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Establishing a Research Partnership:

The Forest Park (OH) Police Division and the University of Cincinnati

A report submitted to the National Institute of Justice

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FINAL REPORT

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Abstract

In January 1997, the Forest Park Police Division and the Center for Criminal Justice Research of the University of Cincinnati established a locally initiated research partnership with support from the National Institute of Justice. The partnership continued through June, 1998. In the first year of operation, the partnership experienced a 75% turnover in personnel.

This report describes the development and operation of the partnership. Despite wholesale change in the command staff of the police division, the researchers completed the primary research task, a survey of community policing and crime prevention officers. The new command staff asked that a second task be completed; the drafting of a feasibility study of geographic crime analysis for the police division. This second task was also completed.

The principal members of the partnership had a long tradition of cooperation in research efforts. The Police Division had conducted surveys in neighborhoods beginning in 1995. In 1996, University of Cincinnati Researchers studied the impact of door-to-door surveys on public attitudes towards the police. The results of these suveys (by both the Police Division and the University) have been incorporated into the strategic plan for the Police Division. This experience has created and supported the impetus for continued research in the police agency. In addition, the survey of crime prevention and community policing officers conducted as part of this project was used to guide the development of training offered through the Tri State Regional Community Policing Institute.

Despite completing two research tasks which both partners felt were worthy of attention, the partnership did not result in any noticeable change in the general research capacity of the police division. An assessment of the evolution of this partnership indicates that a greater involvement of organizational change and links between organizations rather than individuals is necessary to insure a continuing impact of the research collaboration.

Introduction

This report describes a locally initiated research partnership between the Forest Park Police Division and the Center for Criminal Justice Research at the University of Cincinnati. The formal partnership was developed in response to the solicitation issued by the National Institute of Justice, but represented the continuation of a long-standing relationship between the principal investigators. The report presents a chronology of the partnership. The two major research products of this collaborative effort are appended.

Background to the Project

The Forest Park Police Division and the Division of Criminal Justice at the University of Cincinnati had traditionally enjoyed an exchange relationship. For over a decade university students had served internships with the police division, several members of the police division had taken degrees at the university, and there had been numerous instances of cooperation on research and community service projects. What had been missing from this relationship was the element of collaboration. The two organizations had a tradition of cooperation characterized primarily by "quid pro quo" arrangements.

This relationship lacked a formal structure for shared decision-making and responsibility. There was no obligation for the two organizations to work together, so that each instance of cooperation was unique. Seeking to formalize the relationship, the police division and university proposed to create a research partnership in 1996.

In January, 1997, the Forest Park Police Division and the Center for Criminal Justice Research at the University of Cincinnati initiated a formal research partnership with sponsorship from the National Institute of Justice.

Structure and Operation of the Partnership

The partnership included sharing of principal investigator status between Dr. Lawrence Travis of the University of Cincinnati, and Capt. Kenneth Hughes, then assistant chief of the Forest Park Police Division. A graduate research assistant was assigned to the Forest Park Police Division, under the direct supervision of Lt. Roger McHugh, while Capt. Hughes spent approximately four hours per week in the Center for Criminal Justice Research. The project conducted a survey of police officers having community policing or crime prevention assignments in Hamilton County, Ohio. The survey sought information about the kinds of community problems encountered, the solutions employed by officers, and officer perceptions of the adequacy of their training and preparation for their assignments.

In June, 1997, several Hamilton County police officers having community policing or crime prevention assignments were invited to the University to participate in a focus group. The purpose of the focus group was to assist in the development of the survey instrument. Officers were identified by Lt. McHugh, then president of the Ohio Crime Prevention Association. Greg Fiebig, then president of the Hamilton County Community Policing Alliance, assisted in identifying officers and encouraging them to participate in the focus group. The focus group identified common problems encountered by officers and common solutions for those problems. The efforts of the focus group

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enabled the researchers to develop a questionnaire that included standardized, fixed-choice items.

Capt. Hughes accompanied Professor Travis to a meeting of the Hamilton County Chiefs of Police Association where the survey was introduced. This meeting was followed by letters and telephone contact between the researchers and the forty-five local law enforcement agencies in the county. In the end, 14 of 22 agencies in which officers held community policing or crime prevention assignments participated in the survey.

In June, 1997, Lt. McHugh retired from the police division, and in August, Capt. Hughes also left the police division. In September, 1997, the graduate research assistant accepted a faculty position at an out of state university, leaving only Dr. Travis of the original team. Dr. Travis began to work more closely with Chief Steven Vollmar of the police division, until Chief Vollmar retired in April, 1998. The chief requested time to re-organize the command staff of the police division, and a meeting of the researchers and command staff was scheduled in December, 1997. At that meeting, the new command staff requested that the researchers investigate the feasibility of developing computerzied mapping for problem identification.

Beginning in January, 1998, the university partner began a "feasibility study" for the development of a geographic information system to be used by the police division. It was felt that this feasibility study could be shared with the incoming chief, who could decide whether or not to pursue the matter. The new graduate assistant, David Hurley, had primary responsibility for developing this study. He consulted with the Cincinnati

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Police Division, reviewed literature, and met with representatives of the county and city governments. The feasibility study report is appended.

By September, 1998, fully seventy-five percent of the original members of the partnership team were no longer involved in the project. By Spring of 1998, it appeared that the partnership would not continue. The new command staff of the police division were not (and had not been) actively involved in the partnership. The police division was in a state of turmoil, and the new chief of the division had not yet been identified.

Future of the Partnership

In June, 1998, former captain Kenneth Hughes was hired by the City of Forest Park to be the new chief of police. Chief Hughes is strongly desirous of instituting a problem-oriented approach to policing in the division. He hopes to institute a geographic analysis capability within the division to help change the culture of the police division to that of a "learning organization." To that end, the Police Division and University submitted a proposal to the National Institute of Justice for continuation funding for the partnership.

Between August, 1997 and July, 1998, Chief Hughes had directed the Tri-State Regional Community Policing Institute. Dr. Travis is the evaluator for this Office of Community Oriented Policing Services funded project. Thus, the two co-principal investigators continued a professional (and personal) relationship. Upon accepting the position as chief of police, Chief Hughes and Dr. Travis considered ways in which routine research could be encouraged and supported in the police division. They

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concluded that a data-driven, problem orientation would require and support on-going research within the police division.

The continuation proposal features a project management plan which includes continual involvement of the command staff in the problem identification process. Additionally, officers will be encouraged to nominate problems and ask questions that can be addressed through the G.I.S. It is hoped that, if funded, these operational changes in research partnership activities will alter the culture of the organization in ways that will institutionalize a research climate in the police division.

Assessment of the Partnership

In retrospect, the initial partnership between the Forest Park Police Division and the University of Cincinnati was too dependent on the personal relationships between the partners. The partnership did not create an interorganizational relationship that transcended the personnel involved. Further, the work of the partnership was confined to the interests of those persons, rather than to topics of fundamental importance to either organization. Thus, with the turnover in personnel, the partnership itself was jeopardized.

The personal relationships between the police personnel and primary researcher survived, and they continue to cooperate on a number of tasks. While the products of the partnership's research have been and will be useful to the police division, the partnership did not improve the research capacity of the division as an organization. Division personnel are still dependent upon outside researchers for most research tasks.

Based on the experience of the Forest Park/University of Cincinnati Locally Initiated Research Partnership, some generalizations can be offered:

1. Personal relationships between police personnel and researchers are probably critical to the establishment of collaborative efforts since these relationships encourage trust and cooperation.

2. Partnerships between individuals, no matter what positions they hold in organizations will not suffice to fundamentally alter organizational arrangements.

3. Partnerships between organizations should survive changes in personnel so that a successful and long lasting researcher/practitioner partnership probably requires a formal linking of police and research organizations so that,

4. Partnership roles should probably be assigned to positions within both organizations rather than to the incumbents of those positions.

5. Research should be conducted jointly by members of both organizations to insure that police personnel gain experience in the research process and to develop a sense of ownership of the research among all parties.

APPENDIX

A. Community Policing and Crime Prevention Officer Problem Solving in Hamilton County

B. Geo-Mapping for Forest Park Police Division

C. Survey Instrument

COMMUNITY POLICING AND CRIME PREVENTION OFFICER PROBLEM

SOLVING IN HAMILTON COUNTY: SURVEY RESULTS

By:

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INTRODUCTION

In January, 1996, the Forest Park Police Division and the Criminal Justice Research Center of the University of Cincinnati received funding from the National Institute of Justice for the implementation of a police practitioner/researcher partnership. As a collaborative effort, the partners had decided to investigate the problem-solving practices and experiences of police officers in Hamilton County, Ohio. This exploration was designed to identify the types of problems officers most frequently encountered in their work as well as the types of solutions typically employed by officers.

Both the Police Division and the researchers were interested in the problem-solving efforts of community police officers. The study was intended to provide information about successful and unsuccessful problem solving for use by officers in the Forest Park Police Division. Additional information would be helpful in identifying training needs of officers. This report describes the survey of police officers with community policing or crime prevention assignments that constituted the primary task of the research partnership.

METHODS

Sample

Data for this study were collected through a survey of police officers having community policing or crime prevention assignments in Hamilton County, Ohio. The study was conducted in two stages. First, the chiefs of police departments within Hamilton County were contacted to: 1) determine if the department had officers specifically assigned to community policing or crime prevention duties; and 2) if the

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department would be willing to participate in the research . Out of a total of 45 law enforcement agencies in Hamilton County, 22 agencies met the criteria and were included in the study.

Once involved in the study, the chiefs were asked to identify individual officers engaged in community policing and crime prevention activities and to estimate the total number of officers within their agency engaged in these tasks.[1] To expedite and regulate the surveys as well as check on individual police departments participation, an individual within each department was established as a point of contact between that department and the researchers.

The second stage of the project consisted of administering the survey. The contact person within each department was mailed a survey for each community policing and/or crime prevention officer in the department along with self-addressed return envelopes. Each envelope was marked with an identifying number which indicated the agency in which the respondent was employed. Participating officers were asked to return completed surveys to the contact person who placed them into the return envelope. The researchers maintained continued contact with each department contact person until data collection was concluded. Out of 22 departments that met the criteria and agreed to participate, 14 of the departments actually surveyed officers and returned the results. The overall return rate was approximately 55 percent (128 surveys returned per 234 officers surveyed).

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[1]At first glance this seems fairly straightforward. Several agencies, however, claimed all of their officers were COP officers or crime prevention specialists. Once the police administration realized that all these officers in turn needed to be surveyed the total number of officers that these departments claimed to be engaged in community policing or crime prevention were retailled to a more realistic figure.

Measures

The survey was subdivided into three sections: 1) personal information; 2) perceptions and problems encountered in neighborhoods; and, 3) types of training received and satisfaction with assignment. For individual officer characteristics, respondents surveyed were asked a number of demographic questions (age, race, educational attainment, sex, marital status and where they reside) and career related questions (current rank, how long they had been a police officer, how long they had been with the department, on current assignment, on current beat, etc.).

The second section of the survey listed a series of problems (youth gathering on street corners, truancy, curfew violations, vandalism, gang activity, drug use, sale of drugs, after hours operation of a bar/nightclub, loud parties in the neighborhood, speeding at particular locations, DUI, loud car radios, repeated calls for domestic violence, stray animals, dogs barking, trash accumulating, robbery, things being stolen from outside homes, things being stolen from outside businesses, burglary-specific area, auto theft, persons loitering on public street, and sewer/water problems).

The selection of problems included in this section of the survey was accomplished through a focus group of community policing/crime prevention officers. The Hamilton County Crime Prevention Association nominated six police officers who were invited to the University of Cincinnati to participate in the focus group. These officers were asked to identify common problems encountered by community policing and crime prevention officers, and potential solutions to those problems. The products of this focus group were

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incorporated into a series of questions about the frequency of encountering each type of problem, solutions employed, and follow-up activities.

Officers were asked if they had encountered these problems within the last six months. The officers who responded positively to encountering any of the neighborhood problems were then asked a series of questions about the problem - how they learned of the problem, what solution they used in an attempt to resolve the problem, how they learned of the solution, whether the solution was successful, what they did do to follow up on the solution chosen, and what was the main resource used to implement the solution.

The third section of the survey addressed the types of training the officers received and what agency offered the training. Moreover, this section asked the officers about their satisfaction with their current assignments. Types of training were categorized as S.A.R.A., community oriented policing, community organizing, diversity, and problem solving[2]. The officers were also asked if they received the training from their local department, another local agency, a state agency, a national agency or by another agency. Moreover, the officers were asked a series of questions concerning their current assignment (whether they were satisfied with their current assignment, whether they have the authority to implement solutions, whether they were adequately trained for the assignment, and whether they have received adequate in-service training since being in their current position). To answer these questions the survey provided a six-category scale with possible responses ranging from very strongly agree through very disagree.

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[2]S.A.R.A. stands for Scanning, Analysis, Response and Assessment.

A summary of the responding officers' characteristics is offered in Table 1. Not surprisingly, the majority of officers are white (80%) and male (86%). Minorities and female officers' responses, however, were consistent with those of white male officers. Approximately 85% of the officers surveyed had educational experience beyond high school, this includes: some college, a degree from a trade or technical school, an Associates Degree, a Bachelor's Degree, some graduate work, or a Master's Degree. The majority of officers were married (66.4%) and held the current rank of patrol officer (67.2%). The mean age of the officers was approximately 39 years, and the average respondent had been a police officer for about 13 years while serving with the current department for the last 11 years. The length of assignment to the current beat was about two years, but this varied greatly.

FINDINGS

Each officer received a list of 26 problems routinely encountered during the course of police work. The officers were asked if they had encountered these problems on their beats or in their neighborhoods during the last six months. Table 2 shows the percentage of officers that encountered each particular problem in the last six months. These problems were subdivided into three categories: high, medium, and low frequency. Problems that more than 60% of the officers confronted were ranked as high frequency. Those that 40% to 59% of the officers encountered were labeled as medium, while those problems encountered by less then 39% of the officers were categorized as low frequency.

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The most frequently encountered problems are disorder or minor criminal activity with the notable exception of drug abuse.[3] Youth gathering, persons loitering, and noise complaints are often not criminal matters, while activities of drug use and vandalism are nonviolent offenses. Speeding and parking complaints can be grouped as "traffic problems." These seven problems seem to reflect disorder in the neighborhood rather than serious crime. The way the officers most often respond to these problems is evenly divided between arresting and making personal contact with the suspects (see Table 3).

Medium frequency problems encompass a wide variety of concerns from animal complaints to robbery. The majority of problems involve behaviors that are clearly prohibited. Interestingly, all the juvenile criminal violations (underage drinking, curfew, and truancy) fall into this category. The most frequent way officers chose to handle the problems in this category is through arrest.

Low frequency problems appear to reflect citizen needs for services. The majority of these complaints involved situations which were the responsibility of another agency. Not surprisingly, officers faced with this type of matter chose to make a referral to another agency.

In summary, Table 3 reveals that disorder problems are most frequently encountered by officers across neighborhoods. Officers' responses in these situations are evenly divided between legal sanctions (arrest) and personal contacts. Medium frequency problems encompass mainly illegal behavior to which the most frequent police response

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[3]Drug abuse is a vague category and subject to individual officer interpretation. No guideline or definition was given so the type of drug use in the neighborhoods is unknown. Individual responses by the officers, who encountered this problem, could conceivably range from alcohol abuse to heroin addiction.

is arrest. Problems encountered least frequently generally reflect non-legal service needs. When officers encounter these types of problems, they generally refer citizens to another responsible agency.

Table 4 describes the officers' satisfaction with issues concerning community policing. The results displayed in this table show how the officers felt about their current assignment, their ability to implement solutions, how adequately trained they were, and their perceptions of the quality of training. While mean responses to all four questions were positive, there is a notable shift in the responses[4]. Officers appear to be more satisfied with their current assignment and their ability to define problems and implement solutions than they are with the training they received. The lower satisfaction with training might best be understood in context with Table 5. Besides diversity training, the officers are not well trained in the other aspects of COP. Only 58% of the officers reported any training in community oriented policing, while 49% said they were trained in problem solving. Twenty-eight percent reported receiving training in the S.A.R.A. model, and only 25% said they were trained in community organizing. Not surprisingly, when the officers were asked how they arrived at the problem solutions they chose (See Table 3) in all cases but one the officers relied on experience more than training

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[4]As described above in the Methods section the responses were based on a six category scale ranging from very strongly agree to very strongly disagree (the former being counted as 1 and the latter being counted as 6).

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Table 1. Officer Demographics

Variable	Mean	SE	Percent
Age	38.6	7.0	
Years a Police Officer	13.2	7.1	
Years with Current Dept.	11.4	7.4	
Months on Current Beat	24.2	30.4	
Educational Attainment			
Less Than High School			0.8 %
High School Diploma			14.1 %
Some College			36.7 %
Trade/Technical Degree			3.9 %
Associate Degree			16.4 %
Bachelor's Degree			18.8 %
Some Graduate work			6.3 %
Master's Degree			3.1 %
Gender			
Male			85.9 %
Female			14.1 %
Race/Ethnic Background			
Black/African American			20.3 %
Hispanic			0.8 %
Native American			2.3 %
White			76.6 %
Martial Status			
Single/Never Married			13.3 %
Divorced			14.1 %
Married			66.4 %
Separated			6.3 %
Current Rank			
Supervisor			24.2 %
Patrol Officer			67.2 %
Other			8.6 %

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Table 2. Distribution of Problem Frequency

Problem	Percent
High	
Youth gathering on street corner	77 %
Speeding at particular location	76 %
Vandalism	73 %
Parking violations at particular location	73 %
Drug use	70 %
Loud car radios	66 %
Loud parties in neighborhood	63 %
Persons loitering on public street	62 %
Medium	
Underage drinking	56 %
Burglary	55 %
Things being stolen from outside homes	54 %
Curfew violation	53 %
Stray animals	53 %
Dogs barking	52 %
Repeated calls for domestic violence	52 %
Truancy	52 %
Sale of drugs	51 %
Traffic accidents at particular location	50 %
Robbery	49 %
Auto theft	49 %
Gang activity	46 %
Low	
DUI	38 %
Trash accumulating	36 %
Things being stolen outside of businesses	36 %
Sewer/water problems	22 %
After hour operation of bars	16 %

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Table 3. Most Common Solution Chosen by COP Officers to Handle Problem

| Problem | Type of Solution | | |
	Contact	Arrest	Referral
High	50 %	50 %	0 %
Medium[a]	19 %	71 %	8 %
Low	0 %	40 %	60 %

[a] Officers were equally split on the problem of traffic accident at a particular location. To reflect this accurately traffic accident were calculated as .5 in the contact and arrest columns.

Table 4. Mean Sum of Officers' Attitudes

	Mean	Standard Deviation
Satisfied with authority to define problems and implement solutions	2.29	.76
Satisfied with current assignment	2.30	.91
Satisfied with training in preparation for current assignment	2.63	.96
Satisfied with in-service training since being assigned to current position	2.77	1.00

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Table 5. Percent of COP Officers who Received Type of Training

Type of Training	Percent
S.A.R.A.	17 %
Community Oriented Policing	58 %
Community Organizing	23 %
Diversity	74 %
Problem Solving	49 %
Other	8 %

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GEO-MAPPING FOR FOREST PARK
POLICE DIVISION

A Feasibility Study Prepared by:

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INTRODUCTION

This study of geo-mapping for the Forest Park Police Division will consider three elements. First, an overview of the literature on hot spots, mapping and police strategies is presented. Second, the feasibility analysis consists of four sections: the resources available, start up, input needed, and the security and confidentiality of the system. The resources available section examines the advantages and disadvantages of CAGIS and TIGER files. The start up portion considers the various capabilities, costs, training, and technical support needed for the system. The input data section will examine changes required of the police division before the information can be effectively used in a computerized format. Security, confidentiality requirements, and policies that should be considered before geo-mapping is implemented will also be discussed.

Hot Spots

Crime is traditionally thought to have an individual component. The notion of crime "hot spots" broadens the concept of crime by considering the elements of where and when in addition to whom. Sherman, Gartin, and Buerger (1989) found that a small percentage of the locations in a city accounted for a large percentage of the crime. These high crime areas were generally small in size, "usually less than a block," and were promptly named hot spots (Weisburd, Maher, and Sherman 1993). In Minneapolis, Sherman, Gartin, and Buerger (1989)found that:

- A small portion (3.3%) of addresses and intersections in the city accounted for 50.4% of the dispatched police calls.
- Of serious offenses, all robbery calls came from 2.2%, all auto theft calls from 2.7%, and all rape and criminal sexual conduct calls from 1.2% of the area of the city.
- There were 54 locations that registered at least 10 serious offenses over a one year period.

Relatively small areas of cities have a disproportionately high crime rates. Identification of these hot spots would give the police the option of targeting these areas with pro-active strategies, and allotting additional resources to attack the criminogenic effects of these places.

Often, these hot spots share more than just crime. As noted in the philosophy of community policing, the job of the police is not just to attack crime but the root causes of disorder that contribute to the persistent criminogenic effects of certain locations. For community policing or problem-oriented policing characteristics of the community such as the spatial distribution of the population, the physical lay-out of streets and buildings, ethnic or group tensions, along with other social or demographic characteristics can matter.

Mapping

Once the elements of where and when have been added to the crime picture, the location and time of events can now be studied as part of the procedure for analyzing crime. Computerized mapping is a convenient way to pinpoint crimes in general as well as specific offenses (for example rape, robbery, burglary, etc.). Each offense can be represented by a different symbol or color and located on a map. This map can be

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designed to portray sections as large as a city or county or narrowed to a single police

district or beat, zip code, census tract, or gang territory (Block 1998).

Geo-database The purpose of the geo-database is to merge the community characteristics

with the mapping elements of space and time. This allows the law enforcement agency to

examine various patterns (i.e., offenses, arrests, calls for service, etc.) and compare these

patterns to community factors. Block (1998) characterizes this as turning "spatial data

into spatial information." Moreover, this information can greatly aid in the analysis part

of Spelman and Eck's (1987) SARA (Scanning, Analysis, Response, Assessment) model.

Block (1998) suggests that a geo-database resembles a history of past patterns and trends

for the community. This database enables large amounts of seemingly separate incidents

and community characteristics to be linked.

Once the information has been analyzed, some researchers suggest that certain

police responses, for example directed patrol and patrolling of hot spots, can be effective

in reducing location-based crime. The purpose of directed patrol is to aggressively attack

specific crime problems by directing the normal discretionary patrolling of officers to

specific tasks and objectives. Sherman et al. (1989) add to this idea but hold that the

locations, and not the crimes, should be the objective of police patrol strategy. The idea

is to use increased police patrol in given locations most associated with crime in general

to attempt to prevent offenses from occurring. This not only increases police

effectiveness by achieving more arrests and perhaps preventing more crime, but is more

efficient as well because it does so without increasing the cost of policing. Under this

strategy the police become more proactive, not waiting for calls for service to determine

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patrol allocation, but more actively patrolling or directly assigning officers to those areas with disproportionate crime rates. By doing so, the police should reduce the overall calls for service.

Cordner (1981) found that directing police patrol to certain areas to target crime increased the number of arrests. Moreover, it led to the decreased reporting of certain offenses.

Sherman and Weisburd (1992) tested the effect by increasing police officer presence in some hot spot area locations intermittently throughout the day between the normal police calls for service. This strategy resulted in a 13% reduction overall in police calls for service in these areas. "Soft crimes": vice, disputes, and other minor offenses, had a 16% reduction in calls for service. Hard crimes, however, such as violent or index offenses were only reduced by 5%. Robbery when analyzed alone, however, had over a 20% reduction. Civilian observers also noticed a 50% reduction in disorder in patrolled hot spots. An unintended consequence of this strategy was the "residual" effect. The calls for service remained down six weeks after the police stopped the increased patrolling of the area. Moreover, the amount of disorder remained at the same reduced rate during the time of increased patrolling whether or not the police were actually present.

FEASIBILITY

Resources Available

Before getting into the details of computer mapping, the Forest Park Police Division presently has a resource available that could influence their strategy on computer

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mapping. Hamilton County has already put together a consortium to aid in computer mapping. Included in the consortium beside Hamilton County, are several municipalities including the City of Cincinnati, and public utilities such as Cinergy and Cincinnati Bell. The system used by the consortium is Cincinnati Area Geographic Information System (CAGIS). Under the CAGIS system, geographic information system (GIS) mapping, is available to every municipality that is a member. While this system was originally designed for city planners, it contains a framework that should meet police needs for mapping. The CAGIS system provides:

- The location of all streets and buildings;

- An overview map for all the buildings and lots in the city;

- Addresses and owners' names of these buildings and lots;

- Geographic boundaries between building and lots;

- Locations of sewer, water, and power lines;

- Contour elevation lines of the city;

- Records of the auditor's office, the tax department, the fire department, and various health information.

This is just a sample of some of the information which might be of interest to the police and more features are available.

Forest Park has signed on with the consortium and has the CAGIS system available through the City Planner's office. I spoke with Stan Beeler from the City Planner's office, and they hope to have the CAGIS system up and running by the end this

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year. As in any geo-mapping system, the program contains some errors and bugs which the city manager's office is in the process of correcting. This is one reason CAGIS is an incredible resource. Any geo-mapping system the police department decides to use will need to be corrected and debugged - which costs time and money. In the case of CAGIS, the Forest Park City Planning Office is already correcting and debugging the system at no cost to the police department. Moreover, because the city has already contracted for the CAGIS system, the police department can use this system for free.

Information is also available from the U. S. Census' Topologically Integrated Geographic Encoding and Referencing (TIGER) files. In these files the Census Bureau developed digitized street maps for every county in the United States (Block 1998). While this software is also inexpensive it is not as accurate. Mike Neumann, the Cincinnati Police Officer who provides geo-mapping for the Cincinnati Police Division, found TIGER files to be 75% correct but had to edit address data and create some streets. Richard Block (1995) in his study of Chicago noted several shortcomings of the TIGER files including, missing addresses, unnamed streets, misnamed streets, and missing address ranges for streets.

Whether using CAGIS or TIGER both have similar capabilities to make lines (arcs), polygons (shapes) and points of data. Data which can be mapped is limited only by the imagination and includes locations and times for crimes, offenses, arrests, field interrogation reports, gang activity, calls for service, auto accidents, etc.

Start Up

To start computer mapping four elements need to be considered; capability, cost, training, and technical support. How the GIS system is used will affect the other three elements of cost, training and the possible amount of support needed.

The capability of GIS mapping varies with the speed in which the information is available and the broad applications of the data. Mazerolle, Bellucci, and Gajewski (1998) noted the distinction between real time information and archival data. While plotting past offenses and arrests are useful in discerning patterns and trends, the accessibility of up-to-date information on calls for service, arrests and crime information allowed officers to problem solve with the most current information. While they argue that global positioning systems technology would greatly aid police work, this is beyond the scope of this feasibility study, and perhaps the needs of the police division at this time.

Canter (1998) suggested three broad uses of geo-data: 1) forward data mapping; 2) backwards data mapping; and 3) interactive data modeling. Forward data mapping is similar to pin mapping, and can use color or polygons to show the rate of select problems in various communities or areas. These maps give the description, time, type and number of variables (e.g., offense such as robbery). The information contained in these maps allows the police to: "...(1) identify the type of problem occurring, (2) determine which locations were victimized by the same offenders, and (3) develop a tactical strategy..." (Canter 1998).

Backward data mapping uses the geographic information to pin point problem areas. This is useful in determining hot spots. Crimes can be analyzed via their relative

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location to each other. For example, all robberies that occur within a half mile from each other can be computed. Next, these offenses can be analyzed by the features of the geographic location such as buildings, roads, junctions, etc. (Canter 1998).

Interactive data modeling allows the police to ask the question "what if?". Canter (1998) suggests that by using this GIS method police could model the possible changes in crime brought about by a change in land use. Moreover, the police could model the effect an increase in the number of districts might have on response times. The type of software, while most current software is able to perform all three functions, used could be influenced by which of these three capabilities the police department sees as most important.

The cost of GIS mapping varies depending on the software, hardware, capabilities and training needed. With the availability of software packages there is no need to go to the expense of mainframe mapping. Software packages available include ArcView, ArcInfo, MapInfo, and Crime View. ArcView is currently being used with CAGIS and seems to be highly compatible. Crime View has recently released an updated version of its capabilities and should also be considered. The number of individuals who work with and have access to the GIS will increase the amount of the hardware needed. To start, one 300 mz Pentium computer with 32 RAM should be more than sufficient, while allowing for possible upgrades in computer software. Training is relatively cheap, $50 per person for three days of GIS training, and will depend on the number of individuals trained. Staffing is a variable factor depending on use of the GIS system. Staffing costs could run as little as a few hours a week to, at maximum, a full-time job for one officer or

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staff person (the city of Cincinnati has one officer and one civilian who provide input for the GIS data for the whole department). An estimated budget follows:

Software

Arc view	$ 69.95 (CompUSA)

Hardware

Computer system pentium 300 including: monitor, printer and keyboard	Already Have

Training

CAGIS training (3 days)	$ 50/person

Staffing	Variable

Total estimated cost	$ 119 + staffing

Two training programs will be available. First, the county offers a three day training program on CAGIS to give users a rudimentary and practical understanding of how the system works. Information and sign up for these classes was obtained through Stan Colter (352-1644). Second, the Regional Community Policing Institute is also designing a module (Mod 25) to aid police departments developing the skills for computerized mapping. RCPI training is free of charge.

The division must also decide which individuals will be trained, and to what extent. Will a few selected individuals be highly trained as mapping specialists, will all

the officers receive the fundamental principles of GIS, or will some compromise between these two be chosen?

Technical and information support for the CAGIS system in general will be available through the consortium. The National Institute of Justice also provides some support to departments in computerized mapping. Finally, there are various assets, skills, and information obtainable through the Division of Criminal Justice and/or the Center for Criminal Justice Research at the University of Cincinnati that should not be overlooked. Another local department, the Cincinnati Police Department, is currently using the CAGIS and their experience in setting up and trouble shooting CAGIS should also be considered.

Input data needed

To use GIS mapping information of interest data needs to be imported into the file. Computerized information on NIBRS and 911 calls usually exist and are relatively easy to import into a geo-database. These data can be obtained from the RCIC. Other information such as field interrogation reports, disorder information, or any other information that is desired for geo-mapping will need to be computerized and imported directly into the system if these records do not already exist.

Forest Park might have one additional concern if the police division chooses to map calls for service. To reduce the expense of 911 calls citizens are encouraged to call the dispatcher directly. Unless these calls are also logged and computerized, a portion of police calls for service will be missing from any analysis. This missing data could critically misrepresent where and when problems in the community exist. This

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misrepresentation could enhance the likelihood of drawing false conclusions and severely hamper the ability of the police to perform effective community problem solving. Fortunately, this problem can be solved by making sure that all calls for service are included in the service analysis.

Security and Confidentiality

Geo-coding allows the police department considerable access to individual and community level data. While these data can greatly aid the police in community problem solving and crime analysis, steps should be taken insure that the rights of suspects, victims, and witnesses are not ignored. Some form of policy should be developed to limit access to geo-data and the accessibility of sensitive information to the public. Accessibility can be governed by restricting access of sensitive information to only those authorized. Identification and passwords provide a measure of security for what information is available and to whom. Audit trails that track who accesses sensitive information could curb possible abuse of the system (Drummy 1997). Prior planning and policies can balance the public's right to know while protecting police and individual confidentiality (Mazerolle et al. 1998). Several departments, for example San Diego, Tempe, Detroit, etc. allow public access to some geo-mapping information via their departmental web sites. The Berkeley Police department includes a disclaimer regarding the limitations of geo-data they make available to the public.

CONCLUSION

The purpose of this feasibility report has been to consider the possibility and use of GIS mapping for the Forest Park Police Division. The resources available seem to

recommend CAGIS as the GIS which could meet the needs of the police division. This

geo-mapping system, not only has a low start up cost and is available through the City

Manager's Office but also provides a proven, inexpensive source for GIS mapping.

This study considers the relevant literature on hot spots, mapping, and some

possible police responses to this information. The capabilities, costs, training and

technical support of GIS were also considered. The needs for inputting data, security and

confidentiality of the system were assessed. In analyzing the needs of Forest Park a

recommendation to use the CAGIS system was given.

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