# Crime Analysis and the Profession

This chapter serves as a foundation for the discipline of crime analysis by providing definitions of crime analysis and crime mapping, along with an overview of the crime analysis profession in the United States. The overview includes the profession's history, its current status, descriptions of potential career paths for crime analysts, and ways to develop and improve a crime analysis unit. This chapter also includes a brief discussion of international crime analysis practices and highlights how they have influenced crime analysis in the United States.

## Definition of Crime Analysis

During the past 30 years, many scholars have developed definitions of **crime analysis** (Bruce, 2008a; Emig, Heck, & Kravitz, 1980; Gottlieb, Arenberg, & Singh, 1994; Vellani & Nahoun, 2001). Although definitions of crime analysis differ in specifics, they share several common components: All agree that crime analysis supports the mission of the police agency, utilizes systematic methods and information, and provides information to a range of audiences. The following definition of crime analysis will be used for the purpose of this book:

> Crime analysis is the systematic study of crime and disorder problems as well as other police-related issues—including sociodemographic, spatial, and temporal factors—to assist the police in criminal apprehension, crime and disorder reduction, crime prevention, and evaluation.

Clarification of each aspect of this definition helps to demonstrate the various elements of crime analysis. Generally, *to study* means to inquire into, investigate, examine closely, and/or scrutinize information. Crime analysis, then, is the focused and systematic examination of crime and disorder problems as well as other police-related issues. Crime analysis is not haphazard or anecdotal; rather, it is based in theory and involves the application of social science data collection procedures, analytical methods, and statistical techniques.

More specifically, crime analysis employs both qualitative and quantitative data and methods. Crime analysts use **qualitative data and methods** when they examine nonnumerical data for the purpose of discovering underlying causes of crime. The qualitative methods specific to crime analysis include field research (such as observing characteristics of locations and talking to individuals with specific knowledge about a particular type of crime) and content analysis (such as examining police report narratives). Crime analysts use **quantitative data and methods** when they conduct statistical analyses of numerical or categorical data. Although much of the work in crime analysis is quantitative, crime analysts primarily use fundamental statistical methods, such as frequencies, percentages, means, and rates.

The central focus of crime analysis is the study of crime (e.g., rape, robbery, and burglary) and disorder (e.g., noise complaints, burglary alarms, and suspicious activity) problems and information related to the nature of incidents, offenders, and victims or targets (i.e., inanimate objects, such as buildings or property) of these problems. Crime analysts also study other police-related operational issues, such as staffing needs and areas of police service. Thus, even though this discipline is called *crime* analysis, in practice it includes much more than just the examination of crime.

Although many different characteristics of crime and disorder are relevant in crime analysis, three key types of information that crime analysts use are **sociodemographic, spatial,** and **temporal.** *Sociodemographic* information consists of the personal characteristics of individuals and groups, such as sex, race, income, age, and education. On an individual level, crime analysts use sociodemographic information to search for and identify crime suspects and victims. On a broader level, they use such information to determine the characteristics of groups and how these group characteristics are related to crime. For example, analysts may use sociodemographic information to answer the question, "Is there a white, male suspect, 30 to 35 years of age, with brown hair and brown eyes, to link to a particular robbery?" or "Can demographic characteristics explain why the people in one group are victimized more often than people in another group in a particular area?"

The *spatial* nature of crime, disorder, and other police-related issues is central to understanding the nature of a problem. Advanced computer technology and the availability of electronic data have facilitated a large role for spatial analysis in crime analysis. Visual displays of crime and disorder locations (maps) and their relationship to other events and geographic features are essential to understanding the nature of crime and disorder. (For an in-depth discussion of this type of analysis, called *crime mapping,* see Chapter 6.) In addition, results from criminological research within an area called "crime and place" (Weisburd, Bernasco, & Bruinsma, 2009; Weisburd & McEwen, 1997) encourage crime analysts to focus on geographic patterns of crime by examining situations in which victims and offenders come together in time and space. (For a discussion about the importance of "place" in the analysis of crime, see Chapter 2.) Notably, the importance of such patterns is reflected in the title of this book, *Crime Analysis With Crime Mapping.*

Finally, the *temporal* nature of crime, disorder, and other police-related issues is a major component of crime analysis. Crime analysts conduct several levels of temporal analysis, including examination of long-term trends of crime and disorder over several years, by season, and by day of week and time of day. This book will take a close look at specific analysis techniques used to examine the temporal nature of crime at each of these levels.

The final part of the crime analysis definition—"to assist the police in criminal apprehension, crime and disorder reduction, crime prevention, and evaluation"—summarizes the purpose and goals of crime analysis. The primary purpose of crime analysis is to support (i.e., "assist") the operations of a police department. Without police, crime analysis would not exist as it is defined here.

The first goal of crime analysis is to assist in criminal apprehension, given that this is a fundamental goal of the police. For instance, a detective may be investigating a robbery incident in which

the perpetrator used a particular modus operandi (i.e., method of the crime). A crime analyst might assist the detective by searching a database of previous robberies for similar cases.

Another fundamental police goal is to prevent crime through methods other than apprehension. Crime prevention is "intervention in the causes of criminal and disorderly events to reduce the risk of their occurrence and/or the potential seriousness of their consequences" (Ekblom, 2005, p. 28). The second goal of crime analysis is to help identify and analyze crime and disorder problems as well as to guide police in implementing crime prevention responses for those problems. For example, members of a police department may wish to conduct a residential burglary prevention campaign and would like to target their resources in areas with the largest residential burglary problem. A crime analyst can assist by conducting an analysis of residential burglary that examines how, when, and where the burglaries occurred along with which items were stolen. The analyst can then use this information to develop suggestions for responses, such as alerting citizens in specific areas to close and lock garage doors.

Crime reduction refers to decreasing the amount and seriousness of crime and disorder (Ekblom, 2005). Many of the problems that police deal with or are asked to solve are not criminal in nature; rather, they have more to do with quality of life and disorder issues. Some examples include false burglary alarms, loud noise complaints, traffic control, and neighbor disputes. The third goal of crime analysis stems from the police objective of reducing crime and disorder. Crime analysts can assist police with these efforts by researching and analyzing problems such as suspicious activity, noise complaints, code violations, and trespass warnings to provide police with information they can use to address these issues before the issues become more serious criminal problems.

The final goal of crime analysis is to help evaluate police efforts by determining the level of success of programs and initiatives implemented to control, reduce, and prevent crime and disorder, and to measure how effectively police organizations are run. Local police agencies have become increasingly interested in determining the effectiveness of their crime control and prevention programs and initiatives. For example, an evaluation might be conducted to determine the effectiveness of a 2-month burglary surveillance or of a crime prevention program that has sought to implement **Crime Prevention Through Environmental Design (CPTED)** principles within several apartment communities (Crowe, 2000). Crime analysts also assist police departments in evaluating internal organizational procedures, such as resource allocation (i.e., how officers are assigned to patrol areas), realignment of geographic boundaries, the forecasting of staffing needs, and the development of performance measures. Police agencies keep such procedures under constant scrutiny in order to ensure that the agencies are running effectively.

The flowchart presented in Figure 1.1 clarifies the various components of the definition of crime analysis used throughout this book. Crime analysis examines crime and disorder problems as they occur as well as ongoing police-related issues in order to assist police in criminal apprehension, crime prevention, crime and disorder reduction, and evaluation.

In summary, this definition provides the foundation for the rest of the book, and although general, it encompasses a wide range of activities in which crime analysts assist police. They include solving crimes, finding and apprehending offenders, developing effective crime reduction strategies and tactics, detecting and solving community problems, improving safety and quality of life, optimizing internal operations, educating the public, and planning for future resource needs (Bruce, 2008a).

# Definitions of GIS and Crime Mapping

Ever since maps have been available that depict the geographic features of communities, such as streets and city boundaries, police departments have used such maps to determine patrol areas and emergency routes and to assist patrol officers in finding specific addresses. As noted in the definition
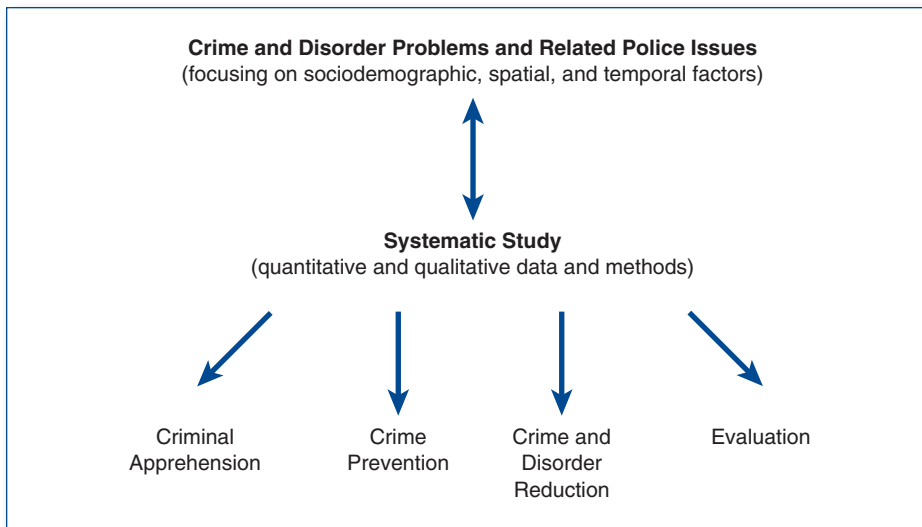
**Figure 1.1**  The Definition of Crime Analysis

of crime analysis, police and crime analysts also use maps as a key tool for crime analysis, a process that, historically, involved the manual placement of pins on hand-drawn wall maps. Since the 1990s, significant improvements in technology, software, electronic databases, and the Internet along with police innovation have made mapping of crime by police departments common (Weisburd & Lum, 2005). Because of this, crime mapping plays a key role in this book as an important tool used in crime analysis; thus it is important to define key terms before proceeding.

A **geographic information system (GIS)** is the software tools that allow the crime analyst to map crime in many different ways, from a simple point map to a three-dimensional visualization of spatial or temporal data. For the purposes of this book, the definition of a GIS is as follows:

> A GIS is a set of computer-based tools that allows the user to modify, visualize, query, and analyze geographic and tabular data.

A GIS is similar to a spreadsheet or word processing program in that the software provides a framework and templates for data collection, collation, and analysis. It is up to the user to decide what parts of the system to use and how to use them. A GIS does more than enable users to produce paper maps; it also allows them to view the data behind geographic features, combine various features, manipulate the data and maps, and perform statistical functions.

**Crime mapping** is a term used in policing to refer to the process of conducting spatial analysis within crime analysis. For the purposes of this book, the definition of crime mapping is as follows:

> Crime mapping is the process of using a geographic information system to conduct spatial analysis of crime and disorder problems as well as other police-related issues.

Clarifying where different types of crime and other types of incidents occur is one of the many important functions of crime analysis. Because of the unique nature of the software used and the prominence of geographic data in crime mapping, many people often discuss this type of analysis

as though it is distinct from crime analysis; in reality, however, crime mapping is a subdiscipline of crime analysis. Crime mapping serves three main functions within crime analysis:

1. It facilitates visual and statistical analyses of the spatial nature of crime and other types of events.

2. It allows analysts to link unlike data sources together based on common geographic variables (e.g., linking census information, school information, and crime data for a common area).

3. It provides maps that help to communicate analysis results.

# History of Crime Analysis

Human beings have analyzed crime and criminal behavior throughout history. That is, humans have always made observations about crime and other problematic events (i.e., collected data) and have identified relationships among those observations (i.e., conducted analysis). For example, in the old American West, a rancher may have noticed that he was losing one or two head of cattle from his grazing land every week. He also may have noticed that the cattle went missing only at night and only from a certain field. These observations and his analysis of them may have led him to respond either by sitting and watching the cattle in that field overnight or by moving the cattle to another field. The rancher's thoughts and actions constitute a simple form of crime analysis. Similarly, police officers have historically conducted crime analysis by using memory to link key suspects and property to specific relationships among crime incidents.

The present-day discipline of crime analysis represents an evolution of the kinds of crime analysis illustrated by this example. It is a systematic process in which data about crime and other related factors are collected and stored for long periods of time. Where earlier "crime analysts" relied mostly on their own observations and their own memories of crime incidents, modern crime analysts utilize complex computer systems to apply various analytic techniques, ranging from simple pattern analysis to complex statistical analysis.

## Beginnings of Crime Analysis

The history of the analysis of crime is long, but the history of crime analysis as a discipline begins with the first modern police force, which was created in London in the early 19th century. This makes sense, given that the main purpose of crime analysis is to assist the police. Through the Metropolitan Police Act, passed in the 1820s, England organized about a thousand men to form a London police force. In 1842, this force created a detective bureau, which was given the responsibility of identifying crime patterns to help solve crimes. According to London's Metropolitan Police Service (2011), by 1844 the detective bureau's officers were collecting, collating, and analyzing police information. An example follows:

1844: Richard Mayne, Commissioner [was] called to give evidence to the Select Committee on Dogs. He stated that in the Metropolis there were a rising number of lost or stolen dogs. In the preceding year over 600 dogs were lost and 60 stolen. He declared the law to be in a very unsatisfactory state as people paid money for restoration of dogs. "People pay monies to parties whom they have reason to believe have either stolen or enticed them away in order to get the reward. . . ." Mayne believed it to be organised crime.

Additionally, the Metropolitan Police Service (2011) notes that aggregate crime statistics were available for the city of London as early as 1847: "Statistics for the year were; 14,091 robberies; 62,181 people taken in charge, 24,689 of these were summarily dealt with; 5,920 stood trial and 4,551 were convicted and sentenced; 31,572 people were discharged by the magistrates."

## United States: 1900–1970

Although many large cities in the United States began to create police departments in the mid-1850s, corruption within these departments as well as a lack of organization and technology prevented them from conducting crime analysis systematically. The first indication of an instance of formal crime analysis in the United States is found in the early 1900s. August Vollmer, the most famous police reformer, in addition to instituting the innovations of vehicle patrol, radio communication, and fingerprinting, encouraged the use of pin mapping, the regular review of police reports, and the formation of patrol districts based on crime volume (Reiner, Greenlee, & Gibbens, 1976).

O. W. Wilson, who worked with Vollmer and created an advanced training program for officers, was the first to mention and define the term *crime analysis,* in the second edition of his book *Police Administration* in 1963. In the fourth edition of that book, Wilson and McLaren (1977) distinguish between "operations" analysis and "crime" analysis, asserting that crime analysis is the "process of the identification of crime trends and patterns through statistical treatment of information and through examination of actual investigative reports" (p. 175).

From Wilson's writings, it appears that crime analysis was being conducted in (or at least was recommended to) police departments in the 1950s and 1960s; however, no evidence of crime analysis products is available from that period. In his lesser-known book, *Police Planning,* which was first published in 1952, Wilson discusses crime mapping and crime analysis, although he does not use those terms. In the second edition of that volume, he outlines the structure of police planning to include a "cartography unit," which among other things "provides technical advice . . . in depicting crime trends or occurrences . . . in located places of arrest" and a "statistics unit," which includes many of the functions of crime analysis that are still practiced today, such as "interpreting and disseminating crime statistics and other related material to be used as aids for more effective and efficient operation of the department; preparing statistical charts, graphs, and artwork as needed by other department units; maintaining and operating the modus operandi files" (Wilson, 1957, p. 10).

## United States: 1970 to Present

The 1968 Omnibus Crime Control and Safe Streets Act brought about increased awareness of the use of analysis and evaluation in policing throughout the 1970s. The act allowed the allocation of federal grants to assist state and local police agencies with any purpose associated with reducing crime. The U.S. Bureau of Justice Administration, established by the act for the general purpose of supporting police agencies, provided extensive assistance, helping police departments establish evaluation programs and providing training, technical assistance, and information to support the work funded by the grants (Omnibus Crime Control and Safe Streets Act of 1968; Pomrenke, 1969).

As a result, publications from the 1970s about crime analysis techniques as well as evaluations of crime analysis functions indicate that police departments had begun to take Vollmer's and Wilson's advice to formalize crime analysis. In an annotated bibliography prepared for the National Institute of Justice, Emig et al. (1980) provide information on crime analysis publications

and products of the 1970s. The bibliography includes entries for many handbooks devoted to the techniques of tactical and strategic crime analysis that were produced by various nonprofit organizations and funded by the U.S. government (e.g., *Police Crime Analysis Unit Handbook* [Austin et al., 1973]; "Management Function of a Crime Analysis Unit" [Booth, 1979]; *Crime Analysis System Support: Descriptive Report of Manual and Automated Crime Analysis Functions* [Chang, Simms, Makres, & Bodnar, 1979]).

During the 1970s, the U.S. government held several symposia on crime analysis and brought academics and practitioners together to work on specific technical assistance projects aimed at increasing the crime analysis capabilities of police agencies (Emig et al., 1980). Popular media sources also provide evidence that formal crime analysis units existed during this period. For example, a *New York Times* article published in 1972 mentions crime analysis: "Crime analysts at NYC Police Hq say on July 21 that record 57 homicides in 7-day period that ended at midnight July 20 is attributed partly to hot weather in met area" (Pace, 1972).

In the mid- to late 1970s, a small group of academics began to emphasize the importance of the characteristics of criminal events, where they take place (locations), and the geographic analysis of crime (discussed in Chapter 2) (Brantingham & Brantingham, 1981). Also in the late 1970s, Herman Goldstein (1979) suggested another focus, which he called **problem-oriented policing** (discussed in Chapter 3). This shifted the focus of the police from administrative and political concerns to an emphasis on addressing crime and disorder problems. Ideally, *problem solving,* a systematic process within problem-oriented policing, involves the use of formal analysis to provide a comprehensive understanding of crime problems and to develop baseline measures and methodology to enable the evaluation of police responses to problems (Scott, 2000). Goldstein and other scholars who were working with police agencies began to demonstrate the analysis of crime and disorder problems.

Growing recognition of crime analysis in the police practitioner community around this time is evidenced by the creation of the **Commission on Accreditation for Law Enforcement Agencies (CALEA)** in 1979.[1] To receive CALEA accreditation, police agencies were required to have crime analysis capabilities. In fact, CALEA accreditation increased the likelihood of having a formal crime analysis unit (Giblin, 2006) since agencies began to designate personnel to crime analysis and created new positions to meet the CALEA standards.

Crime analysis practitioners began to organize in the 1980s and early 1990s. The Colorado Crime Analysis Association, the first state association on record, was formed in 1982. It consisted of an active group of professionals who benefited from the sharing of tools and techniques, according to Dale Harris (personal communication, November 2, 2003), a founding member of the association and its first president. In 1989, the California Crime Analysis Association was founded; it is currently the largest state crime analysis organization in the United States, with more than 350 members. The **International Association of Crime Analysts (IACA)** was created in 1990 by a small group of established analysts from Colorado, Texas, Oklahoma, Georgia, Missouri, and Ontario (Dale Harris, personal communication, 2003).

In the early to mid-1990s, the discipline of crime analysis grew slowly in the United States. In his 1990 book, *Problem-Oriented Policing,* Herman Goldstein further specified the role of crime analysis that he described in his 1979 article, outlining the importance of police agencies' using data and research to identify problems, understand their underlying causes, and evaluate crime prevention programs.

A number of other events that occurred in the mid-1990s fostered the expansion of crime analysis. The philosophy of community policing (discussed in Chapter 3), which was being adopted by departments across the country, emphasized problem solving (the process described by Herman Goldstein) as well as partnerships between police departments and the citizens they serve; in

many cases, such partnerships involved the sharing of crime analysis information and statistics. The 1994 Violent Crime Control and Safe Streets Act, which amended the 1968 Omnibus Crime Control and Safe Streets Act, provided significant funding for new police officers ("100,000 new cops on the street") and created the Office of Community Oriented Policing Services (known as the COPS Office) to administer the hiring of police officers.

In 1997, the COPS Office included crime analysis and crime mapping in its focus, with grants aimed at providing substantive as well as technological support of crime analysis and community policing. Finally, in 1994 the New York City Police Department's conception and implementation of **Compstat** (discussed in more detail in Chapter 3), a data- and mapping-driven police management strategy also used in other departments in subsequent years, increased both awareness of crime analysis and its incorporation into the everyday functions of the police (Weisburd, Mastrofski, McNally, Greenspan, & Willis, 2003).

Coinciding with and facilitating the events described previously were vast improvements in computer technology. In the 1990s, enormous increases were seen in the speed and memory of computers, and the creation of the Windows operating system had a significant impact on crime analysis practices. These changes made it much easier for police to house official information electronically and analysts to examine large amounts of data using desktop statistical programs and crime mapping software to clean data and to generate reports.

In the 1980s and early 1990s, practitioners focused on providing police agencies with statistical information about long-term trends as well as recommendations for organizational procedures stemming from the work of policing planning units (i.e., strategic crime analysis). Although the identification of short-term crime trends and patterns (i.e., tactical crime analysis) was conducted during this time, it became more widespread in medium- to small-sized agencies during the mid-1990s. This was in part a result of the decentralization of crime analysis units (i.e., the shift toward having individual crime analysts operate in police precincts out in the field rather than together at headquarters), the teaching of specific techniques in crime analysis training at the time, and a renewed emphasis on the police goal of apprehending criminals.[2]

# History of Crime Mapping

Even though crime mapping plays a significant role in crime analysis today, conducting spatial analysis and creating crime maps for distribution have become common over the last 15 years in policing and crime analysis, thanks to advancements in technology. The history of crime mapping is somewhat distinct from that of crime analysis, which is why it is presented separately in this chapter. The history of crime mapping begins not with the establishment of the first police force, but with the work of researchers long before the invention of computers.

## Beginnings of Crime Mapping

In the 1800s, European researchers who adhered to the school of thought known as the cartographic school of criminology examined the levels of crime within different areas (regions) and the relationship of these levels to sociological factors, such as socioeconomic status (Groff & La Vigne, 2002). For example, in 1829, Adriano Balbi, an ethnographer and geographer, and André-Michel Guerry, a lawyer, created the first maps of crime using criminal statistics for the years 1825 to 1827 and demographic data from the census. They examined crimes against property, crimes against persons, and levels of education in France and found that areas with high levels of crimes

against property had a low incidence of crimes against people and that higher numbers of educated people lived in areas with more property crime (Weisburd & McEwen, 1997). Also during this period, the Belgian astronomer and statistician Quételet used maps to examine correlations between crime and transportation routes, education levels, and ethnic and cultural variations (Weisburd & McEwen, 1997).

## United States: 1900–1970

In the United States, the use of crime mapping began a little later than it did in Europe. Because the United States was a relatively new country in the 1800s, reliable maps were not readily available and census data were not regularly collected as they were in France and England at that time. The first substantive spatial analysis of crime in the United States was conducted in the 1920s and 1930s by urban sociologists in Chicago (Shaw & McKay, 1969). Their crime research and related crime maps linked crime and delinquency to factors such as social disorganization and poverty. In fact, these scholars' spatial analysis of juvenile delinquency and social conditions in Chicago is considered to be one of the foremost examples of crime mapping in the first half of the 20th century (Groff & La Vigne, 2002).

Crime mapping was a theoretical component in the development of the concentric zone model, which contends that in an urban setting different types of zones (areas with different purposes) form around a central business district and that some of these zones are more prone to crime and disorder than are others. Researchers who analyzed the locations and distribution of gangs in Chicago based on the concentric zone concept found that gangs were concentrated in parts of the city where social control was weak and social disorganization was high (Weisburd & McEwen, 1997). Most of the early crime mapping conducted in both Europe and the United States examined aggregate levels of crime by area. However, evidence exists of a map that was created by hand in 1929 by Chicago school researchers on which the home addresses of more than 9,000 delinquents were clustered in particular areas of Chicago (Weisburd & McEwen, 1997).

Through the 1950s, 1960s, and 1970s, sociologists and others who were interested in crime and its causes continued to examine the sociological factors associated with crime. The explanations and geographic methods of analysis used remained fairly uncomplicated during this period, possibly owing to the researchers' focus on sociological factors and the lack of adequate technology (Groff & La Vigne, 2002). In the late 1960s, scholars began conducting spatial analysis of crime with the help of large computer systems and unsophisticated visualization methods (Weisburd & McEwen, 1997).

## United States: 1970 to Present

From the late 1960s through the early 1980s, a group of researchers in England, Canada, and the United States shifted their focus of the study of crime away from what traditional criminology examined—the criminal offender—and toward the criminal event and its context, including the physical and social environments that create opportunities for crime (Brantingham & Brantingham, 1981; Clarke, 1980, 1983; Cornish & Clarke, 1986). This movement affected crime mapping, as researchers shifted from aggregate analysis of crime and social factors to the analysis of discrete criminal events and their locations (discussed in Chapter 2). Consequently, researchers began to incorporate information about geography and environment into their study of crime problems and related issues, such as rape (LeBeau, 1987) and a host of other crimes (Harries, 1980) as well as distribution of police personnel (Rengert & Wasilchick, 1985).

In the early 1980s, client server technology made geographic information systems more accessible, and this enabled a number of police departments to experiment with crime mapping in their everyday work (Groff & La Vigne, 2002). A project funded by the National Institute of Justice, called "DMAP" (Drug Market Analysis Program) partnered researchers and practitioners in five U.S. cities (Jersey City, New Jersey; Hartford, Connecticut; San Diego, California; Pittsburgh, Pennsylvania; and Kansas City, Missouri) to use innovative analytic techniques in studying drug markets and tracking their movements over time (Groff & La Vigne, 2002). These projects led the way for crime mapping partnerships between practitioners and researchers and demonstrated how communities could use GIS tools as a central part of crime control initiatives. The program focused primarily on the use of geographic police data, but the participants found that examining other geographically based data contributed to their ability to target problem-solving strategies, brought together key partners with different perspectives, and facilitated the assessment of their joint efforts (Taxman & McEwen, 1997).

In the early to mid-1990s, significant improvements in computer technology and police data systems made electronic crime mapping a much more practical tool for police and researchers. GIS software became available for desktop computers as these computers became capable of processing large amounts of data quickly. In addition, police data on crimes, arrests, accidents, and calls for service became available electronically through computer-aided dispatch systems as well as through electronic records management systems (discussed in Chapter 6). Geographic data such as street and census information became widely available in electronic format and were provided free or at minimal cost by a variety of government agencies and commercial organizations. All of these developments helped to advance the field of crime mapping beyond manual methods and the use of large, costly mainframe mapping systems.

In 1993, the Illinois Criminal Justice Information Authority and the Sociology Department of Loyola University of Chicago joined forces to present a computer crime mapping workshop in Chicago. In a publication resulting from the workshop titled *Crime Analysis Through Computer Mapping* (Block, Dabdoub, & Fregly, 1995), participants—many of whom are top researchers and analysts in the field today—described spatial analytic techniques and offered practical advice for both police professionals interested in implementing computer mapping in their agencies and students of spatial analysis. This workshop was one of the first efforts to bring practitioners and researchers together to discuss crime mapping.

During the mid-1990s, the federal government, in a movement spearheaded by Vice President Al Gore, provided increased support for crime mapping technology and methods. Police agencies received federal funding to obtain crime mapping technology, and several programs were developed specifically to assist police agencies with the implementation of crime mapping. The U.S. Department of Justice's Office of Community Oriented Policing Services (the COPS Office) allocated a significant amount of funding for crime mapping software and equipment through a program called MORE (Making Officer Redeployment Effective). The primary objective of this funding was to "expand the amount of time current law enforcement officers can spend on community policing by funding technology, equipment, and support staff" (Office of Community Oriented Policing Services, 2011b). From 1995 to 2002, just over $53 million (90 individual grants) of MORE funding was allocated directly to crime mapping technology and staff (M. Scheider, personal communication, November 10, 2003).

The Crime Mapping Research Center, now called the Mapping and Analysis for Public Safety (MAPS) program, was formed within the Department of Justice's National Institute of Justice in 1997. Its goal is to support research that helps criminal justice agencies use mapping to enhance public safety by examining how "to use maps to analyze crime," "to analyze spatial data," "maps can help researchers evaluate programs and policies," and "to develop mapping, data sharing and spatial analysis tools (National Institute of Justice, 2009). Since its creation, the MAPS program has held

annual conferences at which practitioners and researchers come together to discuss research and spatial analytic techniques. Other activities have included funding spatial analysis research and fellowships, a national survey of crime mapping, developing training curricula, publishing books on crime mapping, and bringing together police professionals and researchers in a technical working group to discuss spatial analysis of crime issues. With the program's help, the United States has seen interest in and development of crime mapping and crime analysis techniques increase significantly among police departments and researchers. From 1998 to 2007, the National Institute of Justice also funded the Crime Mapping and Analysis Program (CMAP), the mission of which was "to provide technical assistance and introductory and advanced training to local and state agencies in the areas of crime and intelligence analysis and geographic information systems (GIS)" (Crime Mapping and Analysis Program, 2004). CMAP provided training to a significant number of crime analysts and officers in the field.

Another relatively recent influence in the use of crime mapping in policing is Compstat, a data- and mapping-driven police management strategy created by the New York City Police Department and adopted by other police agencies across the United States (Henry, 2002; Weisburd et al, 2003) (discussed in Chapter 3). A core component of Compstat is police officials' use of crime mapping software and analysis in weekly meetings to understand local patterns of crime and disorder incidents. Crime mapping is such an integral part of the Compstat program that during the 2001 television season, CBS's *The District,* a show based on New York's Compstat experience, highlighted crime mapping in every episode (Theodore, 2001).

To date, no historical study has been conducted on the adoption of crime mapping by police agencies, but David Weisburd, a distinguished professor in the field of crime and place, has examined the rate of adoption of crime mapping in the 1990s through a number of surveys and a pilot study of his own and found that "crime mapping has become widely diffused among police agencies, that the diffusion process began in the late 1980s to early 1990s and gained momentum in the mid-1990s, and that the adoption of crime mapping appears to follow the standard 's' curve of diffusion of innovation" (Weisburd & Lum, 2005).

# Crime Analysis as a Career Track

Opinions differ somewhat concerning what makes a "good" crime analyst, and usually the opinions that people hold on this subject mirror their own experiences. That is, a crime analyst who is a police officer is likely to believe that all crime analysts should be police officers, and a crime analyst with an advanced degree is likely to feel that all crime analysts should have such degrees. Although this is a simplification, debate continues about what experience and education crime analysts need in order to do their jobs. Is it necessary for a crime analyst to have been an officer, so that he or she knows the ins and outs of a police department, or is an advanced degree in statistics more valuable? In addition, because so much of modern crime analysis relies on computers and software technology, some argue that crime analysts should be computer experts as well.

Ideally, a crime analyst should have police knowledge, research skills, and technological capabilities. One person is not likely to have all of these qualifications at the beginning of a career in crime analysis; rather, he or she may have a particular strength in one of these areas and need to cultivate the others over time. A crime analyst's capabilities should represent a balance of knowledge and skills in these three areas. One individual may have a relatively academic slant but be able to relate to the everyday work of policing and effectively explain crime analysis information. Another person who is lacking in formal education may have street-level knowledge of crime and police activity as well as skills in technology and statistical analysis.

The current trend in police agencies is to hire civilian crime analysts. Officers tend to change positions every few years, and agencies do not want to risk losing the investment that intensive crime analysis training represents when officers move. In addition, civilians are less expensive than officers (in terms of salary and retirement benefits) for police agencies to employ. Although this makes the position of crime analyst a good entry-level job, the position lacks opportunity for career-track advancement. In many police agencies, especially small to medium-sized police departments, the crime analyst is one of only a few professional support positions, and the only way an analyst can advance is to go to a larger department or move to a different position in the city government.

That being said, police agencies vary greatly in how they fill crime analyst positions with both civilians and officers. Generally, successful analysts are experts in data collection, data manipulation, statistics, theory, and research methods. The analyst is the authority in examination, research, and assisting other police personnel in doing their jobs more effectively. Successful crime analysts also have knowledge about policing in general, about police culture, and about the characteristics of the community in which they work. Crime analysts have their own style of dealing with people, but to be successful, an analyst must be able to explain complex ideas clearly to many different types of individuals (e.g., police officers, managers, city officials, citizens) in a way that is not condescending. In addition, crime analysts must be able to relate to police officers (even if they have never been one), work within police culture, think clearly under pressure, defend their views on important issues, and keep a sense of humor. At the end of this chapter, several profiles of current crime analysts are presented to illustrate the varying degree of experience, skill, education, and responsibilities that different analysts have.

## Crime Analyst Qualifications and Job Descriptions

Police departments have many different types of crime analysis positions. Some employ only one crime analyst, whereas others have several who function in what is typically called a **crime analysis unit,** or **CAU.** The following text provides general descriptions of several crime analysis-related positions and their roles within CAUs to show the range of levels and activities in the profession of crime analysis as well as the qualifications necessary for employment at various levels.

### *Interns/Volunteers*

Police agencies have used volunteers to conduct crime analysis for many years. During the 1970s and 1980s, many police departments employed volunteers for this purpose, because few crime analysis professionals were available, or because they lacked the resources to hire professionals. Today, police departments typically use volunteers and interns to support and/or enhance their crime analysis resources and productivity. **Volunteers** are people who work for the police department without pay; they tend to be students or retired persons. **Interns** are undergraduate or graduate students who work in a police department to obtain practical work experience and college credit. An internship can often serve as a proverbial foot in the door, gaining the intern access to future career opportunities.

Internship programs can be extremely beneficial to both police departments and their interns. Interns not only help departments by performing crime analysis duties, they learn the skills they need to become crime analysts and gain practical experience. Police departments recruit student interns from many disciplines, including criminal justice, sociology, political science, geography, English, psychology, and computer science, depending on the needs of their crime analysis units

and the availability of students. For example, a police department that is instituting a geographic information system might recruit geography students, whereas a department looking to conduct tactical analysis might recruit students majoring in criminal justice.

Individual academic programs typically administer the internship programs through which student interns are placed. These programs usually require that students work as an intern for a minimum of one semester (the number of hours per week varies with the number of course credits given), document their experiences through field notes, and write a final paper for a grade. Internships can be paid or unpaid, depending on the resources of the police agency. Volunteers and interns handle many different tasks within CAUs, including tactical data entry, data analysis, production of monthly strategic reports, and the writing of requests to participate in complex analysis projects.

One note of caution about internships: Even though student interns are not becoming police officers, some police departments put applicants for internships through a screening process similar to that used for applicants for police officer training and other police department personnel (e.g., lie detector test, extensive background checks, drug testing), because interns have the same access officers have to department areas and records. Students applying for police department internships should be aware that any illegal behavior in which they have taken part might have a significant impact on their being accepted and, subsequently, on their ability to work in a police agency at all.

### Crime Analysis Assistant/Technician

A **crime analysis assistant** or **technician** is an administrative support person who answers the phone, conducts data entry, makes copies, keeps files, produces simple standardized reports, and does anything else that arises administratively in the CAU. This position normally requires a high school diploma and 1 to 2 years of secretarial/data entry experience. It is typically filled by someone who has been a secretary or by an individual just beginning in the profession of crime analysis (e.g., a student). In some cases, crime analysis assistants are able to move up in the CAU as they obtain additional education and experience.

### Entry-Level Crime Analyst

When a police agency has multiple levels of crime analysis positions, one of these is often described as **entry-level crime analyst.** Analysts in this position usually conduct relatively routine crime analysis duties, as they are likely to be new to the field, have limited experience, and obtain a significant amount of training in their first years on the job. Typically, this position requires an undergraduate degree in criminal justice, political science, sociology, or a related field that includes statistics and research methodology in its curriculum and 1 year of analytic experience, although not necessarily crime analysis experience (a master's degree is often seen as the equivalent of a year of experience). Some police departments require that applicants for the position of entry-level crime analyst have crime analysis certification (offered in several states) when they are hired or that they obtain such certification within a specific period after they begin working in the position.

### Experienced Crime Analyst

An **experienced crime analyst** may be part of the structure of a CAU or may be a solo practitioner of crime analysis in a police agency. In departments that employ a number of analysts, this

level exists to create career advancement opportunities for analysts. Compared with the entry-level crime analyst, the experienced crime analyst holds more responsibility and is expected to conduct more advanced analyses.

An individual in this position may also have the duty of supervising lower-level personnel, such as crime analysis assistants/technicians, volunteers, and interns. Typically, the position of experienced crime analyst requires at minimum a bachelor's degree in criminal justice, political science, sociology, or other related field that includes statistics and research methodology in its curriculum and 2 years of crime analysis experience.

## Specialty Crime Analyst

A **specialty crime analyst** is an analyst who is hired to conduct a particular type of crime analysis. An agency with a relatively large CAU may prefer to employ crime analysts who are specialists (i.e., who have their own individual sets of specialized skills and knowledge) rather than generalists (i.e., who are cross-trained so that all members of the unit have similar skills and knowledge). In some cases, agencies may receive grant funding that requires crime analysts to analyze particular types of crime or other activity. For police agencies, the advantage of having specialty crime analysts available is that these individuals have substantial skills and knowledge in their particular areas of crime analysis; the disadvantage is that their work cannot be shared easily with other analysts, so if a specialty analyst resigns, no one else can conduct the work until another analyst with the same specialty is hired.

There are numerous types of specialty crime analysts; and the education and experience required for these positions varies by specialty. In general, however, the position of specialty crime analyst is typically considered to be equivalent to the experienced crime analyst level, as both positions require proficiencies in particular areas. The following are some examples of types of specialty crime analysts:

- *Tactical crime analyst:* This type of analyst conducts only tactical crime analysis and does not produce long-term reports or statistics.
- *Problem analyst:* This type of analyst conducts analysis within the context of problem solving only.
- *Sex crime analyst:* This type of analyst conducts tactical, strategic, and administrative crime analysis having to do with sex crimes and is likely to work closely with detectives. The position of sex crime analyst might exist in a large agency that has developed a long-term task force to address sex crimes. (Other types of crime analysts also specialize in particular kinds of crime; these include violent crime analysts, property crime analysts, and robbery crime analysts.)
- *School safety analyst:* This type of analyst conducts analysis on the safety in and around schools, working directly with school administrators and school resource officers.
- *Geographic information systems analyst:* This type of analyst specializes in the use of geographic information systems and conducts spatial analysis of crime and various types of police activity. Salaries for GIS analysts are typically higher than those for crime analysts because of the specialized technical skills required and because police agencies must compete for qualified analysts with private companies offering high salaries. Compared with crime analyst positions, significantly fewer GIS analyst positions are available, for a number of reasons: (a) Smaller departments that conduct crime analysis typically have only one crime analyst position, and that is not a specialist position; (b) many police officials do not feel that filling a position with a person who works only on spatial analysis of crime is warranted; and (c) the number of potential applicants for GIS analyst positions (i.e., individuals who have both geography and criminal justice backgrounds) is relatively small.

### Crime Analysis Supervisor

The **crime analysis supervisor** is a person with substantial crime analysis knowledge and experience who supervises a crime analysis unit. This job title is not applied to police managers (sworn personnel) who supervise the crime analysis function as part of their other duties. The position of crime analysis supervisor is considered to be a "working" position, because it involves hands-on crime analysis work. The key responsibilities of a crime analysis supervisor are to represent the interests of the CAU at high-level organizational meetings (such as command staff and patrol or investigations operations meetings), to lead the development of CAU goals and objectives, and to be knowledgeable about the crime analysis discipline regionally, nationally, and internationally. Typically, this position requires a master's degree in criminal justice, political science, sociology, or other related field, 2 years of crime analysis experience, and at least 1 year of supervisory experience.

## CAU Organizational Chart

Figure 1.2 depicts a hypothetical CAU organizational chart, including the positions discussed in the previous section and their minimum requirements. The arrows in the figure indicate potential routes for career advancement.

# Developing and Improving a Crime Analysis Unit[3]

A strategic plan for any type of organization, division, or unit outlines strategies and direction, lays out expectations, and helps guide decisions about how work is done and how to allocate resources. When developing a new crime analysis unit (CAU) or improving the capabilities of an existing
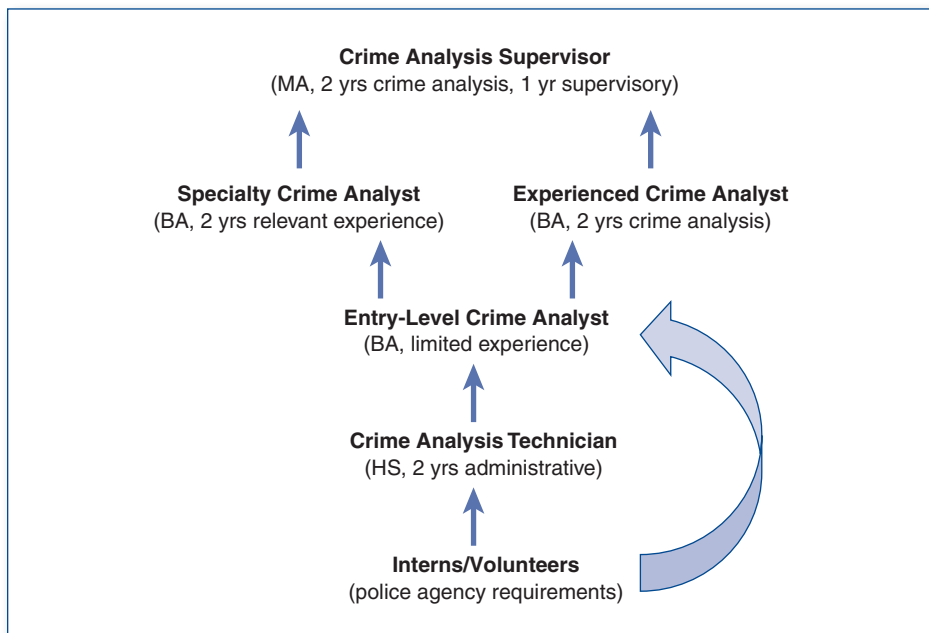


**Figure 1.2**    Sample Crime Analysis Unit Organizational Chart

CAU, the formulation of a strategic plan is important, because it is a formal mechanism that describes the function and purpose of the CAU within the specific agency. Therefore, this section of the book is a brief discussion of how a **strategic plan** might be developed either for a new or an existing CAU. Although this information may not be immediately relevant for college students, it provides a foundation for understanding how crime analysis units are developed and the role they serve within a police agency. For practitioners, the section provides information that can be used to guide the development of their own strategic plans. In general, the strategic plan for a CAU should be developed in line with the agency's goals, should include specific short- and long-term goals for the CAU itself, should be realistic in terms of allocating resources (e.g., funding, time, personnel capabilities), and should describe the future needs as well as discuss the substantive areas of work of the CAU.

The first step in developing a strategic plan for a CAU is to understand the current state of the agency and its crime analysis capabilities. For agencies without a crime analysis function, one would consider the strategic goals of the agency, available data sources and their accessibility, and available hardware and software that might be used for crime analysis. For agencies with an existing CAU, the previous issues would be considered in addition to the number of current crime analysis personnel, their capabilities, and how their time is spent, as well as the types of crime analysis products that are produced and their uses.

The second step in developing a strategic plan for a CAU is to determine the crime analysis "needs" of the agency. This would be accomplished through a triangulation of methods. A review of literature on crime analysis (which would include this book and others) would provide an overview of what the field's standards are and what is effective. Specific to each agency, information would be gathered informally from personnel by talking to individuals in the agency, conducting "ride alongs," and attending departmental meetings. Formal methods of inquiry would include conducting a departmental survey and creating a committee that is brought together to specifically discuss crime analysis needs. Questions that might be asked in interviews and in the survey might include the following: How might current products be improved? What additional information is needed? What new products are needed? Observation conducted on ride alongs and in meetings would focus on determining the level of understanding of crime analysis by sworn personnel in the agency and on what type of crime reduction/prevention strategies are being employed.

Once this information is gathered and analyzed, the third step is to write the strategic plan. Overall, the plan would describe the current state of the CAU or of the agency (based on information collected in the first two steps), prioritize the needs of the CAU, and list both short- (1 year) and long-term (5 years) goals. More specifically, the plan might include the following parts:

- *Structure:* This part would detail the number and type (e.g., civilian, officer, volunteer, student) of personnel conducting crime analysis full or part time and their positions (e.g., crime analysis technician, entry-level crime analyst, specialty analyst, crime analysis supervisor). It would also include job duties and responsibilities for each position and the location of the unit within the organizational chart (i.e., within the chain of command) as well as whether the unit is centralized or decentralized.
- *Functions/products:* The function (i.e., what type of analyses are conducted) would be determined through collaboration with agency executives who would help prioritize the type of analysis. This part would also describe any standardized products such as reports and bulletins and would lay out the dissemination strategy for each.
- *Data issues:* This part would describe the quality of current data in terms of timeliness, accuracy, and completeness and would include any limitations imposed by the current data.

It would also specify what improvements would be needed to conduct the analysis needed by the agency and identify any new data sources that the agency might pursue.

- *Technology:* This part would describe the hardware and software used for crime analysis, detail replacement and update plans, and list any additional needs.
- *Training and promotion*: In terms of training, this part would discuss the local and national training opportunities for the analysts and develop a schedule based on the current budget and personnel needs. In terms of promotion, this part would lay out a structure for advancement (e.g., from crime analysis technician to crime analyst to supervisor) and provide suggestions for realizing the structure if it was not already in place.
- *Policies and procedures:* Because it is important to have formal policies that are not only followed by crime analysts but also are adhered to by customers of crime analysis, this part of the plan would contain each policy and procedure (i.e., methodology). Examples of policies include a citizen request policy, an internal personnel request policy, and a media request policy. Examples of procedures include standardizing product format, methodology for data entry and cleaning, conducting a staffing analysis, and disseminating crime analysis products. Importantly, policies should be developed in collaboration with sworn personnel and approved by the chief or the command staff.
- *Goals:* This section would indicate the achievements the CAU will work toward and would summarize the suggestions for improvements made in each of the previous parts categorized by short-term (e.g., 1 year) and long-term (e.g., 3 to 5 years) goals. It would also include goals focused on the substantive work of the CAU that would include improving the quality and usefulness of crime analysis for crime reduction, prevention, and evaluation.

Obviously, the detailed information for each of the parts described above would be tailored to the agency for which the plan was developed. In addition, there are many different ways to prepare the written strategic plan, but by using this information as a guide, a strategic plan provides a CAU with a formal set of guidelines for the operation and improvement of the crime analysis capabilities, functions, and personnel.

# Crime Analysis Profiles

Analysts from around the country have provided information on their own backgrounds, skills, responsibilities, and thoughts about their careers as analysts. These are provided for students to get a sense of who crime analysts are and what they do. For definitions of tactical, strategic, and administrative crime analysis, refer to the glossary or see Chapter 4.

## Mark C. Bridge

## Frederick (Maryland) Police Department

## Crime Analyst

### *Education and Crime Analysis Experience:*

- Bachelor of science, political science/criminal justice
- Master of science, criminal justice
- 3 years as a crime analyst

*Previous Related Work Experience:*

- 2 years as a research analyst for the Michigan Supreme Court
- 1 year as a research assistant for a criminal justice professor at the University of Akron

*Breakdown of Responsibilities:*

80% Tactical crime analysis

10% Strategic crime analysis

10% Administrative crime analysis

*Mark's Thoughts on Being a Crime Analyst:*

"Crime analysis is a promising field that continues to grow and gain support within the law enforcement community. It allows for social science research applications to be utilized in the field and aid law enforcement in implementing crime reduction strategies. Data-driven and focused strategies continue to yield the most effective results in policing, and a crime analyst plays a key role in helping guide an agency's efforts in reducing crime and disorder issues in their community."

## Michelle Chitolie

## Port St. Lucie (Florida) Police Department

## Crime and Intelligence Analyst

*Education and Crime Analysis Experience:*

- Bachelor of arts, criminal justice
- Master of science, computer information systems
- 4 years as a crime analyst, Broward County (Florida) Sheriff Office
- 5.5 years as a crime analyst, Port St. Lucie (Florida) Police Department
- Law Enforcement Analyst certification, Florida Department of Law Enforcement
- Geographic Profiling Analyst certification, National Law Enforcement and Corrections Technology Center
- Crime Intelligence Analysis certification, Anacapa Sciences, Inc.

*Previous Related Work Experience:*

- 1 year as a geographic information systems address technician, City of Port St. Lucie, FL
- 6 years as a revenue specialist, Florida Department of Revenue

*Breakdown of Responsibilities:*

10% Investigative analysis (support criminal investigations)

75% Tactical crime analysis

10% Strategic crime analysis

5% Administrative crime analysis

### Michelle's Thoughts on Being a Crime Analyst:

"Being an analyst for over nine years has allowed me to see the importance of my profession as a whole and knowing that crime analysts support all aspects of law enforcement in helping to keep people safe. A well-trained crime analyst supports all functions of a police agency including criminal investigations, patrol, crime prevention, homeland security, and the police administration. An analyst can be called upon to identify a trend, link, or small bits of information from a massive amount of data that has been collected by different sources over several years, which I typically refer to as finding 'the needle in the haystack.' There is a lot of gratification in puzzling out the links or patterns of crime when it is not obvious to the naked eye. Believing that all law enforcement personnel have a common goal in keeping the community safe is the driving force and inspiration for me as crime analyst."

## Danielle DiGiosio

## Lakewood (Colorado) Police Department

## Crime Analyst I

### Education and Crime Analysis Experience:

- Bachelor of science in business administration, major in statistics
- 4 years as a crime analyst

### Previous Related Work Experience:

- 5 years as the program coordinator and a certified instructor for the National Institute of Justice, Crime Mapping and Analysis Program (CMAP)
- 1 year as president of the Colorado Crime Analysis Association (CCAA)

### Breakdown of Responsibilities:

80% Tactical crime analysis

10% Strategic and administrative crime analysis

10% Other administrative tasks

### Danielle's Thoughts on Being a Crime Analyst:

"Crime analysis found me. I honestly had no idea that there was such a concept, let alone a profession before I heard about crime analysis. I was introduced to crime analysis in 1998, and now that I am a working crime analyst, I appreciate and admire those who have been involved in this profession since before it was truly recognized as such. Analysts now have many more sophisticated tools, software programs, data and training opportunities available to them, and more recognition and support than many of those who paved the way for us. I find the work challenging, exciting, and rewarding. I believe the future of the crime analysis profession is very promising—as analysts and the profession itself continue to develop, evolve, and improve."

## Ericka Jackson

## Gainesville (Florida) Police Department

## Police Crime Analyst

### Education and Crime Analysis Experience:

- 9 years as a crime analyst
- Law Enforcement Analyst certification, Florida Department of Law Enforcement
- Certification in Internet Technology Support, Santa Fe College

### Previous Related Work Experience:

- 2 years as an analyst at DynCorp working with the U.S. Department of Justice, Drug Enforcement Administration, in asset forfeiture

### Breakdown of Responsibilities:

20% Investigative analysis (supporting criminal investigations)

50% Tactical crime analysis

10% Strategic crime analysis

20% Administrative crime analysis

### Ericka's Thoughts on Being a Crime Analyst:

"I absolutely love being a crime analyst. The art of analysis, the dynamics of the profession, and the experiences that I have been afforded as part of this work is amazing. This is the type of job that never gets boring and can lend to you such experiences that helps to prepare you for almost any other endeavor that life can bring. In it, we are constantly learning as it encompasses the use of some of the most modern computers and other types of technology. We are constantly using and improving our skills in critical thinking, observation, summarization, statistics, written communication, public speaking, networking with other professionals, etc. Crime analysis exposes us to things that can affect the quality of life of our communities, such as issues concerning poverty, juvenile delinquency, homelessness, addictions or affliction related to drugs, alcohol, sex, etc. What better way to learn safely than through the experiences of others. What a rewarding feeling when through our work, we are able to make a difference in so many lives, and contribute each day to effecting positive change in our own communities."

## Jim Mallard

## Arlington (Texas) Police Department

## Crime Analysis Supervisor

### Education and Crime Analysis Experience:

- Bachelor of arts, anthropology
- Master of arts, criminology and criminal justice
- 5 years as a crime analyst, Gainesville (Florida) Police Department

- 4 years as a crime analysis supervisor, Arlington (Texas) Police Department
- Law Enforcement Analyst certification, Florida Department of Law Enforcement

### Previous Related Work Experience:

- 1.5 years as an information technology intern, Gainesville (Florida) Police Department

### Breakdown of Responsibilities:

60% Tactical crime analysis

15% Strategic crime analysis

25% Administrative crime analysis

### Jim's Thoughts on Being a Crime Analyst:

"I believe crime analysis is one of the most exciting criminal justice careers one can choose. Analysts are close to the action, but far from the danger. Analysts understand the detail of crime patterns and problems in their jurisdictions and also have a 'big picture' perspective that few others share. Analysts piece together meaningful information from a patchwork of incident reports, field intelligence cards, interviews, and bulletins from other agencies. They use that knowledge to help suppress an active robbery series, or to develop solutions for a chronic crime problem. The most important aspect of crime analysis is the knowledge that what analysts do has a positive impact on the community they serve. It is easy to think of crime in terms of statistics or dots on a map, but the reality is each number or dot represents a crime victim. Effective crime analysis can directly help reduce victimization and improve the quality of life within a community. There are few professions where one can see the effect of their work in such an overt and satisfying manner."

## SUMMARY POINTS

This chapter defines crime analysis, crime mapping, and GIS; describes the history of the profession; and discusses crime analysis as a career track. The following are the key points addressed in this chapter:

- Scholars have defined crime analysis in many ways, but all of their definitions share these elements: Crime analysis utilizes systematic methods and information, supports the mission of the police agency, and provides information to a wide range of audiences.
- Crime analysis is the systematic study of crime and disorder problems as well as other police-related issues—including sociodemographic, spatial, and temporal factors—to assist the police in criminal apprehension, crime and disorder reduction, crime prevention, and evaluation.
- Crime analysis is not haphazard or anecdotal; rather, it involves the application of data collection procedures, analytic methods, and statistical techniques.
- Crime analysis entails more than the study of criminal incidents; it includes the examination of other information that is of concern to police, including disorder activity and police operational information.

- Temporal, spatial (crime mapping), and sociodemographic factors are key areas of focus in crime analysts' examinations of crime, disorder, and other police-related issues.
- The goals of crime analysis are to assist police in criminal apprehension, crime and disorder reduction, crime prevention, and evaluation.
- A geographic information system is a set of computer-based tools that allows the user to modify, visualize, query, and analyze geographic and tabular data.
- Crime mapping is the process of using a geographic information system to conduct spatial analysis of crime problems and other police-related issues.
- The three main functions of crime mapping are (a) to facilitate visual and statistical analyses of the spatial nature of crime and other types of events, (b) to enable analysts to link unlike data sources together based on common geographic variables, and (c) to provide maps that help to communicate analysis results.
- Citizens and police have conducted informal crime analysis throughout history, but formal crime analysis did not begin until the first formal police department was established in England in the early 19th century.
- Crime analysis did not begin to develop in the United States until the 20th century.
- In the early 1900s, August Vollmer, the most famous police reformer, was the first police practitioner to write about crime analysis and the mapping of police reports in the United States.
- O. W. Wilson, a student of Vollmer, developed recommendations for analysis and "crime mapping" units in police departments in the 1950s and 1960s.

- The 1968 Omnibus Crime Control and Safe Streets Act helped to fund police agencies' crime analysis endeavors throughout the 1970s.
- A number of publications—including manuals, media articles, and conference proceedings—provide evidence of the use of crime analysis in police agencies in the 1970s.
- Scholars' focus on the geographic analysis of crime and problem-oriented policing increased attention to crime analysis in the 1970s and 1980s.
- The first professional associations concerned with crime analysis were established in the 1980s, and an international association was formed in 1990.
- In the mid-1990s, the U.S. government's emphasis on community policing and problem solving led to the availability of federal grants that enabled police agencies to implement crime analysis. In addition, improvements in computer technology encouraged the use of crime mapping and crime analysis in everyday policing.
- The beginnings of crime mapping are different from the beginnings of crime analysis in that crime mapping began through the work of researchers (versus police) in the 1800s and the early 1900s.
- The first substantive spatial analysis of crime in the United States was conducted in the 1920s and 1930s by urban sociologists in Chicago. This research focused on linking crime and delinquency to factors such as social disorganization and poverty.
- In the 1970s and 1980s, improvements in technology and academic developments encouraged the use of crime mapping in police agencies. However, the use of crime mapping

did not increase dramatically until the 1990s.

- Federal funding in the form of grants and the establishment of crime mapping centers, improvements in technology and data collection, and the implementation of Compstat in police agencies across the United States fueled the rapid adoption of crime mapping in the mid- to late 1990s.
- Currently, most large police agencies use some form of crime mapping for one or more of the following purposes: to provide officers and investigators with information on crime incident locations, to make resource allocation (staffing) decisions, to evaluate interventions, to inform citizens about crime in their neighborhoods, and to identify repeat calls for service and crime locations.
- Ideally, a crime analyst should have police knowledge, research skills, and technological capabilities. One person is not likely to have all of these qualifications at the beginning of a career in crime analysis; rather, that individual may have a particular strength in one of these areas and need to cultivate the others over time.
- Although many police agencies employ only one or two crime analysts, the crime analysis discipline includes a range of potential careers, from assistant positions to specialty and supervisory positions.

- Students who are interested in pursuing careers in crime analysis may gain a "foot in the door" through internships or volunteer positions.
- Crime mapping positions in police departments are sometimes separate from crime analysis positions and in many cases have higher salaries because of the high level of training and expertise required. Crime mapping positions are much rarer than general crime analysis positions.
- In general, the strategic plan for a CAU should be developed in line with the agency's goals, should include specific short- and long-term goals for the CAU itself, should be realistic in terms of allocating resources, and should describe the future needs as well as discuss the substantive areas of work of the CAU.
- The first step in developing a strategic plan for a CAU is to understand the current state of the agency and its crime analysis capabilities. The second step is to determine the crime analysis "needs" of the agency. The third step is to write the strategic plan.
- The CAU strategic plan might include sections describing the following: (1) the structure of the unit, (2) its functions and products, (3) any data issues, (4) technology, (5) policing and procedures, and (6) short- and long-term goals.

## DISCUSSION EXERCISES*

### Exercise 1

Using the crime analyst profiles in this chapter, compare and contrast the analysts' (1) education and experience, (2) previous related work experience, (3) breakdown of analysis responsibilities, and (4) overall impressions of being a crime analyst.

## Exercise 2

Compare and contrast the history of crime analysis with the history of crime mapping. Why do you think their histories are different?

What roles do research, technology, and recent innovations in policing play?

*Additional exercises using data and other resources can be found on http://www.sagepub.com/bobasantos3e.

# Notes

1. CALEA is an independent accrediting authority whose purpose is "to improve delivery of law enforcement service by offering a body of standards, developed by law enforcement practitioners, covering a wide range of up-to-date law enforcement topics" (CALEA, 2004). Chapter 15 of CALEA's *Standards for Law Enforcement Agencies* specifies requirements for police agencies concerning crime analysis; this information has been included in every edition of that manual since it was first published in August 1983.

2. These conclusions are based on my own experience, as no study has been conducted to date concerning the evolution of crime analysis in the 1990s.

3. The information in this section has been adapted from Boba (2000) and from a presentation made by the author at the 2008 International Association of Crime Analysts annual conference entitled, "Developing a Strategic Plan for Your CAU."