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# Crime Mapping News



A Quarterly Newsletter for GIS, Crime Mapping, and Policing

Volume 3 Issue 2  
Spring 2001

## Inside this Issue

The topic of this issue of *Crime Mapping News* is Geographic Information Systems (GIS) and school safety, a timely and pertinent subject given the recent incidents of school violence occurring in the United States. The articles in this issue cover topics including 1) a discussion of the use of GIS as a tool for responding to critical incidents at schools, 2) a description of a free software package designed for use by school security and administrative staff that allows for mapping and analysis of incidents occurring in and around schools, 3) a brief description of an analytical tool currently under development that allows for spatial analysis of student pathways, hangouts, and the neighborhoods surrounding schools, 4) an article describing a safe schools mapping initiative developed by the San Diego, CA Police Department, and 5) an annotated bibliography of articles, reports, and books relating to the topic of school safety.

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## Mapping Our Schools Makes Sense: Creating a Tactical Plan for School Violence Using GIS

by **Bob Feliciano, Public Safety GIS/GPS Program Coordinator  
Rio Hondo Community College, Public Safety Training Center**

March 5, 2001. Santee California. A small upscale suburban community in San Diego County. Santana High. An active shooter was on campus, "but it could not happen here." Yet at 9:20 a.m., a 15-year-old freshman entered the campus with a 22 caliber 8-shot revolver, killed two of his fellow students, and wounded 13 others. This was the second worst shooting on our nation's campuses since Columbine High School, which remains the worst incident in the history of school violence.

For the most part, Geographic Information Systems (GIS) have been used as effective crime mapping tools by law enforcement agencies to perform analysis of criminal activities in their jurisdictions. We have seen repeated use of GIS to conduct tactical, statistical, and administrative analysis to assist law enforcement in managing resources more intelligently or to assist in controlling criminal activities.

There are approximately 90,000 schools in our nation with a population of 46.5 million students on campus at any one time; this does not include the faculty, administrators, or support staff serving our student population. This article will explore a different use of Geographic Information Systems than that of crime analysis or intelligence, but as technology that can be used to assist law enforcement and other public safety providers in the response to critical incidents at our schools.

GIS is a resource capable of storing and retrieving vast amounts of spatial data. The data are a combination of computerized addresses that can be geocoded (address matched) to a specific building, office, or space on a campus. Every piece of information that our schools store in their databases can be digitized and applied to a GIS system to provide public safety personnel with a visual depiction of what is facing them prior to their arrival at a critical incident.

*Note from the Editors: The opinions expressed in the articles of this newsletter are those of the authors and do not necessarily reflect the views of the Police Foundation or the COPS office. In addition, only light editing has been made to the articles in order to keep each author's voice and tone.*

Law enforcement, fire personnel, school personnel, and other public safety agencies can share this information. GIS or "smart maps" provide a police department's dispatchers with a spatial layout of a school, thereby allowing immediate retrieval of information about locations from their consoles. Dispatchers can display where a caller may be hiding from an active shooter on campus. Every conceivable bit of information can be brought in as a theme and provide a tactical response team with a visual understanding of the layout of a campus.

Columbine is an example of having insufficient information to conduct a tactical response to an active shooter on campus. From the time the shootings began, it took 46 minutes before a tactical unit entered the school.

When they did, major problems in communication between the officers became evident. The hindrance was due to deafening fire alarms and the activated sprinkler systems. The dilemma was that no one on scene had the location of the controls for such

devices. Another setback was that the police were having a difficult time obtaining floor plans of the school; therefore, the officers were hampered in their life saving activities.

GIS offers all members of public safety an opportunity to prepare for critical incidents with technology that is capable of integrating large amounts of information and providing a wealth of data to those who need to know with the click of a mouse. GIS or "smart maps" provide officers with the ability to display the layout of a campus building prior to making a tactical entry. How much information can we provide tactical units? With GIS technology, the answer is unlimited resources that can be accessed immediately as a crisis begins to unfold.

Columbine has taught us that we must be prepared for the worst. We must train and plan for something that "could never happen in our community." Many states now have laws that require schools to create a detailed plan and test the plan annually. Many relevant reports have been produced about how to create a "toolbox" of information in preparation for a crisis that will most likely never occur. Yet, have we done the best job possible? Is the toolbox the most effective model, and how accessible is it? Have we employed those tools necessary to assist our public safety personnel and school officials to cope with the crisis of an active campus shooter?

If we are not using the powerful mapping capabilities of GIS, I would suggest that the answer is no. GIS allows us to input the computer aided design (CAD) drawing of the school that will display all rooms, doors, windows, utilities, and alarm systems, to name just a few. Klebold and Harris, the shooters at Columbine, had

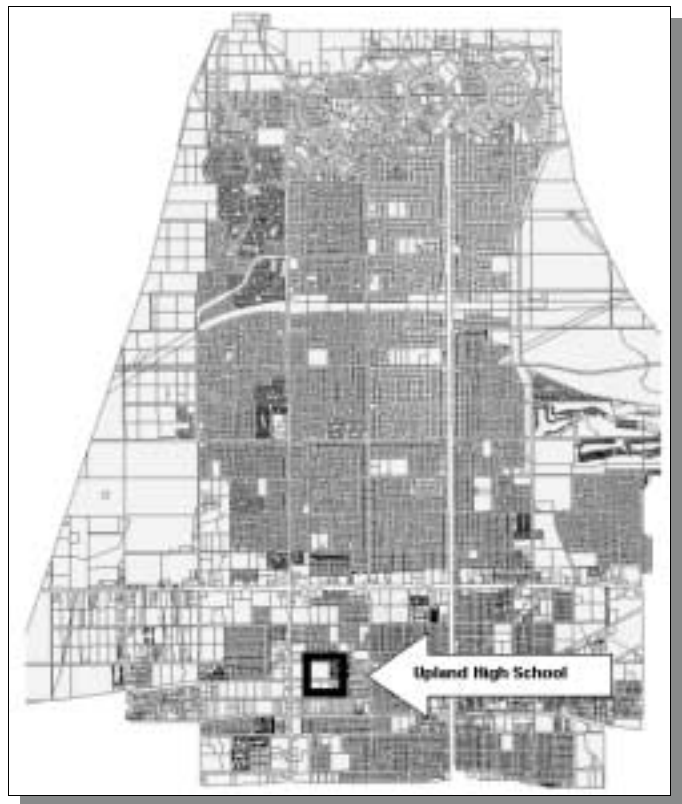
conducted an occupancy study, albeit informal, to determine when the most students would be in the cafeteria. Should we not include a similar study in the GIS plan? Pictures of each room, aerial photos of the campus exterior, and pictures of control panels can be added to the GIS plan. Every bit of information about the staff, students, emergency exits, evacuation locations, where to establish a command post, or a staging area for tactical units should be included in the plans. Locations of hazardous material should be included to avoid mistakes when using explosive devices for distraction. We can share digitized information with the dispatch center, the responding units, the command post, and the tactical team. When all critical members of the crisis team share spatial information at the same time, lives will be saved and safety

will be enhanced for all.

Before the advent of GIS technology, crisis plans and maps were kept in three ring binders, which were cumbersome, oftentimes incomplete, and quickly became outdated. GIS, however, can provide

CDs containing every facet of information necessary to handle a crisis to everyone concerned with school safety. Supervisors, dispatch centers, school resource personnel, and other public safety providers can access data related to an

**"Every piece of information that our schools store in their database can be digitized and applied to a GIS system to provide public safety personnel with a visual depiction of what is facing them prior to their arrival at a critical incident."**



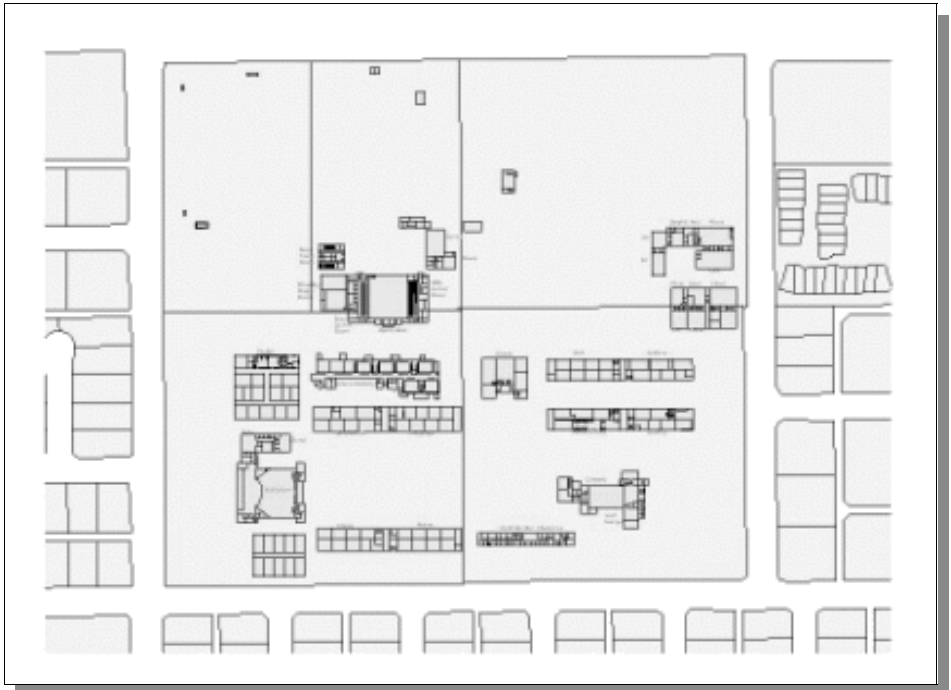
Map 1 - City of Upland

entire school district on CDs that can be stored and placed on a computer in moments.

How do we build a GIS plan that allows for the digitization of information related to school safety and response? Every school has complete information on students, faculty, and other pertinent data in some spreadsheet format that can easily be digitized into a GIS format. Most new schools have existing drawings of the school or existing floor plans that can be scanned into a digitized format and added to the GIS plan. By taking the drawings or plans and creating polygons, we can create themes with room information. With the use of a digital camera, faculty and staff can photograph each key point or room. The more expensive items are aerial photos of sufficient quality to allow tactical units to view campus complexity.

An example of some of the maps created by PSOMAS, a consulting engineering firm based in Los Angeles, working with the Upland High School District in Upland, California is used to illustrate the utility of such mapping.

Map 1 (on the preceding page) is a parcel map of the entire city with the area of Upland High School located with an arrow and black outline. Focusing on an area of this map is useful in a tactical response for identifying directions of major streets and setting up locations for evacuation sites, staging



**Map 2 - Upland High School Plot Plan with Building Plans**

areas, and other key locations in advance.

Map 2 zooms in on Upland High School and depicts a portion of the parcel map that shows building outlines and classroom locations. Map 3 is an aerial photo of the campus that allows for the identification of areas such as the football field, swimming pool, and other school sites.



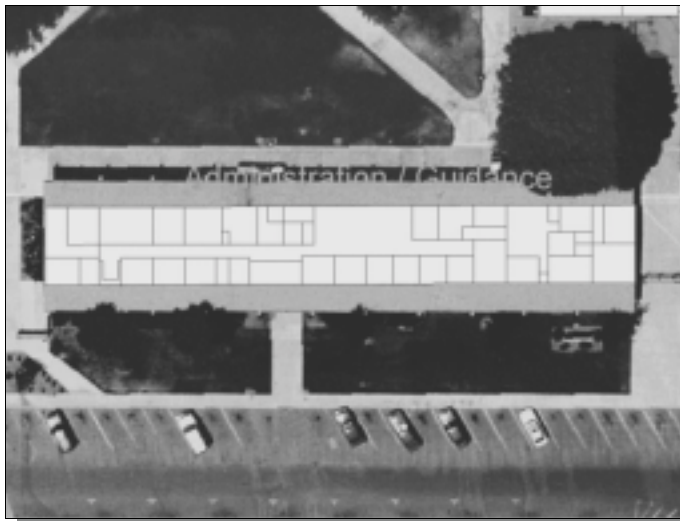
**Map 3 - Upland High School, Aerial Photography**

Map 4 (on the following page) zooms in on the administration building. An overlay of the classroom drawings on the aerial map supplements the visualization of the exterior of the school.

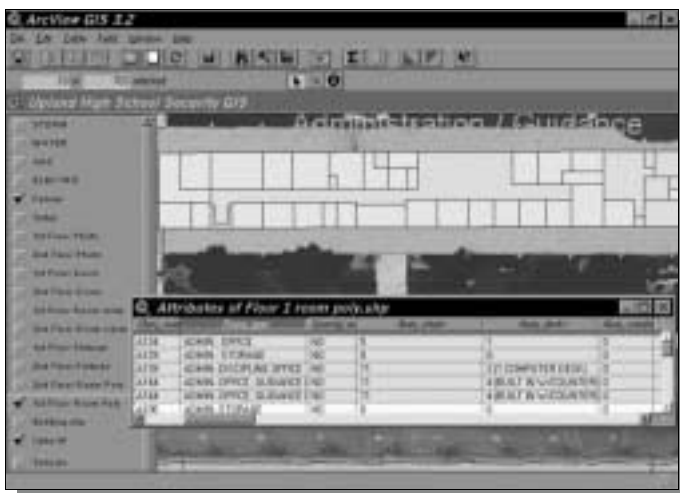
As we continue to build our layers, we add an attribute table to Map 5 (on the following page) that allows a tactical unit to highlight each room to locate suspects and victims and to assist in clearing a building. This final map includes the hot link capabilities of ArcView where over 800 photos of Upland High School were included in the CD.

It is not hard to see, from a tactical and safety perspective, that GIS provides public safety a tool that cannot be replicated by other conventional data management. We are familiar with the old proverb that a picture is worth a thousand words. If this is the case, then a good map could be worth a million words in a tactical situation.

In April of this year, Rio Hondo Regional Public Safety Training



Map 4 - Close up of Upland High Administration Building



Map 5 - Administration Building with Attribute Table

Center will be applying GIS technology at a three-day pilot training exercise approved by the California Commission on Peace Officers Standards and Training (POST). The intent of the training is to bring together the experts from a multi-discipline perspective to develop a training model that can be replicated elsewhere.

Without a doubt, digitizing information and using GIS are major projects for a school district. But with the help of a model and cooperation between the many disciplines affected by critical incidents in our communities, GIS can be a tool that will enhance the welfare of our students and our community in general.

The outcome of the April POST training pilot program will be presented in July at the Environmental Systems Research Institute (ESRI) Users Conference in San Diego, California (see page 14 for conference details).

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## School COP: Software for Analyzing and Mapping School Incidents

by Thomas F. Rich, Associate  
Abt Associates, Inc.

Recent shootings at our nation's schools have heightened the need to document and track incidents occurring in schools. These include not only serious crimes but also bullying and other non-criminal acts, which studies have shown actually cause more concern and fear among students than violent crime (Kenney and Watson, 1999). Unfortunately, few schools systematically collect comprehensive data on these incidents. School information systems generally capture these data if a student is suspended, expelled, or receives some other sanction, but incidents with unknown perpetrators and information about victims are typically not entered in these systems. Non-criminal acts in schools are handled through school administrative processes and are generally not reported to local law enforcement agencies. As a result, schools typically proceed without a complete and accurate depiction of the nature and extent of schools incidents when (1) prioritizing safety problems, (2) selecting from among the myriad strategies for improving school safety (e.g., limiting accessible entrances to the school, video cameras, metal detectors, conflict resolution classes), and (3) determining whether implemented strategies are improving school safety.

### School COP Overview

A new software package, called *School COP* (School Crime Operations Package), is available to improve school incident data collection and analysis. Developed with funding from the National Institute of Justice (NIJ), *School COP* was designed for use by school security staff, school administrative staff, and other persons responsible for ensuring the safety of students and staff at elementary and secondary schools. *School COP* was also designed so that it could be widely distributed—it is usable without formal training and requires no other software to run.

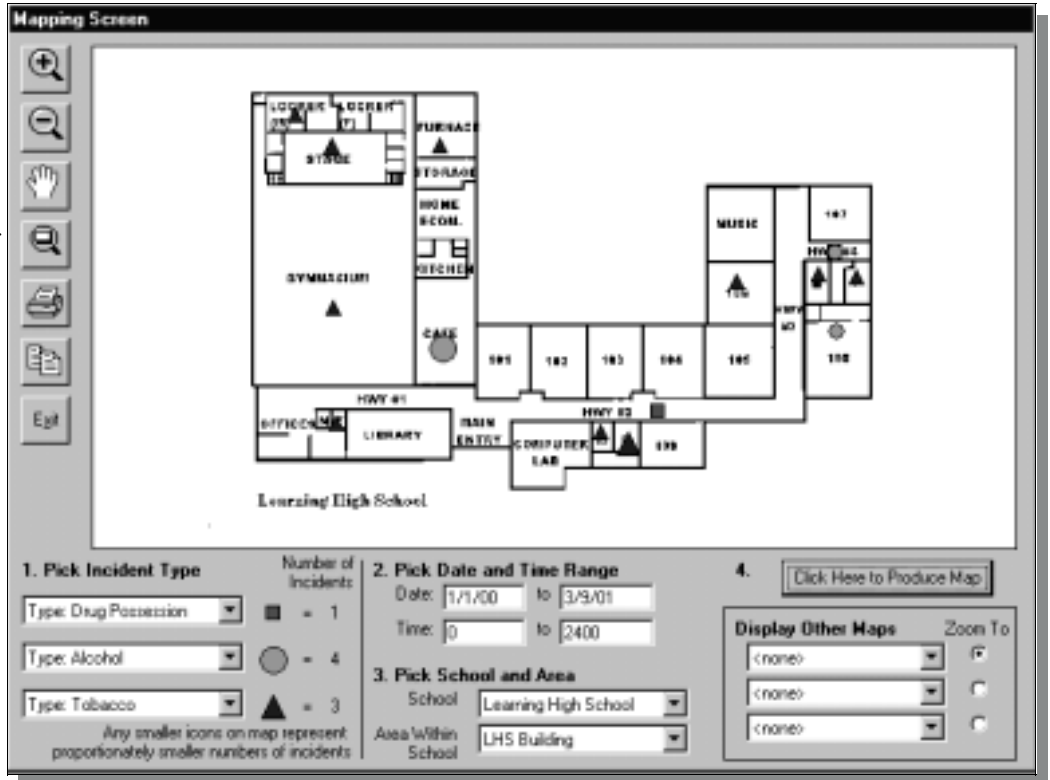
As of February 2001, approximately 300 school police officers, school administrators, and other school personnel have requested and received a copy of *School COP*. About 80 percent received the package at two "COPS In Schools" training conferences held in January and February 2001. With funding from the Office of Community Oriented Policing Services (COPS Office), *School COP* is included in the Problem Solving sessions at this conference series. To date, approximately 1,110 jurisdictions have received COPS In Schools grant funds from the COPS Office, and all are required to send a school administrator and all police officers assigned to schools under the grant program to one of the conferences. Eighteen more conferences are scheduled over the period from March 2001 to September 2002.

**Features**

*School COP* is essentially a scaled-down police records management system that has been tailored for schools. The *School COP* database follows the model recommended by the U.S. Department of Education's National Center for Education Statistics Crime, Violence, and Discipline Reporting Task Force; the database includes data related to the incident (e.g., date, time, type, location) and to persons involved in the incident (e.g., name, grade, action taken). Schools can pre-enter choices for many data elements, which speeds data entry and improves data quality, and define special categories of incidents or persons they especially want to track, such as hate crimes or gang-related incidents.

*School COP* balances ease-of-use and functionality by offering a variety of techniques for analyzing school incidents, including tabular reports, bar graphs, pie charts, and maps. Users will generally conduct analyses in one of three ways:

- The easiest method is to run one of the many 'canned' reports and graphs—for example, a bar graph showing



**Map 1: A Multi-Layer Map Showing Incidents Occurring Inside a School Building**

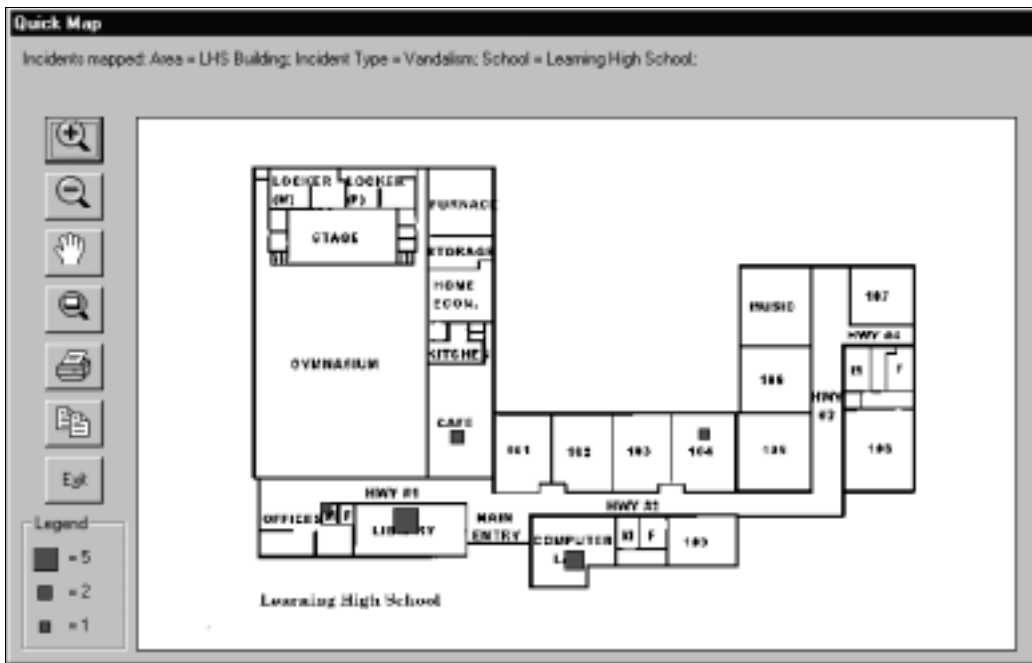
the number of incidents by location over a particular date range.

- A single 'build-a-map' screen enables users to create a multi-layer graduated symbol map—for example, a map showing the building floor plan could include, for a particular date range, separate layers for drug, alcohol, and tobacco offenses (see Map 1).

• The most useful analysis method is first to search for a subset of incidents. Users can search on any single field (e.g., all incidents involving a weapon) or combination of fields (e.g., all incidents occurring inside the building in which girls were victimized). Incidents meeting the search criteria can be browsed, printed in tabular form, graphed, or mapped (see Map 2).

**School COP Approach To Mapping**

Crime mapping and analysis have contributed to problem solving and crime prevention efforts in law enforcement agencies for a



**Map 2: A Map Showing Incidents Inside a School Building That Meet Search Criteria**

number of years. More recently, it has been utilized in other settings, including correction agencies, community crime prevention organizations, and multi-agency crime prevention efforts—see, for example, Groff, Fleury, and Stoe (2001), Rich (2001), or visit NIJ's Crime Mapping Research Center's Web site ([www.ojp.usdoj.gov/cmrc/](http://www.ojp.usdoj.gov/cmrc/)). In addition, an NIJ-funded project demonstrated the feasibility of implementing a "high-definition" Geographic Information System (GIS) on a college campus (Rengert, Mattson, Lowell, and Henderson, 1999). Working with the campus police department, Temple University researchers constructed digitized maps of all campus buildings, including floor plans of multi-story buildings, and linked the maps to the campus police records management system.

Compared to mapping at the city-wide or neighborhood level, mapping incidents inside school buildings and on school grounds presents some interesting challenges. Whereas address-level geocoding works well for most law enforcement applications, it is not clear what the fundamental unit of analysis is for school applications. For mapping purposes, some school "locations" are well-defined.

A classroom can be counted as a single location, for example, since knowing in which part of a classroom an incident occurred is not relevant for problem solving. But what about incidents occurring in major hallways or on the school grounds? In these cases, it is important to be more specific regarding the location. Also, many school buildings have more than one story, which makes it harder to produce the equivalent of a city-wide crime map, much less conduct radius searches or more sophisticated geographic analyses.

An added challenge in developing *School COP* was that, because the package was to be widely distributed, users could not be assumed to have access to a commercial GIS package or GIS-produced maps, much less have any experience working with a GIS package.

The approach to mapping in *School COP* is as follows:

- *School COP* will read and display scanned images or shapefiles (i.e., the standard map file format used in products from ESRI, a leading supplier of GIS software and data). In all likelihood, the majority of users will not have access to a commercial GIS package and thus will work with scanned images of building floor plans and school grounds. While this limits the types of incident maps that can be produced and the types of analyses that can be performed, it also makes mapping more broadly accessible, which is a key project goal.
- Once the maps are available, users create a geographic description of their school(s) in *School COP*. Each school is divided into one or more areas, with a specific map associated with each area. For example, a modest size two-story school might have four areas—one for

each floor, one for the school grounds, and one for the bus routes. Next, users can define specific point locations within each area by clicking on the map in *School COP*. MapObjects LT, a software package from ESRI that allows royalty-free distribution of mapping capabilities, is used in *School COP* to define point locations and produce incident maps.

- When new incidents are entered, the incident location is selected from the list of pre-entered locations. Thus, once users have defined their areas and locations, geocoding, the process by which geographic coordinates are assigned to incident locations, occurs automatically.

Efforts are currently underway to assess how school administrators, law enforcement officers, and school security staff are using *School COP*. Issues of particular interest include how many persons who requested the package are

actually using it, how many users are taking advantage of the mapping features, what types of maps are being produced, and whether users are sharing *School COP* reports and maps with other stakeholders. The assessment will also address

whether using *School COP* led to any changes (e.g., new safety procedures, staffing changes) or whether the package assisted in problem-solving efforts that helped improve school safety.

#### References

Groff, E., Fleury, J., and Stoe, D. (2001). *Strategic Approaches To Community Safety Initiative (SACSI): Enhancing the Analytic Capacity of a Local Problem-Solving Effort*. Washington, DC: U.S. Department of Justice, National Institute of Justice.

Kenney, D. and Watson, T.S. (1998). *Crime in the Schools: Reducing Fear and Disorder with Student Problem Solving*. Washington, DC: Police Executive Research Forum.

Rengert, G., Mattson, M., Lowell, R., and Henderson, K. (1999). *Using a High Definition GIS To Enhance Community Policing on College Campuses*. Philadelphia: Temple University.

Rich, T. (2001). "Crime Mapping and Analysis by Community Organizations in Hartford, Connecticut." *Research in Brief*. Washington DC: National Institute of Justice. NCJ 185333. March 2001.

*Thomas F. Rich, an Associate at Abt Associates Inc., a Cambridge (MA)-based research and consulting firm, is the School COP project director. He can be contacted at tom\_rich@abtassoc.com. For more information on School COP, visit www.SchoolCOPSoftware.com.*

"Compared to mapping at the city-wide or neighborhood level, mapping incidents inside school buildings and on school grounds presents some interesting challenges."



**The Winston-Salem/Police Foundation  
Safe Schools Partnership**  
by Mary Velasco, Research Associate  
Crime Mapping Laboratory, Police Foundation



The Police Foundation, in cooperation with the Winston-Salem, North Carolina Police Department, the Forsyth County Sheriff's Office, and the Winston-Salem/Forsyth County School System, is currently in the process of developing a cutting edge geographic information system for tracking crime and calls for service at schools and in surrounding neighborhoods. Funding for the project entitled, "Winston-Salem/Police Foundation Safe School Partnership," was obtained through the National Institute of Justice's Safe Schools Technology Solicitation in 1999. The system will be developed as an extension to the Environmental Systems Research Institute's (ESRI) ArcView 3.2 and ArcView 8.1 GIS applications and will use Avenue and Visual Basic programming language. ArcBridge Consulting and Training, Inc. of Herndon, VA will assist the Police Foundation with application development.

The application will guide users through a set of easy to use windows and pull down menus to perform quick analyses, create maps, and produce reports. Although the system will be designed for the Winston-Salem school system, the application will be compatible with commonly used PC systems and with available mapping software programs. Thus, upon completion of this project, the GIS application will be available at no cost for use by police and education personnel throughout the country.

The Winston-Salem safe schools geographic information system will rely on data provided by the police department, sheriff's office, and the school system. The mapping application is unique in that qualitative geographic data sources such as student pathways to and from school and student hangouts will be incorporated into the program in addition to standard geographic information such as centerline streets and census data. We believe that the addition of these qualitative data sources will allow school security and law enforcement personnel to analyze and map incidents that occur once students leave school grounds. According to a recent report by the Office of Juvenile Justice and Delinquency Prevention (OJJDP), both juvenile violence and victimization peak in the afterschool hours (between 3 p.m. and 4 p.m.) on school days (U.S. Department of Justice, 1999); therefore, analysis of pathways and afterschool hangouts is an essential tool for understanding and responding to school-related crime. In addition to the software application, an analysis manual detailing the methodology for collecting qualitative pathways data as well as mapping examples will be available.

Winston-Salem, North Carolina is one of several communities throughout the country that is involved in the Department of Justice sponsored Strategic Approaches to Community Safety Initiative (SACSI). This initiative seeks to assist communities in their efforts to combat local crime

problems by establishing partnerships between federal, state, and local agencies. The Winston-Salem/Police Foundation Safe Schools Partnership has built upon this existing partnership to enhance the partners' goal of safer schools by advancing their technical capacity to capture information concerning incidents of school related crime and calls for service. We hope that the development of the safe schools mapping application will provide an incentive for law enforcement and school officials throughout the country to develop partnerships with the goal of improving information sharing and responses to school related crime.

We believe that the safe schools application is complementary to *School COP*, the mapping application developed by Abt Associates, Inc. for analyzing incidents occurring within schools and on school grounds (see page 4 of this newsletter). The safe schools application is scheduled for release by January 2002. With minimal training and expertise, the application will be readily available for use by school and law enforcement personnel in their efforts to analyze and respond to school related crime.

**References:**

Office of Juvenile Justice and Delinquency Prevention. (1999). *Juvenile Justice Bulletin: Violence After School*. U.S. Department of Justice, Office of Justice Programs: Washington, DC.

## NEXT ISSUE

The topic of the next issue of the *Crime Mapping News* will be customized Intranet/Internet mapping applications. We look forward to your participation in submitting articles for the upcoming issue.

If you are interested in contributing to the next issue or any future issue, please contact the Crime Mapping Laboratory at:

[pfmaplab@policefoundation.org](mailto:pfmaplab@policefoundation.org)  
or (202) 833-1460



## Mapping in Action: San Diego: Mapping Schools and Beyond

by Deena Bowman-Jamieson and Kurt Smith  
San Diego, CA Police Department

The San Diego, California Police Department (SDPD) relies on Geographic Information Systems (GIS) technology to evaluate activity, develop plans, and operate within its various roles in the community. Using GIS to plan for, and respond to, school-related emergencies and neighborhood issues is a current effort involving the Crime Analysis Unit, Critical Incident Management Unit (CIMU), and Operational Support Administration.

CIMU is tasked with ensuring effective and efficient management of critical incidents in accordance with the California Standardized Emergency Management System (SEMS). SDPD recognized the usefulness of GIS to fulfill the SEMS mandate. It is imperative that CIMU personnel quickly visualize information to facilitate the coordination of any critical incidents, including school safety issues.

CIMU is coordinating an initiative to address the development and assessment of contingency plans and tactical response involving any of the 360+ public and private schools located within the City of San Diego. This initiative, which is supported by agencies including the City of San Diego Fire and Life Safety, San Diego Unified School District Schools Police, and the Border Research and Technology Center, requires the collection of data from disparate sources and systems. While CIMU collects site survey information and Computer Aided Design (CAD) layouts of school facilities, the SDPD Crime Analysis Unit identifies and extracts appropriate GIS layers (e.g., roads, aerial imagery, schools, etc.) from the San Diego Geographic Information Source (SanGIS) regional spatial data warehouse.

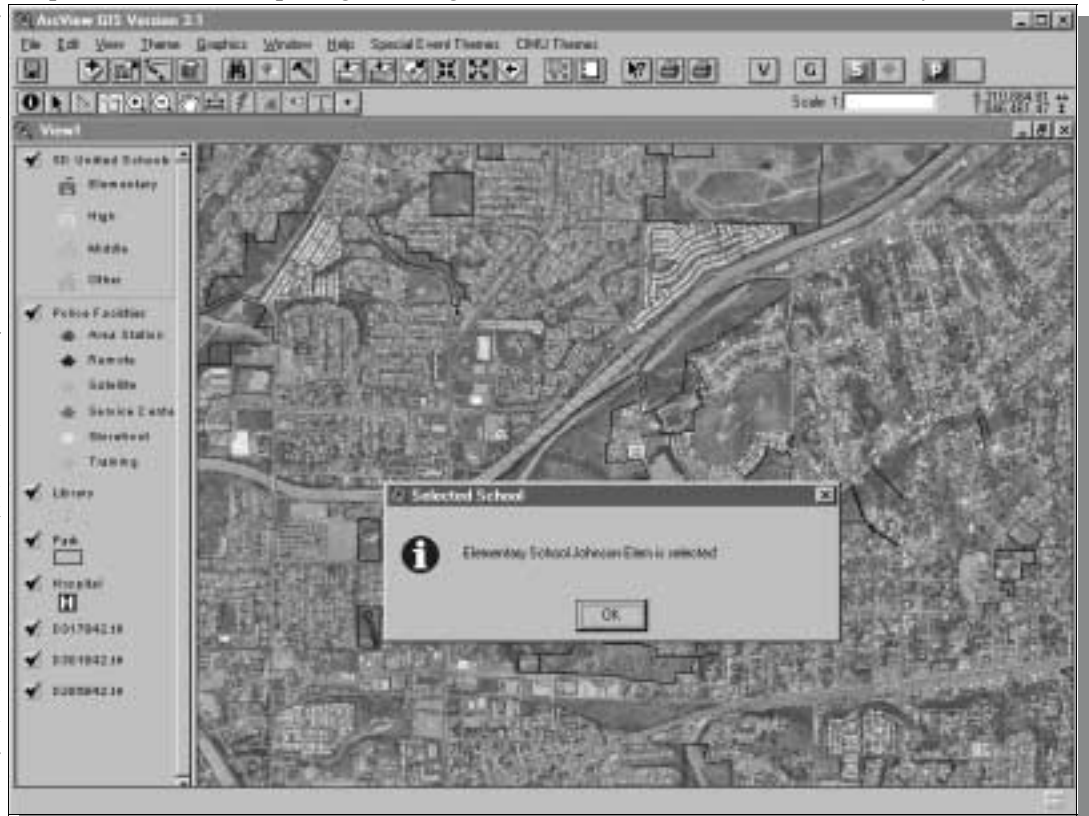
Like most departments, SDPD is faced with how to disseminate these data to officers, and in particular, critical incident coordinators, for use in the field. For the safe schools initiative, the first step was to deliver GIS functionality to CIMU. The Crime Analysis Unit developed an ArcView project enabling the display of local schools and their surrounding areas.

ArcView provides a standard CAD Reader extension that supports viewing and querying CAD drawings within a View Document. The Crime Analysis Unit developed a custom Avenue script making CIMU's access of the school CAD drawings similar to the ArcView hot link function.

Site survey data are an important source of information for the first responder as well as for a critical incident commander. These data include general information, such as primary points of contact, functional description of the site, patrol area, and so on. Equally important is the common system information, which refers to the location of water, electricity, natural gas, and telephone services. An Access database with the general site survey data is being expanded to include common system and contingency plan information.

The next step in the safe schools initiative is to provide first responders with site survey data and maps; however, an appropriate delivery mechanism is a major consideration. The delivery of web-enabled GIS applications to mobile devices is highly desirable throughout the City of San Diego, but there are several hurdles including bandwidth and consistent connectivity throughout the region. In the interim, the Crime Analysis Unit and CIMU are working with

*Map 1: Aerial Photo Depicting San Diego Schools, Police Facilities, and Other City Services*



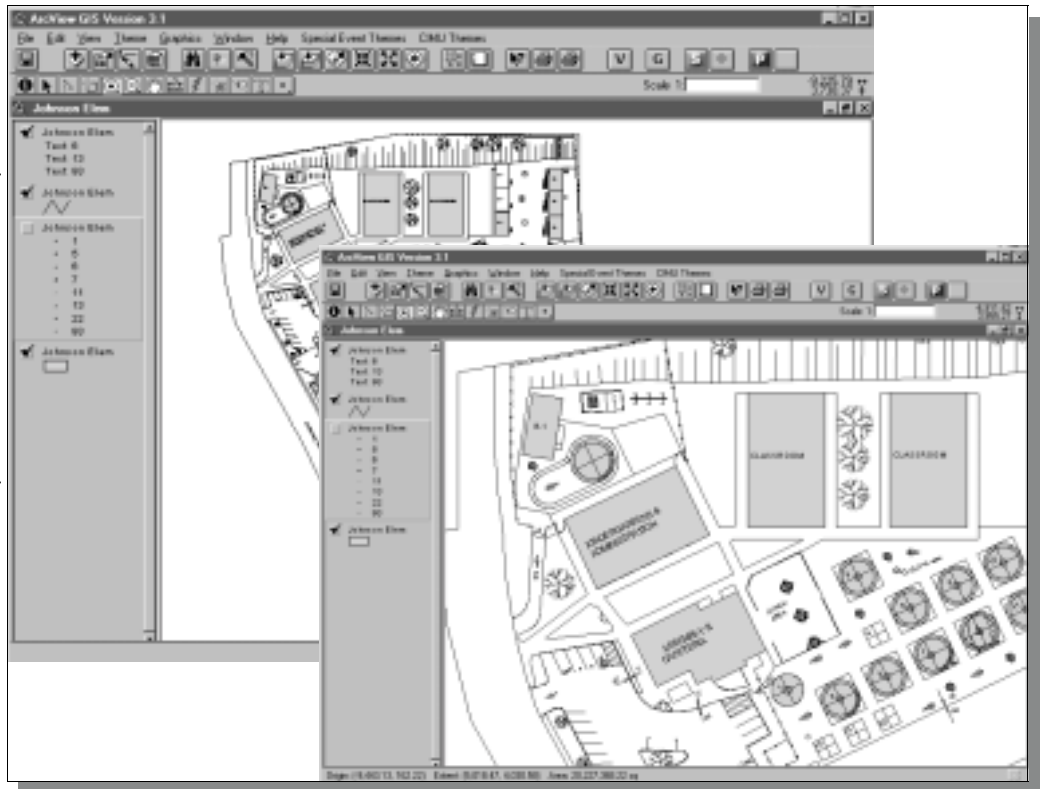
the SDPD Data Systems Division to deliver data and maps to every Mobile Computer Terminal (MCTs) through an HTML Reference Guide.

Another component of school safety is enforcement action in the surrounding neighborhoods, especially for narcotics violations. Narcotics detectives have long relied on GIS-generated maps and overlays to evaluate arrests for "school zone" enhancement criteria. Typically, detectives used an overlay for their area of operations with a shaded circle extending 1000 feet from the centroid of school properties. GIS now enables investigators to move beyond printed maps.

The Operational Support Administration maintains CityMap, an ArcExplorer-based evaluation project that includes map layers for school properties and their 1000 foot zones. These zones are buffers from school property lines and include more of the surrounding neighborhoods than did the centroid overlay. Officers and detectives, through their LAN accounts, can now evaluate current activity in relation to schools in order to quickly identify which schools can be contacted to establish whether a function was occurring when a qualifying arrest was made. Additionally, detectives who must prioritize investigations can "see" which locations exist within a school zone.

With California's power crisis now affecting San Diego, SDPD's use of GIS continues to reflect the Department's priority on school safety. CityMap allows decision makers to quickly see signal-controlled intersections in areas affected by "rolling blackouts" as they occur. Elementary schools are highlighted and all schools are surrounded by a half-mile buffer to aid the deployment of resources should the outages endanger otherwise safe routes between schools and the surrounding neighborhoods. Clearly, GIS improves the ability of patrol and investigative personnel to incorporate schools into the community's police-related goals.

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**Map 2: Floor Plans and School Ground Information for a Selected Elementary School**

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*In light of the theme of this issue of the Crime Mapping News, we have prepared a brief annotated bibliography of 22 articles, reports, and books related to school safety issues. This list is not exhaustive; however, we hope that it will serve as a useful resource for law enforcement, education, and research professionals in their efforts to understand and respond to incidents of school-related violence.*

**Astor, R.A., Meyer, H.A., and Behre, W. "Unowned Places and Times: Maps and Interviews About Violence in High Schools." *American Educational Research Journal*, Vol. 36 (1), Spring 1999.**

This study examines the issue of "ownership" of school areas. Students in five high schools indicated that the most dangerous areas on school grounds were places unsupervised by adults (i.e. not "owned" by the school). Concentration on these areas was the starting point for solving the problem of school violence. This approach differs from other research that has only framed school violence interventions in terms of social, psychological, or technological factors. The authors assert that strategies to reduce violence would be more effective if they target certain areas at specific times rather than prescribe general remedies.

**Burquest, R., Farrell, G. and Pease, K. "Lessons from Schools." *Policing*, Vol. 8, Summer 1992.**

The authors studied repeat vandalism and burglaries of schools in Merseyside, England. It is clear that some schools are more prone to crime than others. The report suggests that preventative actions would be quite effective in cutting the rate of repeat victimization, though they would have to be taken quickly. Moreover, the study posits that certain crimes are more likely to be repeated than others, which will have implications on the allocation of resources to address the problem.

**Ferreira, B. "An Assessment of Relationships Among Schooling, School Performance, and Delinquency." *International Journal of Comparative and Applied Criminal Justice*, Vol. 22 (2), Fall 1998.**

This study explores the relationship between delinquency and schooling. It examines previous research to determine if poor academic performance actually facilitates delinquency. Though the research is not conclusive, there appears to be some relationship between truancy, school environment, self-esteem, and delinquency. Preventative programs should target young children and integrate them into constructive scholastic programs that minimize the negative influence of other delinquents.

**"Guide for Preventing and Responding to School Violence." *The Police Chief*, December 1999.**

The International Association of Chiefs of Police (IACP) has developed guidelines for preventing and responding to school violence. The document contains the input of more than 500 experts and 15 focus groups and is available at [www.theiacp.org](http://www.theiacp.org). The guide focuses on issues such as preventing violence, assessing threats, responding during and after a crisis, and legislative issues.

**"Guns Increasingly Prevalent Among Youth In Schools." *Youth Crime Alert*, December 1999.**

According to a New York Times/CBS News poll, students feel safer at school despite reports of extensive weapons carrying in schools. This article reports that guns will remain accessible as long as passage of a gun control bill remains doubtful, and bipartisan support for the bill stalls at the issue of gun shows. In Maryland, Attorney General Joseph Curran has led the charge toward his goal of a total ban on handguns with a variety of legislative initiatives. These measures have come in response to some of the more high-profile shootings of the last two years.

**"Incidents of Crime and Violence in Public Schools." (1998). In *Violence and Discipline Problems in U.S. Public Schools: 1996-1997*. Washington, DC: National Center for Education Statistics.**

For this study, public school principals received a list of crimes and were asked to record the number of certain types of incidents reported to police during the 1996-1997 school year. Only crimes occurring on school grounds, buses, or at school functions were reported, and only those incidents reported to police were included to minimize subjective judgment. For 1996-1997, the nation's public schools reported 4,000 sexual assaults; 11,000 attacks with weapons; 7,000 robberies; 190,000 attacks without weapons; 115,000 thefts; and 98,000 occurrences of vandalism.

**Kalk, D. "School Terrorism: A Tactical Overview." *Police*, April 2000.**

Recent high profile school attacks have prompted discussion on the efficacy of SWAT tactical responses. All conclude that there is not one particular method for responding to school terrorism. Complicating the problem is the variation in size of the student body as well as the number of exits at each school. Considering these factors, a SWAT team must formulate a variety of tactical responses, develop contingency plans, and realize that unique situations require unique methods.

**Kenney, D.J. and Watson, T.S. (1998). *Crime in the Schools: Reducing Fear and Disorder with Student Problem Solving.* Washington, DC: Police Executive Research Forum.**

This book begins with a discussion of recent trends in school-related crime and a description of various studies and methods that have been employed to gauge the prevalence of school violence. Throughout the years, various police responses, including school-police liaisons, anti-drug and truancy programs, and a full-time police presence, have been implemented and met with varying degrees of success. An evaluation of one such initiative, the Charlotte School Safety Program in North Carolina, a problem-solving effort designed to target specific problems using the resources of the school, students, faculty, and police, is described in detail.

**Lindstrom, P. "Patterns of School Crime: A Replication and Empirical Extension." *British Journal of Criminology*, Vol. 37 (1), Winter 1997.**

This study reports that not only are the majority of schools likely to experience multiple criminal acts in a short period of time, but those schools that are victimized will likely suffer other crimes as well. In general, this study noted that property and violent crimes go hand in hand; therefore, enforcement efforts in one area could impact the other. There is also a correlation between neighborhood status and crime levels. Yet there does not seem to be a relationship between school/law enforcement coordination and crime levels. The study implies that prevention plans should consider the number of incidents in a certain period and the location of the school.

**National Crime Prevention Council. "Placing Probation Officers in Schools." *Catalyst*, Vol. 19 (9), December 1999/January 2000.**

Pennsylvania's juvenile probation officers have initiated an innovative program entitled School-Based Probation (SBP) whereby probationers are monitored at school rather than through meetings at probation offices. Such an approach affords the probation officers an opportunity to see the children as they really are (i.e. with their peers). Since its inception in Lehigh County in 1990, SBP has expanded to more than 300 schools in 50 counties. Probation and school officials overwhelmingly support the measure. Evidence does show that SBP-supervised juveniles avoid trouble for longer periods of time than their peers outside the program.

**National Criminal Justice Association. "School Safety Programming to Air in Nation's School Districts." *Justice Bulletin*, Vol. 20 (1), January 2000.**

EchoStar Communications and the Learning First Alliance have implemented programming to develop school safety strategies. The programs seek to encourage communities to actively participate in ensuring the safety of their schools, foster community collaboration, and expand dialogue on school safety. Ten programs are scheduled to air through March 2001.

**"National Network of Violence Prevention Practitioners Sample Fact Sheet." Vol. 1 (3), May 1996.**

According to this report, students perceive more violence than teachers. Twelve percent of students have at some time brought a weapon to class and though there is recent concern over firearms, studies show students are more likely to bring a knife or razor to school. In response to school violence, a variety of intervention programs have been developed and 60% of school districts in 1993 reported some type of mediation training. Yet, school violence data are incomplete and inconsistent, making it difficult to understand the extent of the problem.

**"NEA Action Sheet: Safe Schools." (1998). Washington, DC: National Education Association.**

Contrary to media reports, America's schools are safe and operating effectively. However, violence does exist in schools, and the National Education Association (NEA) produces information to help strengthen the capacity of communities to address school safety concerns. Researchers link school violence to gang activity, drugs, and hate-motivated behavior. The NEA recommends that schools establish a safety committee to develop action plans, manage crises, and monitor data from surrounding communities. A comprehensive reference list of additional school safety literature is included with this article.

**Office of Juvenile Justice and Delinquency Prevention. (1999). "Juvenile Justice Bulletin: Violence After School." Washington, DC: U.S. Department of Justice, Office of Justice Programs.**

Research indicates that juveniles are most likely to engage in or become victims of crime in the afterschool hours, between 3 p.m. and 4 p.m. Juvenile crime rates, in contrast to those of adults, peak during these hours on school days. On weekends and non-school days, however, the rates more closely resemble those of adults. Other surveys have shown that the frequency of crime occurring during these hours may actually be greater than the number reported to law enforcement. This is due to the tendency of juveniles to report matters to school officials, who may not forward the information to police.

**“Reducing Violence Among Kids.” *Law Enforcement Technology*, Vol. 26 (12), December 1999.**

Based on national surveys of youth in 1991, 1993, 1995, 1997, the Centers for Disease Control and Prevention reported that dangerous behavior among high school students has dropped significantly. There has been a decrease in those who brought weapons to school or participated in a fight. In addition, the study reports that teens have resolved conflicts and managed anger better than in the past.

**“School Boards Must Institute Policies to Control Violence.” *Youth Crime Alert*, December 1999.**

Since students’ access to and use of weapons have increased in recent years, school systems must examine methods for reducing risk. Suggestions include establishing clear guidelines regarding dress and discipline, violence prevention education and training, and coordination with law enforcement.

**“School Shootings Taken Out of Context Don’t Justify Harsher Laws, Experts Say.” *Youth Crime Alert*, December 1999.**

Studies show that school-related deaths have actually declined in recent years. Though homicides are in decline and the youth of 1976 were more likely to be threatened with a weapon at school than today’s youth, the general public perception is that schools have become more dangerous. The resulting “moral panic” has led to more restrictive laws that some organizations deem unnecessary.

**“Schools Can Help Stem Violence by Taking Charge of Public Areas.” (1999). Ann Arbor, MI: University of Michigan News & Information Services.**

Researchers at the University of Michigan and the College of New Jersey have explored student and teacher roles in preventing school violence in certain “hot spot” locations. The study found that all acts of violence in five Midwestern high schools occurred in locations where adults were not present (e.g., gymnasiums, parking lots). These places are regarded by teachers as outside their areas of “ownership.” School guidelines have not adequately defined the zones of teachers’ responsibility, further complicating matters. This misunderstanding of ownership prevails not only among teachers, but students as well (particularly elementary vs. middle school students). Preventative strategies should involve identifying and reclaiming hot spots as opposed to targeting certain groups.

**Shapiro, J., Dorman, R., and Walker, C. “Youth Attitudes Toward Guns and Violence: Relations With Sex, Age, Ethnic Group, and Firearm Exposure.” *Journal of Clinical Psychology*, Vol. 27 (1), 1998.**

This study investigates violence-related attitudes among youth in relation to demographic variables and firearm exposure. Prompted by rising rates of violence among youth, the report notes that the higher rates of violence among African Americans are largely attributed to higher poverty rates and greater exposure to firearms.

**Simon, T., Dent, C., and Sussman S. “Vulnerability to Victimization, Concurrent Problem Behaviors, and Peer Influence as Predictors of In-School Weapon Carrying Among High School Students.” *Violence and Victims*, Vol. 12 (3), 1997.**

This study tests the independent associations between adolescent weapon carrying and general delinquency, self-protection, and social influence. The impetus of this study is the variety of reports indicating that weapons carrying has increased and is regarded as an indicator of other problem behaviors. Surveys were given to students to determine the level of participation in the three aforementioned problem behaviors. Twenty five percent of students reported carrying a gun to school, with males more likely than females. A positive association was found between age and risk of carrying a gun. Self-defense was most commonly cited as a reason for carrying a weapon.

**U.S. Departments of Education and Justice. (1999). “1999 Annual Report on School Safety.” Washington, DC: U.S. Department of Education.**

This report presents federal and international data concerning the nature and scope of school violence. For example, the report indicates that students in school today are less likely to be victimized than in previous years; however, certain groups of students are at greater risk than others for the presence of weapons and physical fights at school. In addition to national and international statistics, this report provides case studies of successful school-community partnerships and contact information for agencies, organizations, and Web sites dedicated to school safety.

**“Youth Out of the Education Mainstream: A North Carolina Profile.” *Juvenile Justice Bulletin*, September 1999.**

The Youth Out of the Education Mainstream (YOEM) is an initiative by the U.S. Department of Justice and the Department of Education that focuses on at-risk youth. Truants, dropouts, suspensees, students afraid to go to school, and those who have been expelled are targeted for re-integration into the school system. YOEM seeks to accomplish this goal by funding programs at high schools and middle schools throughout North Carolina where alternative education initiatives are already in place. The first years of the program have shown that comprehensive, student-centered efforts that combine critical elements of communities and their schools offer at-risk students the greatest chance to become educated and successful.

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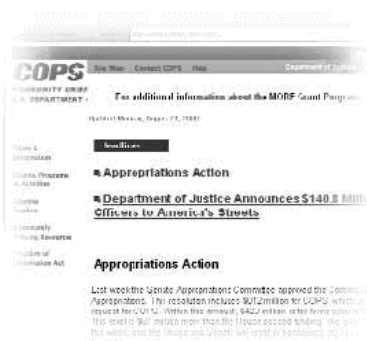
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Fourth Annual Massachusetts Association of Crime  
Analysts (MACA) Training Conference  
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Information available at:  
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Carolinas Institute for Community Policing (CICP):  
Crime Mapping  
May 17-18, 2001  
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[ddigiosi@du.edu](mailto:ddigiosi@du.edu) or (800) 416-8086

International Association of Law Enforcement  
Intelligence Analysts (IALEIA) Spring Conference  
June 10-15, 2001  
Chicago, IL  
Information available at:  
[www.ialeia.org](http://www.ialeia.org)

### General Web Resources for Training Seminars and Conferences

<http://www.urisa.org/meetings.htm>  
<http://www.ifp.uni-stuttgart.de/ifp/gis/conferences.html>  
<http://www.geoinfosystems.com/calendar.htm>  
<http://msdis.missouri.edu/>  
[http://magicweb.kgs.ukans.edu/magic/magic\\_net.html](http://magicweb.kgs.ukans.edu/magic/magic_net.html)  
<http://www.nsgic.org/>  
<http://www.mapinfo.com/events>  
<http://www.esri.com/events>  
<http://www.ojp.usdoj.gov/cmrc/training/welcome.html>  
<http://www.nlectc.org/nlectcrm/>  
<http://www.nijpcs.org/upcoming.htm>  
<http://www.usdoj.gov/cops/gpa/tta/default.htm>  
<http://giscenter.isu.edu/training/training.htm>  
<http://www.alphagroupcenter.com/index2.htm>  
<http://www.cicp.org>  
<http://www.actnowinc.org>  
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[www.nijpcs.org/R&E/conf2210.htm](http://www.nijpcs.org/R&E/conf2210.htm)

## Web Site Reviews



### **Chicago, IL Police Department Citizen ICAM** [www.ci.chi.il.us/CommunityPolicing](http://www.ci.chi.il.us/CommunityPolicing)

The Chicago Police Department's Citizen ICAM (Information Collection for Automated Mapping) is a public access Internet crime mapping and reporting application. Citizens can quickly and easily generate maps, graphs, and tables to see crime conditions in their neighborhoods. Citizen ICAM provides a high level of interaction, and it was designed to strengthen the police-community partnership that is a cornerstone to CAPS, the Chicago Alternative Policing Strategy. The Citizen ICAM database contains 90 days of information which can be accessed in blocks of up to 14 days, and data are refreshed daily. Citizen ICAM includes all reported crimes, except confidential cases still under investigation. Date, time, case report number, primary and secondary crime classifications, addresses to the block level, and Uniform Crime Reporting location codes are available.

In addition to neighborhood crime conditions, Citizen ICAM provides school Safe Passage information, including walking school bus routes, business safe havens, and crossing guard locations. Users can conduct queries by selecting any of Chicago's 965 public or private grade schools or high schools. For example, a query of all crimes occurring within one mile of an elementary school will return a detailed map with different symbol styles for crimes against persons, property, society, and domestic violence incidents. A report detailing the frequency and types of crimes is also included with the search results, and users have the option to view the data in tabular, graphic, or list format. Lastly, detailed information about the selected school, e.g., if the school has a parent patrol program, is included with the search results.



### **Ottawa, Canada Police Service Crime Analysis & Statistics** [www.ottawapolice.ca](http://www.ottawapolice.ca)

The Ottawa, Canada Police Service Crime Analysis & Statistics page allows citizens to review monthly District Profiles, Neighborhood Watch Reports, and Weekly Activity Reports. All reports on the Web page can be reviewed and printed using Adobe Acrobat Reader. The District Profiles provide detailed calls for service information about each district, including totals by type of call, calls for service hot spots, calls totals by day of the week/hour of the day, and general demographic information such as population and number of households. Neighborhood Watch Reports are also broken down by district and include lists of calls for service by neighborhood. Each call includes the type of call, case number, date, time, and the address of the call at the hundred-block level. Lastly, the Weekly Activity Report is a weekly listing of reported crimes in each district. Where possible, additional details such as point of entry, property taken, and suspect information are included.

It is important to include appropriate disclaimers when posting crime and calls for service information to the Internet in order to prevent misinterpretation of the data. Each crime analysis report on the Ottawa Police Service Web site includes a disclaimer indicating that the data were accurate on the day they were obtained; however, they may not represent the final disposition of a call. The site also cautions that inferences about the quality of a neighborhood or area should not be made from the information contained within the site.

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