Integrating Community Policing and Computer Mapping:

Assessing Issues and Needs Among COPS Office Grantees*

Crime Mapping Laboratory

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I. Introduction

Technological advances in computer mapping and information systems, along with theoretical innovations in crime prevention, have together brought crime mapping to the center of crime prevention practice and policy. Desktop computers are becoming more powerful than ever before and computer mapping programs are becoming more accessible, even to relatively small police departments. Many of the recent innovations suggested by proponents of community and problem-oriented policing philosophies require a geographic focus, and emphasize the importance of integrating computer mapping technologies and techniques into processes such as personnel allocation and problem solving.

To facilitate police departments around the country in their efforts to reap the benefits of these technological advances, the Office of Community Oriented Policing Services (COPS) has provided funds for the development of computer mapping technologies in support of community and problem oriented policing in a number of local jurisdictions. However, even with such funding opportunities, many police departments that begin crime mapping are quickly frustrated by the myriad of difficulties that arise when attempting to implement computer mapping in their jurisdictions. The Police Foundation has provided technical assistance to agencies funded by the COPS Office to help them overcome problems in implementing computer mapping, and to facilitate their ongoing use of crime mapping in community policing and problem solving. This

assistance began with an assessment of the needs of these local jurisdictions, both in

terms of geographic information systems (GIS) development and for the integration of

computer mapping into problem oriented and community policing practices.

To begin the process of identifying department needs, we identified several critical
questions:

·   What technologies are departments currently using for mapping?

·   Do local police agencies use already developed mapping software for identifying
     hot spots of crime, or do they seek to develop systems customized for their
     jurisdictions?

·   Are local agencies going beyond the basic mapping capabilities provided in
     packaged software to develop special problem solving applications?

·   What are those applications and how might they be used by other police
     agencies?

·   Do present technologies provide the necessary tools for simple and efficient
     integration of computer mapping into community and problem oriented policing?

·   What types of enhancements will be needed to meet the requirements of local
     departments in using computer mapping as a problem solving tool?

·   How do such needs vary by size of police agency or type of crime problem?

In order to explore these and other questions, we conducted a telephone survey of

51 police departments receiving funding from COPS.[1] Although the primary purpose of

the initial survey was to establish contact with persons involved in computer mapping in

the departments, we developed an interview protocol (Appendix B) to guide those initial

contacts. Our purpose was both to determine the departments' development as users of

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[1] As we explain further (infra), 42 of the 51 departments were funded specifically for
mapping technology; nine were not.

computer mapping technology and to offer them technical assistance. After this initial contact, some departments sought our advice frequently; while there were others from whom we received no requests for assistance.

These initial contacts were followed by a second survey, directed once again to persons involved in computer mapping in the departments, generally the initial contact person. Using a structured survey instrument that expanded upon the first wave questions, the second wave again served the dual purpose of gaining new information about department needs and uses of computer mapping, and continuing contact with the departments in order to offer technical assistance (Appendix C).

We also conducted a third survey of the 51 departments. The purpose of this telephone survey was somewhat different from the other two. In this case, our focus was on learning about the nature and extent of the integration of computer mapping into problem oriented and community policing practices. We administered this survey not to our technical mapping contacts, but to persons with knowledge of community policing in the department (Appendix D). In this report we review the results of the three surveys of the 51 police selected departments.

The departments we contacted constituted two somewhat different groups, both of which were identified and recommended by the COPS Office. The first group comprised forty-two departments that received COPS funding for mapping technology (Group 1).[2] These departments, funded under the 1995 and/or 1996 COPS MORE grant

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[2] The forty-two departments in this first group are: Hartselle (AL), Alameda County (CA), Fountain Valley (CA), Moreno Valley (CA), Sacramento County (CA), Los Angeles Unified School District (CA), Calhan (CO),

programs, submitted applications in which they specifically requested funding for mapping technology. The second group (Group 2) includes nine departments selected by the COPS Office for inclusion in our needs assessment, based on their advanced integration of computer mapping into departmental routine, or because of their expressed interest in assistance with further developing their computerized crime mapping capabilities.[3]

It should be understood at the outset, given the method through which departments were selected, that the sample is not representative of departments nationally. Although not generalizable, our findings are suggestive, and may provide valuable insights into the kinds of issues and problems that police departments encounter as they embark on and integrate crime mapping into their operations.

II. Department Characteristics

Metropolitan Police Department (DC), Jefferson Parish Sheriff's Department (LA), Concord (MA), Worcester (MA), Baltimore (MD), Lansing (MI), Detroit (MI), Rochester (MN), Maryland Heights (MO), Hazelwood (MO), Picayune (MS), Omaha (NE), Fargo (ND), Florham Park (NJ), New York City (NY), Newburgh (NY), Orangetown (NY), New Rochelle (NY), Euclid (OH), Darke County Sheriff's Department (OH), Rittman (OH), Columbus (OH), Shawnee (OK), Portland (OR), Washington County Sheriff's Department (OR), Ashley (PA), Clinton (TN), Metropolitan Nashville (TN), Abilene (TX), and Provo (UT).

[3] The nine departments in this second group are: Salinas (CA), San Diego (CA), Bridgeport (CT), Miami (FL), St. Petersburg (FL), Chicago (IL), Boston (MA), Kansas City (MO), and Charlotte-Mecklenburg (NC).

The 42 agencies that received COPS funding for mapping were distributed across the four regions of the country, according to the regional classification system used in the FBI Uniform Crime Reports. Fourteen departments were in the Midwest, eight in the Northeast, eleven in the South, and nine in the West. There was a concentration in California and the Northeast, whereas the South and Northwest are more dispersed. This skew largely reflects the population distribution of the nation (as well as COPS funding patterns more generally), although a number of states covering vast territories (e.g., New Mexico, Arizona, Nevada, Idaho, Montana, and Wyoming) are not represented. The nine departments in our second group, generally representative of medium and larger cities, are also distributed in all four regions of the country, with two in the Midwest Region, two in the Northeast, three in the South, and two in the West. Table 1 (Appendix A) lists other characteristics of the 51 departments, including for each: the population in the jurisdiction, the number of employees in the department, the 1995 and 1996 aggregate of UCR index crimes, and the number of murders in 1995 (based on UCR data).

We also made comparisons between the 51 departments in our review and departments across the country (see Tables 1-5, Appendix A). We considered how the two groups in our review compare with all law enforcement agencies receiving funding from the COPS Office. Generally, the departments in our review are larger than the average police department receiving funding from the COPS Office: the average COPS grantee has 58 employees (including both civilian and sworn personnel), whereas the average number of employees for the 42 computer mapping grantees in Group 1 is 1,899 (median 163), compared with an average of 3,076 (median 1,633) for the nine departments

in Group 2. The computer mapping grantees ranged in size from only a few officers to New York City's 30,000+ officer force, with 16 small departments (50 sworn officers or less), 18 medium sized departments (51 to 1,000 officers), and 8 large departments (over 1,000 officers), based upon survey data and/or information gleaned from the *1997 National Directory of Law Enforcement*. The departments in our sample also serve larger populations than the average COPS grantee, with a median population served of 17,009 for all COPS grantees compared to 80,213 for Group 1 departments (N=42) and 448,474 for Group 2 departments (N=9).

To establish whether the 51 departments interested in computer mapping (as indicated by their receipt of mapping funding or their generally known interest in the area), serve jurisdictions with particularly serious crime problems, we compared their crime rates with all departments reporting 1995 and 1996 UCR data. Overall, it is clear that the 42 departments receiving COPS Office funding for mapping technology had higher than average crime rates, and that the other nine departments in our sample pursuing crime mapping without COPS Office funding, had even higher crime rates (see Tables 1 and 4). We speculate that these departments have pursued mapping technology, at least in part, in order to lower their crime rates.

This pattern of higher crime rates in the departments in our sample persists across crime categories. For murder, the 1995 rate among all departments with UCR data was 12 per 100,000 population. This compares with over 20 murders per 100,000 population for Group 1 departments, and almost 22 for our Group 2 departments. Looking at 1995 burglary rates, the rate for all departments was 1,088 per 100,000 population, compared

with 1,385 for the mapping grantees and 1,471 for the other nine departments in our sample. This pattern is even more apparent for 1995 robbery rates, with 253 robberies per 100,000 population for all departments, 764 per 100,000 among Group 1 departments, and 803 per 100,000 population for our Group 2 departments. For 1995 larceny rates, there were 3,316 larcenies per 100,000 population overall, 3,730 per 100,000 population for the 42 mapping grantees, and 4,386 per 100,000 population for the remaining nine departments in our sample. Turning to 1996 assaults, we find 541 per 100,000 population for all departments, 730 per 100,000 population among Group 1 departments, and 1,119 per 100,000 population for the other departments in our sample. The pattern varies slightly when we look at 1996 larceny rates, with 3,581 per 100,000 population overall, 3,430 per 100,000 population for the mapping grantees, and 4,273 per 100,000 population for the nine Group 2 departments contained in our sample.

We also compared departments according to the amount of funding they have received from the COPS Office. The departments from both groups in our sample have received much larger than average amounts of COPS Office funding, compared to all other law enforcement agencies that have received such funding (Table 3). The average COPS Office law enforcement agency awardee received $196,317 in total funding from March 1, 1995 to September 30, 1997, compared with close to $10,000,000 for the mapping grantees, and $17,000,000 for our other nine departments. This same pattern holds true when we limit our analysis to only COPS MORE funding. The average COPS MORE awardee received $170,992 in COPS MORE funding from March 1, 1995 to September 30, 1997, compared with $3.9 million for the mapping grantees, and $3.5

million for our other nine departments.

In summary, the departments in our review serve larger populations, have more employees, and are coping with more severe crime problems than the average department. It is also clear that the nine departments in Group 2 of our review serve even larger populations, have even more employees, and are coping with even more severe crime problems than the 42 mapping grantee departments. For all the departments, an interest in crime mapping suggests that they have determined a need for technological tools to assist them in the identification and tracking of crime problems. Our findings are consistent with those of the National Institute of Justice's (NIJ) representative national survey of law enforcement agencies, which shows that larger departments more frequently use computer mapping than do small departments.[4]

III. Initial Telephone Contact and Survey

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[4]Cynthia A. Mamalian, Nancy La Vigne, and the staff of the Crime Mapping Research Center *The Use of Computerized Crime Mapping by Law Enforcement: Survey Results*, (Washington, DC: National Institute of Justice, 1999).

We developed an initial contact protocol (see Appendix B) to gather information related to the following issues: 1) the nature and extent of the computer mapping technology currently being used by the departments, including both hardware and software; 2) departments' priorities and targets for computer mapping; 3) problems encountered as they implemented computer mapping; 4) data available for use with computer mapping software; 5) personnel and training issues associated with computer mapping; and 6) the types of technical assistance that might be beneficial to the departments. The initial telephone contacts were made in December 1997 and January 1998; at this time, a site visit was also made to one of the COPS MORE grantees.

To alert the departments to our intention of contacting mapping personnel to assess needs and offer assistance, we faxed to each department's Chief a letter of introduction signed by the Director of the COPS Office, Joseph Brann, We followed this letter with a telephone call to the Chief's office from researchers in the Police Foundation's Crime Mapping Laboratory (In a few cases, the departments contacted us in response to Director Brann's letter before we could call them). The initial call to the Chief's office served primarily to determine who the appropriate contact person(s) within the department would be, i.e., the individual(s) with responsibility for and/or having the most knowledge about computer mapping and/or community policing.

This process led us to a wide variety of contact persons in the 51 departments. We spoke with both sworn and civilian personnel, with many different titles and ranks (including Chiefs or Commissioners, captains, lieutenants, sergeants, inspectors, detectives, crime analysts, MIS staff, city employees, etc.). In part because of the

variation among contacts, our conversations often diverged considerably from the protocol we had developed for the initial contact. But whatever their rank, the people we spoke with generally expressed appreciation for being able to share their implementation experiences and problems. Overall, we found most respondents to be both interested in providing information and welcoming of assistance from our Crime Mapping Laboratory staff.

While the 51 departments share many characteristics (see above), there is also substantial diversity among them. We encountered a wide range in the degree of sophistication with which departments approach mapping, and found a large number of departments that are engaged in surprisingly little mapping. Indeed, during the initial contact interview, several departments reported doing no mapping at all, most due to the fact that they were just in the process of receiving grants and had not yet procured the requisite hardware and/or software. However, we were surprised to find that there were a few departments which, at least according to the contact person designated by the Chief, appeared to have no plans to implement computer mapping, despite being among the first group of agencies to receive funds from the COPS Office for the express purpose of developing computer mapping capabilities. Those departments actively engaged in computer mapping have only been at it a short while, with only seven reporting more than two years of experience producing crime maps through the use of computers.

Technological Inventory

Most departments we talked with utilize computer aided dispatch systems (CADs), but such software, while it may contain excellent address and geographic identifier information, rarely has a mapping component per se. We found that ArcView, a product sold by the Environmental Systems Research Institute (ESRI), is the most popular mapping software among the departments we contacted (See Table 5). Sixteen of the 27 departments (59.3 percent) that reported using a mapping program, or being in the process of acquiring one, use ArcView. Most of the other departments reported using MapInfo, another GIS product with similar capabilities. Both of these programs, when used in conjunction with add-on software modules (e.g., Spatial Analyst for ArcView and Vertical Mapper for MapInfo) permit departments to smooth point crime data into contours to visualize hot spot locations.

Many of our contacts had limited information about the origins of the mapping system in their department, and frequently did not know why one software package was chosen over another. We speculate that this lack of historical knowledge, even for the short history of mapping in these departments, is due to rotation or turnover of personnel and the use of outside vendors and consultants to make these decisions. When this information was known, we found that many departments chose a particular package because their city, town, or county used that same package and had compatible centerline street files. Transferring data between programs is usually possible, though not always straightforward; thus, using the same software package as other agencies within a jurisdiction has some advantages. For a somewhat technical example, ArcView comes

with a utility that can transform .mif files exported from MapInfo into the native .shp format, but it cannot save files in MapInfo format.

Desktop mapping has only recently become widely available.[5] MapInfo was first released in 1987. It was not until 1991, however, that it was released in multiple platforms with DOS, Windows, and Macintosh versions. The first version of ArcView was released as recently as 1992, although this version was intended to be used to read ArcInfo coverage. If a desktop mapping program like ArcView can so quickly become a market leader, we cannot know for certain which programs will dominate the market just a few years into the future. In any event, this time line helps explain why those departments that use MapInfo tend to be larger and more experienced with mapping than the rest of the departments surveyed.

In addition to MapInfo and ArcView, some departments are using other programs (see Table 3). A few use ArcInfo, ESRI's flagship product that is often used by engineers or architects on a Unix platform (ArcView's advantage is that it is more accessible and much less expensive than ArcInfo). One department is using Streets on a Disk, a product of Klynas Engineering that retails at just over one hundred dollars per copy. Others use programs provided by DeLorme; these products are also inexpensive but permit only limited analysis. Another department uses Integraph software in conjunction with the local county government.

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[5] Among the departments surveyed, the New York City Police Department has been doing computerized crime mapping the longest. Assistant Commissioner Phil McGuire reports that he did computerized mapping in the early 1970's when he arrived at the department using PL1 programming on the mainframe.

Some departments have switched from one mapping program to another, despite the complications involved. For example, one department converted from Atlas GIS (which is still marketed and supported, although its developer, Strategic Mapping, was bought out by ESRI) to ArcView. Two other departments are in the process of switching from MapInfo to ArcView. By switching to ArcView, they will have the capacity to utilize a customized crime analysis program written primarily in Avenue (the ArcView programming language).

IV. Second Telephone Survey of Mapping Contacts

After the initial interview, our contact with the departments over the subsequent two to three months ranged from frequent to none.[6] We decided to conduct a follow-up survey that would provide additional information and serve as an opportunity for continued contact in order to provide technical assistance. As we described above, we conducted a follow-up interview (the second wave) with the mapping contact person in each department, and a third set of interviews (the third wave) with a community policing representative from each department. The second wave was conducted during March and April of 1998 and completed by 45 of the 51 departments (see Appendix C). We administered the third wave of interviews during July and August of 1998, with 47 of the 51 departments participating (see Appendix D). One department did not participate in either the second or the third wave, thus where we give percentage responses, they are

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[6] In each of the waves of interviews, Crime Mapping Laboratory staff made repeated attempts to contact the designated departmental representative during the limited allocated time span of about two months.

based on a total of 50 departments.

For the initial contact, we had developed an interview protocol that we used both to gather information and to introduce ourselves and offer assistance to the departments. Similarly, for the second wave of interviews we developed an instrument (see Appendix B) as a means of continuing contact with the departments and gathering additional information. Interviews from both of these first two waves allowed us to review the overall status of the departments' use of, and needs regarding, computer mapping and enhance our ability to offer future technical assistance. In the discussion that follows, we provide frequencies for those questions asked during the second wave that can be readily and meaningfully quantified (frequencies are provided at Appendix C); for others, we offer a more qualitative assessment.

Of the forty-five departments that completed the second wave, twenty-seven departments (60 percent) indicated that they were involved in computer mapping. We asked what kinds of data they had access to for computer mapping. A large majority of respondents indicated they had access to incident (86.4 percent) and calls-for-service (79.5 percent) data, while only about half (54.5 percent) reported that arrest data were available for this purpose. While these are the three primary types of police data, other data are also available and used for mapping; e.g., 34.1 percent of the agencies reported that suspect information and traffic data were also available.

Of the 27 departments engaged in mapping, 26 responded to our questions about the number of personnel actively involved in producing crime maps. Half these

departments have three or fewer people engaged in mapping, and all but three have six or fewer (one department has 10, one has 14, and another has 200).

We asked the departments not only who produces the maps, but also who uses them. Of the 27 departments currently involved in mapping, 26 indicated that command and management staff use the maps, while more than three quarters (21 of 27) reported that police officers in the field are making use of crime maps. This high level of use by management and line personnel, in addition to specialized crime analysts, suggests an impressive adaptation to the advent of computer mapping technology.

Computer crime mapping can serve many purposes for a police department, and we were interested in discovering how extensively departments are applying their ability to produce maps. Although the instrument provides a list of some sixteen possible uses, we varied our approach to this question somewhat, depending on knowledge gained from prior contacts with each of the departments. Thus, with some departments we presented the list of possible uses, but with others we probed further. The results, therefore, are presented only as indicative of the application of computer mapping to policing tasks in this group of departments; they do, however, suggest a promising range of uses for computer mapping technology.

Of the 27 departments engaged in computer mapping, over 80 percent use mapping for crime analysis; two-thirds use maps for hot spot identification; over 60 percent use maps for resource allocation; and over 50 percent use them for decision making. Between 40 and 50 percent also use maps for (in descending order): data presentation or reports, public information or presenting maps to the community, and

focusing neighborhood strategies. Ten departments (37 percent) use maps for problem solving, for program evaluation, and for traffic or accident analysis. Eight departments (30 percent) use maps for thematic mapping, and seven (26 percent) use them for COMPSTAT.

In this wave of the survey, only two or three departments admitted to having encountered specific difficulties with mapping, whether in training or finding personnel, obtaining adequate street maps for geocoding, formatting data, using the mapping software, customizing the software, and/or producing useful maps. We also asked the computer mapping contact person how we could assist them with their department's mapping development. Those departments that indicated wanting our assistance in this wave were mainly new to mapping, struggling to learn ArcView GIS software, or in the process of switching to ArcView GIS. Departments also asked for information about the National Institute of Justices's Crime Mapping Research Center, about mapping conferences, and about high order technology that in some cases was beyond our scope, while in others would have required onsite visits to provide the requisite assistance.

V. Third Telephone Survey: Mapping and Community Policing

In response to a COPS Office request that we explore how mapping is being integrated in support of community policing in the 51 departments, we developed another interview instrument, which we administered to persons with knowledge of and involvement in community policing in the department. Unlike our two prior interviews, we did not use the third wave to facilitate our contacts and technical assistance activities

with the departments. Rather, we conducted a closed-ended survey with the goal of

gaining specific information about community policing and the integration of crime

mapping with community policing. [7] The same method of repeated attempts to contact

the departments that was used previously resulted in 92.2 percent of departments (n=47)

responding to our third survey.

Thirty departments have implemented community policing department wide,

whether including all sworn and non-sworn personnel (24) or only all sworn (6). Sixteen

departments have either a community policing unit (6) or specially designated patrol

officers (10). One respondent indicated that community policing had been an official

policy in the department for less than one year, while other responses to the question of

how long it had been an official policy ranged from one year (6 departments) to ten years

(3 departments). On average, the responding departments (n=45) have had community

policing as an official policy for about four and a half years.

We asked a series of twelve questions to uncover the extent of departmental

involvement in community policing. For those departments with department wide

implementation of community policing we asked how many officers were involved in

each type of activity associated with community policing (none, some, or most). For

those departments with community policing units or specially designated officers, we

asked about the level of their involvement in each type of activity (not involved,

somewhat involved, or very involved). Since it is difficult to compare the two approaches

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[7] Two questions were written as open-ended questions, and these results are also
presented in Appendix C.

in this way, we present the results first for the 30 departments with department wide community policing, and then for the unit or individual officers.

Among the 30 departments with department wide community policing, all indicated that some or most officers are involved in the following activities associated with community policing: 1) making door-to-door contacts with neighborhood residents, 2) getting to know community leaders in their areas, and 3) working with citizens to identify and resolve crime and disorder problems. While most departments indicated some or most officers are engaged in every community policing activity suggested, nine departments (30 percent) said no officers worked from neighborhood based locations, and seven indicated that no officers are involved in conducting resident surveys. For each of the following seven activities, no more than three of the thirty department-wide community policing departments claim that *no* officers are involved: 1) foot or bicycle patrol, 2) community organizing to solve problems, 3) helping residents learn to address community problems, 4) developing and analyzing data, 5) working with other agencies to solve problems, 6) meeting regularly with community groups, and 7) organizing youth and recreation programs.

Among the 16 departments with a dedicated unit or dedicated officers, all indicated they were very involved in getting to know community leaders in their areas. All 16 also reported that they were either very involved or somewhat involved in the following activities: 1) working with citizens to identify and resolve crime and disorder problems, 2) helping residents learn how to address community problems, and 3) working with other agencies to solve neighborhood problems. For each of the following five

activities, between four and six departments (25 percent to 37.5 percent) indicated that their community policing unit or officers are *not* involved: 1) working from neighborhood based locations, 2) working with citizens to identify and resolve area crime and disorder problems, 3) working with other agencies to solve neighborhood problems, 4) conducting resident surveys, and 5) organizing youth and recreation programs.

The community policing contact for 25 departments indicated that their department uses computer mapping technology as a method for analyzing crime problems. A series of 14 questions asked whether their departments used mapping for a range of activities. Those respondents who answered "yes" to one of these questions were then asked how useful mapping was for the specific purpose. Since they almost always reported that mapping was somewhat or very useful, we report only the results of whether they are using mapping for these activities (See Appendix C for complete results.) .

Community policing contacts in all 25 departments using mapping indicate that their departments use computer mapping to map locations of offenses and to identify "hot spots." All but one (96 percent) use mapping to analyze beat problems. Twenty-two of the 25 mapping departments (88 percent) use mapping to develop crime reduction strategies and to evaluate problem solving efforts. These data suggest a high level of integration of crime mapping with community policing.

Other mapping activities along more traditional policing lines are also engaged in by most of these departments. According to our community policing contacts,18 of the 25 departments (72 percent) report that their department uses computer mapping to map

locations of arrests. Sixteen of the departments (64 percent) report that their department uses computer mapping to map calls for service; identify gang territory or gang related crime, and/or map motor vehicle accidents. The next most frequently reported uses were mapping addresses of victims, and mapping firearms offenses (56 percent); mapping addresses of offenders, and resource/manpower allocation (52 percent); and finally mapping location of sex offenders for notifying residents (44 percent).

Although the results are promising in terms of the use of computer mapping in community policing, it is interesting to learn that the community policing personnel in only seven of the 25 departments (28 percent) have access to computers with mapping software, while 17 (68 percent) request maps from a mapping or crime analysis unit (with one "don't know"). This suggests that the community policing officers may not be able to use mapping as creatively or interactively as possible in problem solving. Of the seven that do have access to computers for mapping, three reported that mapping training was provided to community policing officers (with one "no" and three missing).

Forty-five of the 47 departments (95.7 percent) responding to the survey indicated that people in their department had received special training for community oriented or problem solving policing (with one "no" and one missing). Our interviews suggest that most departments reported receiving training in concepts of community policing, problem solving processes (SARA model), specific problem solving techniques (e.g., drug and nuisance abatement procedures), and cultural diversity. Many also report receiving training in strategic planning, determining or analyzing community needs and resources, and some report receiving other types of training for community policing.

We also asked an open-ended question, "Can you think of any other ways in which computer mapping could help support your department's community oriented or problem solving efforts?" We received 25 responses to this question (see AppendixD); some common themes emerge. Seven of these responses encouraged sharing computer mapping information with the community, three suggested placing the data on the Internet, and one wanted to provide mapping training to citizens. Four spoke about decentralized and department-wide mapping and training. Two mentioned officer safety. Other responses, while more difficult to aggregate, were interesting comments, such as "Mapping is a good thing," and one indicated that our questions provided good ideas for using crime mapping in support of community policing.

A second open ended question asked simply, "Is there anything else you would like to add concerning the potential of computer crime mapping technology in facilitating community oriented or problem solving policing?" The 21 responses to this question were very diverse (Appendix D), but we note here two comments that were offered in relation to COPS funding. One respondent said that, though computer crime mapping makes sense and is relatively inexpensive, it likely would not have been implemented in their department without their COPS grant. Another echoed this view, saying that COPS funding is critical for small departments.

VI. Conclusions and Recommendations

Mapping has many uses ranging from routing to resource allocation, although most departments utilize the technology for quite limited purposes. While departments'

primary interests seem to be in mapping as a tool for crime analysis, and as an aid in their

problem solving and community policing efforts, there are many other purposes for which

GIS can be used. For example, one jurisdiction has developed detailed maps of the

location of school alarms in buildings around the city. Another agency has an employee,

hired with COPS Office funds, who produces maps for community groups. Some

departments also use mapping to support the COMPSTAT process.

As mentioned earlier, some police departments begin the process of mapping

crime, but are quickly frustrated by the difficulties that arise in implementing computer

mapping in their jurisdictions. While departments are able to obtain mapping capabilities

at reasonable costs and often are able to find people interested in learning crime mapping,

the learning curve is often underestimated and integrating the mapping into departmental

routine requires substantial planning and effort. Further, the increasing number of

competing products creates confusion, and it is quite difficult for those without

technologically detailed knowledge to meaningfully differentiate between them.

Nevertheless, GIS technology is becoming cheaper, more accessible, and easier to use

than ever before. It is also becoming less difficult to transfer data and files between

different software programs through the use of import and export functions. Because of

this, the common practice of vendors making it difficult to transfer their proprietary data

formats will likely decrease substantially in the future.

A common theme that emerged from the survey is a need for customized mapping

applications. Crime analysts spend most of their time massaging the data and importing it

into a usable form rather than actually analyzing it. This problem is amplified even more

for those departments that want their rank and file police officers to be able to use mapping technology. A basic software program like ArcView seems overwhelming to many who do not have the time or support to be trained to use it adequately. A few departments are using or considering using the program CrimeView, a front end application written to be used with ArcView. At least one department was enthusiastic about its potential, although another balked at the considerable costs of using the services of the company that designed it (the Omega Group). Such applications, once they are designed to be used with a particular department's data in a manner consistent with its needs, have great potential because they can be designed for user friendly "point and click" use. One can simply select the crimes, areas, dates and shifts for which one has interest and the program will draw a map of the area with the locations of the crimes shown.

Only a couple of departments in our group of 42 departments have access to customized mapping. Several in the second group of nine have such access. But in both groups resources are limited and developing customized applications presents a challenging task. Developing customized applications is important for two reasons. First, customization can simplify the task of mapping and make it more efficient. Second, customization can focus on the problems and analytic methods of interest to the department. For example, precinct commanders may want to directly map the crimes of interest to them in their precincts rather than having to query and select crime codes, zoom in on their area, etc. every time they want to produce a map. Furthermore, more sophisticated functions, such as the ability to measure clusters and compare change in crime rates over time, can be built into more advanced mapping applications.

Naturally, department needs are driven by the extent of their experience with mapping. The departments that are just starting to map need basic advice on how to go about choosing a software package and gathering the necessary boundary files such as streets. This was frequently the case for smaller departments. We offered assistance to all of the 51 departments, and some called back to accept our offer of assistance. One department asked for advice on how to set up mapping in a network environment (ESRI does not recommend running ArcView over a network and when one has limited resources it is best to invest in memory for the mapping PC's and in storage space for the data that will be stored on the server). They have also asked for advice on preparing a grant that would offer the community access to interactive crime mapping on the Internet. Another department asked us to evaluate a contract they had made with a consulting group.

Another question departments need to grapple with is for whom the mapping system is intended and who is targeted to utilize the maps that are produced. While many departments want to get many officers involved in mapping, the reality is that generally the technology is concentrated in the hands of a few crime analysts. Although a few departments had sent personnel to short training courses, most users seemed to be self-taught. Often, mapping was performed by civilians who were hired as computer technicians. Expanding mapping to a larger audience and getting the rank and file officers involved is the next logical step. Generally the maps are intended for use by the command staff, although many departments clearly see the need to use them as a tool in community relations and education efforts. One department was using mapping as a tool to enhance

job satisfaction among the rank and file officers.

Those who are doing mapping generally have become good at geocoding accurately and quickly, but the delay between the criminal activity and mapping is often substantial. Geocoding involves matching data to a geographic location to display it on a map. Address-matching is the specific form of geocoding in which departments are usually interested. Data entry and records management is becoming more efficient in most departments. Moving back and forth among separate computer systems and upgrading them is clearly a stumbling block for many. There is a wide range in the types of computer systems departments have configured; some departments have multiple systems. Most departments still keep data on mainframe computers, although many have moved into a networked PC environment. The departments also map a wide range of geographic data, although they seem to focus on major reported crime, such as burglary, robbery, assault, and murder. Others mapped data such as calls for service, arrests, and traffic accidents. Some maintained databases on suspects and their home addresses.

The first consideration for every department in choosing a GIS is what its needs are. Those that do a lot of scanning and rubber sheeting, for example, will want a high-end system such as ArcInfo. Most departments should be more concerned with obtaining a user-friendly system that will support their data and crime analysis needs. Basic programs like MapInfo and ArcView are actually very powerful tools for crime analysis and problem solving. The difficulty police departments face is not needing more software and more powerful tools for mapping, but rather learning how to use and simplify the tools they have. This message came across so clearly that the Police Foundation has developed a

seminar to train new GIS users, and is continuing curriculum development for intermediate

and advanced users.

Thus, the dilemma is that it requires an enormous amount of investment, of both financial and human capital, to set up easy-to-use geographic information systems that can be accessible to even those with limited training and skills. Implementing and integrating mapping technology with standard departmental procedures is not a simple or automatic process. Just purchasing the necessary software and computer equipment is not enough to ensure the implementation of a successful mapping strategy in a department; there needs to be a push to successfully implement a GIS plan. This suggests the importance of technical assistance and training in the development of successful mapping programs. Without such support and assistance, local departments are not likely to be able to successfully integrate computer mapping into problem solving and community policing.

Appendix A

Tables 1-5

Table 1   Jurisdiction Population, Number of Employees, and Selected UCR Crime Statistics for the Sample of 51 Police Departments

Department	Jurisdiction Population	Number of Employees	1995 Index Crimes	1996 Index Crimes	1995 Murders
Hartselle, AL	11,813	28	338	370	0
Alameda Co., CA	130,083	1,292	5,169	3,949	8
Salinas, CA	121,517	181	8,329	7,554	9
Fountain Valley, CA	56,255	87	2,763	2,258	0
Moreno Valley, CA	141,292	172	9,187	8,733	13
Sacramento Co., CA	680,412	1,634	37,077	32,940	51
San Diego, CA	1,168,364	2,784	64,235	61,574	80
LA Unified School Dist., CA	Missing	Missing	Missing	Missing	Missing
Calhan, CO	652	2	Missing	1	Missing
Bridgeport, CT	133,015	483	10,386	10,123	40
Washington, DC	543,000	4,369	67,402	64,557	397
Miami, FL	384,976	1,427	59,170	52,918	124
Saint Petersburg, FL	246,229	717	22,899	23,843	26
Pembroke, GA	1,836	7	80	73	0
Chicago, IL	2,754,118	15,687	Missing	258,804	789
Akron, IN	Missing	Missing	Missing	Missing	Missing
Elkhart, IN	45,533	132	3,898	4,958	6
North Webster, IN	Missing	Missing	Missing	Missing	Missing
Zachary, LA	9,510	27	400	321	0
Jefferson Parish, LA	347,275	1,345	29,354	28,650	25
Concord, MA	17,755	41	250	272	0
Boston, MA	552,519	2,926	52,278	44,711	59
Worcester, MA	166,782	524	11,386	10,048	7
Baltimore, MD	716,446	3,658	94,855	85,982	328
Lansing, MI	120,821	344	9,784	9,744	10
Detroit, MI	1,002,299	4,453	119,065	120,188	428
Rochester, MN	77,278	137	3,524	3,561	5
Maryland Heights, MO	26,429	77	1,097	1,459	Missing
Hazelwood, MO	16,033	66	725	1,120	Missing
Kansas City, MO	448,474	1,849	52,575	52,300	104
Picayune, MS	12,205	36	751	726	3
Omaha, NE	350,607	879	27,324	26,939	27
Charlotte-Mecklenburg, NC	554,070	1,633	52,110	53,518	71
Fargo, ND	80,213	125	3,573	3,012	1
Florham Park, NJ	8,909	32	181	201	0
New York City, NY	7,339,594	48,441	444,758	382,555	983
Newburgh, NY	24,328	57	1,142	1,136	0
Orangetown, NY	35,227	108	1,109	969	1
New Rochelle, NY	66,821	220	2,430	2,677	2
Euclid, OH	53,590	172	Missing	2,175	Missing
Darke Co., OH	33,810	57	370	331	0
Rittman, OH	6,230	12	62	79	1
Columbus, OH	640,297	2,029	58,715	61,083	89
Shawnee, OK	28,246	72	1,902	2,145	1
Portland, OR	467,906	1,247	55,348	50,306	51
Washington Co., OR	176,241	207	5,484	5,380	3
Ashley, PA	3,195	3	54	48	0
Clinton, TN	10,508	24	Missing	Missing	Missing
Nashville, TN	530,059	1,563	56,090	59,467	89
Abilene, TX	114,523	227	6,049	5,987	8
Provo, UT	92,787	163	3,975	3,507	

Table 2: Comparison of Population Served and Number of Employees Among Departments Receiving Mapping Grants (Group 1) and COPS Selected Departments (Group 2)

	Group 1	**Group 2**
Average Population Served	363,764	707,031
Average Number of Employees	1,899	3,076

Table 3: Comparison of COPS MORE Funding and Total COPS Funding Received Among Departments Receiving Mapping Grants (Group 1), COPS Selected Departments (Group 2) and All Departments Receiving COPS Funding

	Group 1	**Group 2**	**All Departments**
COPS MORE Funding	$3,893,757	$3,511,337	$170,992
Total COPS Funding	$9,770,569	$17,000,000	$196,317

Note: Figures represent average funding in each category.

Table 4: Comparison of 1995 and 1996 Index Crimes Among Departments Receiving Mapping Grants (Group 1) and COPS Selected Departments (Group 2)

Offense	Group 1	Group 2
Murder 1995	76	155
Rape 1995	200	253
Robbery 1995	2,829	5,739
Assault 1995	3,057	8,427
Burglary 1995	5,129	10,504
Larceny 1995	13,813	31,325
MV Theft 1995	4,499	9,182
Total Offenses 1995	29,602	40,248
Murder 1996	102	145
Rape 1996	208	247
Robbery 1996	2,902	5,175
Assault 1996	2,704	7,996
Burglary 1996	4,490	10,107
Larceny 1996	12,703	30,520
MV Theft	4,004	8,654
Total Offenses 1996	25,998	62,816

Note: Figures represent average number of crimes in each category.

Table 5: COPS Funding Received and Mapping Software in Used Among Sampled Departments (N = 51)

Department	COPS MORE	Total Funding	Mapping Software Used
Hartselle, AL	$53,756	$296,706	ArcView / Beginning To Use
Alameda Co., CA	$101,015	$1,002,215	Probably ArcView
Salinas, CA	$996,500	$1,420,701	ArcView
Fountain Valley, CA	$254,940	$254,940	ArcView
Moreno Valley, CA	$157,743	$1,076,216	ArcView
Sacramento Co., CA	$1,947,041	$43,958,103	ArcView
San Diego, CA	$7,736,116	$14,997,123	ArcInfo / ArcView
LA Unified School Dist., CA	$810,000	$810,000	ArcInfo
Calhan, CO	$7,275	$70,206	None
Bridgeport, CT	$208,575	$3,582,304	Streets on a Disk
Washington, DC	$6,061,806	$6,683,958	MapInfo / Moving To ArcView
Miami, FL	$9,537,933	$45,692,445	ArcInfo
Saint Petersburg, FL	$825,000	$2,517,783	MapInfo
Pembroke, GA	$3,176	$54,971	None
Chicago, IL	$1,940,735	$47,375,735	ArcView
Akron, IN	$20,268	$85,505	None
Elkhart, IN	$487,251	$671,170	ArcView
North Webster, IN	$15,809	$15,809	ArcView
Zachary, LA	$29,737	$345,194	ArcView
Jefferson Parish, LA	$1,717,500	$6,498,877	ArcView
Concord, MA	$64,155	$386,384	None
Boston, MA	$276,150	$11,132,232	MapInfo
Worcester, MA	$599,124	$5,472,329	ArcView
Baltimore, MD	$2,156,022	$17,849,854	MapInfo
Lansing, MI	$120,202	$364,125	ArcView
Detroit, MI	$4,738,231	$23,616,640	MapInfo
Rochester, MN	$44,956	$719,956	Will Be ArcView or MapInfo
Maryland Heights, MO	$116,677	$266,677	Integraph
Hazelwood, MO	$310,035	$461,136	ArcView
Kansas City, MO	$1,717,769	$8,122,701	ArcView
Picayune, MS	$14,700	$62,143	ArcView
Omaha, NE	$2,809,132	$5,609,132	None

Charlotte-Mecklenburg, NC	$8,363,253	$14,315,971	ArcView
Fargo, ND	$128,665	$1,028,665	None
Florham Park, NJ	$33,855	$108,855	Considering Options
New York City, NY	$1,370,000	$259,777,199	MapInfo
Newburgh, NY	$70,091	$1,100,753	Considering Options
Orangetown, NY	$254,350	$1,004,350	None
New Rochelle, NY	$412,695	$876,196	ArcView
Euclid, OH	$83,046	$533,046	None
Darke Co., OH	$89,463	$310,458	Considering Options
Rittman, OH	$43,901	$118,901	Negotiating With Vendors
Columbus, OH	$243,030	$4,448,030	ArcView
Shawnee, OK	$48,024	$48,024	DeLorme
Portland, OR	$1,065,463	$9,378,966	MapInfo
Washington Co., OR	$225,954	$671,954	MapInfo
Ashley, PA	$22,710	$77,429	Awaiting COPS Office Grant
Clinton, TN	$24,747	$99,747	None
Nashville, TN	$1,420,763	$12,549,800	ArcView
Abilene, TX	$126,585	$260,598	ArcView
Provo, UT	$63,678	$1,338,678	ArcView

Appendix B

Initial Interview Protocol

Appendix B: Initial Interview Protocol

What is the department size and the jurisdiction population?

Is the department involved in computer mapping? If not, why not and is the department interested in mapping?

How long has it been doing mapping?

Did or does the department currently employ other mapping techniques such as push-pin mapping?

What type of equipment (hardware) is available for mapping (e.g., PC based)?

What software is used for mapping (MapInfo, ArcView, Arc/Info, Atlas, Maptitude, Integraph, Streets on a Disk, etc.)?

Is the software customized or are specialized crime analysis programs available? If so , was it developed in-house or with the assistance of a consulting company?

What layers are available in the department's mapping system (i.e. streets, Census boundaries, public housing, ATM's, etc.)? Include both data and boundary information.

Are there particular things you would like to be able to do that your software cannot do? Example: Can you produce the kinds of maps you need? Can you compare changes over time? Can you identify hot spots easily**?**

What is mapping used for and how often is it used? Is it used for . . .
> Resource Allocation
> Decision Making
> Support Community Policing
> Support Problem Solving
> Public Information
> Data Presentation / Reports
> Program Evaluation
> Support Tactical or Emergency Situations
> Traffic / Accident Analysis
> Event Coordination
> Crime Analysis
> Other

What kind of training is provided to those who do mapping work?

How often and by whom are data entered into the system?

What types of data are mapped (Calls for Service, Arrests, Incident reports, corrections or court records, etc.).

       Where is it entered?
       In what format?
       Is it archived?

Who in the Department uses mapping technology?

Is mapping used in support of problem solving and community policing? How?

What could we do to help? In particular, we are available for general consultation on setting up and implementing a GIS; we will provide advice on data formatting questions and evaluation of geocoding accuracy. We can assist with data analysis and map production at our Computer Mapping Laboratory.

Who is the best person to contact regarding mapping? Please provide name, rank, and telephone number.

Appendix C

Second Survey: Questions with Reported Frequencies

Appendix C: Second Survey Instrument with Reported Frequencies

Is your department actively engaged in community oriented policing?

    Yes   43   (97.7)
    No   1   (2.3)
    (N = 44)

If so, would you characterize community oriented policing as being (A) a major orientation of your department, (B) a significant but not dominant influence in the department, or (C) only a small part of the department's activities?

    A   41   (95.3)
    B   2   (4.7)
    (N= 43)

Is mapping used for problem solving? (Only departments indicating current involvement in mapping)

    Yes   10   (90.9)
    No   1   (9.1)
    (N = 11)

Do you have access to incidents/reported crime (UCR or NIBRS categories) for mapping?

    Yes   38   (86.4)
    No   6   (13.6)
    (N = 44)

Do you have access to calls for service for mapping?

    Yes   35   (79.5)
    No   9   (20.5)
    (N = 44)

Do you have access to arrests for mapping?

    Yes   24   (54.5)
    No   20   (45.5)

(N = 44)

Do you have access to traffic data for mapping?

    Yes   15   (34.1)
    No   29   (65.9)
    (N = 44)

Do you have access to suspect information for mapping?

    Yes   15   (34.1)
    No   28   (63.6)
    Don't Know   1   (2.3)
    (N = 44)

Do you have access to other data for mapping?

    Yes   9   (20.5)
    No   35   (79.5)
    (N = 44)

For the remainder of the survey, responses are from departments that indicated they are currently involved in mapping (n=27).

How many people in the department are currently actually involved in producing crime maps?

    0   1   (3.8)
    1   5   (19.2)
    2   5   (19.2)
    3   3   (11.5)
    4   3   (11.5)
    5   2   (7.7)
    6   3   (11.5)
    10   1   (3.8)
    14   1   (3.8)
    200   1   (3.8)
  all officers   1   (3.8)
    (N = 26)

Are maps used by command and management staff?

      Yes   26   (96.3)
      No   1   (3.7)
      (N = 27)

Are maps used by police officers in the field?

      Yes   21   (77.8)
      No   6   (22.2)
      (N = 27)

Are maps used for resource allocation in your department?

      Yes   17   (63.0)
      No   10   (37.0)
      (N = 27)

Are maps used for decision making in your department?

      Yes   14   (51.9)
      No   13   (48.1)
      (N = 27)

Are maps used for public information or presenting maps to the community in your department?

      Yes   12   (44.4)
      No   15   (55.6)
      (N = 27)

Are maps used for data presentation or reports in your department?

      Yes   13   (48.1)
      No   14   (51.9)
      (N = 27)

Are maps used for program evaluation in your department?

      Yes   10   (37.0)

No   17   (63.0)
(N = 27)

Are maps used for tactical support or emergency situations in your department?

Yes   6   (22.2)
No   21   (77.8)
(N = 27)

Are maps used for focusing strategies among neighborhoods in your department?

Yes   12   (44.4)
No   15   (55.6)
(N = 27)

Are maps used for traffic or accident analysis in your department?

Yes   10   (37.0)
No   17   (63.0)
(N = 27)

Are maps used for event coordination in your department?

Yes   7   (25.9)
No   20   (74.1)
(N = 27)

Are maps used for crime analysis in your department?

Yes   22   (81.5)
No   5   (18.5)
(N = 27)

Are maps used for identifying or profiling suspects in your department?

Yes   9   (33.3)
No   18   (66.7)
(N = 27)

Are maps used for hot spot identification in your department?

Yes   18   (66.7)
No   9   (33.3)

(N = 27)

Are maps used for COMPSTAT in your department?

Yes   7   (25.9)
No   20   (74.1)
(N = 27)

Are maps used for thematic mapping in your department?

Yes   8   (29.6)
No   19   (70.4)
(N = 27)

Have you encountered any difficulties with obtaining adequate street maps from which to geocode?

Yes   3   (11.1)
No   24   (88.9)
(N = 27)

Have you encountered any difficulties with getting crime data into a format from which it can be used with the mapping program, or obtaining other sorts of data of interest?

Yes   3   (11.1)
No   24   (88.9)
(N = 27)

Have you encountered any difficulties with figuring out how to use the mapping program itself?

Yes   2   (7.4)
No   25   (92.6)
(N = 27)

Have you encountered any difficulties with customizing the mapping program for your department's needs?

```
Yes      2         (7.4)
No      25         (92.6)
(N = 27)
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Have you encountered any difficulties with producing the kind of maps most useful to you with the data and programs you have available?

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Yes      2         (7.4)
No      25         (92.6)
(N = 27)
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Have you encountered any difficulties with training personnel or finding officers interested in learning mapping skills?

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Yes      3         (11.1)
No      24         (88.9)
(N = 27)
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Appendix D

Third Survey: Questions with Reported Frequencies

Appendix D: Third Survey: Questions with Reported Frequencies

Which of the following statements best describes who is involved in community policing in your organization?

All sworn and non-sworn personnel	24	(52.2)
All sworn personnel	6	(13.0)
Only a specially designated unit	6	(13.0)
Only specially designated patrol officers	10	(21.7)
(N = 46)		

How many years has community policing been an official policy in your department?

Years	0	1	(2.2)
	1	6	(13.3)
	2	2	(4.4)
	3	8	(17.8)
	4	8	(17.8)
	5	8	(17.8)
	6	4	(8.9)
	7	1	(2.2)
	8	1	(2.2)
	9	3	(6.7)
	10	3	(6.7)
	N = 45		

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in making door-to-door contacts with neighborhood residents?

Some officers	16	(53.3)
Most officers	14	(46.7)
(N = 30)		

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in developing familiarity with community leaders in their area of assignment?

Some officers	14	(46.7)
Most officers	16	(53.3)

(N = 30)

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in working from neighborhood based locations?

No officers	9	(30.0)
Some officers	13	(43.3)
Most officers	8	(26.7)
(N = 30)		

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in conducting foot or bicycle patrols?

No officers	2	(6.7)
Some officers	17	(56.7)
Most officers	11	(36.7)
(N = 30)		

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in working with citizens to identify and resolve area crime and disorder problems?

Some officers	11	(36.7)
Most officers	19	(63.3)
(N = 30)		

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in assisting in organizing the community to help resolve area problems?

No officers	3	(10.0)
Some officers	14	(46.7)
Most officers	13	(43.3)
(N = 30)		

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in helping residents learn how to address community problems?

No officers	2	(6.7)

Some officers   14 (46.7)
Most officers   14 (46.7)
(N = 30)

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in developing and analyzing data about their patrol area?

  No officers   2 (6.7)
  Some officers   14 (46.7)
  Most officers   14 (46.7)
  (N = 30)

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in working with other city or community agencies to solve neighborhood problems?

  No officers   1 (3.4)
  Some officers   15 (51.7)
  Most officers   13 (44.8)
  (N = 29)

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in conducting surveys of residents in the patrol area?

  No officers   7 (23.3)
  Some officers   19 (63.3)
  Most officers   4 (13.3)
  (N = 30)

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in meeting regularly with community groups?

  No officers   1 (3.3)
  Some officers   18 (60.0)
  Most officers   11 (36.7)
  (N = 30)

If all sworn, or all sworn and non-sworn, personnel are involved in community policing in your organization, what is their level of involvement in organizing youth and recreation programs?

No officers	3	(10.0)
Some officers	24	(80.0)
Most officers	3	(10.0)
(N = 30)		

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in making door-to-door contacts with neighborhood residents?

Not involved	2	(12.5)
Somewhat involved	9	(56.3)
Very involved	5	(31.3)
(N = 16)		

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in developing familiarity with community leaders in their area of assignment?

Very involved	16	(100.0)

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in working from neighborhood based locations?

Not involved	4	(25.0)
Somewhat involved	5	(31.3)
Very involved	7	(43.8)
(N = 16)		

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in conducting foot or bicycle patrols?

Not involved	2	(12.5)
Somewhat involved	7	(43.8)
Very involved	7	(43.8)
(N = 16)		

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in working with citizens to identify and resolve area crime and disorder problems?

      Somewhat involved   4   (25.0)
      Very involved   12   (75.0)
      (N = 16)

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in assisting in organizing the community to help resolve area problems?

      Not involved   1   (6.3)
      Somewhat involved   5   (31.3)
      Very involved   10   (62.5)
      (N = 16)

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in helping residents learn how to address community problems?

      Somewhat involved   3   (18.8)
      Very involved   13   (81.3)
      (N = 16)

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in developing and analyzing data about their patrol areas?

      Not involved   1   (6.3)
      Somewhat involved   6   (37.5)
      Very involved   8   (50.0)
      Don't know   1   (6.3)
      (N = 16)

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in working with other city or community agencies to solve neighborhood problems?

      Somewhat involved   6   (37.5)
      Very involved   10   (62.5)

(N = 16)

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in conducting surveys of residents in the patrol area?

Not involved	5	(31.3)
Somewhat involved	6	(37.5)
Very involved	5	(31.3)
(N = 16)		

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in meeting regularly with community groups?

Somewhat involved	3	(20.0)
Very involved	12	(80.0)
(N = 15)		

If only a specialized dedicated unit or specially dedicated patrol officers are involved in community policing in your organization, what is their level of involvement in organizing youth and recreation programs?

Not involved	6	(40.0)
Somewhat involved	4	(26.7)
Very involved	5	(33.3)
(N = 15)		

Has anyone in your department received any special training for community oriented or problem solving policing?

Yes	45 (97.8)
No	1 (2.2)
(N = 46)	

Have officers in your department received training in concepts of community policing?

Yes	41 (97.6)
No	1 (2.4)

(N = 42)

Have officers in your department received training in problem solving processes (e.g., Scan, Analyze, Respond, Assess - SARA model)?

Yes	34	(85.0)
No	6	(15.0)
(N = 40)		

Have officers in your department received training in specific problem solving techniques (e.g. drug and nuisance abatement procedures)?

Yes	32	(78.0)
No	9	(22.0)
(N = 41)		

Have officers in your department received training in strategic planning for community policing?

Yes	21	(52.5)
No	19	(47.5)
(N = 40)		

Have officers in your department received training in cultural diversity?

Yes	31	(79.5)
No	8	(20.5)
(N = 39)		

Have officers in your department received training in determining or analyzing community needs and resources?

Yes	33	(86.8)
No	5	(13.2)
(N = 38)		

Have officers in your department received other types of training?

Yes	13	(36.1)

No   23   (63.9)
(N = 36)

Does your department currently use computer mapping technology as a method for analyzing crime problems?

Yes   25   (54.3)
No   21   (45.7)
(N = 46)

THE NEXT SET OF QUESTIONS INCLUDE THE DEPARTMENTS THAT RESPONDENT INDICATED USE COMPUTER MAPPING FOR ANALYZING CRIME PROBLEMS (N = 25)

Does your department use computer mapping to map locations of offenses?

Yes   25 (100.0)
(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful   18   (72.0)
Somewhat useful   7   (28.0)
(N = 25)

Does your department use computer mapping to map locations of arrests?

Yes   18   (72.0)
No   6   (24.0)
Don't Know   1   (4.0)
(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful   10   (55.5)
Somewhat useful   7   (39.0)
Not useful   1   (5.5)
(N = 18)

Does your department use computer mapping to map citizen calls for service?

Yes	16	(64.0)
No	9	(36.0)

(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful	11	(68.8)
Somewhat useful	4	(25.0)
Not useful	1	(6.2)

(N = 16)

Does your department use computer mapping to analyze beat problems?

Yes	24	(96.0)
No	1	(4.0)

(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful	19	(82.6)
Somewhat useful	3	(13.0)
Don't know	1	(4.3)

(N = 23)

Does your department use computer mapping to develop responses/strategies to reduce crime and disorder problems?

Yes	22	(88.0)
No	2	(8.0)
Don't know	1	(4.0)

(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful	16	(72.7)
Somewhat useful	4	(18.2)
Don't know	2	(9.1)

(N = 22)

Does your department use computer mapping to evaluate/assess problem solving efforts?

Yes	22	(88.0)
No	3	(12.0)

(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful	19	(90.5)
Somewhat useful	1	(4.8)
Not useful	1	(4.8)

(N = 21)

Does your department use computer mapping to identify "hot spots"?

Yes	25	(100.0)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful	21	(87.5)
Somewhat useful	3	(12.5)

(N = 24)

Does your department use computer mapping to identify gang territory or gang related crime?

Yes	16	(64.0)
No	9	(36.0)

(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful	14	(87.5)
Somewhat useful	2	(12.5)

(N = 16)

Does your department use computer mapping to map addresses of victims?

Yes	14	(56.0)
No	11	(44.0)

(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful   7   (53.8)
Somewhat useful   5   (38.5)
Not useful   1   (7.7)
(N = 13)

Does your department use computer mapping to map addresses of offenders?

Yes   13   (52.0)
No   12   (48.0)
(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful   11   (84.6)
Somewhat useful   1   (7.7)
Don't know   1   (7.7)
(N = 13)

Does your department use computer mapping to map motor vehicle accidents?

Yes   16   (64.0)
No   9   (36.0)
(N = 25)

If so, how useful is computer mapping for this purpose? (only those answering yes)

Very useful   11   (68.8)
Somewhat useful   4   (25.0)   93.8
Don't know   1   (6.2)
Total   16   100.0   100.0

Does your department use computer mapping to map firearms offenses?

Yes   14   (56.0)
No   11   (44.0)
(N = 25)

If so, how useful is computer mapping for this purpose? *(only those answering yes)*

Very useful	11	(78.6)
Somewhat useful	2	(14.3)
Not useful	1	(7.1)
(N = 14)		

Does your department use computer mapping to map the location of sex offenders for notifying nearby residents and related institutions?

Yes	11	(44.0)
No	14	(56.0)
(N = 25)		

If so, how useful is computer mapping for this purpose? *(only those answering yes)*

Very useful	10	(90.9)
Don't know	1	(9.1)
(N = 11)		

Does your department use computer mapping for resource/manpower allocation?

Yes	13	(65.0)
No	7	(35.0)
(N = 20)		

If so, how useful is computer mapping for this purpose? *(only those answering yes)*

Very useful	9	(69.2)
Somewhat useful	4	(30.8)
(N = 13)		

THE NEXT SET OF QUESTIONS INCLUDE THE DEPARTMENTS THAT RESPONDENTS INDICATE HAVE NOT BEEN USING COMPUTER MAPPING FOR ANALYZING CRIME PROBLEMS (N = 18)

If your department was utilizing computer mapping, would your department use computer mapping to map locations of offenses?

Yes   17   (94.4)
No   1   (5.6)
(N = 18)

If your department was utilizing computer mapping, would your department use computer mapping to map locations of arrests?

Yes	14	(77.8)
No	4	(22.2)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to map citizen calls for service?

Yes	15	(83.3)
No	3	(16.7)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to analyze beat problems?

Yes	17	(94.4)
No	1	(5.6)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to develop responses/strategies to reduce crime and disorder problems?

Yes	18	(100.0)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to evaluate/assess problem solving efforts?

Yes	17	(94.4)
No	1	(5.6)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to identify "hot spots"?

Yes	18	(100.0)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to identify gang territory or gang related crime?

Yes	12	(66.7)
No	6	(33.3)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to map addresses of victims?

Yes	13	(72.2)
No	4	(22.2)
Don't know	1	(5.6)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to map addresses of offenders?

Yes	14	(77.8)
No	4	(22.2)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to map motor vehicle accidents?

Yes	14	(77.8)
No	4	(22.2)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to map firearms offenses?

Yes	11	(61.1)
No	6	(33.3)
Don't know	1	(5.6)
(N = 18)		

If your department was utilizing computer mapping, would your department use computer mapping to map the location of sex offenders for notifying nearby residents and related institutions?

Yes	15	(83.3)

No   3   (16.7)
(N = 18)

If your department was utilizing computer mapping, would your department use computer mapping for resource/manpower allocation?

Yes   14   (87.5)
No   2   (12.5)
(N = 16)

Do officers assigned to community oriented or problem solving policing have access to computers with mapping software, or do they request maps from a centralized mapping or crime analysis unit? *(departments currently involved in mapping)*

Have access to computers   7   (28.0)
Request maps from other unit   17   (68.0)
Don't know   1   (4.0)
(N = 25)

(For departments with decentralized mapping only) **Is computer mapping training provided to officers involved in community policing?**

Yes   3   (75.0)
No   1   (25.0)
(N = 4)

If your department was able to provide the types of information (using computer mapping technology) that I just mentioned, do you think that having access to that type of information would help officers who are assigned to community or problem solving policing?

Yes   16   (64.0)
(N = 25)

Can you think of any other ways in which computer mapping could help support your department's community oriented or problem solving efforts? (25 responses)

 1) Computerized booking, officer safety, application for mobile computers, easy to use crime analyses above just mapping

 2) Enhance ability to communicate with community and internally "generate a news letter"

3) Going to decentralized mapping

4) In process of strategic planning for redistricting
5) In process of using maps to create a problem-solving resource for surrounding areas

6) Individual officers will be trained

7) Internet, including community, for mobile units, using for officer safety by mapping hazardous material -- digital and spacial retrieval

8) All coded data is intended to become part of GIS mapping system

9) Mapping a joint operation, several officers having maps, know location and layout, purchased ArcView, waiting on maps

10) Mapping is a good thing - we analyze on a daily basis with COMPSTAT

11) Mapping key prevention resources -- community programs. Help cities decentralize projects --understand where blocks, beats, districts are all common since city is divided up in multiple ways

12) Non-criminal problems also should be mapped

13) Pin mapping community organizations and block associations

14) Place crime data on internet using map objects so community is informed

15) Plan for department wide use of mapping

16) Plan to establish unit level kiosks in community where citizens can access information about crime in the community

17) Resources, report calls, density of crime

18) Sharing info with community -citizen training and access to crime maps

19) They plan to use mapping for routing so that dispatchers can give officers the best routes to calls

20) Training to make it department wide

21) Want to make this crime information available to civic associations via internet

22) Want to map crime to geographic locations (schools, parks) to determine if more crime occurs at certain types of locations

23) We gave her good ideas

24) Will be decentralized

25) Yes, if technology could be linked up with neighborhood organizations

Is there anything else you would like to add concerning the potential of computer crime mapping technology in facilitating community oriented or problem solving policing? (21 responses)

 1) Both go together -- helps decrease crime

 2) Eventually it should be more comprehensive and take into account non-crime (street lights, all city agencies, projections about crime)

 3) Finds information mapping provides incredible

 4) Hot spots-- animal control issues

 5) Instruction/ training in mapping at community levels -- do their own visual analysis

 6) Mapping is a great benefit even if department doesn't have serious crime problem

 7) More friendly software if you want officers to use it themselves

 8) New GPS systems for small departments to know where cars are located -- dispatching - tied to CAD system

 9) Non-profit neighbors resource -- crime watch groups

10) Obtaining funding from OCOPS is critical for small departments

11) Our goal is to have mapping available department wide by 1999

12) Should be talking about criteria for standardization so we are talking about apples and apples to ensure accuracy

13) They expect it to be tremendously useful once it is off and running

14) They have a home page with area crime maps so citizens can access information about neighborhoods - plan to make it interactive

15) They have a lot in the works - 3d mapping of public housing projects

16) Tracking results

17) Training is a great idea and very much needed -- funding becomes the major issue

18) Users will define its direction ESRI's product is so robust that the sky is the limit

19) We have been using an officer based GIS for 7 years - the potential is now just being realized since use is continuing to increase

20) Would plan to make information available to public

21) Wouldn't have done it without COPS grant even though it makes sense and it is relatively inexpensive