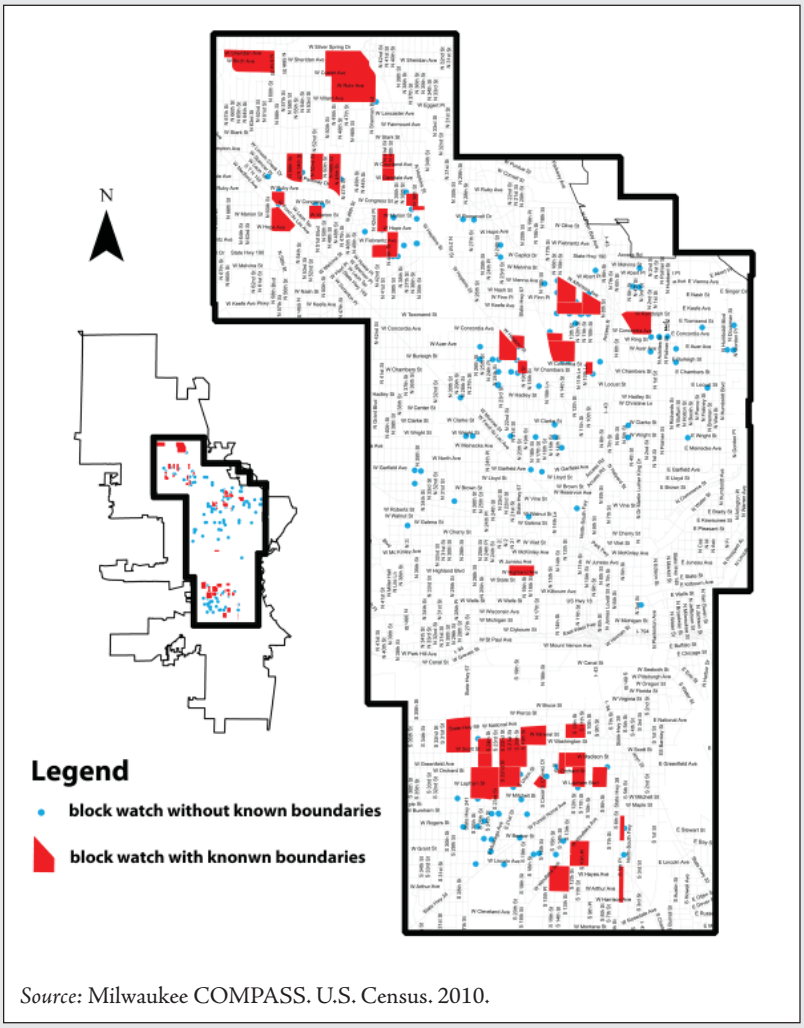
Methodology

With the assistance of MHRC, Safe & Sound's annual community perception survey was revised to collect the data that would answer the key evaluation questions. This survey was administered over the phone by Safe & Sound staff from March to April 2011. By the April deadline, 46 block club captains had completed the survey. In particular, participants were asked to indicate their club's geographic boundaries using streets and addresses.

MHRC staff then compiled Part I violent crime data from the Milwaukee Police Department for the years 2007–2010. Block club boundaries and crime incident locations were geocoded in ArcGIS. Population estimates were taken from the U.S. 2010 census. The following calculations were used and depicted in a series of thematic maps:

- Crime Rates: (number of crimes in a year/2010 population)
- Comparison Area: all blocks with center inside 1/5 mile buffer surrounding the Block Watch Club area
- Percent Change: [(second year)-(first year)/first year]*100
- Relative Change: (percent change between two years in comparison area) – (percent change between two years in block club area)

Figure 1. Milwaukee Safe and Sound Block Watch Locations 2011



Source: Milwaukee COMPASS. U.S. Census. 2010.

© Cartography by Stephen Hudak

Results

MHRC, along with graduate-level interns from the University of Wisconsin-Milwaukee's School of Architecture and Urban Planning, prepared several maps and spatial analyses illustrating the results.

The most basic map documented the location and boundary of each block club and plotted the clubs where boundary information was unavailable. See Figure 1.

To demonstrate the reach of a club, a similar map was created to document the number of people residing within a quarter mile and a half-mile of the club. The findings were very interesting, with 146,388 residents living within a quarter mile of a club, and 232,029 residents living within a half-mile of a known block club. The city has just under 600,000 residents, which means that roughly 40% of the population lives near a block club. See Figure 2 on page 13.

Next, a map documenting the crime rate normalized by population size was created. The map depicts higher and lower crime areas and was used to identify high crime areas where no known block club existed. An immediate follow-up in response to this map occurred when one organizer observed that there were no block clubs in her assigned neighborhood, an area designated as a "high" crime rate area. The organizer is working with residents to start a club focused on crime and violence prevention using community organizing strategies. See Figure 3 on page 14.

Three additional maps were created that compared the block club boundary with the crime rates in the area immediately surrounding the block watch club. That is, a half-mile buffer was created around the block club to serve as the control area. The three maps—each comparing the block club territory to the ½-mile buffer—depict total percent and relative changes in total crime rates, crimes against people, and crimes against property. The findings were promising; crime decreased in several block club areas between 3%–33%. Without law enforcement data, this analysis would not have been possible. Figure 4 on page 14 illustrates the map for total crime rate change between 2007 and 2010 in Milwaukee Safe & Sound Block Watches. Similar maps have been produced to depict crime rate changes for crimes against people, and crimes against property.

Safe & Sound has since developed relationships with 32 additional block watch clubs and plans to expand its capacity by building additional services for these groups. The organization also plans to administer an updated survey to the remaining groups in 2012. With additional information, the Milwaukee Homicide Review Commission will conduct an analysis of each block club based on their specific demographic profile (e.g., the assessment will control for block watches that are active only during certain months, with a subset of populations, or on specific problems).

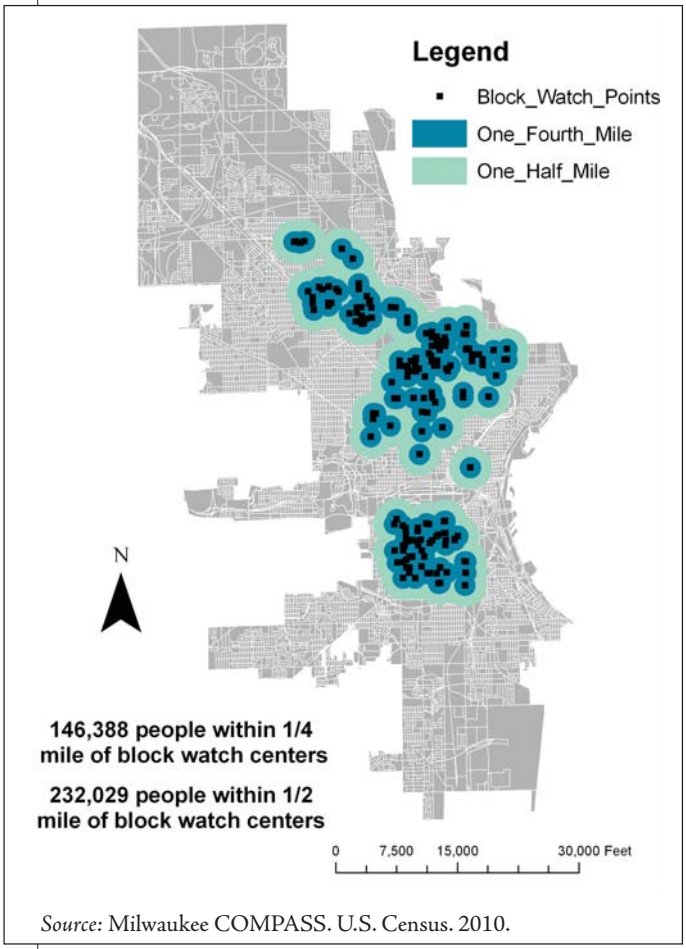


Figure 2. Total Population in Block Watch Buffer Areas

Source: Milwaukee COMPASS. U.S. Census. 2010.

In a related project, MHRC is mapping service drought areas—areas the police have identified as needing community service providers but where they have been unable to identify community organizations that are physically located in the area or that provide services to it.

Recommendations

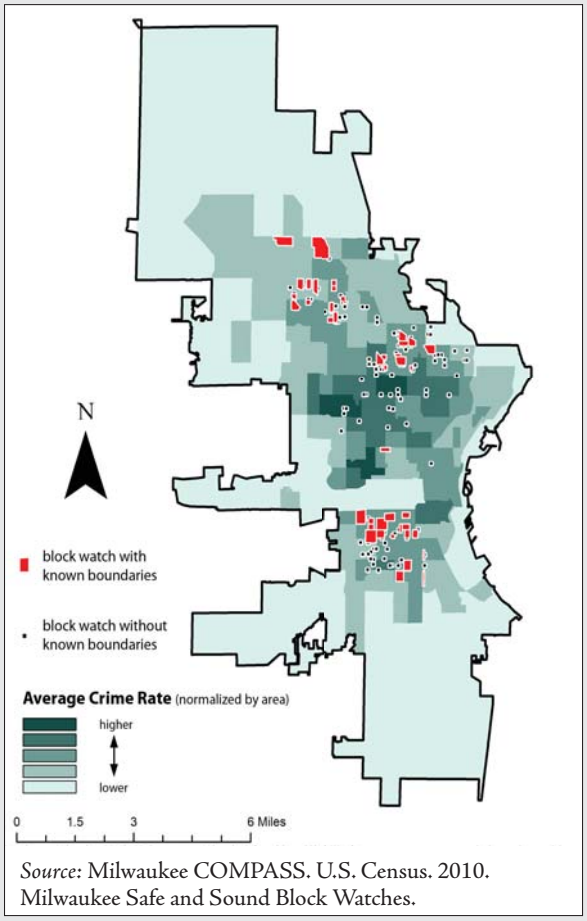
The information needs of the community are greater now than ever before and law enforcement agencies should consider deeper partnerships to expand the dissemination and use of law enforcement data by the community it serves. Every governmental agency and nonprofit organization must demonstrate severity of need (i.e., that a problem exists and is measurable, that the size or scope of the problem is great and impacts the sustained health and well-being of a community) to validate their existence and in the most tangible way, when requesting funds and advocating for change.

More and more entities are required to demonstrate measurable changes in the conditions or behaviors of the individuals, issue areas, and/or communities they serve. What can be learned from the field of public health is that a variety of data sources are needed to identify a problem, develop a deeper understanding of the problem, and assess the results of a program or initiative designed to respond to the problem. Law enforcement agencies should heed this and develop formal and expanded mechanisms to share data with community partners that move beyond annual reports and aggregated data that is not electronic, not searchable, and does not support analysis at smaller geographic units of analysis. Police departments (or their research partners) have an opportunity to provide critical and timely evaluation and research assistance to their community partners. ■

Notes

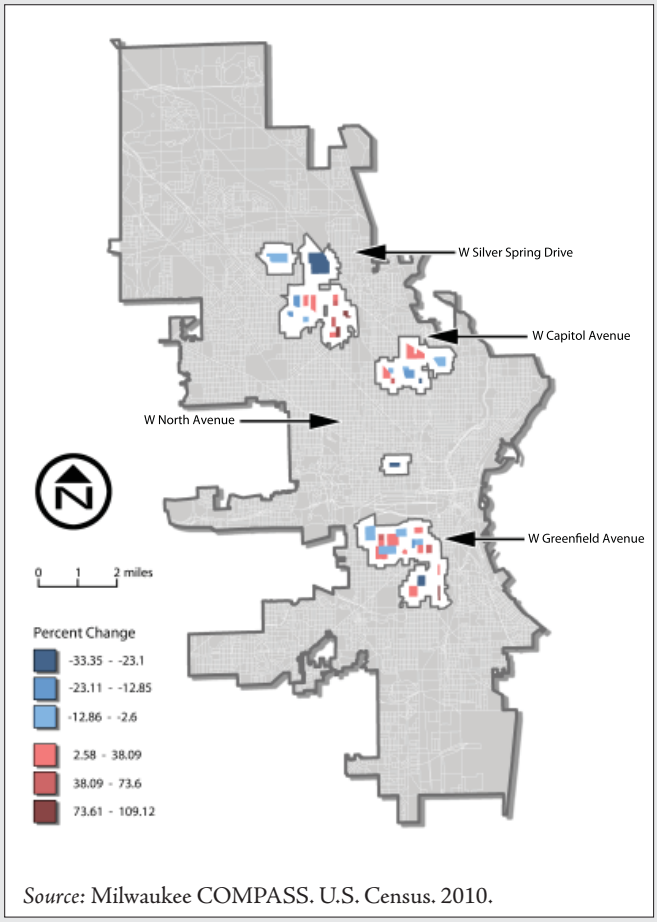
1. To learn more about the Milwaukee Homicide Review Commission visit www.milwaukee.gov/hrc.
2. To learn more about Safe & Sound visit www.safesound.org/.
3. A block club is three or more neighbors who communicate regularly to keep a 'watch' over criminal, nuisance, and blight issues that can destroy neighborhood safety and quality of life. Block clubs are usually informal and can focus on addressing long-term and serious criminal issues.

Figure 3. Milwaukee Safe and Sound Block Watches and Average Crime Rate 2007 01502010



Source: Milwaukee COMPASS. U.S. Census. 2010. Milwaukee Safe and Sound Block Watches.

Figure 4. Relative Total Crime Rate Change in Milwaukee Safe and Sound Block Watches 2007–2010



Source: Milwaukee COMPASS. U.S. Census. 2010.

NEWS BRIEFS

Deadly Tornadoes Highlight City's Need for Update of GIS

The importance of advanced GIS data in relation to emergency response was realized by the public safety office of the City of Dunn, North Carolina, after deadly tornadoes passed through the city and outlying areas. Communication Director Charlie Callahan commented on working with Geographic Technologies Group (GTG) on updating the ESN layer and address points so that they will have up-to-date data for future emergencies, noting that GTG will provide the city with the technological advancement needed to adequately protect the City of Dunn and its residents. ■

IDV Solution's New Application Enhances Data Sharing Nationwide

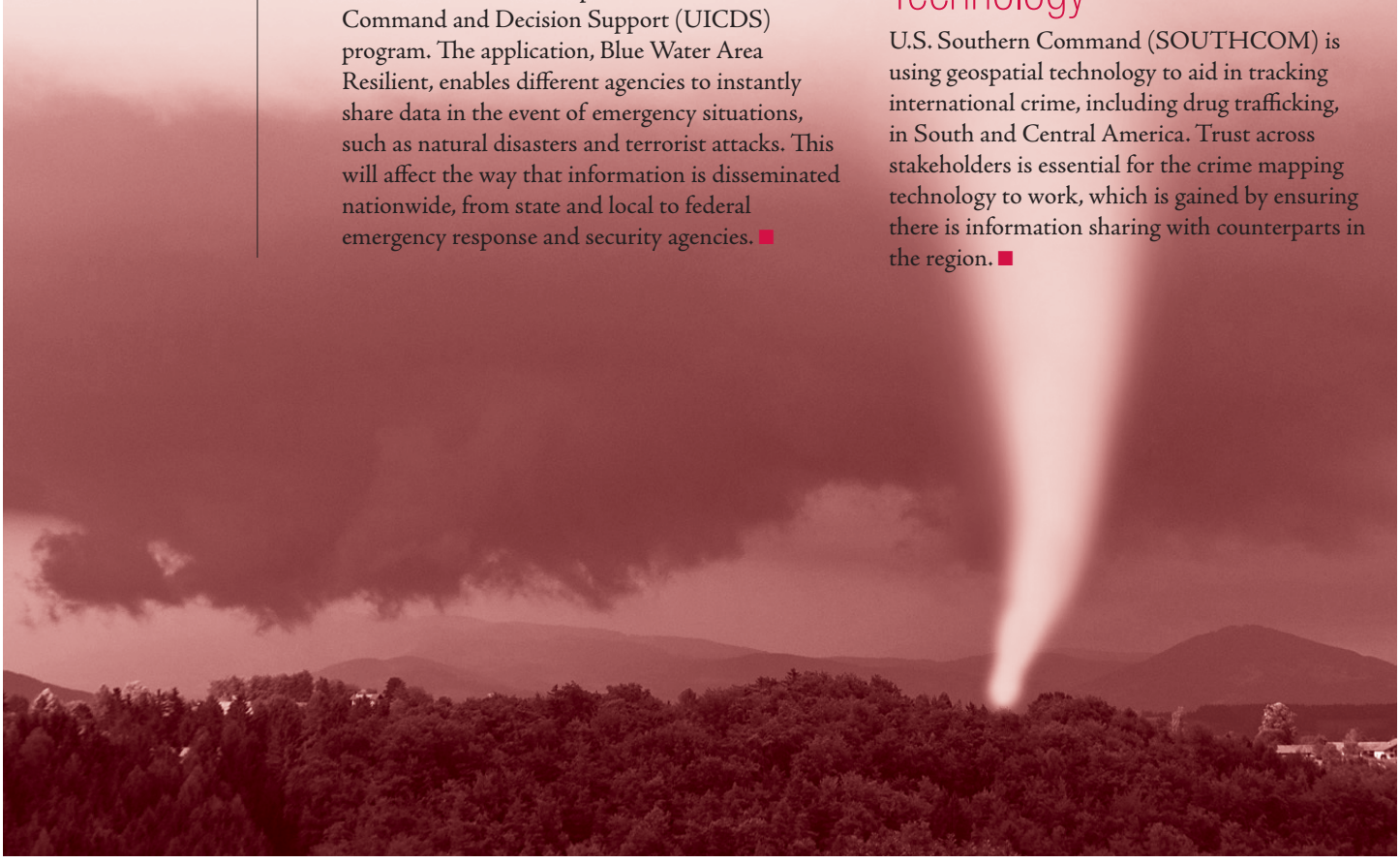
Public safety will be greatly enhanced after it was revealed that a Visual Fusion application by IDV Solutions will become a part of the Unified Incident Command and Decision Support (UICDS) program. The application, Blue Water Area Resilient, enables different agencies to instantly share data in the event of emergency situations, such as natural disasters and terrorist attacks. This will affect the way that information is disseminated nationwide, from state and local to federal emergency response and security agencies. ■

Users Get Instant Access to Global Disease Trends through GIS Technologies and Mapping Apps

An emerging tool for tracking infectious disease and illness outbreaks globally are new disease-mapping applications. These applications, advanced by geographic information systems (GIS) technologies, can be used by health organizations, federal agencies, and individuals, to monitor and research different diseases instantly. An example of this technology at work is a mobile app engineered by epidemiologists and software specialists at Children's Hospital Boston, called 'Outbreaks Near Me,' which provides free instant access to users on global trends on diseases. ■

SOUTHCOM Tracking Crime through Geospatial Technology

U.S. Southern Command (SOUTHCOM) is using geospatial technology to aid in tracking international crime, including drug trafficking, in South and Central America. Trust across stakeholders is essential for the crime mapping technology to work, which is gained by ensuring there is information sharing with counterparts in the region. ■



Crime Mapping App by BAIR Inc. to Track Crimes in User Vicinity

A new crime mapping application has been released by BAIR Analytics Inc., called RAIDS Online Mobile. This innovative app is the first of its kind to use the user's location to provide them with instant data on criminal activity in their vicinity. According to BAIR Inc.'s founder Sean Bair, the app was meant to assist law enforcement in quickly disseminating information to the public and nearby agencies, as well as improving communication with the citizens in their respective communities. This app will aid the general public in being aware of their surroundings, even while traveling, and is free on Apple products, such as iPhones and iPads. ■

Charlotte Fire Department Deploys GIS-Based COP

Public Safety at the Charlotte Fire Department (CFD) has been greatly enhanced through the new GIS-based Common Operating Picture (COP). This system employs the Charlotte Operations Based Response Analysis (COBRA) to provide close to real-time data on live events, sending all kinds of information on specific developments at a crime scene to the personnel at the Charlotte-Mecklenburg Emergency Management Office (CMEMO). The COBRA system also provides information regarding medical events, not just crime-related calls, to give emergency management officials the data to be aware of during on-the-scene development, as well as the ability to analyze information to improve procedures for future emergency situations. ■

Law Enforcement Use New Tagging System to Track Evidence

Patrol officers recently began employing a GPS system that was designed to allow law enforcement to "tag" a location through a satellite GPS system installed in police vehicles. This enables officers to keep track of specific locations where suspects may have disposed of critical evidence while being chased. This tool proved highly effective in a recent case where the law enforcement officer was able to save the coordinates for a location where evidence was tossed before continuing on to apprehend the suspect. Later, using the coordinates from the GeoTag system, the officer was able to recover the evidence, whereas in many situations it would have been difficult to find a small piece of evidence over a large geographic location. ■

Juvenile Crime Mapping System Success through Collaboration

The Bradley County Sheriff's Office has developed a new way to keep track of juvenile offenders through crime mapping technology. Even with the most advanced technology in place, the mapping system is mainly successful in tracking data such as the address of the offender for the past decade due to the cooperation between different partners—from social welfare programs to the Bradley County Juvenile Court system. It also serves to keep law enforcement agencies, such as the Cleveland Police Department, as well as other community partners, well informed. ■

New Health Mapping Website

Graham Dodge, who spent time as a crime mapper for the U.S. Census Bureau, has helped develop a new website that provides its visitors with a map designed to track different illnesses around the world. Operating at almost real-time speed, SickWeather monitors cities on a global scale for disease and sicknesses, giving users the ability to view areas in detail, such as neighborhoods, for outbreaks. ■

Recent Events

Mid America GIS Consortium MAGIC 2012 Symposium
Kansas City, MO
4/22/2012 – 4/26/2012
www.magicgis.org/magic/symposiums/2012/index.cfm

Geo Spatial World Forum – "Geospatial Industry and World Economy"
Amsterdam, The Netherlands
4/23/2012 – 4/27/2012
www.geospatialworldforum.org/

International Association of Law Enforcement Intelligence Analysts (IALEIA) Conference
Loews Coronado Bay – San Diego, CA
4/30/2012 – 5/04/2012
www.ialeia.org/conference

Risk Terrain Modeling for Spatial Risk Assessment
Webinar Workshop
Rutgers Center on Public Security
5/01/2012 – 6/19/2012
www.rutgerscps.org/rtm/webinar.html

Association of State Criminal Investigative Agencies (ASCIA) Spring 2012 Conference
Hyatt Place Madison/Downtown – Madison, WI
5/13/2012 – 5/16/2012
http://ascia.org/conference_detail.php?detail=4

IACA Professional Training Series – Crime Analysis with Crime Mapping
Dallas, TX
5/17/2012 – 7/23/2012
www.iaca.net/Training.asp?TID=720

IACP 36th Annual Law Enforcement Information Management Conference and Technology Expo
Indianapolis, IN
5/21/2012 – 5/23/2012
www.theiacp.org/Technology/LEIMSection/LEIM2012Conference/tabid/977/Default.aspx

2012 Omega User Conference (6th training conference)
Paradise Point Resort
San Diego, CA
5/23/2012 – 5/25/2012
www.theomegagroup.com/company/omega_conference.htmlasp

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