An Exploration of Gun Violence and Prevention: Toward the Development of an Inclusive Database

Working Paper 2 of 3: Databases as Prevention


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Databases as Prevention

This paper is the second in a series of three addressing the need for developing a shooting database in Rochester. The benefit from crime analysis has been seen in recent years as smart policing has come to the forefront. This paper addresses the role that databases play in crime prevention and then moves toward a focus on the need for a shooting database and what role that would play in law enforcement. In addition to providing examples of crime databases, this paper will also highlight the variables necessary to include in a database specific to shooting victims.

Prevention Techniques

In today’s society, the prevalence of gun violence remains a pressing concern for law enforcement agencies and crime analysis centers alike. Various programs and interventions have been put in place to reduce the violence. Educational interventions, advances in firearm technology and microstamping, and stricter gun laws are several measures previously suggested to prevent potential violent incidents (Wellford, Pepper, & Petrie, 2004). In an effort to remove illegal guns from the street, gun buyback programs have been implemented in cities across the U.S., offering an incentive for anyone turning in these weapons. However, evaluations have shown that these programs rarely produce a significant reduction in violence; typically they do not get weapons off the streets that are used in crimes (Makarios & Pratt, 2008). Gun buyback programs ignore the risk principle, as we know that people living particular lifestyles have a significantly higher risk of becoming either a victim or offender of a crime. Sherman stated, “Nothing in the structure of gun buyback programs attempts to focus the intervention on the risk” (2001, p. 19); thus, when thinking through violence prevention, the level of risk should be addressed.
Perhaps the most conceptualized gun violence prevention programs to date are the Ceasefire programs in Boston and Chicago and other similar interventions, exercising strategic problem-oriented policing to combat the illegal gun market and gang violence in the areas (Braga, Kennedy, & Piehl, 2001, p. 27). Programs such as these address the major crime problem head-on, rather than expending efforts across the general population. In order for these programs to be most effective, departments must be thoroughly aware of the issues at hand, and have a substantial understanding of the causes and how to actively prevent further crime from happening. This knowledge is obtained through extensive analysis of all relevant information known regarding the incidents of interest. In this way, policing strategies are evolving from street-level reactive measures, to data-based proactive crime prevention techniques.

**Crime Analysis**

An increasing number of Criminal Justice agencies across the country are beginning to identify the many advantages of extrinsic statistical analysis and in-depth research. Law enforcement agencies have more recently begun to rely on crime analysis in daily policing practices, and some have begun to establish separate structures exclusively for analyzing crime data. The National Institute of Justice (NIJ) advises that valuable partnerships form when practitioners work alongside researchers to design, implement, evaluate, and revise intervention programs. These partnerships rely heavily on “collaboration, feedback, innovation and compromise” to create an effective Action Research model (NIJ, 2010, The criminal justice action research model section, para. 2).

Establishing a close relationship with crime analysis allows law enforcement personnel to gather a “bigger picture” of what is happening in their jurisdiction, rather than relying only on what they experience along their area of patrol. Prior to having separate crime analysis centers, several sworn officers were usually responsible for the
analysis of cases in their area. In recent years, these positions are being turned to civilian analysts, with the ability to focus solely on the collective analysis for the entire surrounding area. These analysis centers incorporate crime mapping, crime pattern detection, weapons tracing, identifying personal networking ties, and more in order to provide law enforcement with actionable intelligence. As explained by the Senior Crime Research Specialist of Monroe Crime Analysis Center (MCAC), allocating a team specifically responsible for analyzing all data within a jurisdiction provides the ability to bring information to areas and personnel that may not have had access before, and “arm police officers with the most important information to make the most out of their time” (personal communication, 2012).

The fusion of crime analysis and policing has made way for better-informed, data-supported decisions and more effective proactive policing tactics. Using the findings of crime analysis, police departments can better identify any specific problems at hand with data support. Incorporating the findings, police can further understand the core of disputes and causes of certain crimes, and be aware of any crime patterns that may be of interest. With this knowledge, law enforcement can take a more educated approach to crime prevention, and propose informed prevention procedures to allow for early interventions, identifying potential suspects or victims, or developing tactical strategies in policing. Further analysis can then be used for “(1) testing and validating police activities to develop policy and program guidelines based on best practices, and (2) careful monitoring of outcomes to ensure the program is working” (NIJ, 2010, The criminal justice action research model section, para. 8).

Proactive policing techniques have proven to be effective in various cases. This method may partially account for the overall decrease in violent crime in New York City and other areas over the years (Levitt, 2004; Zimmer, 1990). In order to successfully prevent crimes before they happen, departments need to have as much knowledge as
possible about the situation. The Senior Crime Research Specialist of MCAC attests that these proactive procedures are extremely useful in tackling property crime (personal communication, 2012). The number and frequency of these crimes allows analysts to more readily recognize any patterns or characteristics that may be valuable to law enforcement. However, applying these same analytic techniques to gun violence and violent crime in general has proven to be more difficult. Incidents of violent crime typically occur at lower rates than property crime, making it harder to quantify and detect meaningful trends in a short amount of time. To provide for an adequate data set, it is necessary to examine these crimes along several years. In considering the number of cases within an extended period of time, the amount of data to be analyzed is substantial and difficult to work with. To account for obstacles such as this, multi-variable databases have been developed to house unlimited amounts of data for extensive logical analysis.

Existing Databases

As data analysis is becoming universally relied upon in numerous professional fields, the need to adopt a reliable system for managing large amounts of information is growing rapidly. Databases have become a widely used structure enabling users to combine, organize, filter, and query any amount of data with ease and flexibility. Access to these databases may range from being internationally implemented, to local or private use. Below, select databases are described and discussed as they relate to crime analysis.

International Classification of Diseases

One current internationally applied system is the tenth revision of the International Classification of Diseases (ICD-10). The ICD-10 is utilized in the healthcare field for the standardized coding of diseases and other health problems around the world, and “provide[s] the basis for the compilation of national mortality and
morbidity statistics” (World Health Organization [WHO], 2012a, International Classification of Diseases [ICD] section, para. 2). This allows practitioners around the world to “compare and share data in a consistent and standard way… [and] facilitates the collection and storage of data for analysis and evidence-based decision-making” (WHO, 2012b, Why is the ICD important? section, para. 1). While development of an eleventh revision is projected for 2015, the United States is in the process of upgrading from the currently used ICD-9 (Ledue, 2010). This is important because establishing a universal standard for classifying this information sets a common ground for all agencies within the field to share and interpret each other’s findings on health-related issues. If this information were also shared with criminal justice departments and analysis centers, it could be particularly useful for violent crimes to provide better understanding of the severity of the injury, and possibly an indication of intent.

National Violent Death Reporting System

On a national level, the Centers for Disease Control and Prevention (CDC) have created a more specific system for the collection and documentation of incidents of violent deaths. The National Violent Death Reporting System (NVDRS) is “a state-based surveillance system that collects facts from different sources about the same incident” which are pooled into a useable database (CDC, 2011, National Violent Death Reporting System, para. 3). Entries in the NVDRS are incident-based, and include all victims and suspect information associated with a given incident in one record (CDC, 2008). Before this development, all incident information was stored in different areas- from police reports, to hospital and coroner reports, to legal records. With the creation of the NVDRS, all of this information is now collected and combined into one comprehensive reporting system that provides a more complete picture of an incident. The goal of this
system is to link the “who, when, where and how” of these incidents to provide insights about “why” they occurred.

The National Violent Death Reporting System was created in 2002 and began collecting data from seven states in 2003 (Karch, Logan, & Patel, 2011). Six more states joined in 2004, four in 2005, and two more in 2010 for a total of 19 states. New York State does not currently use the NVDRS, but the system continues to serve as a model for standardized incident reporting in various jurisdictions. The knowledge derived from this system will be able to provide communities with a clearer understanding of violent deaths in order to better prevent them. There has historically been a large gap in information about these violent incidents, but “as NVDRS data become available, state and local violence prevention practitioners [will be able to] use it to guide their prevention programs, policies, and practices” (CDC, 2011, National Violent Death Reporting System, para. 3). As declared by the CDC, expansion of the NVDRS “will increase knowledge about where the problem of violent death exists, the groups who are most at risk, and trends over time. This system can provide a foundation upon which to build many activities and processes necessary for successful violence prevention” (2011, National Violent Death Reporting System, para. 10).

**Milwaukee Homicide Review Commission**

Focusing further on the prevention of violent incidents, the Milwaukee Homicide Review Commission (MHRC) “builds on existing theory and uses cutting edge practices to create and implement effective cross-agency prevention approaches” (MHRC, 2010, p. 5). The MHRC introduces a “comprehensive and collaborative process” for reviewing homicides and nonfatal shootings (MHRC, 2010, p. 8). The system provides reviews of homicides, supports the implementation and evaluation of recommendations from these
reviews, and maintains a comprehensive database on homicides, nonfatal shootings, and near fatal domestic violence incidents.

The MHRC incorporates comprehensive and “real time” homicide and nonfatal shooting data from courts, police, and elsewhere in the community. “The database includes family history, employment, social service utilization, criminal history and community corrections supervision status for the victim, suspect, and witness” (MHRC, 2010, p. 11). It also includes gun trace data and location history information for the incident location. The use of the database allows data to be compared over time and across agencies. With this information agencies can better analyze and interpret trends and statistics in order to formulate action plans based on the data presented (MHRC, 2010).

A primary concern for the MHRC is why a problem exists. The success of the program relies on first identifying any trends, gaps, and needs, and tailoring data-driven solutions “directed at the underlying conditions that create the problem” (MHRC, 2010, p. 8). The MHRC emphasizes a collaborative, cross-agency effort in violence prevention. The aim of the commission is to gain an understanding of the causes and risks associated with major problems in the area through strategic problem analysis, to “develop innovative and effective responses and prevention strategies,” and “help focus available prevention and intervention sources” (MHRC, 2010, p. 6).

As data become more prevalent, the need to organize the data in a meaningful way becomes even more pressing an issue. While some jurisdictions, like those above, have begun to work through the issues to determine the most useful way to analyze and use data, there are many others who have yet to even begin to think about database creation.
Essential Database Elements

Each of the data-tracking programs discussed adopts a regulated and universal system of documenting data. This ensures the reliability of consistent information within the data set. Not only is it key to maintain regularity within the data, it is also important to establish a foundation of well thought out items to be recorded in the database.

In the area of shooting injuries and gun crime, only a handful of police departments employ a system specifically for tracking and analyzing these data. Most jurisdictions collect general information on shootings along with other violent crimes, but the data are not commonly tracked in a single database. When there is a tracking system in place for shooting injuries, it has been typically run by health organizations like the CDC or San Francisco Department of Public Health, rather than a law enforcement agency (National Fatal Firearm Injury Reporting System [NFFIRS] Workgroup, 2001). In addition, some of the reports may be completed and inputted by various individuals, creating a higher chance of subjective inconsistencies (State of Alaska, Section of Epidemiology, n.d.). In many of these current systems, data may also only be inputted once, with little or no update of the information as time goes on.

The main focuses of many existing firearm and violent injury reporting systems circulate around the findings of past research. Commonly shared fields include incident information (date, time, jurisdiction), location information (location type), victim and offender information (relationship, substance use, demographics, criminal history), weapons information (type, caliber, gauge, make), and circumstantial information (law enforcement-related, drug-related, gang involved). Some shooting databases are more inclusive than others. The National Fatal Firearm Injury Reporting System (which eventually turned into the National Violent Death Reporting System) emphasized the following elements: incident type, accident/suicide circumstances, location type, address,
date of injury and death, place of death, investigating police agency, victim residential address, victim and suspect age, sex, race/ethnicity, relationship, presence of alcohol/drugs, and firearm type, make, model, caliber, and gauge (NFFIRS Workgroup, 2001). In Milwaukee, main focuses remain on targeting specific individuals or types of individuals, behaviors and activities, geographic areas, and types of places, and generate policy recommendations based on the findings (MHRC, 2010).

Tracking Personal Information

Review of existing databases, research and knowledge of the factors surrounding gun violence can help to identify important elements to include in a database of shootings. In 2011, Papachristos, Braga, and Hureau examined fatal and nonfatal shootings in Boston and found that “the probability of gunshot victimization is directly related to one’s [social] network distance to other gunshot victims…. The closer someone is to a gunshot victim, the more likely that person is to also be a gunshot victim” (p. 2). The study also found that individuals are placed at an even greater risk if they are younger, have a high number of gang members in their social network, or are gang members themselves. In a study done by Spano, Pridemore, and Bolland (2012), it was found that the intersection of exposure to violence and engagement in violent behavior had the most significance in juvenile gun carrying. Wallace (2009) also concludes that juvenile firearm carrying is most influenced by delinquent peers, friends, and gang membership. These three studies provide strong support for including such relational networking data within a database. These studies further highlight the notion of risk and that some people are at higher risk than others of getting shot or being the shooter, which is undeniably critical information for law enforcement to have access to. Understanding who in the community is at greater risk of criminal behavior has obvious effects on not only criminal justice agencies, but also on service providers.
As research finds that most of these incidents are dispute-related, it is necessary to gather more in-depth information on victim/offender relationships, as well as take a closer look into any previous disputes among participants. Oftentimes incidents during these ongoing disputes are known by officers, but there is not a consistent system in place to link these events together. Tracking information such as this will serve to help researchers, law enforcement personnel, and policymakers more thoroughly understand the factors fueling such incidents in order to propose informed prevention programs focused directly on the problems at hand. Boston’s Operation Ceasefire incorporated this method by “applying quantitative and qualitative research techniques to assess the nature of and dynamics driving youth violence” (Braga, Kennedy, & Piehl, 2001, p. 1).

Criminal history and weapons involvement are also said to be related to the likelihood of a shooting victimization. Previous negative interactions with the criminal justice system are shown to increase the likelihood of becoming involved in a shooting (Wells & Chermak, 2011). Wells and Chermak found an even greater risk of gun victimization in individuals involved in illegal weapons activity. Capturing information regarding criminal history and case outcomes will thus be meaningful within a database.

As for offender characteristics, Spano et al. (2011) identify the intersection of exposure to violence and violent behavior as a key factor in youth participation in illegal firearm activity. Ratcliffe and Rengert discuss a potential victim/offender overlap in the coercion, retaliation and escalation of circumstances relating to “romantic interchanges,” drug market disputes, and routine illegal activities such as armed robberies (2008, p. 58). For these reasons, it is important to track all shooting participants’ criminal history, domestic history, drug involvement, and personal history within a database.

*Tracking Spatio-Temporal Information*
Collating crime data based on geographic location and change over time is another useful tool for analyzing shootings. A study by Ratcliffe and Rengert (2008) examined patterns of “near-repeat shootings” in Philadelphia, PA. They found “elevated patterns of near-repeat shootings within 2 weeks and one city block of previous incidents” (p. 58). The study demonstrated a 33 percent increase in the risk of a shooting when compared to any other situation not within one block and two weeks after a shooting. This phenomenon of near-repeat shootings is speculated to result from “coercion, retaliation and escalation” of participants and those affected by the incident (p. 61). Papachristos, Braga, and Hureau (2011) also highlight the influence of neighborhood characteristics on the victimization risk of shootings. With this in mind, it is important to consider tracking the distance between victim, suspect, and incident addresses as well as merging records of other problems of violence in the area around that time. However, both Ratcliffe & Rengert and Papachristos, Braga, & Hureau contend that perhaps the most critical factors increasing the risk of shootings are the overlap of known problem areas and the social circle of the individual.

**Influence of Street Culture**

As expressed by Papachristos, Braga, & Hureau (2011) “a growing amount of empirical evidence suggests exposure to serious gun violence and risk of violent victimization is highly concentrated in extremely small geographic locations and within highly circumscribed social networks” (pp. 3-4). While examining repeat incidents, Ratcliffe and Rengert (2008) attribute many shootings to personal disputes and instrumental crimes, as opposed to random violence. “The first is romantic interchanges. People sometimes resort to violence against a mate they fear they are losing or against the person who is intruding on their romantic turf. Others use guns to commit an armed robbery or other felony. Finally, guns are used to settle disputes in illegal activities such
as illegal drug sales where the parties do not have access to criminal or civil justice systems to settle their disputes” (Ratcliffe & Rengert, 2008, p. 61). These factors are further explained as they relate to the “code of the street” in many of these areas. As Anderson (1999) and Ratcliffe and Rengert (2008) point out, the “code of the street” actively discourages respect for and cooperation with formal law enforcement and encourages the use of violence to solve personal disputes. The “code of the street” emerges where the influence of the police ends and personal responsibility for one’s safety begins (Anderson, 1999). This yet again drives the point that many of these shootings are between people who know each other.

Although many of these incidents are found to involve individuals with some type of relationship, research presents another situation as well. Ratcliffe and Rengert (2008) describe a situation of a shooting occurring during the commission of another felony such as a robbery, another common finding of repeat shootings in areas of routine drug activity. Understanding this, it may be necessary and helpful to identify and label the type of motivation for the shooting, or at least differentiate between instrumental and expressive motives for the incident. It would also be important to capture whether the shooting happened during the commission of another crime. Knowing the reasons behind these attacks could help track related incidents or detect patterns of shootings.

Summary of Elements

Risk factors for shootings overlap the many elements of homicide in general as described by Papachristos, Braga, and Hureau (2011). “Leading social scientific examinations of homicide victimization and offending generally focus on understanding ‘risk factors’ at the individual-level (e.g. age, gender, race, and socioeconomic status), at the situational-level (e.g. the presence and type of weapon, the presence of drugs or alcohol, and the role of bystanders or third parties during violent events), and at the
community-level (e.g. residential mobility, population density, and income inequality)” (p. 3). With the factors just mentioned and the elements previously described, a shooting database can be built to cover nearly all of the important areas relating to shooting incidents, as supported by research. With a focus on persons information, incident location characteristics, and incident circumstances, an outline of a database can be created by expanding each topic to specific variables. These set variables will then serve to record any information worth tracking within the database for the overall purpose of analysis.

Next Steps

The third and final paper in this series will look at the current Rochester shooting database with recommendations on other elements that should be captured as well. The final paper will serve to propose the creation of a new, more inclusive database of shootings in the City of Rochester. The development process of the database will be reviewed, and several obstacles throughout the process will be highlighted. The general structure of the database will be provided as well as a selection of certain variables. Looking further, practical application of the database will be described, and the expected benefits of the database will be discussed.
References


Milwaukee Homicide Review Commission (MHRC). (Fall 2010). *Prevention Model, Accomplishments, and Future Directions*. Milwaukee, WI.


