CRIME ANALYSIS IN AMERICA*

Prepared for

U.S. Department of Justice
Office of Community Oriented Policing Services

Center for Public Policy
University of South Alabama

March 2002

* This project was supported by cooperative agreement #99-CK-WX-K002 by the Office of Community Oriented Policing Services, U.S. Department of Justice. Points of view or opinions contained in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

CRIME ANALYSIS IN AMERICA

Prepared for

U.S. Department of Justice
Office of Community Oriented Policing Services

by

Timothy C. O'Shea, Ph.D.
Principal Investigator

Keith Nicholls, Ph.D.
Co-Principal Investigator

With assistance from

Jonathan Archer
Elton Hughes, MA
Jana Tatum

Center for Public Policy
University of South Alabama

March 2002

TABLE OF CONTENTS

TO OBTAIN COPIES OF APPENDICES B-F PLEASE CONTACT THE COPS OFFICE DIRECTLY. THEY WERE TOO LARGE TO BE MADE AVAILABLE IN A DOWNLOADABLE FORMAT.

I. INTRODUCTION

Organizations must adapt to survive. Like all organizations, police departments must adjust their administrative arrangements to accommodate shifts in social, economic, and political conditions. Adjustments are ordinarily incremental; however, there are times when change is dramatic. At two points in the history of American policing, according to Kelling and Moore (1991), extraordinary change occurred; in both instances a dramatic and far-reaching transformation in police administration followed. The first shift came in the early 20th century, when the professional model appeared. The second can be traced to the mid-1980s, when the idea of community policing began to attract serious attention.

Even the casual observer of police administration is struck by the remarkable diffusion of community policing. Kingdon (1984) maintained that there are times when ideas sweep through a policy community like fads. A strong consensus develops, often between former adversaries. Elected officials at all levels, police executives, and academics had all historically held quite different views about the role of the police in a democracy and about how the police should be organized. Yet, when it came to community policing, distrust seemed to have slowly given way to collaboration. The “idea” held enough power to produce a striking consensus among

policymakers who shape American policing. One area of police operations that has been particularly affected by the shift to community policing is information processing.

Community policing does not break from professional policing because it demands information; obviously, both models rely on the acquisition and analysis of information to make informed decisions. Community policing can be distinguished from professional policing because it calls for information from domains that had previously been either ignored or neglected. New or expanded information domains are a byproduct of fundamental philosophical differences between professional and community policing.

Reducing corruption is an important aim of professional policing. Reformers at the turn of the century believed that to do so it was necessary to separate the administration of police from politics. Under the professional model, the police distance themselves from corrupting influences, especially elected officials, and to a lesser degree the general public (just the facts, ma'am). The police system is for all practical purposes closed. Community policing takes a contrary position: democratic principles demand that the police actively formulate policy that reflects the interests of external stakeholders (e.g., elected officials, citizens, agencies related to the police mission, etc.). Aggregating these interests and translating them into police policy places

greater demands on the information processing operations of the department.

Under professional policing, vertical interactions between hierarchical levels of the organization are also strictly limited. Communication is primarily one direction. Departmental policy is formed at the top and is filtered downward in the form of standard operating procedures. Policymaking power is not shared, it is centralized at the top. Here too, the community policing model calls for an open system: all members of the organization at all levels participate in the policymaking process. Community policing operations that follow from these philosophical shifts (e.g., participatory management, customer and officer surveys, performance measures, community partnerships, strategic planning, etc.) require substantially more data from substantially more sources.

Finally, when it comes to day-to-day field operations, the professional model concentrates on tactics that are intended to maximize the police response to crime. Police react to 911 calls and their performance is measured by response times, cases cleared, and arrests. Crime control is the overriding goal of the police service under the professional model. Community policing, on the other hand, places a high value on proactive policing. Officers are encouraged to systematically scan the police data, analyze it to discover problems and their

causes, design responses, and assess the responses. The ultimate goal is to go beyond crime control and deliver a broad range of services that improve the community's general quality of life. Here, again, the demand for data is substantially increased.

Police executives are acutely aware of the additional information demands created by community oriented policing. Fortunately, support has come in several forms. Federal authorities have actively supported community policing, especially when it comes to information processing. For example, since the Office of Community Oriented Policing Services (COPS) was formed in 1994, information technology awards to state and local law enforcement agencies have exceeded one billion dollars (Apt Associates, 2000). Also, over the past fifteen years, computer hardware and software technology has improved considerably. Systems currently are less expensive to purchase and operate, their operation requires less technical skill, the data are more accessible, and the output is more intuitive (e.g., crime maps). The combination of money and improved technology has vastly improved the information processing capacity of police departments.

Police operations generally associated with information processing (e.g., crime counts and trends, pattern and series identification, manpower allocation, beat configuration,

intelligence, crime mapping, etc.) are customarily referred to as crime analysis. Police crime analysis operations consist of three essential functions: (1) to assess the nature, extent, and distribution of crime in order to efficiently and effectively allocate resources and deploy personnel; (2) to identify crime-suspect correlations to assist investigations; and (3) to identify the conditions that facilitate crime and incivility so that policymakers may make informed decisions about prevention approaches (Reuland, 1997).

The tasks that we now associate with crime analysis have been an integral part of policing since the first municipal police force was formed in the early 19th century. Sir Robert Peel, the person who many regard as the architect of modern municipal policing, proposed a set of essential elements of policing. One of Peel's principles called for the police to keep records, both to inform the public of crime conditions and to direct the allocation of police resources (Gaines, Kappeler and Vaughn, 1999). Since Peel's time the technology and the information demands have changed; however, the essence of records management remains the same: collect, collate, analyze, and disseminate data to facilitate informed decision making.

Few researchers have concentrated exclusively on the crime analysis function. There is, however, some literature devoted to the subject. Several works describe the basic operations of police crime analysis in a how-to manual format (Reuland, 1997;

Gottlieb, Arenson and Singh, 1994; Peterson, 1994, Austin et al., 1973, McCualey, 1975). A few researchers have examined the mechanics of crime pattern recognition, a task that some suggest is the heart of crime analysis (Goldsmith et al., 2000; O'Shea, 1998). Crime mapping has developed into a major tool for crime analysis and has been studied and reported extensively (Block, Dabdoub and Fregly, 1995; Harries, 1999; Weisburd and McEwen, 1998). Some work, albeit very little, has been done to critically assess the quality of analytic output (Spelman, 1988). A small section of the Law Enforcement Management and Administrative Statistics (LEMAS) report addresses a handful of crime analysis issues (Reaves and Hart, 2000). National-level data are currently not available to describe a broad spectrum of personnel, technological, training, analytic, data, functions, and product utilization aspects of crime analysis operations. We report here the findings of a recent study that describes key aspects of the crime analysis function, and provides a baseline that may be used to measure trends over time.

The remainder of the report is divided into three sections. The second section reports the findings of two national surveys. The first survey was mailed to all law enforcement agencies in the United States with 100 or more sworn personnel. Nearly 65% of the 859 agencies responded to the survey. There were 95 items on the survey that addressed

six categories of crime analysis. In the second survey we drew a random stratified (by size and region) sample of 800 law enforcement agencies from a sampling frame of just over 17,000 law enforcement agencies with less than 100 sworn personnel. The survey was administered via telephone. The categories of questions were similar to those asked in the mail survey; however, because of resource limitations there were fewer questions. We report the findings of the surveys and examine factors that help to explain the variance in the quality of crime analysis in these two populations. The third section of the report takes an in-depth look at crime analysis operations across the country in the larger departments. Data were drawn from telephone interviews with crime analysts and site visits to nine crime analysis units that demonstrated high levels of crime analysis. The final section of the report attempts to explore the policy implications that the findings suggest.

We believe that much of what we found will come as no surprise to experienced law enforcement personnel. Those of us who have worked in this field for any length of time will find that the results reported here support many long-held beliefs about the general state of crime analysis in American law enforcement agencies. One may, from time to time, find the results surprising and counter-intuitive. It was not our intent to expose aspects of policing that have been concealed; nor was it our intent to extol the wonders of modern crime

analysis. The overall goal of this project was to systematically and rigorously explore crime analysis operations in American law enforcement. We sincerely hope that the reader will walk away from this report more informed about the state of crime analysis in America. For law enforcement policymakers, we would hope that the findings that we report here will serve to inform decisions that affect crime analysis operations.

II. CRIME ANALYSIS IN AMERICA: A BROAD OVERVIEW

INTRODUCTION

In exploring a complex operational phenomenon like crime analysis, it is useful to begin by developing a broad understanding of its various relevant aspects. This is the logical starting point. One must first acquire a sense of the subject's general characteristics and the patterns that those characteristics form. In the process we begin to confront many of the intuitions and anecdotal evidence that form our current understanding about the subject. A panoramic view also provides a sound foundation upon which to frame the questions necessary to open a deeper, more insightful inquiry. We chose to administer a survey to law enforcement agencies to satisfy this first step in the process.

Only about 5% of all law enforcement agencies (state, county, municipal, and special purpose) have more than 100 sworn personnel; yet nearly 50% of all American law enforcement officers are employed by those departments. In other words, more than 95% of all American law enforcement agencies can be considered small. Few would disagree that there is a difference between big and small departments. That would seem uncontroversial. To avoid lumping together targets of our inquiry that are different, we separate big from small departments and study them individually. The more

controversial issue is the criteria that we use to make the big and small distinction. This is somewhat arbitrary. We follow the Bureau of Justice Statistic's classification system that uses 100 sworn personnel as the break point for its LEMAS report. This section reports on the findings of two surveys, one of departments with 100 or more sworn personnel, and the other of departments with fewer than 100 or fewer sworn personnel.

POLICE DEPARTMENTS WITH MORE THAN 100 SWORN PERSONNEL

Method

Target and Response

The data used in this analysis are derived from a national survey of law enforcement agencies. Questionnaires were mailed to all municipal police, sheriff's offices, and state law enforcement agencies with 100 or more sworn personnel. Two cover letters accompanied the questionnaire and were sent to the agencies chief executive. One letter was drafted by the sponsor, COPS, and the second letter was drafted by University of South Alabama (USA) researchers. Both letters assured the participants of confidentiality and encouraged participation. The USA letter described the survey process, the expected deliverables, and the person to whom the questionnaire should be directed (someone knowledgeable about crime analysis operations).

There are 859 law enforcement agencies that fit the target criteria. The first mailing, to all 859 agencies, was sent April 2000. One follow-up mailing was sent to nonrespondents July 2000. Overall, 544 (63%) completed surveys were received. There were no systematic differences between respondents and nonrespondents according to state, size of department, and type of department.

The Questionnaire

The questionnaire consisted of 95 items. Items were coded in two ways: First, we coded simple presence or absence of some feature of crime analysis (e.g., do you have a CAD system? yes/no). Second, items were coded for scaled responses (e.g., How would you rate crime analysis training? None offered, poor, only fair, good, excellent). In all, there were six categories of questions.

The first category of questions, *personnel*, consisted of a single item that simply asked how many people in the department are assigned to crime analysis as their primary responsibility. This question was recoded to reflect the number of crime analysts per 100 sworn employees.

The second category of questions, *hardware/software*, consisted of twenty-six items. Questions examined automation, inter-agency data sharing, and software utilization. Respondents were asked which reports they entered into

automated systems, what sorts of formal data sharing arrangements they participated in, and what types of specialized software programs they used.

The third category, *training*, consisted of eight items that measured the quality of training. Questions addressed the following areas of training: hardware and software, data processing, statistical analysis, crime analysis, geographical information systems, graphics, and report writing.

The fourth questionnaire category, *data*, examined the quality, sources, and utilization of data collected by the department. It consisted of twenty-three items.

The fifth category, *statistics*, consisted of seven items that examined the statistical methods that crime analysts use to uncover patterns and relationships in the data. Respondents were asked to comment on the extent to which they used the following statistical methods: frequencies; mean, median, mode; standard deviation; crosstabs; correlation; regression; and cluster analysis (e.g., hierarchical and K-Means).

The final category of questions, *functions/targets* consisted of thirty items. The questions examined the types of operations crime analysts engage in (e.g., link analysis, workload distribution, etc.) and the extent to which different potential targets use the crime analysis product (e.g., command-level managers, patrol officers, etc.).

Findings

Personnel

We asked departments to tell us how many people in their organization were assigned primarily to conduct crime analysis operations. Nearly 3 out of 4 (74%) departments had at least one member whose primary duties were crime analysis. In order to compare different size departments, we standardized the variable to the number of crime analysts per 100 sworn officers. If departments are excluded that have no people assigned primarily to the crime analysis function (139), then the average number of crime analysts per 100 sworn personnel is just under 1 (.92).[1] The distribution of crime analysts per 100 sworn officers is skewed to the right. This is due to an unusually high number of crime analysts per 100 sworn personnel in one department (10.65). If not for this one outlier, the distribution would be reasonably normal (skewness=1.71). Removing this outlier would not, however, substantially change the average number of crime analysts per 100 sworn personnel (down from .92 to .89).

Civilianization of police services is a controversial issue that has touched the crime analysis function. Many

[1]We do not mean to suggest that these 139 departments do not engage in crime analysis activities. That is simply not so. Departments have engaged in crime analysis long before the position of "crime analyst" appeared. It goes without saying that every member of a police department, in some form, at some point, engages in crime analysis. In this question, however, we are exploring the structural aspect of specialization. Our concern is only with those departments that have opted to formally specialize the crime analysis function.

departments, over the past ten to fifteen years, have hired civilian crime analysts. There are two compelling reasons for this trend: (1) economic: civilians tend to receive lower salaries than sworn personnel; and (2) organizational: crime analysis units tend to be more stable with civilian workers, since sworn members are more likely to move out of the unit due to promotion or reassignment. As shown in table 1, of the 409 departments that said they have personnel primarily assigned to crime analysis functions, nearly 8 out of 10 (78%) had at least one civilian crime analyst.

Table 1: Structure

	N	Yes		No	
If you assign personnel exclusively to crime analysis are any civilians?	409	78%		12%	
	N	Separate Unit		Other	
How are these people whose primary jobs is crime analysis organized in your department?	382	72%		28%	
	N	Administration	Patrol	Detective	Other
If crime analysis is a separate unit where on the organizational chart does it fall.	336	44%	8%	27%	21%

Administrators have disagreed about whether crime analysis should be a separate function (specialization), and where in the organization crime analysis should be placed (centralization). There are sound arguments on both sides of these issues. Many argue that crime analysis is a legitimate specialization and thus should have a separate unit. Others argue that crime analysis is simply part of the suite of tasks

that police officers perform and therefore it warrants no specialized designation. Some argue for a centralized crime analysis unit. Those who support this approach insist that decentralized crime analysis invariably thwarts the mission of crime analysis. When crime analysts are assigned to field unit commands, they are inundated with trivial requests (e.g., making a computer banner for the retirement party). Others suggest that crime analysis should be decentralized. The needs of different functional units differ, the argument goes, and a decentralized structure facilitates varied crime analysis activity that is responsive to individual unit needs. Table 1 addresses the police response to these issues.

More than seven out of 10 (72%) departments said they have separate crime analysis units. When a specialized unit does exist, in about half (44%) of the departments it falls under administration (centralized), and about one-quarter (27%) of the units are under investigations (decentralized). In only about 1 out of 10 (8%) departments the crime analysis unit was located in the patrol division (decentralized). It would appear that crime analysis is considered a specialized function and is primarily centralized under the authority of administration.

Hardware/Software Technology

The quality of crime analysis is a function of how well a law enforcement agency can store and access data. Law enforcement has enjoyed an unprecedented opportunity to advance its information processing capacity as a result of cheaper and better hardware and software technology. Aspects of hardware and software technology worth considering are as follows: (1) the extent to which formal reports are entered into automated information systems; (2) the types of software used to support crime analysis; and (3) the degree to which police departments utilize their automated systems to facilitate the exchange of information, both intra- and inter-agency. Table 2 illustrates the range of reports that police departments computerize. When it comes to automated data bases, nearly 9 out of 10 agencies that responded use automated systems to store primary data (i.e., initial case report, calls for service, and the arrest report). Nearly three-quarters of the departments computerize data that is arguably less critical (i.e., investigative, traffic, and evidence). This is not especially surprising; we would expect most departments to store these reports in computers. Other types of reports, however, are less likely to turn up in automated systems. Field interviews, pawn shop, nickname, modus operandi, intelligence, and vice data are entered into computers by nearly half of the respondents. While these data are

unquestionably useful for analytic purposes, they are data that historically have not been systematically collected, much less stored in a computer. Automating this set of data implies an impressive breadth of automation.

Table 2 : Reports that Department Computerizes			
Which of the following reports and information are entered into a computerized information system?	N	Yes	No
Initial Case	529	94%	6%
Arrest	532	90%	10%
Calls For Service	528	87%	13%
Investigative	525	75%	25%
Evidence	524	73%	27%
Traffic Accident	531	72%	18%
Nickname	528	65%	35%
Field Interview	532	65%	35%
Pawn Shop	511	54%	46%
Vice Case	508	50%	50%
Intelligence	513	42%	58%
MO Files	505	47%	53%
Does your department have a paperless information system, totally online?	531	14%	86%
Does your department have a formal records management system?	542	91%	9%

Table 2 also provides an indication of the overall sophistication of automated systems. A formal records management system suggests that rational thought went into the planning, design, and execution of the overall data processing operations of the department. A paperless information system, totally online (PISTOL) would suggest, given current technology, a full-scale automated system. More than 9 out of 10 (91%) respondents said their department had a formal records

management system; however, only about 1 out of 10 (86%) respondents said they have a totally paperless system.

Table 3 summarizes software usage by the responding departments. Crime mapping and spreadsheet are the most commonly used software of the choices offered. Nearly 6 out of 10 (65% and 60%, respectively) departments that responded use that type of software. Intelligence[2] and operations analysis software is used far less, and sophisticated statistical software is used by only 2 out of 10 (20%) of the respondents.[3] This indicates that departments are not engaging in more sophisticated statistical-based methods of analysis. We will consider this in more detail when statistical methods and crime analysis functions are discussed below.

[2] A reviewer pointed out that intelligence analysis should be distinguished from crime analysis. We recognize that others may agree with this position. For purposes of this report we define crime analysis broadly to include intelligence analysis.

[3] We recognize that using sophisticated statistical software (e.g., SPSS) does not necessarily permit one to conclude that sophisticated statistical analysis is being done by analysts. We seek to tease out that information through follow-up questions that will be discussed below.

Table 3: Software			
Indicate which type of specialized software programs your department currently uses.	N	Yes	No
GIS (Mapping)	544	61%	40%
Crime Analysis	544	45%	55%
Intelligence	544	35%	65%
Operations Analysis	544	27%	73%
Does your department use a spreadsheet software for crime analysis (Excel, Lotus, Quattro Pro, etc.)?	537	65%	35%
Does your department use a statistical package for crime analysis (SPSS, SAS, etc.)?	536	20%	80%

Training

The quality of crime analysis operations is closely connected to the quality of training. With the advances in hardware and software technology, police departments are capable of processing data more efficiently and effectively. More data and better technology, however, requires considerably more training for crime analysts than before: for data collection and entry, for data analysis, and for generating intuitively useful output. How and how well analysts transform data into useful strategic and tactical information is a function of how well they are trained.

Table 4 depicts respondent opinions about the department's efforts to provide training in eight key areas. Overall, it is

clear that the great majority of respondents feel that training is in the middle range (fair to good). Relatively few respondents rated training at the extremes, either excellent or poor. When it comes to training areas that appear to be neglected, three stand out: crime mapping, graphics, and statistics.

Table 4: Training

How would you rate your department's efforts when it comes to training in each area?	N	Excellent	Good	Only Fair	Poor	None Offered
Crime Analysis	526	13%	34%	25%	11%	17%
Computer Software	530	12%	43%	31%	9%	6%
GIS (Mapping)	524	12%	23%	20%	12%	34%
Report writing	525	11%	47%	21%	6%	15%
Statistical Analysis	529	9%	30%	25%	15%	22%
Computer Hardware	528	8%	37%	28%	9%	17%
Processing Data	529	8%	40%	31%	9%	12%
Graphics	528	6%	23%	23%	14%	34%

Data Quality and Sources

Equipment is purchased and personnel are hired and trained. Next, it is important to examine aspects of the data: how they are collected, how they are entered into computers and utilized; and from what sources they are derived. Table 5 presents the results of this category of questions.

Table 5: Data Quality, Sources and Utilization

Please indicate whether each of the following is a Major problem, Minor problem, or Not a problem when it comes to generating quality data.	N	Major	Minor	Not
Case report does not ask for enough relevant data.	535	12%	44%	44%
Data values are not uniform (e.g., blue, blu, bl)	533	21%	41%	39%
Data entry is slow and not accessible in a timely manner	533	26%	39%	35%
People who key the data in are careless	532	10%	60%	30%
Officers that take the initial reports are careless	531	20%	66%	14%
Please indicate the extent to which data from each of these sources are utilized for crime analysis.	N	Not Utilized	Utilized Some	Highly Utilized
Corrections data for:				
Parole	525	57%	33%	11%
Probation	523	60%	34%	7%
Inmate release	526	61%	30%	9%
Crime data from:				
Neighboring police	529	37%	51%	12%
Federal law enforcement (FBI, DEA, ATF, etc.)	523	45%	50%	6%
State police	523	48%	45%	8%
Non-law enforcement				
Local city sources (building dept., school, etc.)	528	36%	56%	18%
Local county sources (highways, tax assessor, etc.)	525	46%	48%	6%
State sources (welfare, highways, etc.)	525	60%	37%	3%
Federal sources (Social Sec., Veterans, etc.)	525	67%	32%	1%
Miscellaneous sources				
State Dept. of Motor Vehicle	527	36%	40%	24%
Courts (dispositions, pending cases, etc.)	528	39%	51%	10%
Which of these three terms best describes your department's utilization of each of the following types of data: **Count-** We basically keep track of the number of occurrences **Analyze-** In addition to counting, we look for trends and relationships in the data **Neither-** We don't' utilize that type of data	N	Count	Analyze	Neither
Crime totals	530	33%	66%	2%
Arrest totals	529	59%	38%	2%
Calls for service	527	40%	56%	5%
Clearance rates	527	59%	33%	8%
Traffic accidents	572	40%	50%	10%
Citizen complaints	516	46%	40%	14%

When it comes to data collection and entry, the findings reveal that in both areas about half of the responding departments find some problem. Overall, the biggest problem areas were as follows: officers who are careless in taking reports, data values that are not uniform (making data queries difficult) and slow turnaround time between data collection and data entry. At least two out of 10 (20%, 21%, and 26%, respectively) departments said these are major problem areas.

If the community policing model demands information from more domains, then we should see police departments collecting data from outside sources. Table 5 shows that about half of the responding departments do use data from outside sources to

some degree. Few highly utilize any of the sources identified. The other side of this coin, however, suggests that nearly half of the respondent departments do not utilize outside data. The question that these items raise is whether the data are not utilized because they have little strategic or tactical utility, whether the data are not utilized because departments lack the technological capacity, or whether the data are not utilized because departments lack the analytic skills to exploit the data sources. The data do not permit us to address that question.

An examination of what police do with the data they collect raises a fundamental issue that surrounds crime analysis. Spelman (1988) and others criticize law enforcement information processing operations, arguing that too much attention is devoted to counting crime, rather than analyzing crime. Goldstein (1990) insists that the police must move past simply counting crime; rather, they must pursue the root causes of crime and incivility. This calls for a more thoughtful, systematic, and rigorous analysis of the data. Table 5 summarizes the results of questions that examine this important area.

Most departments utilize critical data (i.e., crime, arrests, calls for service, and clearance rates) to some degree. Only about 1 out of 20 departments completely ignore these data. The number of departments that ignore traffic and

citizen complaints increases slightly (10% and 14%, respectively). The vast majority of departments do utilize the data they collect somewhat. It is more interesting, however, to ask how the data are utilized (i.e., do they count it or analyze it?). Crimes and calls for service are analyzed by about 6 out of 10 departments responding (66% and 56%, respectively). When it comes to arrests and clearance rates, less than 4 out of 10 (38% and 33%, respectively) departments analyze. A sizeable number of departments, even in critical areas like crime and calls for service, continue only to count data.

Statistical Methods

When it comes to the use of statistics, crime analysts have a range of methods at their disposal, from simple methods (e.g., frequencies) to relatively complex ones (e.g., regression and cluster analysis). Asking how often a department's crime analyst uses various statistical methods is straightforward. Interpreting the results is not quite as obvious.

It is a mistake to conclude that departments that claim to use higher-level statistical methods "very often" are more advanced than departments that say they use those methods "sometimes." Advanced crime analysis is not necessarily a function of how frequently one or another method is used;

rather, it is a function of how well the product contributes to some objective performance standard (e.g., the number of cases cleared, problems solved, etc.). It is more useful to consider the extent to which respondent departments "never" use one or another statistical method.

All of the methods we list should be in the crime analysts "statistical tool bag." The frequency with which each tool is used may vary based on size of department, the nature and extent of crime, etc. Nevertheless, all of the tools are necessary at one time or another to perform the full range of crime analysis. If we are told that a carpenter works without a hammer, we might reasonably deduce that he/she is working at a suboptimal level. The same can be said of a crime analyst who never uses one or more of the basic statistical methods.

Table 6 presents items that examine the use of statistical methods. Consider first frequencies. One would expect that most law enforcement agencies utilize frequencies. After all, as we noted above, law enforcement agencies have been criticized for their over-reliance on "bean counting." More than 8 out of 10 (82%) departments use frequencies. The number of departments that use means, medians, and modes; correlation; and cluster analysis drops to about 6 out of 10 (64%, 58%, and 60% respectively). Even fewer departments said they use higher-level statistical methods: standard deviation, crosstabs, and regression (49%, 40%, and 36% respectively).

Thus, the findings show that better than one-half of the departments that responded do not use any statistical methods beyond the most basic ones (i.e., simple counting).

Table 6: Statistical Methods					
Please indicate how often your department uses each of the following in crime analysis?	N	Never	Sometimes	Often	Very Often
Frequencies	493	18%	28%	30%	24%
Mean, Median, Mode	486	34%	34%	19%	11%
Cluster analysis	484	40%	28%	20%	12%
Correlation	484	42%	37%	17%	4%
Standard Deviation	483	51%	32%	12%	5%
Crosstabs	480	60%	24%	12%	4%
Regression	482	64%	28%	16%	2%

Crime Analysis Functions and Targets

The types of activities that a crime analyst engages in can be broken into two temporally-based categories: strategic and tactical. Strategic crime analysis supports administrative, long-range planning. Tactical analysis supports short-term, day-to-day field operations. While this is not a perfect typology, it does help to organize the examination of crime analysis functions. It is also, by the way, the kind of distinction that many crime analysts use to describe the type of unit that their department has formed.

Table 7 presents findings that reflect the level of activity that respondents devote to various crime analysis functions.

Table 7: Crime Analysis Functions and Targets

How often does your department undertake the following types of analysis?	N	Never	Sometimes	Often	Very Often
Target profile analysis	508	25%	44%	20%	11%
Victim analysis	509	30%	53%	14%	4%
Link analysis	499	34%	43%	18%	5%
Temporal analysis	495	42%	27%	20%	12%
Spatial analysis	492	36%	27%	20%	16%
Financial analysis	505	38%	47%	12%	4%
Flowcharting	506	34%	51%	13%	2%
Program evaluation	506	35%	43%	18%	4%
Case management	508	17%	37%	32%	15%
Crime scene profiling	505	33%	50%	17%	4%
Crime forecasting	508	31%	47%	16%	6%
Crime trends	518	11%	37%	34%	18%
Citizen surveys	509	35%	51%	10%	4%
Victim surveys	503	48%	43%	6%	3%
Employee surveys	505	49%	45%	5%	1%
Environmental surveys	504	73%	24%	2%	1%
Intelligence analysis	508	20%	50%	21%	9%
Productivity analysis	510	34%	45%	15%	6%
Civil litigation analysis	503	75%	22%	3%	1%
Patrol strategy analysis	510	22%	46%	25%	7%
Workload distribution	511	24%	46%	24%	6%
Displacement/diffusion analysis	500	61%	31%	6%	1%
To what degree are the results of your crime analysis efforts utilized by each of the following potential internal users?	N	Not Utilized	Utilized Some	Highly Utilized	
Command level mgrs.	519	9%	54%	37%	
Middle mgrs. (Lieuts., up)	521	7%	59%	34%	
First-line mgrs. (Sgts.)	522	12%	61%	28%	
Detectives	521	10%	54%	34%	
Patrol Officers	518	16%	63%	21%	
Specialized unit officers	515	14%	57%	29%	
Traffic officers	508	35%	56%	9%	
Training unit	507	48%	48%	5%	

When we consider the activities that most departments engage in to some extent (i.e., either sometimes, often, or very often), they are primarily tactical, with the exception of a single strategic-based function. Target profile analysis (75%), case management (83%), patrol strategy analysis (78%), and workload distribution (76%) are all areas that involve decisions related directly to day-to-day field operations. Crime trend analysis (89%), while arguably having tactical implications, is primarily concerned with projecting the nature and extent of crime in the foreseeable future. This is more

useful for long-range planning than it is for daily tactical operations.

When we look at activities that somewhat fewer agencies engage in (6-7 out of 10), more strategic activities appear. Victim analysis (70%), link analysis (66%), spatial analysis (64%), flowcharting (66%), and crime scene profiling (67%) support tactical patrol and investigations operations. Financial analysis (62%), program evaluation (65%), crime forecasting (69%), citizen surveys (65%), and productivity analysis (66%) are all examples of strategic analysis.

When it comes to the type of activities departments engage in least, they tend to be strategic. About 5 out of 10 departments, or less, engage in victim, employee, or environmental surveys (53%, 51%, and 27%, respectively) and displacement/diffusion analysis (39%).

Overall, the responding agencies engage in a wide variety of analytic activity: The top-level of activity is primarily tactical, the mid-level is mixed, and the lower level of activity is primarily strategic.

Another way of determining the mix of strategic and tactical analysis is to examine by whom and to what degree the product is utilized. Table 7 describes the degree to which various internal targets use crime analysis product. In 8-9 out of 10 police departments that responded, command level managers (91%), middle managers (93%), first line managers

(88%), detectives (90%), patrol officers (84%), and specialized unit officers (86%) utilize crime analysis product either somewhat or highly. Products were used least by traffic and training. About 6 out of 10 departments said traffic officers (65%) use the product and about 5 out of 10 said training units (52%) used crime analysis product. When it comes to targets, it would appear that personnel at all levels of the hierarchy make use of crime analysis product, suggesting a mix of strategic and tactical demand.

Explanatory Factors

The response frequencies give us a general idea about various aspects of crime analysis operations in police departments with more than 100 sworn personnel. Even a cursory examination of the findings tells us what we already knew, but had no systematic evidence to support: Police departments, when it comes to crime analysis operations, are not all the same; they vary. This raises an obvious question: What factors explain the differences in crime analysis operations in police departments with more than 100 sworn personnel? We address that question in this section.

Method and variables

A crime analysis unit varies along several critical dimensions: 1) the quality of its hardware and software

inventory; 2) the training of its personnel; 3) the quality, sources, and utilization of its data; 4) the degree of sophistication of its statistical methods; and, 5) the varied types of its operational methods. These dimensions of crime analysis conform to the major categories within which the survey questions were ordered. To determine if and to what degree the respondents varied along these dimensions of crime analysis, we constructed a summated index for each of the dimensions. Question choices were assigned numerical values. For example, one question asked the respondent to rate the training a department provided for crime mapping. Five options were offered, ranging from none offered to excellent. None offered was assigned 0 points, poor, 1 point, only fair, 2 points, good, 3 points, and excellent was assigned 4 points. All question options were similarly assigned point scores. Points for all the questions within each dimension were summed. Using this method we were able to determine the relative scores of each respondent along each crime analysis dimension. We found that the departments that responded to the survey did vary along these dimensions. This raises the question, How can we explain the differences between departments?

There are, of course, many possible factors that together explain the differences in the five index scores. The object of this section is to propose several factors that would appear

to influence the quality of crime analysis. These **explanatory factors** (or independent variables) are as follows:

Number of sworn personnel: One might reasonably expect that larger departments will have greater crime analysis capacity. The larger the department is, the greater the population, thus the greater the crime, and thus the greater the calls for service. Larger jurisdictions would be expected to have larger budgets and thus be able to afford a more sophisticated crime analysis operation. In all, the combination of need and available resources would predict that larger departments would have higher crime analysis scores. Please note that other variables mentioned here (i.e., population, crime, and calls for service) are highly correlated to number of sworn personnel. Because this is so, any one of the variables would predict the outcome to the same degree. As a result, we omit population, number of index crimes, and total number of calls for service as predictor variables.

Crimes per 1000 population: The raw number of sworn personnel, or for that matter the raw number of crimes (highly correlated to number of sworn personnel), are only rough measures of police demand. A more accurate measure of the demand for police services, and thus the demand for crime analysis, is the number of crimes per 1000 citizens. Using this standardized measure, the size of a jurisdiction is rendered irrelevant. We are able to compare cities of any size

and focus on the extent of crime. It is a far more accurate measure of crime and thus the demand for crime analysis. We would expect that the higher the crimes per 1000 people, the greater the demand for police services, thus the greater the demand for crime analysis. Crime analysis scores should be higher in cities with higher crimes per 1000 people.

Per capita expenditures: The amount of resources a jurisdiction is willing to devote to the police service should be related to a law enforcement agency's capacity to conduct crime analysis operations. The total amount spent by a jurisdiction is less indicative of its commitment to the police service as is the ratio of expenditures for police service to its population. The greater the per capita expenditure devoted to police resources, the higher we would expect the dimension scores to be.

Community policing: As we noted above, departments that adopt community policing, almost by definition, substantially increase the demand for information processing. The heart of the model's political and administrative dimensions are driven by the need for efficient, effective data collection, collation, analysis, and dissemination. The Law Enforcement Management and Administrative Statistics (LEMAS) survey collects information about community policing operations in police departments over 100 sworn personnel. We merged that data with the mail survey data. Six questions in the LEMAS

survey were used to create a community policing index in a fashion similar to those indices we created to measure various aspects of crime analysis. The degree to which a department engages in community policing activities should be related to the department's crime analysis functions. Specifically, the higher the index score for community policing, the higher we would expect the crime analysis dimension scores.

Management demand: If police managers hold back crime analysts from producing the quality of output they feel they are capable of, then it is likely that the product will be substandard and thus the unit as a whole will suffer. Three questions on the mail survey tapped into this area. Respondents were asked if managers required crime analysts to produce a variety of superficial irrelevant products instead of more tactically useful ones. We created a summated index to measure this variable. One might expect that the greater the demand for quality analysis, the greater the dimension scores.

Target appreciation: When a unit is valued, it is likely that the unit will flourish. Workers who feel that they are valued will be more productive. Also, management will be more likely to provide resources to a valued unit. We asked four questions about the degree to which command staff, middle managers, patrol officers, and detectives appreciated the crime analysis unit's work. The questions were used to form an index to measure target appreciation. We would expect that the more

a unit was appreciated (i.e., the higher the appreciation index score), the higher the crime analysis dimension scores should be.

Specialized crime analysts: Workers who specialize in a particular function should attain a higher proficiency at performing the task. We would expect that crime analysis capacity in departments that have specialized crime analyst positions should be greater than in those departments that have not specialized this function. Police departments that assign people to specialized crime analysis positions should have higher crime analysis index scores.

Region: The quality of the crime analysis produced may be a function of the region (northeast, south, midwest, and west) of the country in which the department is located. We created three dummy variables (reference northeast) to measure the impact of this variable.

Type of department: The type of department may have a bearing on the quality of crime analysis that it produces. Three types of law enforcement agencies responded to the mail survey: municipal, sheriff, and state. Two dummy variables (reference municipal) were created to measure the impact of this variable.

Each of the five dimensions of crime analysis (hardware/software, training, data, analysis, and, operations) were regressed on the nine factors (# sworn, crimes/1000, per

capita expenditures, community policing, management demand, appreciation, specialized crime analysts, region, and department type).

Findings and conclusions

Table 8 portrays the findings. They indicate the following:

Table 8: OLS Standardized Coefficients (and Standard Errors) for Variables Predicting Crime Analysis Capacity: Departments with 100 or More Sworn Personnel

Independent Variable	Training	Hardware/ Software	Statistical Method	Crime Analysis Functions	Data
NSP	.033 (.000)	.083 (.000)*	.039 (.000)***	.172 (.000)***	.010 (.000)
C100K	-.022 (.008)	-.054 (.006)	.030 (.009)	.009 (.012)	-.074 (.007)
PCE	.028 (.000)	-.123 (.000)**	-.022 (.000)	.004 (.000)	-.042 (.000)
CP	.139 (.237)**	.103 (.166)*	.026 (.152)	.030 (.337)	.201 (.056)
MD	.100 (.125)*	.113	.112 (.082)*	.142 (.194)**	.218 (.109)***
TA	.179 (.111)***	.80 (.078)	.133 (.071)**	.214 (.162)***	.259 (.094)***
SCA	.232 (.927)***	.245 (.667)***	.331 (.602)***	.277 (1.33)***	.139 (.793)**
Midwest (ref,ne)	.026 (1.272)	.129 (.917)*	-.033 (.830)	-.067 (1.87)	.031 (1.07)
South (ref,ne)	.024 (1.18)	.273 (.866)***	.064 (.788)	.045 (1.72)	.142 (.992)*
West (ref,ne)	-.015 (1.262)	.294 (.907)***	.135 (.815)*	-.002 (1.80)	.115 (1.06)
TYPE	.069 (.926)	.097 (.656)*	.029	.062 (1.33)	.042 (.796)
R^2	.17	.24	.24	.26	.23
F	6.506***	9.579***	9.734***	10.451***	9.231***
N	369	348	352	339	354

* p < .05
** p < .01
*** p < .001

- Size of the department is a weak predictor of crime analysis capacity. It does have a significant effect on operations. The larger departments appear to engage in a wider variety of crime analysis operations than their smaller counterparts.
- Crime does not matter. The amount of crime has no bearing on hardware/software, quality and utilization of data, training, statistical methods, and types of analytic operations engaged in.
- The amount of resources that are devoted to police operations does impact the quality of hardware/software

inventory; however, otherwise it has no effect on any other crime analysis dimension.

- Whether or not a department has adopted community policing practices seems only minimally related to how well it analyzes crime. It does affect training and hardware/software inventories, but otherwise does not predict the quality of crime analysis.
- When managers demand sophisticated levels of crime analysis output, the quality tends to follow along accordingly. This variable affected all dimensions of crime analysis. The higher the demand, the better the hardware/software, training, data, analysis, and breadth of methods employed.
- The degree to which targets appreciate crime analysis output was also a strong predictor of the quality of crime analysis operations. In every category except hardware/software inventory, the greater the appreciation, the higher the levels of crime analysis.[4]
- Crime analysis across all dimensions is superior in departments that designate a specialized crime analysis position.
- The region of the country in which a department is located is a significant predictor of crime analysis operations in

[4] We caution the reader that the opposite may also be true; that is, the higher the levels of crime analysis, the greater the appreciation. Our analysis cannot say which way these are related.

several dimensions. When it comes to hardware/software inventories, the west ranks first, followed by the south, followed by the midwest, with the northeast placing last. The west stands out ahead of the other regions (although not substantially so) when it comes to the use of sophisticated statistical methods. The south finished first when it comes to data issues. In all other areas there are no significant differences between regions.

DEPARTMENTS WITH LESS THAN 100 SWORN PERSONNEL

Method

The Questionnaire

The questionnaire consisted of 60 questions requiring 146 responses.[5] Most items were coded to determine simple presence or absence of some feature of crime analysis (e.g., do you have a CAD system? (yes/no). Several questions were coded for scaled responses (e.g., on a scale of 1 to 10, with 10 being the highest, how would you rate your crime analysis unit?). In all, there were six categories of questions.

The first category of questions, *personnel*, simply asked if the department assigned anyone to crime analysis as a primary responsibility and the degree to which civilians were utilized in that capacity.

[5] We do not discuss the responses to all questions. For those interested in the complete survey instrument and the responses to all questions see Appendix A.

The second category of items, *hardware/software*, examined automation, inter-agency data sharing, and software utilization. Respondents were asked if they used computers, what sort of data they entered into computers, what sorts of data sharing arrangements they participated in, whether they possessed a formal records management system, and general opinions about the quality of their hardware and software inventory.

The third category, *training*, measured the extent of formal training in various crime analysis areas.

The fourth category, *data*, examined how the collected data were utilized, either counted, analyzed, or neither.

The fifth category of questions, *functions*, asked respondents what types of analytic operations the department performed (e.g., link analysis, workload distribution, surveys, etc.).

The final category of questions, *targets*, examined the extent to which different potential targets used the crime analysis product.

Findings

Introduction

Recall that “big” departments are distinguished from “small” departments by the number of sworn personnel. One hundred or more sworn personnel constitute a “big” department.

When appropriate in this section, we will point out the differences, according to our findings, between the “big” and “small” departments. We also intend to point out differences within the “small” department group according to size. This may lead to a confused narrative when we begin to talk about the “smaller” (or “bigger”) of the “small” departments. We propose to avoid this potential confusion by referring to the departments with 100 or more sworn personnel as Type I, and the departments with less than 100 sworn members as Type II. This should make the discussion somewhat less difficult to follow.

Personnel

As table 9 shows, just over 2 out of 10 (23%) Type II departments surveyed had at least one person whose primary responsibility is crime analysis. Of those departments that have a crime analyst specialist, nearly 5 out of 10 (47%) of them had at least one civilian in the position. We find that size of the Type II departments has a significant effect on both the number of departments that have specialized crime analysts and that use civilians for the position. As Type II departments get bigger, the proportion of those that have specialized positions, as well as the number of departments that utilize civilians for the position, increases. For example, only about 1 in 10 (14%) departments with between 1-24 sworn officers have a specialized crime analyst position, while

in departments with between 75-99 sworn officers more than 4 out of 10 (41%) have at least one person assigned primarily to crime analysis.

Table 9: Personnel						
	Percent of personnel answering yes					
	N	1-24	25-49	50-74	75-99	Total
Is there anyone in your department whose primary job responsibility is crime analysis?	777	14%	26%	35%	41%	23%*
Are any of the persons responsible for crime analysis civilian employees?	176	29%	52%	53%	68%	47%*
* significant relationship ($p < .05$) between size and dependent variable						

Hardware/Software Technology

As table 10 shows, regardless of size, nearly every Type II department has at least one computer. While this information is useful, it tells us nothing about how these machines are being used. Nearly all of the Type II departments in the sample, about 8 out of 10, reported having a formal records management system. This suggests that most Type II departments exercise a reasonable degree of rational planning in the design and construction of their information systems. The smallest departments surveyed were less likely to have a connection to the internet or e-mail; however, the difference is minimal. Even in the smallest Type II departments, more than eight out of 10 (81%) have internet connections and about 6 out of 10 (62%) have e-mail.

Table 10: Hardware/Software						
	Percent of personnel answering yes					
	N	1-24	25-49	50-74	75-99	Total
Does your department have at least one computer?	777	95%	99%	100%	100%	97%
Records Management System good or excellent?	633	80%	84%	80%	76%	80%
Is software out of date?	753	37%	37%	35%	29%	36%
Is hardware out of date?	753	29%	24%	15%	12%	23%*
Does your department use a computer-aided dispatch system (CAD)?	777	44%	66%	88%	92%	61%*
Does your department have at least one computer with access to the Internet?	753	81%	93%	99%	97%	88%*
For how many employees does your department provide E-mail accounts?	753	62%	78%	91%	96%	73%*
* significant relationship ($p < .05$) between size and dependent variable						

The size of the department makes no difference when it comes to opinions about the quality of software. Nearly 4 out of 10 of the Type II departments surveyed said they felt that their software was out-of-date. There was less agreement across departments when hardware was considered. As the size of the Type II department increases, the hardware inventory would appear to improve. Only about one out of ten of the bigger Type II departments felt that their hardware was out-of-date, while nearly three out of ten of the smaller Type II departments were dissatisfied with their hardware.

We see in table 11 that like Type I departments, most of the Type II departments, about 9 out of 10, store primary data

(initial case report, arrest, investigations, and calls for service) in computers. The depth of automated reports, like we found in the Type I departments, is impressive in these smaller departments. On average, around 6 out of 10 of the Type II departments surveyed said they enter secondary data (traffic, intelligence, field interviews, vice, evidence, and nickname) into computers. Larger Type II departments are more likely to enter these data, but the differences due to size are not substantial.

Table 11: Computerized Data

	Percent of personnel answering yes					
	N	1-24	25-49	50-74	75-99	Total
Which of the following reports and information are entered into the department's computer.						
Initial Case reports	692	93%	99%	97%	99%	95%*
Arrests Reports	692	94%	96%	91%	99%	96%
Traffic Accident Reports	692	66%	76%	78%	78%	71%*
Intelligence Reports	692	59%	63%	65%	57%	61%
Field Interview Reports	692	50%	60%	65%	62%	56%*
Vice Case Reports	692	57%	69%	78%	81%	65%*
Calls For Service	692	77%	90%	90%	95%	83%*
Investigative Reports	692	90%	90%	91%	87%	90%
Evidence Reports	692	76%	86%	92%	87%	82%*
Pawn Shop File	692	20%	43%	52%	59%	35%*
Nickname File	692	48%	61%	79%	81%	61%*
MO Files	692	35%	56%	61%	57%	45%*
Does your department participate in a formal regional information-sharing program?	753	62%	10%	73%	73%	67%*
Does your department use crime mapping software?	753	9%	9%	23%	33%	15%*
* significant relationship ($p < .05$) between size and dependent variable						

Table 11 shows that far fewer Type II departments use geographical information systems than the Type I departments.

On average, about 2 out of 10 have mapping programs. In this case, significantly and substantially more of the larger Type II departments in the survey had mapping software: about 1 out of 10 of the smallest (49 or fewer members) departments compared with about 1 out of 3 of the larger ones (75-99 members). Regardless of size, all the Type II departments surveyed that used mapping software geocoded data in essentially the same proportions. Most, about 9 out of 10, departments geocoded part I crimes. Nearly 7 out of 10 geocoded part II, arrests, and calls for service. Only about 2 out of 10 geocoded corrections data. Very few Type II departments, less than 1 out of 10, used hotspot software.

Table 12: Crime Mapping

	Percent of personnel answering yes					
	N	1-24	25-49	50-74	75-99	Total
Which of the following types of data does your department map?						
Part I Crimes	112	85%	75%	89%	97%	88%
Part II Crimes	112	72%	63%	71%	83%	74%
Arrests	112	69%	63%	54%	73%	65%
Calls for Service	112	64%	75%	63%	80%	69%
Corrections	112	13%	25%	17%	30%	20%
Traffic	112	64%	75%	63%	63%	64%
Do you use “hotspot” software such as STAC?	112	3%	13%	6%	7%	5%
* significant relationship ($p < .05$) between size and dependent variable						

Training

Table 13 depicts training issues. Nearly half of the Type II departments surveyed provide crime analysis training to its

members. There is little variance between Type II departments according to size. Nearly all of them, about 9 out of 10, provide report writing training. About 6 out of 10 of the departments surveyed deliver software training to it members; somewhat fewer, on average, about half, train members in hardware operations. Few of them train members in statistical methods, graphics, and geographical information systems.

Table 13: Training

	Percent of personnel answering yes					
Does your department provide training in the following areas:	N	1-24	25-49	50-74	75-99	Total
Crime Analysis	777	47%	55%	61%	52%	51%*
Report Writing	777	88%	93%	88%	81%	88%
GIS Mapping	753	10%	22%	33%	36%	19%*
Computer Hardware	753	39%	53%	65%	50%	47%*
Computer Software	753	57%	75%	80%	73%	66%*
Statistical Analysis	753	24%	39%	45%	46%	33%*
Graphics	753	15%	25%	32%	37%	22%*
* significant relationship ($p < .05$) between size and dependent variable						

Data

The items in this category were intended to measure the degree to which the Type II departments analyze the data that they collect. As we pointed out in the survey of Type I departments, some have criticized them for devoting too much energy to simply counting crime, rather than analyzing it. As table 14 shows, we found that counting does dominate crime analysis operations in the Type II departments, like we found with the Type I departments.

Table 14: Data Utilization

Count, Analyze, or not utilize following data	N	Percent of personnel answering yes 1-24			Percent of personnel answering yes 25-49			Percent of personnel answering yes 50-74			Percent of personnel answering yes 75-99		
		Count	Analyze	Not Utilize	Count	Analyze	Not Utilize	Count	Analyze	Not Utilize	Count	Analyze	Not Utilize
Crime totals	777	62%	21%	16%	58%	36%	6%	57%	40%	3%	53%	44%	1%
Arrest totals	777	70%	18%	11%	66%	30%	3%	70%	29%	1%	72%	24%	2%
Clearance rates	777	59%	17%	23%	51%	35%	11%	62%	30%	7%	58%	34%	6%
Calls for service	777	64%	22%	13%	56%	38%	6%	60%	40%	0%	48%	49%	2%
Traffic accidents	777	59%	27%	13%	44%	47%	8%	48%	45%	6%	36%	53%	9%
Citizen complaints	777	57%	29%	14%	46%	46%	8%	41%	50%	7%	38%	56%	4%

About 6 out of 10 of the Type II departments, regardless of size, count crime, arrests, clearance rates, calls for service, traffic accidents, and citizen complaints. When it comes to analyzing data, of the Type II departments surveyed, as the size category increased, the proportion that analyzed the various data increased from about 2 out of 10 in the departments with 1-24 members to about 4 out of 10 in the departments with 75-99 members. Very few of the larger departments (50-99 members) said that they do not utilize data (either count or analyze). More of the smallest Type II departments (1-24 members) said that they do not utilize data. For example, more than 2 out of 10 of these departments said that they do not utilize clearance rate data. Although we did not specifically ask respondents to describe their analytic operations, these data suggest that little sophisticated statistical analysis is performed. This finding is similar to what we found in the Type I departments.

Functions

In keeping with the survey of Type I departments, we distinguish crime analysis functions (e.g., target profiling, spatial analysis, surveys, etc.) according to whether they are primarily strategic or tactical. As table 15 illustrates, when it comes to the kind of functions that Type II departments do, we found the following: Type I departments engage in a wider range of functions. However, when we look at the mix between tactical and strategic functions, the Type II departments engage in a greater proportion of strategic functions than their Type I counterparts. Table 15 depicts these findings.

Table 15: Functions

Which of the following crime analysis functions does your department employ?	Percent of personnel answering yes					
	N	1-24	25-49	50-74	75-99	Total
Citizen surveys	777	45%	58%	66%	71%	54%*
Workload distribution	777	38%	59%	68%	68%	50%*
Program evaluation	777	36%	56%	65%	67%	47%*
Employee surveys	777	40%	49%	59%	57%	47%*
Spatial	777	33%	63%	61%	67%	46%*
Patrol Strategy	777	39%	60%	50%	53%	45%*
Crime trends	777	33%	53%	63%	68%	45%*
Temporal	777	31%	55%	55%	58%	42%*
Productivity	777	35%	52%	52%	52%	42%*
Victim surveys	777	32%	40%	46%	53%	38%*
Intelligence	777	30%	47%	52%	44%	38%*
Crime scene profiling	777	28%	40%	39%	42%	33%*
Flowcharting	777	16%	28%	44%	46%	26%*
Victim	777	20%	28%	30%	31%	24%*
Link	777	13%	28%	22%	31%	19%*
Crime forecasting	777	13%	23%	28%	32%	19%*
Financial	777	13%	19%	24%	23%	17%*
Target profile	777	8%	18%	21%	29%	14%*
Displacement and diffusion	777	12%	17%	18%	17%	14%
Civil litigation	777	9%	6%	14%	6%	9%*
Environmental survey	777	6%	3%	11%	10%	7%

* significant relationship ($p < .05$) between size and dependent variable

These distinctions, however, evaporate when we break down Type II departments by size. The bigger of the Type II

departments are very similar to the Type I departments when it comes to range of functions and the mix of tactical and strategic functions. The significant and substantial differences emerge when we compare Type I departments with the Type II departments of 1-24 members.

Targets

The worldwide web is an efficient and effective way for police departments of any size to communicate with the public. As table 16 points out, when the larger (25 members or greater) of the Type II departments is distinguished from the smaller ones (less than 25 members), we find that over 6 out of 10 of the bigger ones have a formal web page. Only about 3 out of 10 of the smaller Type II departments have one. But for those departments that do have a web page, more than 8 out of 10 utilize it to facilitate information exchange between the department and the public. There is no significant difference based on size of Type II departments when it comes to access to crime maps. Of those Type II departments that produce crime maps, about 6 out of 10 allow the public to view them.

Table 16: Targets

	Percent of personnel answering yes					
	N	1-24	25-49	50-74	75-99	Total
Department have an official web page	753	34%	59%	74%	72%	52%*
Citizens allowed to view web	112	49%	63%	77%	67%	63%*
Means for publishing communications via the web	342	82%	79%	80%	87%	82%
Are crime analysis products provided to the following						
Community	777	40%	57%	58%	56%	47%*
Prosecutors	777	49%	46%	54%	42%	49%
Outside law enforcement	777	49%	48%	60%	60%	52%*
Elected officials	777	57%	55%	65%	59%	58%
* significant relationship (p < .05) between size and dependent variable						

Elected officials tend to be the dominant external target for crime analysis products. About 6 out of 10 of the Type II departments surveyed provide crime analysis output to elected officials. The size of the department makes no difference in this area. There is also no significant size difference between Type II departments when it comes to providing analytic output to prosecutors. Nearly 5 out of 10 departments surveyed said that prosecutors are targets of their crime analysis products. As the size of the Type II departments increases, the number of departments that said they provide output to the community and to outside law enforcement agencies tended to increase; however, the differences were not substantial. Overall, about 5 out of 10 Type II departments surveyed deliver product to these two targets.

Explanatory Factors

As we did with the Type I departments, we explore in this section factors that might help explain the variance in the quality of crime analysis operations in Type II departments.

Method and variables

We examined crime analysis in Type II departments along four primary dimensions: 1) the quality of hardware and software inventory; 2) the training of its personnel; 3) the quality, sources, and utilization of its data; and, 4) the varied types of operational methods. To determine the extent of variance between respondents we constructed four summated indices, like we did for the Type I departments (refer to the preceding section for a discussion of the method). We found that the respondents did vary along the four dimensions, raising the same question that we addressed in the previous section: How can we explain the differences between departments? The explanatory factors that we propose are as follows:

Population: The size of the city should help to explain the quality of service delivery within its public organizations. Larger cities should be expected to have access to more resources, both human and fiscal. One would expect that the larger the city, the greater the crime analysis index scores.

Crime: The amount of crime a jurisdiction suffers should be related to the nature and extent of operations that it engages in. Greater levels of crime should translate into a greater need for crime analysis operations. We would expect that as crime increases, crime analysis operations correspondingly increase to meet the need.

Region: The quality of crime analysis produced may be a function of the region of the country (northeast, south, Midwest, and west) in which the department is located. We created three dummy variables (reference northeast) to measure the impact of this variable.

Type of department: The type of department may have a bearing on the quality of crime analysis that it produces. Two types of law enforcement agencies were included in the phone survey: municipal and sheriff. One dummy variable (reference municipal) was created to measure the impact of this variable.

Crime analyst specialization: Whether or not a department has designated a specialized crime analyst position should influence the department's crime analysis operations. Every law enforcement agency, regardless of whether or not they specialize the function, engage in crime analysis; however, those that designate a specialized crime analysis function will be likely to take a greater interest in crime analysis operations, and the resources dedicated to those operations, than a department without a specialized function. We would

therefore expect that departments with a specialized crime analysis function will have higher index scores.

Each of the four dimensions of crime analysis (hardware/software, training, data, and operations) was regressed on the four factors (population, crime, region, and type of department).

Findings and conclusions

Table 17 portrays the findings. They indicate the following:

Table 17: OLS Standardized Coefficients (and Standard Errors) for Variables Predicting Crime Analysis Capacity: Departments with Fewer than 100 Sworn Personnel

Independent Variable	Hardware/ Software	Training	Crime Analysis Functions	Data
POP	.259 (.059)***	.402 (.272)***	.359 (.156)***	.263 (.110)***
INDEX	-.010 (.000)	.085 (.000)**	-.026 (.000)	.001 (.000)
Midwest (ref,ne)	-.043 (.214)	-.132 (.988)**	-.008 (.568)	-.152 (.401)**
South (ref,ne)	-.042 (.216)	-.189 (.999)***	.027 (.575)	-.121 (.406)**
West (ref,ne)	-.042 (.254)	-.059 (1.175)	-.025 (.676)	-.043 (.477)*
TYPE	.148 (.179)***	.143 (.827)***	.184 (.476)***	.158 (.336)***
CAS	.257 (.166)***	.202 (.765)***	.279 (.440)***	.165 (.311)***
R^2	.17	.29	.22	.12
F	19.438***	38.972***	28.465***	14.454***
N	686	686	686	686

* p < .05
** p < .01
*** p < .001

- The population that the agency serves is a significant predictor of crime analysis operations. In all four dimensions we found that the larger the city, the higher the index scores.
- The extent of crime only impacted hardware and software inventories. The higher the crime rates, the better the hardware and software.
- Region was a significant predictor in both hardware/software inventory and the quality, source, and

utilization of data. When it came to hardware/software, northeastern agencies were superior to agencies in the midwest, west, and the south, although the differences were not substantial. When it came to data quality, sources, and utilization, the northeast and west were about the same and significantly, albeit not substantially, better than the midwest and south; otherwise, region had no impact on crime analysis.

- The type of agency was a significant predictor in all four dimensions. Municipal agencies consistently exhibited higher, although only moderately so, dimension scores than sheriff's departments.
- Agencies that have crime analysis specialists have significantly higher scores across all four dimensions of crime analysis than their counterparts that do designate specialized crime analysts.

Discussion

When it comes to structure, in departments with over 100 sworn personnel, we see a primarily specialized, centralized, and civilianized function. In these departments, when departments choose to designate a specialized crime analysis function, the ratio of analysts to sworn personnel is nearly 1 crime analyst per 100 sworn officers. Hardware, software, and training support for crime analysis are generally good in big

departments. In departments with less than 100 sworn personnel, training is provided by most departments in a wide range of crime anlaysis-related tasks. For the most part, data management is rationally planned in both big and small departments. The vast majority of collected data is stored in automated data bases across all sizes of departments. Most departments seek data from outside sources. In big departments, although crime analysis is normally centralized and under administrative authority, actual operations tend to be more tactical than administrative; nevertheless, the products are utilized by personnel at all levels, from the beat officer to command staff.

When compared to crime analysis operations of, say, fifty years ago, we would expect dramatic advances in analytic methods and output. And in many respects this is so. There is no question that we store and access data more efficiently and effectively than we did fifty years ago. Analytic software is now available to greatly enhance the analyst’s ability to discover the myriad patterns and relationships in the police data set. Yet, with all the advances in technology, regardless of the size of the department, the findings here indicate that “bean counting” continues to dominate crime analysis operations. Granted, they are counted faster, and there are beans counted that were not counted fifty years ago, but the

evidence is clear: counting is the primary method when it comes to working with police data.

The reason that counting dominates analysis is unclear. The findings, however, point to some signs that warrant a closer look. Most big departments reported problems with data collection. Data that are inconsistently coded, or data that are not captured because the reports simply do not ask for the data, would substantially obstruct analysis. There is some evidence that training may be partially responsible for the emphasis on counting. Respondents in both big and small departments said overall that training in analytic-type software (GIS) and in basic statistics were deficient.

It is important to look at issues like data collection, report configuration, and hardware and software inventories to assess crime analysis. But I would suggest that if we demand a more sophisticated utilization of the data that law enforcement collects, then it may be more productive to look at the demand side of the equation. Like it or not, policing in America conforms to the bureaucratic, hierarchical model. Policies are formed at the executive level of the organization and are communicated to subordinates in the form of direct orders and standard operating procedures. Crime analysts count crime in response to the demand established by executive policymakers. So, the interesting question is not why do crime analysts continue to essentially count crime, but why does the demand

from police executives continue to emphasize crime counts? The findings we report here simply do not permit an answer to this very important question.

We do feel obligated to point out the weaknesses of both the mail and phone surveys. First and most important, there is the problem of self-reporting bias. In most cases, one person completed the survey. We cannot know with certainty whether the respondent was entirely honest and objective in his/her responses. Respondents may have slanted their responses one way or the other based on some unknown motivation. Based on follow-up phone interviews with a random selection of respondents that we discuss below, we are reasonably confident that this bias was minimal. We feel a more important concern is that our findings measure conditions at one point in time. We cannot know how the crime analysis function has changed over time. We therefore offer these findings as a baseline from which changes in the crime analysis function can be measured in the future.

III. CRIME ANALYSIS IN AMERICA: A CLOSER LOOK

INTRODUCTION

We now have some general sense of the state of crime analysis in America. The results of the mail and phone surveys helped to develop a broader understanding of various important aspects of crime analysis; however, in many ways, the survey raised as many questions as it answered. The aim of this section is to probe crime analysis operations in large American police departments a bit more deeply.

A cursory review of the mail and phone survey results suggests that the quality of crime analysis operations varies between departments. Not all police departments are equal when it comes to crime analysis. We intend look more carefully at the departments that, by our calculations, excel in the area. By singling out the departments that by all indications are among the most advanced, we can feel more comfortable in drawing conclusions about the current state of the art. We may all have some rough idea about what a crime analysis unit should be. In this section we examine what it currently is, at its best. In the process, not only the strengths emerge, but the weaknesses also come into focus.

We first had to create some method to rank mail survey respondents. To do so we constructed a single summated index. A subset of survey questions were selected and coded so that the higher values represented conditions favorable for crime

analysis. In all, there were 110 questions selected for the index. The higher the sum is, the higher the level of crime analysis is. For a variety of reasons, this is a crude measure of a department's crime analysis competency, but for our purposes it does provide a rough, objective way to rank order the respondents.

Our first objective, after ranking the respondents, was to find out more about their analytic methods. The mail survey appeared to indicate that analysts were "counting" crime more than they were "analyzing" crime. This in itself was interesting and informative; however, it is more useful and practical to determine what sort of activities the higher-level departments are conducting that constitutes more sophisticated analysis. To do this we identified the top 100 departments according to their rank on the summated index. Of these departments we looked for the ones that reported using the most sophisticated software and further reported engaging in higher levels and frequencies of the more sophisticated analytic operations. We then conducted telephone interviews with the crime analysts from these departments. In all, we interviewed thirty crime analysts in police departments of all sizes, types, and regions of the country.

Our second objective was to delve more deeply into the details of the operations and management of a crime analysis unit. We drew a sample of nine departments from the top

twenty-five departments on the summated index list. This selection was not random. Departments were selected based on a combination of factors: convenience, region, and reputation. Each of these sites was visited. In all of the departments that we selected, the analyst who completed the mail survey acted as the contact person. Members of each unit were interviewed, as well as other relevant members of the department that had an organizational connection to the crime analysis function. We should point out that we do not mean to imply that the departments selected represent the “best” crime analysis units in the country; however, we are confident that they are representative of the “best” crime analysis units in the country.

In this section we summarize the findings of those phone interviews and site visits.

ORGANIZATIONAL DYNAMICS AND BEHAVIOR

Division of Labor

Organizations increase efficiency when different types of work are distinguished and when the various types of work are assigned functional units with clearly defined jurisdictions. The overall goal is to militate against overlap and duplication of effort. We found from the mail survey that most departments (74%) reported having specialized crime analysts and of those

nearly the same proportion (72%) said that they assigned their crime analysts to separate units.

In every department that we visited the crime analyst position was formally differentiated from other specialized police tasks; in addition, in all the departments that we visited the unit was functionally differentiated from other units. In most departments, the specialization of the crime analysis function can be traced to a time when technical ability was necessary to extract data from the department, city, or county information system, and translate that stored data into useful strategic or tactical information. Command staff managers, to fulfill their obligations to report the nature and extent of crime in their jurisdiction, had to rely on someone with the technical knowledge to access and generate reports from data sources that demanded some measure of technical expertise. As police organizations moved from storing data on the “police blotter” to storing data in sophisticated automated systems, the need for a specialized function arose.

Several of the departments we visited can trace the formation of a specialized crime analysis unit to the early 1970s. These departments, like many others at that time, had to rely on city or county information systems to manage their data. Police departments have traditionally been somewhat territorial when it comes to their information. As such, there

was a strong incentive to seek more control of access to data and the generation of reports.

For some departments, the federal government provided a means for the police to secure tighter control over their data. The 1968 Omnibus Crime Control Act provided substantial funding for law enforcement agencies to develop formal planning operations. Many of the grants required the creation of crime analysis units to support planning functions. This is essentially what we found in three departments (i.e., specialized units were formed that were dedicated to taking control of the data and to generating reports for managers). As one of the crime analysts in a site we visited said:

> The chief wanted someone in the department to be able to get reports to him when he wanted them. Our technical people at the city were giving us a set of reports but the chief sometimes wanted things that it took too long to get from the city.

Current hardware and software technology has substantially improved access to police data when compared to thirty years ago. Graphical user interfaces have reduced the need for programming skills. But there is another side to that coin. Software developers have been developing a wide range of software to support crime analysis. Consider the advances in crime mapping and the potential data sharing capabilities of the web. While overall the software and hardware may be more

user friendly, it still takes some measure of technical knowledge to operate these new and advanced systems. Several departments that we visited have formed their crime analysis units within the past ten to fifteen years. The success of these units is directly related to the technical skills that the crime analysts either brought with them to the job (e.g., special academic credentials) or developed while they were with the units. Baltimore County, MD, illustrates this point. Through the efforts of that department's crime analysis supervisor, the unit has one of the most advanced mapping operations in the country. The skills that were required to build that unit were clearly outside of the skills typically associated with traditional police work.

This is likely to continue into the future. Software and hardware developers are producing more advanced methods for police departments to store, share, analyze, and disseminate data. Taking full advantage of these advances are likely to require skills not commonly held by the typical police officer. Specialization and functional differentiation are not always a matter of efficiency, as much as they are a matter of necessity. Specializing the crime analysis function may be driven by the need to identify and concentrate scarce or previously unavailable specialized skills, not by the need to avoid duplication, at least for the time being.

Line and Staff

Notions about line and staff have changed somewhat over time; however, the essence of the distinction between the two types of functions remains the same. Line personnel perform tasks that directly impact the organization's primary mandate (e.g., write tickets, make arrests, etc.). Staff personnel, on the other hand, support and advise the activities of the line in an effort to facilitate the execution of their activities (e.g., law unit, planning, etc.). Crime analysis historically, that is prior to the early 1970s, was one of many tasks that line personnel performed. Beat officers and detectives searched for patterns and relationships in the data as a part of their regular routine. As the tools to store and retrieve the data grew more sophisticated and correspondingly more complex, crime analysis evolved into a specialized function. The crime analyst ideally used his/her technical expertise to more efficiently access larger data sets and discover a wider range of patterns and relationships.

In a broad sense, the crime analysis personnel that we spoke with at the nine sites viewed their role as staff. The analysts that we spoke with saw a distinction between the skills that they possessed and the skills that sworn personnel possess. In their minds they performed different tasks and the tasks that the crime analysts performed were designed to

facilitate the work of the sworn officer. As one crime analyst put it:

> We're here to support the sworn people. Sometimes it's hard to get some of my people to accept that. It's hard not to want to be more involved in the investigations, but we have to know where our role stops and the detective's begins. We are supposed to make getting the information easier for the sworn people and try to put things together for them. That's what we do.

Although crime analysts view their overall role as staff, they are quick to offer the views on the preferred target of support. In most cases, the analysts that we spoke with distinguish between tactical and strategic analysis. Recall that tactical and strategic analysis is distinguished essentially by the time horizon: Tactical analysis seeks to support daily operations; strategic analysis seeks to support long-range planning. Analysts that we spoke with place a high value on supporting line operations; however, they somewhat narrowly define line operations as those associated with the work of beat officers and detectives. Activities that support the work of middle and executive level managers are viewed as less legitimate by the analysts that we spoke with. In a manner akin to the beat officer feeling that issuing traffic tickets is not "real" police work, the crime analyst appears to view activities that support long-range planning as not "real"

crime analysis. The comments of one crime analyst point this out:

> I just hate the annual report. I know its something the chief wants and I do it, but it just seems like such a waste of time.

How the unit views its role (i.e., staff or line) is influenced by its history and organizational placement. In most departments that we visited, the unit was situated in operations and had its closest links with patrol and investigations. One unit was situated under administration and this unit placed a higher value on support for administration. This unit has always been under the supervision of a civilian and that person has always reported directly to the chief. Of the three staff members that perform analytic tasks, two are assigned to administrative duties and one to tactical. Their output reflects this structural context. Much of their work is centered on activities that support long-range planning. That arrangement (i.e., support for strategies planning) is clearly the exception in the departments that we visited.

Centralization

Centralization is an issue that managers have had to address when designing the structural arrangements for a crime analysis unit. The substance of the issue was described in the previous section. Some argue that centralization is necessary

to insure that the unit stays focused on the unit and organization mission; others argue that centralization inhibits the unit's flexibility to provide services to a diverse set of internal clienteles.

We found both types of structural arrangements in the sites visited. We also found that centralization is not a settled issue among practicing crime analysts. One crime analyst in a department that had a decentralized arrangement said:

> I'm not sure which [decentralization v. centralization] is better. Ours is decentralized. It's good because we get to know the officers and the commander better. But it's not so good because we're asked to do things that crime analysts probably shouldn't. The commander knows that we know how to operate the computer, so when anything comes up that can be done with the computer, he comes to us. He's starting to do his reports [to the command staff] in powerpoint now that he knows I can do it for him. That takes time away from what I think I'm supposed to do, but you can't say no.

One department designed an arrangement that combined elements of both centralization and decentralization. Units were physically located in remote stations and had a loose working relationship within the substation chain of command; however, they were formally within a centralized chain of

command with their supervisor located under investigations. The supervisor of this unit maintained:

> You can't have a decentralized unit. Analysts are being asked to do things that really aren't crime analysis. But you don't want to loose the support of the station commanders. So the way we do it is if the station crime analyst is asked to do something that they think they shouldn't be doing they give me a call and I tell them not to do it and if the commander wants to know why, he can call me. That takes the crime analyst off the hook. It's worked for us. We've been able to avoid getting into things that really waste our time.

Regardless of structural arrangement, analysts in all sites complained that they were frequently being asked to perform tasks that have nothing, in their view, to do with crime analysis. Crime analyst familiarity with hardware and software technology works as much to their disadvantage as to their advantage. As the excerpts above point out, analysts are often asked to engage in activities that the analysts deem outside of their job description. According to one analyst:

> When they find out what the software can do you get, like, "Hey, how about a banner: Lordy, Lordy, Sgt. so and so is forty." It's hard to say no, but I'd like to.

Structure can and has been used to overcome this problem. Yet the more important concern may be to establish, with some

certainty, a more explicit crime analyst job description. We will address this issue in more detail below.

Communication

Formal and informal communication provides a useful conceptual distinction to explain organizational communication (Berlo, 1960). Formal communication is normally written, originates with some organizational authority, follows the chain of command, is directed at some specific individual/s, and is part of the process by which the organization's policies, mission, strategy, tactics, etc. are implemented. The primary advantage of formal communication is that it fosters accountability. The primary disadvantage of formal communication is that the organization can become swamped in documentation. Informal communication is normally verbal, may originate from various sources, may or may not be directed at some specific audience, may or may not follow normal communication channels, and it reflects a broader range of concerns than formal communication. Informal communication can overcome some of the disadvantages of formal communication. Most importantly, it tends to facilitate practical solutions to problems that are aggravated by the rigidity of formal bureaucratic arrangements.

Effective communication is vital to the operations of a staff function. Crime analysis units must develop sound

communication channels with their targets in order to carry out their mission. In all the sites that we visited, crime analysts, to varying degrees, complained of problems in this area. Information overload was especially evident in some of these departments. Some units produce a vast array of different types of bulletins, notices, summary reports, etc. Targets engage in a cost/benefit analysis when it comes to processing information. When the costs of processing the output exceed the expected benefits, the information will be ignored. Comments of one of the analysts interviewed are illustrative:

> We provide information to officers almost case-by-case. We do have some[forms] that are formatted, but there are just too many different types of requests. You try to get it all to the briefing room bulletin boards but it gets pretty cluttered.

Much of the communication between crime analysts and their targets is informal. Most crime analysts we spoke with seemed to feel that this form of communication was most effective. All of the analysts believed that they had to “sell” themselves, and the unit, to targets. This adds to the ad hoc nature of the output. Part of the reason for this struggle seems to be connected to the civilianization of the crime analysis function. Nearly 8 out of 10 departments that had a crime analysis function (see above) had at least one civilian

crime analyst. Seattle PD's unit was sworn and Lincoln PD's unit's first-line supervisor was a sworn member; in all the other departments the analysts and first-line supervisors were civilian. Several of the civilian analysts claimed that they have experienced some difficulties in gaining the trust of sworn members. As one civilian analyst put it:

> You have to work at selling yourself to the officers. You have to prove that what you do can help them. Once you do that they're sold, but it's not so easy sometimes. You have to work at it. I'm always looking for ways to get them to see we can make their jobs easier. Most of the time, it's up to me to make the first move.

This is to be expected. The police culture literature (Crank, 1998) describes a belief system among police officers that creates resistance to anyone they consider an "outsider." Sworn officers, particularly at the patrol level, tend to have a world-view that is distrustful of those outside of their particular functional responsibility: Patrol doesn't trust detectives; detectives don't trust the specialized units; sworn members at the street level don't trust their superiors, and so on. Civilians are truly considered outsiders and are held up to special scrutiny by all members. It is entirely understandable that civilians that enter this world would find it difficult to gain acceptance. To overcome this obstacle, informal communication patterns proliferate, especially between

analysts and first-line officers; in their efforts to overcome target resistance, the ad hoc nature of communication is aggravated.

It is important for crime analysts to build trust and credibility with targets. It is, likewise, important for crime analysts to be responsive to the information needs of a wide audience. To accomplish these ends, crime analysts will have to generate a wide range of output. But the crime analysts must insure that each product reaches the widest possible audience. The benefit of formatted reports is that it reduces processing time for the reader. The format allows the reader to quickly determine if the information is relevant to their needs. Unformatted, individualized output implies the diffusion of information and thus constrains effective communication between crime analysts and targets. Categorizing output and creating a manageable set of well-organized, formatted reports would improve communication between analysts and targets.

We found that communication between functional units also tended to be informal. Most of the departments that we visited had some form of community policing, problem-oriented policing, crime prevention, or command accountability (COMSTAT) policies. Since each one of these policies is highly information-dependent, one might reasonably assume that crime analysis would be formally linked with those functions (forms, staff

meetings, etc.). We found that normally this was not so. Although some of the units interviewed did have informal links with these operations, formal communication mechanisms were for the most part absent. There were exceptions. Departments that had a command accountability policy formally integrated crime analysis output into the regular meetings. As a command staff officer in Lincoln, Nebraska, explained:

> Crime analysis provides all the information that we use to talk about at our meetings[command accountability]. Crime maps. Statistics. We put the maps up and pass around the statistics and talk about the problems that we find. Commanders tell us what they intend to do about them. The meetings are held once a month and commanders from all sections attend. The whole thing depends on the crime analysis people.

Coordination

Coordination is, for practical purposes, the opposite of division of labor. It is the process by which specialized or divided labor is brought together (Williams, 1980; Seidman, 1986). It is the mechanism by which the organization seeks to keep its separate parts focused on the common mission. The more complex and specialized an organization becomes, the more it requires coordination. Coordination is closely akin to and dependent upon effective communication channels. Coordination is likely to meet with resistance. Those who seek to

coordinate often advance interests that may be at odds with those that are the targets of coordination.

Even though the creation of a crime analysis unit increases specialization, because it serves a staff function, it should facilitate coordination. This is what we found in those departments that built formal links between crime analysis and command accountability operations. These departments provided reports that facilitated links between various specialized units. Comments of several crime analysts illustrate how this worked:

> When it works, it's a way to get different units working toward solving the problem. We found a robbery series. The way we described the series showed how other units had to get involved. It all began with our unit finding and describing the problem.

> Our meetings [command accountability] are actually discussions about what the crime analysis people put together for us. When we decide how different units can work together to solve a problem that crime analysis finds, it's from what the crime analysis people tell us.

Similar to what we found in communication channels, coordination with relevant units was loose and informal in most of the departments that we visited. There was little evidence of formal links with crime prevention, community policing, and

problem-oriented policing when these operations were formalized. Crime analysts said that they work with these units much in the same way that they work with other sworn officers (i.e., on a primarily ad hoc basis). What's more, it was very common, when we viewed the organizational charts, to find crime analysis located in functionally different sections of the hierarchy. This in some cases aggravated the difficulties in coordinating logically connected functions. According to one crime analyst:

> We work with the CPTED [crime prevention through environmental design] person, but there is no formal relationship. They're even under another division. I made it a point to make a connection. We should work more closely with CPTED.

Crime Analysis Performance Measures

According to Ammons (1995), performance measurement is essential to the following critical functions of an organization: accountability, budgeting, planning, operational improvement, evaluation, and, allocation of resources. It is necessary for a specialized unit, like crime analysis, to design a clearly defined set of objective, and ordinarily quantifiable, measures of performance.

Performance measures should respond to a unit's overall mission, goals, and objectives, and ultimately should be driven

by some larger organization mission or vision. We did not find formal unit-specific performance measures in the departments that we visited. Units did not have clearly and formally stated unit goals and objectives that could be easily translated into quantifiable, measurable indicators of performance. This should not be misconstrued to suggest some criticism of the work product of crime analysts; it does not. It simply suggests that we found that crime analysis units in our sample were not designing rational methods to assess the efficiency and effectiveness of their output. This should not come as any great surprise. Police departments have not been particularly successful at developing useful performance measures, nor for that matter, have they been particularly successful at adopting formal rational planning. One might reasonably expect that units within a police department would likewise be somewhat deficient in this area.

It should be noted that some departments that we observed were making an effort to overcome this weakness. Some of the departments were either constructing or have constructed a unit mission statement and are looking at general unit goals and objectives. Several departments administer surveys to targets of their analytic output. These surveys, however, were only sporadically administered and were at best weak indicators of the demand for and the quality and usefulness of the unit's output. Analyst supervisors that we spoke with, for the most

part, were aware of the need for evaluating their products and nearly all were wrestling with a solution. According to one analyst:

> We have a survey that we give officers. It is supposed to tell us how we're doing, but it doesn't always get to them and it probably doesn't tell us enough. We're trying to put one together, but honestly it's not high on the list of things to do. We're kind of busy here.

Planning

The Law Enforcement Assistance Administration (LEAA), a federal agency created by the Omnibus Crime Control and Safe Streets Act of 1968, awarded substantial funds to state, county, and municipal police departments to support rational planning (Hudzik and Cordner, 1985). In a phone survey recently conducted by the University of South Alabama Center for Public Policy, nearly one-third of a sample of police departments with 100 or more sworn personnel said that they engage in formal strategic planning. The planning process requires that an organization gather data that informs planners about both the external and internal environment. The crime analysis unit is a logical place for the collection, collation, analysis, and distribution of these data for planning purposes (e.g., nature, extent, and location of crime; crime trend predictions; citizen and employee surveys; etc.). We discussed

crime analysis involvement in the formal planning process with the analysts that we interviewed.

All of the departments that we visited do some form of strategic planning. Nearly all the analysts that we talked with provide reports to superiors that are in some fashion intended to support planning. Mostly, crime analysis units provide data about the nature and extent of crime in the department's jurisdiction. In a few departments, the analysts were asked to provide estimates of future trends. One department is analyzing data in a manner that seeks to predict the movement of crime over time in an effort to help planners estimate future manpower needs and distribution. However, crime analysts are not currently assisting planners in sophisticated analysis that one might associate with the needs of strategic planners (e.g., forecasting, stakeholder assessments, etc.). This is due in large part to the current emphasis on tactical analysis. Some of the departments that we visited designated members of the unit for administrative duties, which is a form of analysis that might be expected to support strategic planning. But the dominant view among analysts and police executives calls for an emphasis on tactical analysis. This form of analysis may be compatible with providing nature and extent of crime data to planners, but it is not the type of analysis that we would expect to find

that would support the more sophisticated needs of strategic planning teams.

HUMAN RESOURCES

Job Description

All but two of the departments that we visited had formal job descriptions (see appendix B). Job descriptions were normally found in the job announcements that were distributed to the public. One department had a job description in its unit manual and another department had its job description in a standard operating procedure. We also expanded our search by viewing job descriptions of other police departments that posted job announcements on their web sites. Of the job descriptions that we reviewed, they generally called for the following set of skill categories: hardware and software operation; data management and analysis; operations planning; and verbal and written communication. As a rule, the minimum education requirement qualification was an undergraduate degree, although several allowed experience to substitute for education. Judging from what we were able to determine, job descriptions for hiring purposes seem relatively similar between departments.

Selection

The selection process depends upon whether the analyst is a civilian or a sworn member of the department. For a sworn member, selection to a crime analysis unit is normally a temporary assignment and represents an opportunity for the officer (at whatever rank level) to broaden his/her police experience. When the unit is staff to command staff, this position can provide an opportunity for a sworn member to be noticed by superiors. As one sworn crime analyst said:

> It's a good assignment. It gives you some good experience in another unit and since we do a lot for the chief, it gives you the chance to show what you can do.

For civilian crime analysts, the selection method varied across departments that we visited. As a rule, applicants were asked to complete a formal application form; the pool was reduced to some manageable number based on the application; oral interviews were conducted to a short-list of candidates; and a final decision was reached. In some cases, the department administered a written examination that covered basic analytic skills. The primary selection method appeared to be the oral interview. This provided the opportunity for interviewers to determine a candidate's qualifications for the position. All departments conducted some form of background investigation; a few departments included a polygraph

examination. While there were variations in the methods used to select personnel, it can be said that all the departments we visited did have some formalized selection process in place.

When we asked about problems associated with the selection process, analysts most often mentioned was the long application processing time. One analyst's comments illustrate this problem:

> It just takes too long to process an applicant. We have lost a couple good people because when we finally get around to offering them a job they've found something else.

Career Path

Like the selection process, the career path for a crime analyst depends upon whether the position is civilian or sworn. For a sworn member, assignment to a crime analysis unit, like any assignment, should not affect advancement in the normal military-like rank structure. For a civilian, rank structure ordinarily is confined to whatever rank structure exists within the relatively small unit. In general, career path for a civilian analyst, both vertical and lateral, is extremely limited. The vertical path for civilians, in the departments that we visited, was limited to two and sometimes three tiers. Every civilian-staffed unit that we observed ultimately reported to a sworn police manager; this was the ceiling into

which a civilian was confined. Except in departments where the civilian crime analyst position shared a job classification with other municipal departments, lateral movement (i.e., out of the crime analysis unit and into another specialization of the department) was not a career option. For example, in several California departments the crime analyst position was filled through the city's personnel department; when openings occurred in other city departments for this position, crime analysts were eligible to apply.

Training

The mail survey (see above) indicated that training was not a problem overall. Respondents reported that training was adequate. Analysts we interviewed during the site visits echoed this opinion. None of the departments offered a formal entry-level training for crime analysts. The selection process was normally intended to insure that new hires had the required basic skills. When it came to familiarizing new hires with the specific operations of the unit, training for all departments was on-the-job. On-the-job training is especially important for civilian hires. They must become familiar with the sort of analysis that has practical value. They must become familiar with the police culture if they expect to gain the confidence and trust of the sworn members. As one analyst put it:

> It was hard at first. Hell, its still hard. I knew how

> to operate the computer and software, I even knew something about the criminal justice system. But I didn't know anything, really, about what it was like to work for a police department or what a crime analyst did.

Some departments took advantage of advanced training offered by the municipal or county personnel department. One analyst said:

> The department doesn't provide training at the academy for crime analysis. But city personnel has courses that we can use for our people, like word processing, spreadsheet and data base. That helps, since our budget isn't big enough for specialized training for crime analysts.

Every department budgeted something for training. Most said that the amount was adequate, but they could use more, especially for advanced training in crime mapping. Some departments also took advantage of grant funding to provide in-service training. Some departments viewed attendance at the International Association of Crime Analysts (IACA) as a good training vehicle. Many of the analysts that we interviewed were members of IACA and felt that the annual conference provided useful skill-building workshops and panels that improved their performance.

Compensation

This is another aspect of the crime analysis function in which the distinction between civilian and sworn employee is relevant. Historically, civilianization of police operations (e.g., station desk personnel, lock-up keepers, dispatchers, etc.) has been used as a means to cut costs: civilians can be hired in some positions for wages that are less (sometimes substantially so) than for sworn members. This is clearly the case when it comes to crime analysts. At the departments that we visited, civilian crime analysts earned substantially less than their sworn counterparts. For example, according to one civilian analyst who supervises a staff of eight:

> I'm doing the same work as a lieutenant but I'm making about $35,000 less[per year]. A starting analyst starts out for about $10,000[per year] less than a new police officer.

This sort of salary disparity, to a greater or lesser degree, was similar at all the sites we visited. And it should be added that these disparities do not go unnoticed by the analysts that we interviewed. Other benefits that civilian employees enjoy (e.g., health insurance) would appear to be similar to their sworn officer counterparts, that is, except for pension benefits. Civilian members did not enjoy the same pension benefits, although most were offered some form of retirement security (e.g., deferred compensation, 401K, etc.).

When it comes to a variety of compensation issues, sworn and civilian members are not treated alike.

Turnover

Turnover (i.e., the percentage of workers that separate from an organization over a year) is an important factor for managers to consider when assessing the general condition of an organization or unit. Some measure of turnover is to be expected and what's more is desirable. Fresh ideas prevent an organization or unit from becoming inflexible and unresponsive to its external environment. Turnover, however, can, at some point, become dysfunctional. Longer-tenured employees facilitate a process by which knowledge gained from experience is passed on to newcomers. Frequent turnover creates discontinuity and some measure of unpredictability in relations with other organizations or units, thereby adversely affecting coordination. High turnover, most importantly, implies job dissatisfaction, which is, in turn, related to productivity. All of the sites that we visited reported, to varying degrees, some problem with analyst turnover. It would appear that the trend toward civilianization and the manner in which civilians are integrated into policing may help to explain the condition.

Crime analysis units are clearly a function that police managers have targeted for civilianization. Those who support civilians as crime analysts argue the following: Typically,

sworn officers do not have the hardware and software training and background to perform the tasks associated with current crime analysis practices; civilians can be paid less than sworn members; turnover when analysts are sworn members is more frequent because of promotion and transfer; and, the number of sworn officers that perform primary patrol and investigative functions can be increased when crime analysis is performed by civilians. All of these arguments for civilianization may be true; however, from the findings that we report here, there appears to be a cost associated with civilianization.

Currently, in combination, pay scales and career opportunities for civilian crime analysts compare unfavorably with sworn members. In the departments that we visited where the crime analysts were civilian, we were told that this disparity accounts for high turnover. As one analyst put it:

> The pay here is lower than it should be. We get much less than commissioned officers. When a better job comes along, crime analysts leave. We lose someone every couple years.

OPERATIONS

Background

Over its existence, LEAA provided substantial support to professionalize all sectors of the criminal justice system. LEAA was especially interested in facilitating rational

planning. In the early 1970s formal planning agencies were created in all fifty states (Hudzik and Cordner, 1985) to assist LEAA in administering its fiscal responsibilities, as well as to assist county and municipal criminal justice agencies in their planning efforts.

Grants were awarded to numerous police agencies to create planning units; frequently LEAA required the funded agency to create a formal crime analysis function. Evaluation reports submitted by the grant recipients tell us a good deal about the structure, management, and operations of these initial efforts to formalize crime analysis (e.g., Austin et al.). In reading these reports, one is struck by how much, and how little, crime analysis has changed over the past three decades. In this section, we use these reports as a frame of reference to develop some sense of the evolution of crime analysis operations.

Hardware Technology

We found that nearly every department (of all sizes) has automated their information systems. More than 9 out of 10 departments that were surveyed have at least one computer (mainframe, minicomputer, or PC/Mac); nearly 9 out of 10 departments who have computers also have a formal records management system. This represents a truly remarkable improvement over the way data were managed thirty years ago.

Since automated data storage was limited to a mainframe platform in the 1970s, only the larger departments could justify the expense. And of those departments, most were allotted space on the city or county mainframe. Accessing the data was virtually impossible for police personnel. Reports were limited to standard crime counts and some crude time comparisons that were provided by city or county data systems personnel according to a regular schedule (e.g., monthly crime totals). Ad hoc queries were nearly impossible, since the analyst would have to be familiar with the data base management systems arcane programming language. Even when someone in the department could write the code to query the system, getting time on the mainframe was often difficult. In short, the data were nearly impossible to access for timely tactical or strategic purposes.

Beginning in the 1970s, frequently with the help of LEAA, some departments were not only automating their data, but were integrating it with crime data from other law enforcement agencies in their region, and were providing access to a broad audience of police personnel. For example, in Eugene, Oregon, the police department entered into an agreement with six law enforcement agencies in the region to share each others crime data through a single mainframe computer. San Diego police entered into a similar arrangement with fifteen other regional law enforcement agencies. In both cases, data systems

personnel designed user-friendly terminal screens that provided most sworn members the wherewithal to execute basic queries of the data. These were ground-breaking agencies who were building the foundation for integrated justice information systems (IJIS). Nearly thirty years later, we are still pushing for data sharing between law enforcement agencies, frequently without success.

There is no question that hardware inventories have improved dramatically over the past thirty years. Every department that we visited could point to a reasonably sophisticated selection of hardware: computers (mainframe, minicomputer, and PC/Mac), printers, CAD systems, digital imaging, etc. All of the departments visited were pleased with advances in intra-departmental hardware integration (e.g., local area networks) and the opportunity that it provided to facilitate communication. Most analysts also said that they were almost constantly in the process of assessing and improving the overall system. According to one analyst:

> We seem to get the money from somewhere. Grants have helped a lot. I've been here for seven years and I can't remember a time when we weren't doing something with the system. We just changed the mainframe, we just got the plotter. When you ask us about our hardware, it depends on what day you ask.

Analysts that we interviewed prided themselves on being familiar with the state of technology. When there were

complaints about hardware, it usually centered on the analysts desire to be more current. The more pressing problem, one that had less to do with quantity or quality of the hardware inventory, is typical of information technology weaknesses in many public organizations. There seems, in many cases, to be a lack of rational planning. Systems are built incrementally, without a clear and comprehensive overall plan. The comments of one analyst highlight this point;

> Walk around the units and you'll see plenty of equipment, a lot of it right out of the box. But we just don't use all of it in a way that gets the most out of it. It's kind of like a patchwork.

Software Technology

Planning problems show up even more clearly when one considers the software inventories. As we noted above, hardware systems overall have improved dramatically. Every department that we visited had reasonably sophisticated automated systems. The mail survey and the phone survey revealed that a wide range of data are stored in computers. Site visits supported the mail and phone survey findings. However, a closer look at these state-of-the-art departments revealed some rather significant weaknesses. Two such problems stand out in particular: 1) There are still departments that rely on a primary case report that do not document the basic characteristics of the incident (e.g., type of weapon) through

forced-choice check boxes; instead, much of the incident detail is left to be described in the narrative section of the case report. 2) There are still departments that do not enter all relevant data into the computer system. We found that some of the departments that we visited have had to design off-the-shelf data bases (e.g., Access) to key in important case report data and then use that data base for analysis purposes. In these departments, crime analysts may spend several hours of their work day keying data into the "homemade" system.[6] This represents a serious deficiency. One of these analysts complained:

> I spend a couple hours a day putting data into the computer. On a Monday, after a busy weekend, it's even worse. I don't think I'm being used as well as I should when I'm spending so much time entering data.

Another problem that every department that we visited complained of, to varying degrees, concerned various data conversion routines. Several analysts said that the conversions from, say, the computer aided dispatch to the SQL server, were awkward and in many cases the data were not entirely accurate. The root cause of software deficiencies, according to some analysts, is similar to the root cause of hardware deficiencies: software applications are designed and

[6] It should be noted that there is an upside to this. Even though the data entry by analysts is time consuming and unfortunate data

implemented incrementally and there is an apparent weakness in overall software planning and integration. Again, this is not a problem specific to policing, but is common to most public organizations. The problems that we found in information technology planning, both with respect to hardware and software, are discussed at length by Dunworth et al. (Abt Associates, 2000).

When it comes to the types of software that are most commonly used by crime analysts in the site visit departments, first and foremost were data base management systems, ranging from sophisticated department-wide ones to smaller off-the-shelf supplemental and specialized data bases. As we noted above, some of these supplements are designed to overcome shortcomings in the department-wide data management systems. Spreadsheet software is also used extensively to supplement larger data base management systems. Easily, crime mapping software is the most dominant analytic tool, used extensively by all the departments that we visited. Word processing programs and publishing programs are also used widely to aid in the preparation of the myriad of notices, bulletins, alerts, etc. that crime analyst units provide. One department in particular has developed special skills in developing graphics to support presentations in court. Like the mail survey indicated, we found very little use of statistical software.

---

entry tends to be more consistent since it is entered by few instead

When units do engage in some basic forms of statistical analysis, they usually rely on spreadsheet programs. SPSS and SAS were rarely found to be used. Some of the units we visited were beginning to familiarize themselves with publishing various reports to the web. Some departments were also using, to a limited extent, manpower allocation software; however, these were clearly exceptions. It is safe to say that the most sophisticated crime analysis units tend to rely almost exclusively on the basic suite of office software, with primary emphasis on geographical information systems.

Analytic Output: Tactical

Thirty years ago, many departments had no automated information systems. In those departments, and even in the departments that did have some form of computerized records management, officers discovered patterns by crude and highly inefficient means (O'Shea, 1998). Scanning hardcopy case reports, manual pin maps, and word-of-mouth were the basic means of discovering patterns and relationships in the data. The primary role of crime analysis units that were formed in the early 1970s was to search for patterns, but more importantly their role was to disseminate a range of formatted reports to relevant targets, both for tactical and for strategic purposes. The idea, in short, was to provide

---

of many.

statistical output to a broad audience, one that might be likely to make use of the analyzed information, but would not be likely to generate it themselves. The kinds of reports that crime analysts produced were for the most part crime counts and a wide range of memo-like bulletins to give officers information about identified patterns, wanted subjects, officer safety issues, etc.

When we looked at the hardcopy output of the crime analysis units that we visited, we were struck by how similar the substance of those products were to the sorts of output that crime analysis units generated nearly thirty years ago. Due in large part to advances in software technology, the style of the products may be different; however, the substance is fundamentally the same. Appendix C illustrates examples of some of the older forms of reports.

The ad hoc nature of the relationship between crime analysts and their targets is reflected in the type of tactical output that these units generate. Every department that we visited made some effort to organize the tactical analysis that they produce. None, however, had successfully developed a comprehensive system of categorizing their products. Analysts had a difficult time in articulating a typology of reports that they create. We found literally hundreds of different types of reports that are produced by the nine sites that we visited. When output is posted in places where detectives and beat

officers/deputies can view them (e.g., the briefing room bulletin board), it is common to find several formatted reports (e.g., pattern alert and wanted person) and a vast array of apparently unrelated documents. Targets would clearly find it difficult to assimilate this endless sweep of information. The problem is further aggravated when output from neighboring departments is added to the mix. The comments of one analyst illustrate this problem:

> We have a lot of different types of reports. We don't have but a few standard reports that we put in the numbers for according to the time it's made up. You can see the board is organized by patrol assignments, but each board has a lot of different information. An officer has to spend some time to get it all. They seem to look at the wanted and pattern ones more than some of the others.

Lack of apparent standardization of report formats notwithstanding, we do feel that the tactical report samples that we received, both through site visits and through follow-up phone interviews, do in fact form a rather clear set of categories. Although they are not entirely inclusive and exclusive, the categories we suggest provide a rough sense of the types of tactical reports that crime analysis units are producing. It might be useful to describe tactical output from the sites we visited and from the departments that we spoke

with by telephone using these categories as an organizing framework.

Crime and Incivility Conditions

Crime series and crime *patterns* are the most important output that crime analysis units produce. The style and layout of these reports vary greatly between departments; however, they all provide a narrative description of the series or pattern and relevant incident information (date, time, location, suspect, proceeds taken, vehicle used by offender, etc) about the linked incidents. In nearly every department that we spoke with, this type of report also contains a digital map to illustrate the geographical aspects of the pattern or series.

The mail survey and interviews with analysts indicate that the methods used to discover series and patterns are similar to those used in the past. Many series and patterns are discovered through word of mouth. Beat officers/deputies and detectives take reports and investigate incidents and over time begin to develop a hunch that a series is emerging. Informal conversations with other sworn members either confirm or reject the officer’s hunch. Using some form of a matrix, or table, is another popular method of discriminating series or patterns from the data. This systematic method has been used by police departments for years; the first published account of the

method can be traced to Yamada and Spice (1979). A table is created with general incident characteristics (date, time, point of entry, point of exit, weapon used, proceeds taken, etc.) forming the columns and individual incidents (the report number) forming the rows. Examining the boxes provides a means of identifying incidents that are linked according to patterns that checks form in the boxes (see appendix D). Building these matrices manually is time-consuming. With the querying capabilities of automated data bases, matrices can now be easily constructed. This was a popular method of series and pattern recognition used by the departments that we visited.

Mapping crimes is another popular method of series and pattern recognition. Manual pin maps have been a mainstay of police crime analysis for some time. Mapping has benefited from technological advances much in the same way that matrix construction has. Judging from our site visits and phone interviews of large departments, mapping is the primary method for identifying series and patterns. Discriminating a series or pattern from a map is considerably easier than doing so from a matrix. When incidents cluster on a map, they are easily grouped (see appendix D). The weakness of mapping, and the reason that it is so much simpler than a matrix to discriminate series and patterns, is that it groups incidents by a single dimension (i.e., location).

Hot spots or general *problems* are another form of report that falls under this category. This type of report differs from the pattern or series: a pattern or series involves multiple criminal events that share a few or many characteristics (MO); hot spots involve multiple incidents that share location as the dominant unifying characteristics; a problem involves an ongoing event or series of events that may include matters of incivility. The problem report is the product of a systematic analysis of the root causes of a problem; it also implies a specific tactical response. For example, the analyst may discover in reviewing calls for service that numerous calls have been received complaining of teens drinking in a local park or possibly disturbances around a local bar at closing time. Or an analyst, in cooperation with the crime prevention unit, may discover that a theft from vehicle pattern around a housing complex is related to lighting and traffic patterns.

When it comes to hot spot identification, most departments rely on mapping software. Although hot spot software is available to aid in this process, it is rarely used by the departments that we visited, nor is it used by the vast majority of departments in which we conducted follow-up phone interviews. In the mail survey of big departments, 60% said that they use mapping software, but only 24% of those said that they use hot spot software. We discovered that the respondents

on the mail survey who said that they were using hot spot software ordinarily meant that they were identifying hot spots by visually discriminating dot clusters, not by utilizing software that automatically identifies (through complex algorithms) the groups of incidents that comprise the hot spot.

Although problems may be discovered by a crime analyst, in the departments that we spoke with the dominant form of identifying a problem, especially in those departments that have formalized problem-oriented policing, is through the beat officer. The crime analysis unit often acts as the medium for disseminating the information. One analyst, from a department that has adopted a problem-oriented policing model described this type of report:

> We've designed a report that helps our POP program. When an officer works on a problem and comes up with a solution, we make up a report to let others know what the officer did. It gets the word out to other officers who might have something like it[the problem] going on in their area.

Activity Reports provide summary information to targets. The 24-hr activity report is used by most departments. It informs officers about criminal activity over a 24-hr period in the precinct/district/substation, usually by some smaller subdivision within the precinct/district/substation (e.g., beat or sector). The report consists of a brief summary (e.g.,

incident type; date, time, location of incident; suspect or wanted subjects, vehicle used, etc.) of incidents over the last three watches (see appendix D). The 24-hr activity report is a useful tool to inform officers of events on their beat while they were off-duty. The weekly and monthly activity reports were found less frequently at the field level, but were routinely produced for managers at the sites we visited. The format of the weekly and monthly reports is less detailed than the 24-hr activity report; it is generally a summary crime count broken out by precinct/district/substation, sector, or beat (see appendix D).

Finally, under crime and incivility, some departments continue to produce the *hot sheet*. This is a list of stolen vehicles by license number. Many departments have done away with the hot sheet because of the advances in electronic communications that allow almost immediate license checks via mobile computers.

General Offender: Detain

The wanted poster is as old as law enforcement in America. Years ago, the larger departments (e.g., New York, Chicago, and Los Angeles) formed specialized units to produce in-house published materials. These units were normally within the identification sections of the department. Many of the departments that we visited, and departments that we spoke with

by telephone, have assigned these duties to crime analysts, thanks in large part to digital photo reproduction and desktop publishing software. Once again, this task has fallen to the crime analysis unit because they are the ones familiar with computer applications. These types of reports notify field officers of *wanted subjects,* sometimes with and sometimes without arrest warrants, but at least with probable cause to arrest. In nearly every case a narrative description of the wanted person is accompanied by a digital photo/s and the appropriate unit to notify when the offender is apprehended (see appendix E).

General Offender: Information Only

These types of reports are similar in format to the general offender: detain reports (see appendix E). They differ because the persons named are not subject to arrest. The primary purpose of the report is to inform field personnel of the presence of the named individuals within the department's jurisdiction.

Corrections agencies, both custodial and community, now routinely provide inmate information to local law enforcement agencies. In some states, corrections departments are required to notify local law enforcement of released sex offenders, for example. Many of the departments that we spoke with produced

reports that informed officers of penitentiary mandatory releases, parolees, and probationers (see appendix E).

A common form of report that nearly every department in our sample produced could be generally termed *alerts*. These are reports of known offenders that engage in various criminal activities, but are not at present wanted by authorities. For example, a gang unit may want to advise patrol officers of known street drug peddlers working in their area. The reports consist of information about the subjects and include digital photo/s (see appendix E).

Analytic Output: Strategic

Strategic analysis supports long-range planning. Like tactical analysis, this type of analysis consists of both formatted reports produced at regular intervals and reports of a more ad hoc nature. In the mail survey we found that more than 75% of the respondents engaged in various forms of strategic analysis. Only two of the departments that we visited specifically designated crime analysts for non-tactical activities. That is not to say that the analysts in the other departments did not engage in non-tactical analysis; they, of course, did.

Nature and Extent of Crime

This type of ***activity*** reports are the most common form of strategic analysis. At a minimum, they describe crime totals broken down by jurisdiction, from the smallest (e.g., beat) to the biggest (e.g., the city, county, or state, depending on the departments jurisdiction) (see appendix D and F). They may also be broken down by other relevant geographical areas (e.g., housing complex, apartments, industrial area, etc.). The reports may also include information about cleared cases, number of arrests, victim demographics, times and seasonal variations, and comparisons between time periods (e.g., this month this year v. this month last year). All of the departments that we visited and spoke with produced some variation of this type of report, usually on a monthly and/or yearly basis. The reports are presented in some combination of narrative, graphs, and charts. In some departments the reports are automatically generated by the records management system. In some departments they are rather elaborate documents with professional-like graphics, suitable for distribution to a wide audience (see appendix F).

Planning

With the introduction and diffusion of community policing, formal rational planning has become more common in police administration. In a recent survey, conducted in 2000, O'Shea

(2000) found that nearly 1 out of 3 police departments with over 100 sworn personnel engaged in formal strategic planning. Depending on the level of sophistication with which a department engages in strategic planning, the demands for information are correspondingly increased. Collection, collation, analysis, and dissemination of this information have been viewed as a crime analysis function. This was clearly the intent of LEAA when they chose to link crime analysis funding with the effort to diffuse formal planning. If this is so, then the outcome is an increase in the demands made upon the crime analysis unit. We found that in most of the departments that we visited and spoke with in telephone interviews, the crime analysis units were normally asked to contribute, albeit to a limited extent, to the formal planning process.

Most departments that we spoke with contributed in some fashion to the *budget* preparation process. Nearly every department that is involved in the budget process submits the activity reports (see immediately preceding section). However, in some instances, the analytic process was a bit more sophisticated. The method that one department used illustrates this type of report:

> We have been asked to estimate crime in the city for the budget people. I've done some simple regression analysis in Excel to project crime trends. They use the numbers when they go to the Council.

Several departments that we visited engaged in a formal strategic planning process. In some cases, the crime analysis units were asked to provide information to planners. Usually, this information consisted of crime counts found in the activity reports (see above). None of the crime analysis units that we visited or that we interviewed by phone were formally integrated into the planning process. None of the departments conducted a formal analysis of department strengths, weaknesses, opportunities, and threats (SWOT). Some departments did administer surveys (normally citizen, but in some cases sworn personnel and victim). Some departments have completed surveys that are loosely linked to the initiation of community policing (either formation or evaluation), and some have begun to utilize citizen surveys as a component of their performance measurement system. For example:

> We randomly select and send surveys to the public. They're taken every quarter and broken into precincts. We get the percent satisfaction. The results are shared with commanders so they can work on improving them. They're performance evaluators.
>
> Surveys are anonymous and randomly selected from victims. We use them as part of our performance measures and they are included in the annual report.

Resource Allocation

Several crime analysis units that we spoke with are the primary staff resource to department planners who are charged with assessing the beat boundaries and manpower allocation, both by shift and by beat. Many of the departments that we visited and that we interviewed by phone said that they are utilizing their mapping software to help in manpower allocation decisions. Several methods were described by analysts:

> Based on our call volume we realign and redraw the county precincts and zones within precincts. The areas with the most calls get the most deputies.
>
> We study call frequencies in zones and add staff to stations where needed.
>
> We conduct semi-annual review of reports and the outcome of each. That's how we determine workload distribution.
>
> We use software that goes through the calls for service and lays out how many officers we should have working at each station and on each shift. The Chief and his staff love the program (see appendix F).

Policy Research

Over the past twenty or so years the police mandate has substantially broadened. The professional model of policing was driven by crime control and its proponents discouraged police activity outside of that mandate. Too much interaction

with the community, the logic went, set the stage for corrupt practices. The mandate for community policing is grounded in service delivery, broadly defined, and includes activities that are likely to facilitate not only crime control, but also quality of life. This implies that police executives will be forced to develop a working knowledge of social policies that are vastly more complex and varied than those associated with the professional model of policing.

In many departments, the crime analyst has been charged with gathering background information in various policy areas to inform police executives. We found that most of the departments that we visited or spoke with by phone were from time to time asked to engage in this form of analysis. Several examples of this type of product are illustrative:

> We are always getting asked by the chief to research something. It's part of our job and I personally like it. I know most crime analysts that I talk to don't. They think it's not crime analysis. But I like it. It gives me a chance to do something interesting.
>
> We've been working on a report for the chief on racial profiling. He wants it for the city council.
>
> The problem has been to figure out what to do with homeless people. It's one that a lot of places have trouble with and they asked us to look into it.

Last year they [crime prevention unit] asked us to do some research in how to get the city to condemn property. It was interesting and the crime prevention people were happy.

The department is thinking about changing the way it measures performance. The deputy chief asked us to find out what other departments are doing and to try to figure out if our data base could be changed to support a better performance measurement system.

It’s been tough to get community groups formed and to get them to work together once they are. Tough to keep them interested and to get them to attend meetings when there’s no big problem right then. We’ve been looking around to figure out how other places have been doing in that sort of thing.

IV. POLICY IMPLICATIONS

INTRODUCTION

The surveys that we administered to large and small departments provided a panoramic view of crime analysis operations. Some of our intuitions, as well as some of the anecdotal evidence about crime analysis were confirmed by the findings; some were rejected. Most important, the findings stimulated a deeper, more critical set of questions that provided the framework for the second phase of this project, the follow-up phone interviews and site visits. The deeper probe revealed a more detailed view of the crime analysis function and a better understanding of the complex set of interrelated characteristics that affect its operations. In this section we briefly review those characteristics and propose the policies that they imply.

ORGANIZATION

Specialized Function

Brief: Division of labor is the cornerstone of Weber's ideal bureaucratic organization. In a complex organization, the rational manager breaks down the work of the organization into its component parts; each part is assigned to a separate department that performs a specialized function. In the end,

structure becomes the means by which an organization achieves technical and economic advantages associated with specialization. Some tasks are not appropriate for specialization. When a specialized unit is created unnecessarily, the inefficiencies associated with redundancy are created. It is also particularly important for managers to realize that the conditions that initially justify a specialized function can change over time. Organizational paradigms change, technologies change, the characteristics of personnel change, etc. The crime analysis function has evolved into a specialized unit in American policing, or so the findings that we report here seem to indicate. Some have argued that greater efforts should be directed toward pushing data to the end users (i.e., beat officers and detectives) in a fashion that facilitates analysis at the lowest levels; others argue that pulling data to a specialized unit and conducting the analysis there is more efficient and more effective. This is a legitimate issue for police executives to consider; it has generally not been one that police policymakers have addressed.

Policy Implication: The appropriateness of functionally differentiated crime analysis should not be assumed. Academics and practitioners should work

toward constructing a clear understanding of what we mean by crime analysis and what its appropriate place in the organization is and should be.

Line/Staff

Brief: The role a functionally differentiated unit should play, either staff or line, is an important aspect of organizational dynamics. Police executives consider crime analysis a staff function. Crime analysis units are viewed by executives, as well as members of the unit, as a support and advisory function to line members. This is clear and uncontroversial. The question is not whether crime analysis should be a staff function; the question is rather to whom the staff function should be directed. The findings suggest that crime analysts value tactical analysis over strategic analysis. Managers seem to share that view, even though most crime analysis units are under the authority of administrative divisions. Emphasis on tactical analysis is troublesome when one considers the following: (1) Tactical crime analysis is a specialization because it requires technical skills and training that the ordinary sworn member does not have. After all, organizational complexity is what drives specialization. Hardware and software

technology is moving toward more user-friendly applications. Education levels and familiarity with computers among police recruits is increasing. These changes should reduce the need for tactical analysis to be performed by “experts” (consider, e.g., Chicago PDs user-friendly mapping program, ICAM). As the need for support decreases, so does the need for a functionally differentiated unit, that is, if it limits its efforts to tactical analysis; (2) Current thinking about police administration stresses the importance of strategic management, which demands substantially higher levels of strategic intelligence (e.g., stakeholder assessments, forecasting, policy evaluation, performance measurement, organizational intelligence, citizen surveys, etc.). The necessary technical skills and training to support these activities parallel those that we associate with the crime analyst. Overemphasis on tactical analysis draws the analysts skills away from areas in which it can be useful.

Policy Implication: Managers should carefully reconsider the target audience for crime analysis operations. Overemphasis on tactical analysis should be avoided.

Centralization

Brief: The question of centralization in the crime analysis context arises when the following occurs: a functionally differentiated unit is formed; the unit has multiple members; and, there are multiple dispersed units that are the targets for crime analysis support. At issue is whether crime analysis operations should have an independent and distinct chain of command (centralized), or whether its members should be embedded in the chain of command within the dispersed units that they support and are physically assigned (decentralized). For example, should a crime analyst assigned to support a precinct station fall within the precinct station chain of command, and thereby under its authority, or should the crime analyst fall within a department-wide crime analysis unit chain of command and ultimately be responsible to the crime analysis operations superior officer? Regardless of which arrangement, frequently when the unit is decentralized, a central crime analysis authority remains; thus, the principle of unity of command is violated. Many of the departments that we visited and interviewed by phone followed this practice, arguing that there was need for a centralized line of authority, but it was

impossible to ignore the local one. To do so, they insisted, would damage the relationship between crime analysis and target. Often, according to respondents, this hybrid decentralization arrangement leads to situations in which the crime analysis unit mission is subordinated to a variety of questionable, and at times trivial, needs of the target superior.

Policy Implication: The crime analysis unit, when it is multi-member and when it supports multi-targets, should be structured with a single, distinct unit chain of command.

Coordination

Brief: As organizations become more complex it is necessary to divide labor. The benefits of the division of labor have been discussed above. There are, at the same time, costs associated with the division of labor. Functionally differentiated units tend to develop independent, unit-level missions that may or may not conform to the overall mission of the organization. Management must seek to coordinate inter-unit operations to insure that all units remain focused on the organization's strategic mission. In its staff capacity, the crime analysis unit should serve as a structural means to facilitate inter-unit coordination. Crime analysts, as the department's

information specialists, should be the primary center for identifying tactical and strategic problems, and ultimately for generating alternative responses. To do so, however, the unit must develop sound, formal links with other units. We found that this was not the case. Links with other units are informal; interactions between units are primarily ad hoc. Although it appears that nearly three-quarters of large police departments have chosen to specialize the crime analysis function, the operations of the function seem to be, at best, loosely integrated into the fabric of the organization. One is struck by the perception of many crime analysts that they must "sell" the unit to others in the department. Unit members appear insecure, reluctant to assert themselves, and generally unwilling to take their place in the organization.

Policy Implication: Law enforcement executives should consider designing formal, structural arrangements to link the crime analysis unit with logically connected operations and units (e.g., crime prevention, POP, planning, COMSTAT, etc.).

Performance Measures

Brief: Measuring individual, unit, and organizational performance is critical to the management function.

We found little evidence of formal performance measurement in the crime analysis units that we visited and spoke with in phone interviews. This deficiency appears to be linked to the overall ad hoc nature of the relationship between crime analysis and the targets to which they provide support. This relationship could best be described as tentative. Crime analysts, as noted above, feel the need to "sell" their product to other members of the department. Analysts have no clear sense about which products are considered useful to the target. They produce, deliver, and through anecdotal evidence draw conclusions about the value of their work. Neither the analysts, nor the analysts' managers are clear about how and how well targets use their product. Individual-level quantifiable measures (e.g., number of patterns identified, alerts generated, forecast accuracy, etc.) cannot be established until managers know what products the crime analysis unit should be producing. And this has to come through a systematic assessment of crime analysis output. Most units that we visited and spoke with by phone interview were aware of this deficiency and have made efforts to remedy it, but with only minor success.

Policy Implication: Managers should design formal mechanisms (e.g., surveys, focus groups, interviews, etc.) to discover the relative value that end-users place in their products and thus begin the process to develop useful performance measures. Managers should also look to outside sources (e.g., COPS, International Association of Crime Analysts, etc.) for guidance in establishing the value of various crime analytic output.

Organizational Demand

Brief: The performance of a unit is a function of the demands made upon it by the organization and of the appreciation with which its output is received by colleagues. This was supported by our findings. Agencies in which managers demanded more sophisticated products and agencies in which the work of the analysts were appreciated scored higher on all dimensions. The findings that we reported here were disappointing on several levels. The most striking finding was that with all the advances in technology, crime analysts continue to “count” crime rather than “analyze” it. Analysts rarely perform sophisticated tactical or strategic analysis. The products that dominate are primarily crime counts, simple digital maps, and notices to alert officers about offenders

or suspects. Low-level output may well correspond to current demand and target response. If managers are simply not aware of the range of possible support products that a fully-functioning crime analysis unit is capable of, then low-level demand is likely and thus low-level output is to be expected. Also, we estimate that at least 6 out of 10 larger law enforcement agencies do not engage in strategic planning. This suggests that many departments are unlikely to place a high value on strategic analysis, again, creating an environment of low demand for this more sophisticated form of analysis.

Policy Implication: Organizations should develop formal inservice curriculum to increase the level of manager awareness about the potential applications of tactical and strategic analysis. Crime analyst units should “sell” themselves, in a sense, but in a more formal, effective manner. This of course assumes that crime analysts must first themselves understand what an “ideal” crime analysis unit is capable of. Here, too, police departments may have to look to outside sources (e.g., COPS, Police Foundation, International Association of Crime Analysts, academic institutions, etc.) for assistance.

PERSONNEL

Staffing

Brief: We found that the ratio of analysts to sworn members was slightly less than 1 per 100. While we have no evidence to suggest that this is an optimum ratio, it would appear to conform to standards currently recommended by professionals working in the area. The staffing issue becomes relevant only when one considers smaller departments, those with less than 100 sworn personnel. Some have suggested that smaller departments probably cannot justify dedicated crime analysts. Since integrated justice information systems are now more affordable and thus a realistic option for small departments, the crime analysis function can be constructed in a manner that would permit smaller departments to share a unit between multiple jurisdictions.

Policy Implication: Crime analysis units should be staffed at a level of 1 analyst per 100 sworn personnel. Small departments should consider either contracting out for crime analysis or forming agreements with neighboring agencies to integrate their information systems and share the services of a crime analyst/s.

Job Description

Brief: Formal job descriptions were routinely found in the departments that we visited and spoke with in phone interviews. Ordinarily, they were drafted to be used for job announcements. We also found them contained in departmental general orders. The entry-level position generally called for a person with an undergraduate degree in one of the social sciences[7], familiarity with basic office software, and good verbal and written communication skills. Basic entry-level requirements for job announcement purposes seem to be reasonably well described. However, when it comes to articulating the routine, daily activities of a crime analyst, the findings were less encouraging. We found that only one of the departments that we visited or spoke with had a formal job manual for the crime analyst position. Several were in the process of drafting one. Nearly every analyst that we spoke with believed that a manual was necessary, but they also pointed out that drafting one was a complex and difficult task that required a collaborative effort between analysts and managers. The general absence of a formal manual further illustrates the ad hoc nature of crime

analysis in American law enforcement and is a further indication that the function has not been given the careful, deliberate consideration that a differentiated function should.

Policy Implication: Managers with a specialized crime analysis function should construct a formal crime analysis position manual.

Training

Brief: When it comes to crime analysis, training does not appear to be a high priority issue. This is partially explained by the mission, either explicitly or implicitly articulated by managers and analysts. The tendency is to emphasize tactical analysis. Most analysts that we spoke with resented engaging in activities that cannot be directly linked to the identification and apprehension of offenders. To this end, managers and analysts have placed great value in data manipulation (data bases and spreadsheet) and various presentation tools (e.g., word processing, graphics, digital imaging, etc.). In many instances, training has been unnecessary, or neglected, because the people that have been drawn to the analyst position have acquired the valued skills on their own. When training is offered in crime

[7] We use the term “called for” as distinct from “required.” Many

analysis, according to the analysts we interviewed, the courses that are provided are elementary and as a rule geared toward the entry-level person. Relatively little energy or inclination has been directed toward higher-level data analysis. This type of training is especially necessary if the analysis function is going to become more sophisticated, considering that the entry-level requirement for analysts requires only the most basic understanding of statistical methods. The overall crime analysis function has advanced greatly in the storage, access, and dissemination of data. However, the fact remains: according to our findings, crime analysis continues to "count" crime far more effectively than it "analyzes" it. The training implications are obvious.

Policy Implication: Inservice training curriculum should be developed to train crime analysts to conduct sophisticated analytic operations. Police departments may also consider requiring more advanced statistical training as a requirement for hiring (e.g., graduate-level research design and methods coursework), thereby reducing some of the need for inservice training. This, of course, carries with it

---

departments may call for a degree, but many will substitute

human resources implications (e.g., more attractive pay, benefits, and career path). If police departments choose to train in-house, then arrangements will have to be made to contract with trainers with a background in statistical methods (e.g., partnerships with local academic institutions).

Selection

Brief: Selecting a civilian crime analyst is substantially different from selecting a sworn crime analyst. When it comes to civilians, most of the departments that we visited or spoke with began the process by posting a job announcement, often via the city or department web site. Some departments hired civilians from within the city personnel system. In those that hired from outside the city system, the pattern generally consisted of some combination of basic written exam, oral board interview, and background investigation. When selecting civilians, the most common complaint was the long processing time. With sworn members, the selection issues are different. One could reasonably assume that when a civilian applies for a non-sworn position he/she has an interest in the work. This may not be the case

---

experience for the academic credential.

when the selection pool consists of sworn members. Because the position is specialized, it requires skills and training that may not be commonly found among the sworn population. If the position falls within the boundaries of a collective bargaining agreement, the selection process may be driven by standards that are unrelated to the job description (e.g., seniority). The appeal of the assignment may be unrelated to the work (e.g., steady watch, straight days, weekends off, etc.). This was the case in several of the departments that we spoke with in phone interviews. Members of the unit who did not have the desirable qualifications were selected because they bid successfully. Unit productivity suffered dramatically in these departments. Another selection issue, especially important for agencies forming a crime analysis unit, concerns selection of the unit leader. The departments that we visited and spoke with in phone interviews, all of which scored high in all domains of crime analysis, agreed that the unit's success was directly related to the energy of the unit's leader, particularly its first leader. The idea that the success of a crime analysis unit is linked to a leader, or "policy entrepreneur," is supported by our findings. A common characteristic

of the outstanding units that we visited was a dynamic leader who was a powerful influence on the unit's success.

Policy Implication: The selection process for civilian crime analysts should be as brief as possible to avoid loosing qualified people to other jobs. Sworn crime analysts should be exempt from collective bargaining requirements for position assignments. Departments should carefully consider unit leadership, especially when a new unit is being formed. A "policy entrepreneur" is vital to a new unit success.

Career Path

Brief: Like the selection process, the career path depends upon whether the crime analyst is a civilian or sworn member. A sworn member's assignment to the crime analysis unit, in a technical sense, has no effect on his/her career path. Vertical movement for a sworn officer is strictly a function of how well the officer performs on a promotion exam. Previous assignments have little, if anything, to do with promotion decisions. In the civilian's case, the career path is very limited when compared to a sworn member. Ordinarily, for civilian crime analysts, there is little opportunity for vertical movement and

in almost all cases none for lateral movement. There are exceptions: In several California departments the crime analyst position allows for limited lateral and vertical movement to other municipal departments that have similarly defined positions. In one department, the crime analyst has been eligible for advancement to higher-ranking civilian administrative positions within the department. The consequence of the lack of mobility, according to some analysts that we spoke with, has been high turnover. This is somewhat ironic: according to proponents of civilianization, turnover is reduced when sworn members are replaced by civilians. The tenure for sworn members in a crime analysis unit, the argument goes, is shortened through frequent transfers and promotions. We found that the absence of lateral and vertical opportunity may, at the other extreme, also result in high turnover.

Policy Implication: Managers will have to weigh the benefits of civilian crime analysts against the costs of high turnover due to a narrow career path. If the benefits are sufficiently high, then policymakers should consider opening opportunities for civilian members, both laterally and vertically.

Compensation

Brief: Compensation and career path policy issues are similar. When the crime analyst is a sworn member, we found that compensation was not an issue that demanded administrative attention. Compensation for sworn members is solely a function of vertical movement. A move to crime analysis for a sworn member is always either a lateral transfer or a new assignment upon promotion. It has no bearing on compensation. When it comes to civilian members, compensation does become an administrative issue and is closely tied to career path. The limits in vertical movement obviously limit compensation increases for civilians. In addition, however, we found that when compared to sworn members, civilians with similar responsibility and who perform similar tasks (when compared both within and between departments) are paid substantially less. This is a condition that does not go unnoticed by civilian members. It would appear that, like career path, an unintended consequence of cost savings associated with civilianization is high turnover.

Policy Implication: Managers will have to weigh the benefits of civilian crime analysts against the costs of high turnover due to compensation disparities. If the benefits are sufficiently high, then policymakers

should consider pay schedules that correspond to sworn positions with similar responsibilities and tasks.

OPERATIONS

Hardware and Software Technology

Brief: Law enforcement agencies have improved their hardware and software inventories considerably over the past twenty years, due in part to more sophisticated managers and in part to remarkable advances in and affordability of the technology. Nearly every law enforcement agency, both big and small, has automated systems that are capable of storing and processing large data sets. Judging from the surveys (mail and phone) and our interviews with crime analysis personnel across the country, we found that city, county, and federal government are providing law enforcement managers with the necessary financial resources to equip their departments with basic automated systems. These encouraging findings aside, we did discover that when it comes to hardware and software, system planning is weak. Many of the departments that we visited and the analysts that we spoke with complained of poorly planned systems that have been developed piecemeal over time. Many

departments that we surveyed said they did not have a formal records management system, suggesting very low levels of planning. This is not a problem confined to law enforcement; information system planning is a problem faced by a wide range of public and private sector organizations. The fact remains, however, that the overall weaknesses of law enforcement agencies to engage in strategic planning aggravates information systems planning. Rational, comprehensive strategic planning has not been a part of the police administrative culture. When this is found in any organization, public or private, weaknesses in adapting to changing technology are likely to follow.

Policy Implication: Law enforcement agencies should construct a comprehensive, time-bounded rational information systems plan. If the department is engaging in strategic planning, then the information systems plan should be specifically assigned to an action plan team. If the department does not engage in formal strategic planning, then a distinct information systems plan should be developed, including an articulated mission, goals, objectives, and tasks. A team should be formed, including a

representation from crime analysis, to construct the plan and oversee its implementation.

Output: Tactical

Brief: As we have noted several times throughout this report, analysts and managers place a high value on tactical analysis. Crime analysis personnel appear to believe that their first priority is to provide support for field officers, whose primary responsibility is to identify and apprehend offenders. This belief is consistent with an emphasis on crime control, indicative of the professional model of policing. Those who have been responsible for charting the course for crime analysis have directed the deployment of resources to that end. Owning and using advanced hardware and software has been held up by crime analysts as evidence of a more sophisticated, professional, specialized function. Few would disagree that data are managed substantially more efficiently and effectively than, say, twenty years ago. If the ultimate aim is to be able to collect more data, access it more easily, and count it better, then we have arrived. If, however, the aim is to “analyze” the data using more sophisticated methodologies, that is, making the best use of the analytic tools available, then we clearly have not arrived. In the end, the substance of tactical output that crime

analysis units currently produce is remarkably similar to what was produced twenty years ago. Most of what we found on briefing room bulletin boards were various notices directed toward patrol and investigative units about individual offenders (wanted, known to be working, recently released, etc). The turnaround time for release of these notices is faster than twenty years ago because of desktop publishing software and digital photography, but the substance is essentially the same. We also found pin maps in various places, also distributed primarily to line officers. These also are more easily produced and noticeably more current than twenty years ago because of the advances in geographical information systems, but they too are essentially the same. And lastly, we saw an occasional pattern or series notice, sometimes discovered by the crime analysis unit and sometimes discovered by a field unit, normally an investigative unit. There was sporadic evidence of more sophisticated analysis (e.g., geographic profiling, point-pattern analysis, standard deviation-based early warning systems, etc.). Applied researchers are working on advanced methodologies (particularly crime mapping applications) directed toward tactical

analysis. However, the evidence demonstrated that these advanced methods were more often the exception than the rule. As we have noted above, counting crime dominates current tactical analysis. Analysts are expected to either know or have the capacity to learn basic PC skills sufficient to operate the machine, manage data sets (data file construction and manipulation, querying, report construction, etc.), generate digital maps (and work with data in that context), and publish notices and alerts. Higher-level research design and methodologies, including intermediate-level statistics, are not demanded, nor are they currently performed by crime analysts. In short, crime analysis is, by all appearances, underutilizing the vastly improved data sets that are now available.

Policy Implication: Law enforcement policymakers should demand higher-level preservice and inservice training for crime analysts that will equip them with higher-order analytic skills. Law enforcement policymakers should enter into partnerships with academic institutions, especially applied researchers, to develop approaches and methods to utilize law enforcement data sets for tactical purposes.

Output: Strategic

Brief: Law Enforcement Assistance Administration funding in the 1970s provided the first concentrated effort to support the creation of formal crime analysis units. Crime analysis was viewed as a necessary adjunct to the fulfillment of LEAA's primary goal (i.e., to encourage and facilitate formal, comprehensive, rational planning in the criminal justice system). The need for rational planning has not changed. If anything, the current model of policing stresses the value of formal strategic planning more strongly than ever. Strategic planning requires the support of specialized personnel that are skilled in research design and methods. Site visits and phone interviews indicated that strategic analysis of the sort that supports strategic planning is rarely conducted. Several of the sites that we visited did dedicate crime analysts to strategic analysis tasks, but this was normally limited to annual reporting and manpower allocation. We rarely found crime analysis personnel formally linked to the department's long-range planning process. The data do not permit us to speculate the reasons for this apparent underutilization of the crime analysis unit; however,

several possibilities occur as possible explanations. First, the emphasis on tactical crime analysis is consistent with the professional policing model, the mission of which is driven by crime control and offender apprehension. Second, long-range, strategic planning has not been part of the organizational fabric of policing. Although the current model of policing encourages police managers to embrace strategic planning, it has simply not taken hold as yet. Therefore, since the demand for strategic analysis is low, we would expect to find it subordinated to tactical crime analysis, which we did.

Policy Implication: Managers who have adopted formal long-range planning should consider creating formal links with their crime analysis unit and develop practices that will stimulate strategic analysis.

References

Apt Associates. 2000. Police Department Information Systems Technology Enhancement Project (ISTEP). Washington, DC: Department of Justice, Office of Community Oriented Policing Services.

Ammons, D. 1995. "Performance Measurement in Local Government." In D. Ammons (ed.), Accountability for Performance: Measurement and Monitoring in Local Government. Washington DC: International City/County Management Association.

Austin, R, G. Cooper, D. Gagnon, J. Hodges, R. Martensen and M. O'Neal. 1974. Police Crime Analysis Handbook. Sacremento, CA: Search Group, Inc.

Berlo, D. 1960. The Process of Communication. New York: Holt, Rinehart, and Winston.

Block, R., M. Dabdoub and S. Fregly (eds.). 1996. Crime Analysis Through Crime Mapping. Washington, DC: Police Executive Research Forum.

Crank, J. 1998. Understanding Police Culture. Cincinnati, OH: Anderson.

Goldsmith, V., P. McGuire, J. Mollenkopf, T. Ross (eds.). 2000. Analyzing Crime Patterns. Thousand Oaks, CA: Sage.

Goldstein, H. 1990. Problem-Oriented Policing. New York: McGraw-Hill.

Gottlieb, S., S. Arenberg and R. Singh. 1994. Crime Analysis: From First Report to Final Arrest. Montclair, CA: Alpha Publishing.

Harries, K. 1999. Mapping Crime: Principle and Practice. Washington, DC: National Institute of Justice.

Hudzik, J. & G. Cordner. 1985. Planning in Criminal Justice Organizations and Systems. New York: Macmillan Publishing Co., Inc.

Kelling, G. & M. Moore. 1991. "From Political to Reform to Community: The Evolving Strategy of Police." In J. Greene & S. Mastrofski (eds.), Community Policing: Rhetoric or Reality. New York: Praeger.

Kingdon, J. 1984. Agendas, Alternatives, and Public Policies. Boston: Little, Brown, and Co.

McCauley, R. 1975. Crime Analysis. Louisville, KY: National Crime Prevention Institute.

O'Shea, T. 1998. "Pattern Recognition: An Exploration of the Information Processing Operations of Detectives." The Justice Professional, vol. 11, no. 4, pgs. 437-451.

O'Shea, T. 2000. "Strategic Planning Survey of Police Departments with 100 or More Sworn Personnel." Mobile, AL: Center for Public Policy.

Peterson, M. 1998. Applications in Criminal Analysis. Westport, CT: Greenwood.

Reaves, B. and & T. Hart. 2000. Law Enforcement Management and Administrative Statistics, 1999: Data for Individual State and Local Agencies with 100 or More Officers. Washington DC: US Department of Justice.

Reuland, M. 1997. Information Management and Crime Analysis:Practitioners' Recipes for Success. Washington, DC: Police Executive Research Forum.

Seidman, H. and R Gilmour. 1986. Politics, Position, and Power: From the Positive to the Regulatory State. New York: Oxford University Press.

Spelman, W. 1988. Bean Counting: New Approaches for Managing Crime Data. Washington DC: Police Executive Research Forum.

Williams, J. 1980. Public Administration: The People's Business. Boston: Little, Brown.

Weisburd, D. and T. McEwen (eds.). 1998. Crime Mapping & Crime Prevention. Monsey, NY: Criminal Justice Press.

Yamada, D. and H. Spice. 1979. "Crime Series Analysis Matrix: An Investigative Tool." Police Chief, June, pgs. 58-59.

APPENDIX A

MAIL SURVEY FREQUENCIES

PHONE SURVEY QUESTIONNAIRE

PHONE SURVEY FREQUENCIES

Mail Survey Frequencies
Frequency Tables

How crime analysts organized?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	dispersed	71	13.1	18.6	18.6
	separate unit	276	50.7	72.3	90.8
	some dispersed, some separate	35	6.4	9.2	100.0
	Total	382	70.2	100.0	
Missing	System	162	29.8		
Total		544	100.0		

Where on org. chart crime analysis unit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Administration	148	27.2	44.0	44.0
	Patrol	27	5.0	8.0	52.1
	Investigations	92	16.9	27.4	79.5
	other	69	12.7	20.5	100.0
	Total	336	61.8	100.0	
Missing	System	208	38.2		
Total		544	100.0		

How rate efforts in training? - computer hardware

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	92	16.9	17.4	17.4
	poor	48	8.8	9.1	26.5
	only fair	149	27.4	28.2	54.7
	good	195	35.8	36.9	91.7
	excellent	44	8.1	8.3	100.0
	Total	528	97.1	100.0	
Missing	System	16	2.9		
Total		544	100.0		

How rate efforts in training? - computer software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	32	5.9	6.0	6.0
	poor	47	8.6	8.9	14.9
	only fair	162	29.8	30.6	45.5
	good	227	41.7	42.8	88.3
	excellent	62	11.4	11.7	100.0
	Total	530	97.4	100.0	
Missing	System	14	2.6		
Total		544	100.0		

How rate efforts in training? - processing data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	64	11.8	12.1	12.1
	poor	45	8.3	8.5	20.6
	only fair	164	30.1	31.0	51.6
	good	213	39.2	40.3	91.9
	excellent	43	7.9	8.1	100.0
	Total	529	97.2	100.0	
Missing	System	15	2.8		
Total		544	100.0		

How rate efforts in training? - statistical analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	114	21.0	21.6	21.6
	poor	77	14.2	14.6	36.1
	only fair	132	24.3	25.0	61.1
	good	160	29.4	30.2	91.3
	excellent	46	8.5	8.7	100.0
	Total	529	97.2	100.0	
Missing	System	15	2.8		
Total		544	100.0		

How rate efforts in training? - crime analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	91	16.7	17.3	17.3
	poor	58	10.7	11.0	28.3
	only fair	133	24.4	25.3	53.6
	good	178	32.7	33.8	87.5
	excellent	66	12.1	12.5	100.0
	Total	526	96.7	100.0	
Missing	System	18	3.3		
Total		544	100.0		

How rate efforts in training? - GIS (mapping)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	176	32.4	33.6	33.6
	poor	64	11.8	12.2	45.8
	only fair	103	18.9	19.7	65.5
	good	119	21.9	22.7	88.2
	excellent	62	11.4	11.8	100.0
	Total	524	96.3	100.0	
Missing	System	20	3.7		
Total		544	100.0		

How rate efforts in training? - graphics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	178	32.7	33.7	33.7
	poor	75	13.8	14.2	47.9
	only fair	121	22.2	22.9	70.8
	good	123	22.6	23.3	94.1
	excellent	31	5.7	5.9	100.0
	Total	528	97.1	100.0	
Missing	System	16	2.9		
Total		544	100.0		

How rate efforts in training? - report writing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none offered	80	14.7	15.2	15.2
	poor	33	6.1	6.3	21.5
	only fair	108	19.9	20.6	42.1
	good	246	45.2	46.9	89.0
	excellent	58	10.7	11.0	100.0
	Total	525	96.5	100.0	
Missing	System	19	3.5		
Total		544	100.0		

Connected to state/region violent crimes info. dbase?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	288	52.9	54.5	54.5
	yes	240	44.1	45.5	100.0
	Total	528	97.1	100.0	
Missing	System	16	2.9		
Total		544	100.0		

Member of formal IJIS?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	359	66.0	69.7	69.7
	yes	156	28.7	30.3	100.0
	Total	515	94.7	100.0	
Missing	System	29	5.3		
Total		544	100.0		

Participate in formal info sharing program?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	227	41.7	43.1	43.1
	yes	300	55.1	56.9	100.0
	Total	527	96.9	100.0	
Missing	System	17	3.1		
Total		544	100.0		

Paperless info system, totally online?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	459	84.4	86.4	86.4
	yes	72	13.2	13.6	100.0
	Total	531	97.6	100.0	
Missing	System	13	2.4		
Total		544	100.0		

How many police reports entered into system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	22	4.0	4.1	4.1
	some	56	10.3	10.4	14.6
	most	122	22.4	22.8	37.3
	all	336	61.8	62.7	100.0
	Total	536	98.5	100.0	
Missing	System	8	1.5		
Total		544	100.0		

Entered into computer info system? - Initial case

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	60	11.0	11.0	11.0
	yes	484	89.0	89.0	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Arrest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	57	10.5	10.5	10.5
	yes	487	89.5	89.5	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Traffic accident

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	172	31.6	31.6	31.6
	yes	372	68.4	68.4	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Intelligence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	326	59.9	59.9	59.9
	yes	218	40.1	40.1	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Field interview

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	210	38.6	38.6	38.6
	yes	334	61.4	61.4	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Vice case

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	287	52.8	52.8	52.8
	yes	257	47.2	47.2	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Calls for service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	93	17.1	17.1	17.1
	yes	451	82.9	82.9	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Investigative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	159	29.2	29.2	29.2
	yes	385	70.8	70.8	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Evidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	169	31.1	31.1	31.1
	yes	375	68.9	68.9	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Pawn shop

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	264	48.5	48.5	48.5
	yes	280	51.5	51.5	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - Nickname

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	211	38.8	38.8	38.8
	yes	333	61.2	61.2	100.0
	Total	544	100.0	100.0	

Entered into computer info system? - MO files

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	304	55.9	55.9	55.9
	yes	240	44.1	44.1	100.0
	Total	544	100.0	100.0	

Use for database management? - Mainframe

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	158	29.0	30.8	30.8
	yes	355	65.3	69.2	100.0
	Total	513	94.3	100.0	
Missing	System	31	5.7		
Total		544	100.0		

Use for database management? - Minicomputer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	364	66.9	71.1	71.1
	yes	148	27.2	28.9	100.0
	Total	512	94.1	100.0	
Missing	System	32	5.9		
Total		544	100.0		

Use for database management? - PC/Mac

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	231	42.5	45.0	45.0
	yes	282	51.8	55.0	100.0
	Total	513	94.3	100.0	
Missing	System	31	5.7		
Total		544	100.0		

Use spreadsheet software for crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	189	34.7	35.2	35.2
	yes	348	64.0	64.8	100.0
	Total	537	98.7	100.0	
Missing	System	7	1.3		
Total		544	100.0		

Use statistical package for crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	429	78.9	80.0	80.0
	yes	107	19.7	20.0	100.0
	Total	536	98.5	100.0	
Missing	System	8	1.5		
Total		544	100.0		

Extent of informally created and managed crime analysis applications?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	informal applications do not exist	86	15.8	16.2	16.2
	very few, they exist, but it's rare to find one	157	28.9	29.6	45.8
	moderate number, not uncommon, but not everywhere	240	44.1	45.2	91.0
	almost every unit has at least one	48	8.8	9.0	100.0
	Total	531	97.6	100.0	
Missing	System	13	2.4		
Total		544	100.0		

How many crime analysts have departement Internet access?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	62	11.4	11.7	11.7
	some	92	16.9	17.4	29.2
	most	49	9.0	9.3	38.4
	all	325	59.7	61.6	100.0
	Total	528	97.1	100.0	
Missing	System	16	2.9		
Total		544	100.0		

Specialized software department uses? - Crime analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	326	59.9	59.9	59.9
	yes	218	40.1	40.1	100.0
	Total	544	100.0	100.0	

Specialized software department uses? - Intelligence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	381	70.0	70.0	70.0
	yes	163	30.0	30.0	100.0
	Total	544	100.0	100.0	

Specialized software department uses? - Operations analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	423	77.8	77.8	77.8
	yes	121	22.2	22.2	100.0
	Total	544	100.0	100.0	

Specialized software department uses? - GIS (mapping)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	243	44.7	44.7	44.7
	yes	301	55.3	55.3	100.0
	Total	544	100.0	100.0	

Specialized software department uses? - Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	153	28.1	63.2	63.2
	yes	89	16.4	36.8	100.0
	Total	242	44.5	100.0	
Missing	System	302	55.5		
Total		544	100.0		

Which data does department geocode and map? - Any Part I crimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	36	6.6	11.5	11.5
	yes	276	50.7	88.5	100.0
	Total	312	57.4	100.0	
Missing	System	232	42.6		
Total		544	100.0		

Which data does department geocode and map? - Any Part II crimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	95	17.5	30.7	30.7
	yes	214	39.3	69.3	100.0
	Total	309	56.8	100.0	
Missing	System	235	43.2		
Total		544	100.0		

Which data does department geocode and map? - Arrests

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	124	22.8	40.3	40.3
	yes	184	33.8	59.7	100.0
	Total	308	56.6	100.0	
Missing	System	236	43.4		
Total		544	100.0		

Which data does department geocode and map? - Calls for service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	90	16.5	29.2	29.2
	yes	218	40.1	70.8	100.0
	Total	308	56.6	100.0	
Missing	System	236	43.4		
Total		544	100.0		

Which data does department geocode and map? - Prison release

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	262	48.2	85.3	85.3
	yes	45	8.3	14.7	100.0
	Total	307	56.4	100.0	
Missing	System	237	43.6		
Total		544	100.0		

Which data does department geocode and map? - Parole/probation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	233	42.8	75.9	75.9
	yes	74	13.6	24.1	100.0
	Total	307	56.4	100.0	
Missing	System	237	43.6		
Total		544	100.0		

Which data does department geocode and map? - Traffic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	164	30.1	53.2	53.2
	yes	144	26.5	46.8	100.0
	Total	308	56.6	100.0	
Missing	System	236	43.4		
Total		544	100.0		

Citizens allowed to view crime maps?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	143	26.3	42.6	42.6
	yes	193	35.5	57.4	100.0
	Total	336	61.8	100.0	
Missing	System	208	38.2		
Total		544	100.0		

Who allowed to generate GIS maps?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	only designated unit personnel	281	51.7	87.3	87.3
	any sworn officer	41	7.5	12.7	100.0
	Total	322	59.2	100.0	
Missing	System	222	40.8		
Total		544	100.0		

Use 'hotspot' software?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	262	48.2	76.4	76.4
	yes	81	14.9	23.6	100.0
	Total	343	63.1	100.0	
Missing	System	201	36.9		
Total		544	100.0		

Department have official webpage?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	68	12.5	12.8	12.8
	yes	462	84.9	87.2	100.0
	Total	530	97.4	100.0	
Missing	System	14	2.6		
Total		544	100.0		

Provide crime stats for public to view?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	230	42.3	46.8	46.8
	yes	261	48.0	53.2	100.0
	Total	491	90.3	100.0	
Missing	System	53	9.7		
Total		544	100.0		

Provide means for public to communicate via web?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	97	17.8	19.9	19.9
	yes	391	71.9	80.1	100.0
	Total	488	89.7	100.0	
Missing	System	56	10.3		
Total		544	100.0		

How many employees does department provide E-mail accounts?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	34	6.3	6.4	6.4
	some	194	35.7	36.3	42.7
	most	150	27.6	28.1	70.8
	all	156	28.7	29.2	100.0
	Total	534	98.2	100.0	
Missing	System	10	1.8		
Total		544	100.0		

Does department have CAD system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	59	10.8	10.9	10.9
	yes	480	88.2	89.1	100.0
	Total	539	99.1	100.0	
Missing	System	5	.9		
Total		544	100.0		

How many of department's PC's networked?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	7	1.3	1.3	1.3
	some	53	9.7	9.8	11.1
	most	222	40.8	41.1	52.2
	all	258	47.4	47.8	100.0
	Total	540	99.3	100.0	
Missing	System	4	.7		
Total		544	100.0		

Does department have formal records management system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	46	8.5	8.5	8.5
	yes	495	91.0	91.3	99.8
	3	1	.2	.2	100.0
	Total	542	99.6	100.0	
Missing	System	2	.4		
Total		544	100.0		

Best describes RMS?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	dept pers	102	18.8	20.6	20.6
	consultant	154	28.3	31.1	51.7
	comm software	239	43.9	48.3	100.0
	Total	495	91.0	100.0	
Missing	System	49	9.0		
Total		544	100.0		

Rate you departmen's records management system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	53	9.7	10.8	10.8
	fair	165	30.3	33.5	44.3
	good	212	39.0	43.1	87.4
	excellent	62	11.4	12.6	100.0
	Total	492	90.4	100.0	
Missing	System	52	9.6		
Total		544	100.0		

Technical support?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	do best we can	28	5.1	5.2	5.2
	city/county	115	21.1	21.2	26.4
	dept. support	214	39.3	39.5	65.9
	comb tech and best we can	185	34.0	34.1	100.0
	Total	542	99.6	100.0	
Missing	System	2	.4		
Total		544	100.0		

Problems in generating quality data?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	major	108	19.9	20.2	20.2
	minor	355	65.3	66.4	86.5
	not	72	13.2	13.5	100.0
	Total	535	98.3	100.0	
Missing	System	9	1.7		
Total		544	100.0		

Problems in generating quality data?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	major	52	9.6	9.8	9.8
	minor	322	59.2	60.4	70.2
	not	159	29.2	29.8	100.0
	Total	533	98.0	100.0	
Missing	System	11	2.0		
Total		544	100.0		

Problems in generating quality data?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	major	109	20.0	20.5	20.5
	minor	218	40.1	40.9	61.4
	not	206	37.9	38.6	100.0
	Total	533	98.0	100.0	
Missing	System	11	2.0		
Total		544	100.0		

Problems in generating quality data?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	major	62	11.4	11.7	11.7
	minor	234	43.0	44.0	55.6
	not	236	43.4	44.4	100.0
	Total	532	97.8	100.0	
Missing	System	12	2.2		
Total		544	100.0		

Problems in generating quality data?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	major	137	25.2	25.8	25.8
	minor	207	38.1	39.0	64.8
	not	187	34.4	35.2	100.0
	Total	531	97.6	100.0	
Missing	System	13	2.4		
Total		544	100.0		

Extent utilized (inmate release?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	323	59.4	61.4	61.4
	utilized some	155	28.5	29.5	90.9
	highly utilized	48	8.8	9.1	100.0
	Total	526	96.7	100.0	
Missing	System	18	3.3		
Total		544	100.0		

Extent utilized (parole?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	297	54.6	56.6	56.6
	utilized some	173	31.8	33.0	89.5
	highly utilized	55	10.1	10.5	100.0
	Total	525	96.5	100.0	
Missing	System	19	3.5		
Total		544	100.0		

Extent utilized (probation?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	311	57.2	59.5	59.5
	utilized some	175	32.2	33.5	92.9
	highly utilized	37	6.8	7.1	100.0
	Total	523	96.1	100.0	
Missing	System	21	3.9		
Total		544	100.0		

Extent utilzed (neighboring police?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	193	35.5	36.5	36.5
	utilized some	271	49.8	51.2	87.7
	highly utilized	65	11.9	12.3	100.0
	Total	529	97.2	100.0	
Missing	System	15	2.8		
Total		544	100.0		

Extent utilized (state police?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	251	46.1	48.0	48.0
	utilized some	233	42.8	44.6	92.5
	highly utilized	39	7.2	7.5	100.0
	Total	523	96.1	100.0	
Missing	System	21	3.9		
Total		544	100.0		

Extent utilized (federal law enforcement?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	234	43.0	44.7	44.7
	utilized some	260	47.8	49.7	94.5
	highly utilized	29	5.3	5.5	100.0
	Total	523	96.1	100.0	
Missing	System	21	3.9		
Total		544	100.0		

Extent utilized (local city sources?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	192	35.3	36.4	36.4
	utilized some	293	53.9	55.5	91.9
	highly utilized	43	7.9	8.1	100.0
	Total	528	97.1	100.0	
Missing	System	16	2.9		
Total		544	100.0		

Extent utilized (local county sources?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	240	44.1	45.7	45.7
	utilized some	252	46.3	48.0	93.7
	highly utilized	33	6.1	6.3	100.0
	Total	525	96.5	100.0	
Missing	System	19	3.5		
Total		544	100.0		

Extent utilized (state sources?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	316	58.1	60.2	60.2
	utilized some	194	35.7	37.0	97.1
	highly utilized	14	2.6	2.7	99.8
	3	1	.2	.2	100.0
	Total	525	96.5	100.0	
Missing	System	19	3.5		
Total		544	100.0		

Extent utlilized (federal sources?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	350	64.3	66.7	66.7
	utilized some	168	30.9	32.0	98.7
	highly utilized	7	1.3	1.3	100.0
	Total	525	96.5	100.0	
Missing	System	19	3.5		
Total		544	100.0		

Extent utilized (courts?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	205	37.7	38.8	38.8
	utilized some	271	49.8	51.3	90.2
	highly utilized	52	9.6	9.8	100.0
	Total	528	97.1	100.0	
Missing	System	16	2.9		
Total		544	100.0		

Extent utilized (state dept. of motor vehicle?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	192	35.3	36.4	36.4
	utilized some	210	38.6	39.8	76.3
	highly utilized	125	23.0	23.7	100.0
	Total	527	96.9	100.0	
Missing	System	17	3.1		
Total		544	100.0		

How often department uses frequencies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	87	16.0	17.6	17.6
	sometimes	138	25.4	28.0	45.6
	often	149	27.4	30.2	75.9
	very often	119	21.9	24.1	100.0
	Total	493	90.6	100.0	
Missing	System	51	9.4		
Total		544	100.0		

How often department uses mean, median, mode?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	177	32.5	36.4	36.4
	sometimes	165	30.3	34.0	70.4
	often	92	16.9	18.9	89.3
	very often	52	9.6	10.7	100.0
	Total	486	89.3	100.0	
Missing	System	58	10.7		
Total		544	100.0		

How often departments uses standart deviation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	246	45.2	50.9	50.9
	sometimes	154	28.3	31.9	82.8
	often	59	10.8	12.2	95.0
	very often	24	4.4	5.0	100.0
	Total	483	88.8	100.0	
Missing	System	61	11.2		
Total		544	100.0		

How often department uses crosstabs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	288	52.9	60.0	60.0
	sometimes	117	21.5	24.4	84.4
	often	55	10.1	11.5	95.8
	very often	20	3.7	4.2	100.0
	Total	480	88.2	100.0	
Missing	System	64	11.8		
Total		544	100.0		

How often department uses correlation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	204	37.5	42.1	42.1
	sometimes	178	32.7	36.8	78.9
	often	84	15.4	17.4	96.3
	very often	18	3.3	3.7	100.0
	Total	484	89.0	100.0	
Missing	System	60	11.0		
Total		544	100.0		

How often department uses regression?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	310	57.0	64.3	64.3
	sometimes	133	24.4	27.6	91.9
	often	28	5.1	5.8	97.7
	very often	11	2.0	2.3	100.0
	Total	482	88.6	100.0	
Missing	System	62	11.4		
Total		544	100.0		

How often deparment uses cluster analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	193	35.5	39.9	39.9
	sometimes	136	25.0	28.1	68.0
	often	97	17.8	20.0	88.0
	very often	58	10.7	12.0	100.0
	Total	484	89.0	100.0	
Missing	System	60	11.0		
Total		544	100.0		

How often department undertakes target profile analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	127	23.3	25.0	25.0
	sometimes	225	41.4	44.3	69.3
	often	102	18.8	20.1	89.4
	very often	54	9.9	10.6	100.0
	Total	508	93.4	100.0	
Missing	System	36	6.6		
Total		544	100.0		

How often department undertakes victim analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	152	27.9	29.9	29.9
	sometimes	267	49.1	52.5	82.3
	often	72	13.2	14.1	96.5
	very often	18	3.3	3.5	100.0
	Total	509	93.6	100.0	
Missing	System	35	6.4		
Total		544	100.0		

How often department undertakes link analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	167	30.7	33.5	33.5
	sometimes	216	39.7	43.3	76.8
	often	92	16.9	18.4	95.2
	very often	24	4.4	4.8	100.0
	Total	499	91.7	100.0	
Missing	System	45	8.3		
Total		544	100.0		

How often department undertakes temporal analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	206	37.9	41.6	41.6
	sometimes	133	24.4	26.9	68.5
	often	97	17.8	19.6	88.1
	very often	59	10.8	11.9	100.0
	Total	495	91.0	100.0	
Missing	System	49	9.0		
Total		544	100.0		

How often department undertakes spatial analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	180	33.1	36.2	36.2
	sometimes	135	24.8	27.2	63.4
	often	103	18.9	20.7	84.1
	very often	79	14.5	15.9	100.0
	Total	497	91.4	100.0	
Missing	System	47	8.6		
Total		544	100.0		

How often department undertakes financial analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	190	34.9	37.6	37.6
	sometimes	237	43.6	46.9	84.6
	often	60	11.0	11.9	96.4
	very often	18	3.3	3.6	100.0
	Total	505	92.8	100.0	
Missing	System	39	7.2		
Total		544	100.0		

How often department undertakes flowcharting?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	173	31.8	34.2	34.2
	sometimes	259	47.6	51.2	85.4
	often	65	11.9	12.8	98.2
	very often	9	1.7	1.8	100.0
	Total	506	93.0	100.0	
Missing	System	38	7.0		
Total		544	100.0		

How often department undertakes program evaluation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	177	32.5	35.0	35.0
	sometimes	218	40.1	43.1	78.1
	often	92	16.9	18.2	96.2
	very often	19	3.5	3.8	100.0
	Total	506	93.0	100.0	
Missing	System	38	7.0		
Total		544	100.0		

How often department undertakes case management?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	88	16.2	17.3	17.3
	sometimes	186	34.2	36.6	53.9
	often	160	29.4	31.5	85.4
	very often	74	13.6	14.6	100.0
	Total	508	93.4	100.0	
Missing	System	36	6.6		
Total		544	100.0		

How often department undertakes crime scene profiling?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	167	30.7	33.1	33.1
	sometimes	253	46.5	50.1	83.2
	often	66	12.1	13.1	96.2
	very often	19	3.5	3.8	100.0
	Total	505	92.8	100.0	
Missing	System	39	7.2		
Total		544	100.0		

How often does department undertake crime forcasting?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	157	28.9	30.9	30.9
	sometimes	241	44.3	47.4	78.3
	often	81	14.9	15.9	94.3
	very often	29	5.3	5.7	100.0
	Total	508	93.4	100.0	
Missing	System	36	6.6		
Total		544	100.0		

How ofen department undertakes crime trends?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	58	10.7	11.2	11.2
	sometimes	191	35.1	36.9	48.1
	often	178	32.7	34.4	82.4
	very often	91	16.7	17.6	100.0
	Total	518	95.2	100.0	
Missing	System	26	4.8		
Total		544	100.0		

How often department undertakes citizen surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	178	32.7	35.0	35.0
	sometimes	260	47.8	51.1	86.1
	often	52	9.6	10.2	96.3
	very often	19	3.5	3.7	100.0
	Total	509	93.6	100.0	
Missing	System	35	6.4		
Total		544	100.0		

How often department undertakes victim surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	243	44.7	48.3	48.3
	sometimes	216	39.7	42.9	91.3
	often	31	5.7	6.2	97.4
	very often	13	2.4	2.6	100.0
	Total	503	92.5	100.0	
Missing	System	41	7.5		
Total		544	100.0		

How often department undertakes employee surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	246	45.2	48.7	48.7
	sometimes	226	41.5	44.8	93.5
	often	27	5.0	5.3	98.8
	very often	6	1.1	1.2	100.0
	Total	505	92.8	100.0	
Missing	System	39	7.2		
Total		544	100.0		

How often department undertakes enviromental surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	366	67.3	72.6	72.6
	sometimes	123	22.6	24.4	97.0
	often	9	1.7	1.8	98.8
	very often	6	1.1	1.2	100.0
	Total	504	92.6	100.0	
Missing	System	40	7.4		
Total		544	100.0		

How often department undertakes intelligence analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	103	18.9	20.3	20.3
	sometimes	253	46.5	49.8	70.1
	often	105	19.3	20.7	90.7
	very often	47	8.6	9.3	100.0
	Total	508	93.4	100.0	
Missing	System	36	6.6		
Total		544	100.0		

How often department undertakes productivity analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	174	32.0	34.1	34.1
	sometimes	229	42.1	44.9	79.0
	often	75	13.8	14.7	93.7
	very often	32	5.9	6.3	100.0
	Total	510	93.8	100.0	
Missing	System	34	6.3		
Total		544	100.0		

How often department undertakes civil litigation analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	376	69.1	74.8	74.8
	sometimes	110	20.2	21.9	96.6
	often	14	2.6	2.8	99.4
	very often	3	.6	.6	100.0
	Total	503	92.5	100.0	
Missing	System	41	7.5		
Total		544	100.0		

How often department undertakes patrol strategy analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	113	20.8	22.2	22.2
	sometimes	235	43.2	46.1	68.2
	often	127	23.3	24.9	93.1
	very often	35	6.4	6.9	100.0
	Total	510	93.8	100.0	
Missing	System	34	6.3		
Total		544	100.0		

How often department undertakes workload distribution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	121	22.2	23.7	23.7
	sometimes	236	43.4	46.2	69.9
	often	124	22.8	24.3	94.1
	very often	30	5.5	5.9	100.0
	Total	511	93.9	100.0	
Missing	System	33	6.1		
Total		544	100.0		

How often department undertakes displacement/diffusion analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	306	56.3	61.2	61.2
	sometimes	157	28.9	31.4	92.6
	often	30	5.5	6.0	98.6
	very often	7	1.3	1.4	100.0
	Total	500	91.9	100.0	
Missing	System	44	8.1		
Total		544	100.0		

Best describe department's utilization of crime totals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	neither	8	1.5	1.5	1.5
	count	174	32.0	32.8	34.3
	analyze	348	64.0	65.7	100.0
	Total	530	97.4	100.0	
Missing	System	14	2.6		
Total		544	100.0		

Best describe department's utilization of arrest toatls?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	neither	12	2.2	2.3	2.3
	count	314	57.7	59.4	61.6
	analyze	203	37.3	38.4	100.0
	Total	529	97.2	100.0	
Missing	System	15	2.8		
Total		544	100.0		

Best describe department's utilization of clearance rates?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	neither	42	7.7	8.0	8.0
	count	310	57.0	58.8	66.8
	analyze	175	32.2	33.2	100.0
	Total	527	96.9	100.0	
Missing	System	17	3.1		
Total		544	100.0		

Best describe department's utilization of calls for service?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	neither	26	4.8	4.9	4.9
	count	208	38.2	39.5	44.4
	analyze	293	53.9	55.6	100.0
	Total	527	96.9	100.0	
Missing	System	17	3.1		
Total		544	100.0		

Best describe department's utilization of traffic accidents?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	neither	51	9.4	9.8	9.8
	count	210	38.6	40.2	50.0
	analyze	261	48.0	50.0	100.0
	Total	522	96.0	100.0	
Missing	System	22	4.0		
Total		544	100.0		

Best describe department's utilization of citizen complaints?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	neither	73	13.4	14.1	14.1
	count	235	43.2	45.5	59.7
	analyze	208	38.2	40.3	100.0
	Total	516	94.9	100.0	
Missing	System	28	5.1		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by command level mgrs.?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	48	8.8	9.2	9.2
	utilized some	280	51.5	53.9	63.2
	highly utilized	191	35.1	36.8	100.0
	Total	519	95.4	100.0	
Missing	System	25	4.6		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by middle mgrs.?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	36	6.6	6.9	6.9
	utilized some	307	56.4	58.9	65.8
	highly utilized	178	32.7	34.2	100.0
	Total	521	95.8	100.0	
Missing	System	23	4.2		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by first-line mgrs.?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	60	11.0	11.5	11.5
	utilized some	316	58.1	60.5	72.0
	highly utilized	146	26.8	28.0	100.0
	Total	522	96.0	100.0	
Missing	System	22	4.0		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by detectives?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	53	9.7	10.2	10.2
	utilized some	283	52.0	54.3	64.5
	highly utilized	185	34.0	35.5	100.0
	Total	521	95.8	100.0	
Missing	System	23	4.2		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by patrol officers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	83	15.3	16.0	16.0
	utilized some	326	59.9	62.9	79.0
	highly utilized	109	20.0	21.0	100.0
	Total	518	95.2	100.0	
Missing	System	26	4.8		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by specialized unit officers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	72	13.2	14.0	14.0
	utilized some	293	53.9	56.9	70.9
	highly utilized	150	27.6	29.1	100.0
	Total	515	94.7	100.0	
Missing	System	29	5.3		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by traffic officers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	180	33.1	35.4	35.4
	utilized some	282	51.8	55.5	90.9
	highly utilized	46	8.5	9.1	100.0
	Total	508	93.4	100.0	
Missing	System	36	6.6		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by training unit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	241	44.3	47.5	47.5
	utilized some	241	44.3	47.5	95.1
	highly utilized	25	4.6	4.9	100.0
	Total	507	93.2	100.0	
Missing	System	37	6.8		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by elected officials?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	143	26.3	29.1	29.1
	utilized some	307	56.4	62.5	91.6
	highly utilized	41	7.5	8.4	100.0
	Total	491	90.3	100.0	
Missing	System	53	9.7		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by community at large?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	154	28.3	31.4	31.4
	utilized some	288	52.9	58.7	90.0
	highly utilized	49	9.0	10.0	100.0
	Total	491	90.3	100.0	
Missing	System	53	9.7		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by outside law enforcement?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	145	26.7	29.5	29.5
	utilized some	294	54.0	59.8	89.2
	highly utilized	53	9.7	10.8	100.0
	Total	492	90.4	100.0	
Missing	System	52	9.6		
Total		544	100.0		

Degree the results of crime analysis efforts utilized by prosecutors?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not utilized	261	48.0	53.5	53.5
	utilized some	203	37.3	41.6	95.1
	highly utilized	24	4.4	4.9	100.0
	Total	488	89.7	100.0	
Missing	System	56	10.3		
Total		544	100.0		

Spend too much time counting crime and not enough time analyzing it?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	123	22.6	23.6	23.6
	agree	225	41.4	43.1	66.7
	neutral	73	13.4	14.0	80.7
	disagree	79	14.5	15.1	95.8
	strongly disagree	22	4.0	4.2	100.0
	Total	522	96.0	100.0	
Missing	System	22	4.0		
Total		544	100.0		

Spend too much time producing administrative reports and not enough time analyzing crime?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	83	15.3	15.9	15.9
	agree	202	37.1	38.6	54.5
	neutral	121	22.2	23.1	77.6
	disagree	108	19.9	20.7	98.3
	strongly disagree	9	1.7	1.7	100.0
	Total	523	96.1	100.0	
Missing	System	21	3.9		
Total		544	100.0		

Spend too much time constructing notices, alerts, etc. and not enough time analyzing crime?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	34	6.3	6.5	6.5
	agree	102	18.8	19.6	26.1
	neutral	188	34.6	36.1	62.2
	disagree	172	31.6	33.0	95.2
	strongly disagree	25	4.6	4.8	100.0
	Total	521	95.8	100.0	
Missing	System	23	4.2		
Total		544	100.0		

Command staff appreciate calue of crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	21	3.9	4.0	4.0
	disagree	71	13.1	13.7	17.7
	neutral	101	18.6	19.4	37.1
	agree	257	47.2	49.4	86.5
	strongly agree	70	12.9	13.5	100.0
	Total	520	95.6	100.0	
Missing	System	24	4.4		
Total		544	100.0		

Middle managers appreciate value of crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	13	2.4	2.5	2.5
	disagree	83	15.3	15.9	18.4
	neutral	104	19.1	19.9	38.2
	agree	255	46.9	48.8	87.0
	stongly agree	68	12.5	13.0	100.0
	Total	523	96.1	100.0	
Missing	System	21	3.9		
Total		544	100.0		

Patrol oficers appreciate value of crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	21	3.9	4.0	4.0
	disagree	103	18.9	19.7	23.7
	neutral	152	27.9	29.1	52.8
	agree	204	37.5	39.0	91.8
	strongly agree	43	7.9	8.2	100.0
	Total	523	96.1	100.0	
Missing	System	21	3.9		
Total		544	100.0		

Detectives appreciate value of crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	8	1.5	1.5	1.5
	disagree	61	11.2	11.8	13.3
	neutral	83	15.3	16.0	29.3
	agree	286	52.6	55.1	84.4
	strongly agree	81	14.9	15.6	100.0
	Total	519	95.4	100.0	
Missing	System	25	4.6		
Total		544	100.0		

Technical support for crime analysis is substandard?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	114	21.0	21.8	21.8
	agree	156	28.7	29.9	51.7
	neutral	109	20.0	20.9	72.6
	disagree	117	21.5	22.4	95.0
	strongly disagree	26	4.8	5.0	100.0
	Total	522	96.0	100.0	
Missing	System	22	4.0		
Total		544	100.0		

Computer software used for crime analysis is inferior?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	99	18.2	19.0	19.0
	agree	123	22.6	23.7	42.7
	neutral	102	18.8	19.6	62.3
	disagree	147	27.0	28.3	90.6
	strongly disagree	49	9.0	9.4	100.0
	Total	520	95.6	100.0	
Missing	System	24	4.4		
Total		544	100.0		

Computer hardware used for crime analysis is unacceptably out-of-date?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	53	9.7	10.2	10.2
	agree	63	11.6	12.1	22.4
	neutral	119	21.9	22.9	45.3
	disagree	176	32.4	33.9	79.2
	strongly disagree	108	19.9	20.8	100.0
	Total	519	95.4	100.0	
Missing	System	25	4.6		
Total		544	100.0		

Department provide sufficent incentives to attract good crime analysts?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	100	18.4	19.2	19.2
	disagree	155	28.5	29.8	49.0
	neutral	168	30.9	32.3	81.3
	agree	82	15.1	15.8	97.1
	strongly agree	15	2.8	2.9	100.0
	Total	520	95.6	100.0	
Missing	System	24	4.4		
Total		544	100.0		

Department provides sufficient incentives to retain good crime analysts?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	99	18.2	19.1	19.1
	disagree	142	26.1	27.5	46.6
	neutral	179	32.9	34.6	81.2
	agree	83	15.3	16.1	97.3
	strongly agree	14	2.6	2.7	100.0
	Total	517	95.0	100.0	
Missing	System	27	5.0		
Total		544	100.0		

There are effective feedback channels in the deaprtment to inform crime analysts about how useful (or not) their products are to field officers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	60	11.0	11.6	11.6
	disagree	167	30.7	32.4	44.0
	neutral	157	28.9	30.4	74.4
	agree	119	21.9	23.1	97.5
	strongly agree	13	2.4	2.5	100.0
	Total	516	94.9	100.0	
Missing	System	28	5.1		
Total		544	100.0		

Question # 1 Page # 1

Hello, my name is _____ and I'm calling from the University of South Alabama on behalf of the Department of Justice COPS Office **(Community Oriented Policing).** Could I please speak with "Title"?

If asked about purpose of call, say: **We are gathering information for COPS regarding crime analysis activities of law enforcement agencies around the nation. The "Department" has been selected to participate in the study and your "Title" has been identified as the person I need to talk to.**

If "Title" is not available, ask: **Is the person second in command under the "Title" available?** If not, ask: **When would be a good time to call back to talk to the "Title"?**

Once the appropriate person is on the phone, say:
Hello, my name is _____ and I'm calling from the University of South Alabama on behalf of the Department of Justice COPS Office. We're conducting a brief survey regarding crime analysis activities of law enforcement agencies around the nation. Your responses are fully confidential. We will not release any information that would allow you or your department to be identified. The survey should take less than 10 minutes.

TEMPORARY QUESTION
-Check List- (Number of items: 1 Min: 1 Max: 1)
1 Start

Question # 2 Page # 2

Is there anyone in your department whose primary job responsibility is crime analysis?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

SKIPS from Q2
IF q2 NE 1 SKIP TO: 4

Question # 3 Page # 3

Are any of the persons responsible for crime analysis civilian employee?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 4 Page # 4

Does your department have at least one computer?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

SKIPS from Q4
IF q4 NE 1 SKIP TO: 25

Question # 5 Page # 5

Does your department have at least one computer with access to the Internet?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

SKIPS from Q5
IF q5 NE 1 SKIP TO: 9

Question # 6 Page # 6

Does your department have an official web page?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

SKIPS from Q6
IF q6 NE 1 SKIP TO: 9

Question # 7 Page # 7

Do you provide crime statistics on the web for the public to view?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 8 Page # 8

Do you provide a means for the public to communicate to the department via the web?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 9 Page # 9

For how many employees does your department provide E-mail accounts? Would that be . . . (read responses)

-Check List- (Number of items: 5 Min: 1 Max: 1)
1 None
2 Some
3 Most
4 All
5 DK/NA

Question # 10 Page # 10

How many police reports are entered into your department's computer? Would that be . . . (read responses)

-Check List- (Number of items: 5 Min: 1 Max: 1)
1 None
2 Some
3 Most

4 All
5 DK/NA

SKIPS from Q10
IF q10=[1,5] SKIP TO: 12

Question # 11 Page # 11

Which of the following reports and information are entered into the department's computer? (read responses; mark all that apply)

-Check List- (Number of items: 13 Min: 1 Max: 12)
1 Initial case reports
2 Arrest reports
3 Traffic accident reports
4 Intelligence reports
5 Field interview reports
6 Vice case reports
7 Calls for service
8 Investigative reports
9 Evidence reports
10 Pawn shop file
11 Nickname file
12 MO files
13 None

Question # 12 Page # 12

Is your department connected to a state or regional violent crimes information database?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 13 Page # 13

Does your department participate in a formal regional information-sharing program?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 14 Page # 14

Is your department a member of a formal Integrated Justice Information System (IJIS)?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 15 Page # 15

Does your department use crime mapping software?

If yes, ask: **What is the name of the software?** (Type answer in the space provided. If "Don't know" type DK)

-Check List Open- (Number of items: 3 Min: 1 Max: 1)
1 No
2 DK/NA

3 Yes

SKIPS from Q15
IF q15 NE 1 SKIP TO: 20

Question # 16 Page # 16

Which of the following types of data does your department geocode and map? (read responses, mark all that apply)

(Part I crimes include homicides, rape, aggravated assault, burglary, theft, and vehicle theft)

-Check List Open- (Number of items: 8 Min: 1 Max: 7)
1 Part I crimes
2 Part II crimes (all other crimes)
3 Arrests
4 Calls for service
5 Corrections
6 Traffic
7 None
8 Any other types of data?

Question # 17 Page # 17

Are citizens allowed to view crime maps?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 18 Page # 18

Who is allowed to generate crime maps? (read responses)

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Only designated unit personnel
2 Any sworn officer
3 DK/NA

Question # 19 Page # 19

Do you use "hotspot" software such as STAC (pronounced: "stack")?
If yes, ask: **What is the name of the software?** (Type answer in the space provided. If "Don't know", type DK)

-Check List Open- (Number of items: 3 Min: 1 Max: 1)
1 No
2 DK/NA
3 Yes

Question # 20 Page # 20

Does your department have a formal records management system?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

SKIPS from Q20
IF q20 NE 1 SKIP TO: 23

Question # 21 Page # 21

Which of the following best describes the source of your system? (read responses)
If it is a commercial software package, ask: **What is the name of the package?** (Type answer in the space provided. If "Don't know", type DK)

-Check List Open- (Number of items: 5 Min: 1 Max: 1)
1 Provided by city or county MIS
2 Built by department personnel
3 Built by outside consultant
4 DK/NA
5 Commercial software package

Question # 22 Page # 22
How would you rate your department's records management system? (read responses)

-Check List- (Number of items: 5 Min: 1 Max: 1)
1 Excellent
2 Good
3 Only fair
4 Poor
5 DK/NA

Question # 23 Page # 23
Please tell me how much you agree or disagree with this statement.

The computer software we use for crime analysis is inferior. Do you strongly agree, agree, disagree, or strongly disagree?

-Check List- (Number of items: 7 Min: 1 Max: 1)
1 Strongly agree
2 Agree
3 Disagree
4 Strongly Disagree
5 Neither/neutral

6 Don't do Computer Crime Analysis
7 DK/NA

Question # 24 Page # 24

What about this statement: The computer hardware we use for crime analysis is unacceptably out-of-date. Do you strongly agree, agree, disagree, or strongly disagree?

-Check List- (Number of items: 7 Min: 1 Max: 1)
1 Strongly agree
2 Agree
3 Disagree
4 Strongly Disagree
5 Neither/neutral
6 Don't do Computer Crime Analysis
7 DK/NA

Question # 25 Page # 25

The next few questions deal with the training of individuals in your department who are responsible for crime analysis. Please tell me whether individuals in your department receive either initial or in-service training in either of the following areas: (read responses; mark all that apply)

-Check List- (Number of items: 4 Min: 1 Max: 2)
1 Crime analysis
2 Report writing
3 Neither
4 DK/NA

SKIPS from Q25
IF q4 NE 1 SKIP TO: 27

Question # 26 Page # 26

What about training in these areas? (read responses; mark all that apply)

-Check List- (Number of items: 6 Min: 1 Max: 5)
1 GIS mapping
2 Computer hardware
3 Computer software
4 Statistical analysis
5 Graphics
6 None

Question # 27 Page # 27

A few departments may conduct very sophisticated types of crime analysis. Please tell me whether or not your department conducts the following types? (read responses; mark all that apply)

-Check List- (Number of items: 12 Min: 1 Max: 11)
1 Target profile analysis
2 Victim analysis
3 Link analysis
4 Temporal analysis, dealing with times when crimes occur
5 Spatial analysis, dealing with places where crimes occur
6 Financial analysis
7 Intelligence analysis
8 Productivity analysis
9 Civil litigation analysis
10 Patrol strategy analysis
11 Displacement and diffusion analysis
12 None

Question # 28 Page # 28

Please tell me whether or not your department conducts the following types of research? (read responses; mark all that apply)

-Check List- (Number of items: 8 Min: 1 Max: 7)
1 Flowcharting
2 Program evaluation
3 Case management
4 Crime scene profiling
5 Crime forecasting
6 Crime trends
7 Workload distribution
8 None

Question # 29 Page # 29

Please tell me whether or not your department conducts the following types of surveys? (read responses; mark all that apply)

-Check List- (Number of items: 5 Min: 1 Max: 4)
1 Citizen surveys
2 Victim surveys
3 Employee surveys
4 Environmental surveys
5 None

Question # 30 Page # 30

Next I'm going to give you two terms that describe how law enforcement agencies might utilize certain types of data. The terms are "count" and "analyze". "Count" means basically keeping track of the number of occurrences. "Analyze" means looking for trends and relationships in the data. Please tell me which of the terms best describes your department's

utilization of crime totals such as numbers of robberies, number of thefts, etc. Do you count or analyze crime totals, or do you not utilize that type data?

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Count
2 Analyze
3 Not utilize
4 DK/NA

Question # 31 Page # 31
What about arrest totals? Do you count, analyze, or not utilize arrest totals?

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Count
2 Analyze
3 Not utilize
4 DK/NA

Question # 32 Page # 32
What about clearance rates?

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Count
2 Analyze
3 Not utilize
4 DK/NA

Question # 33 Page # 33
Calls for service

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Count
2 Analyze
3 Not utilize
4 DK/NA

Question # 34 Page # 34
Traffic accidents

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Count
2 Analyze
3 Not utilize

4 DK/NA

Question # 35 Page # 35

Citizen complaints

-Check List- (Number of items: 4 Min: 1 Max: 1)
1 Count
2 Analyze
3 Not utilize
4 DK/NA

Question # 36 Page # 36

Please tell me whether or not the results of your crime analysis efforts are utilized by each of the following? (read first 5 responses; mark all that apply)

-Check List Open- (Number of items: 7 Min: 1 Max: 5)
1 Elected officials
2 Community at large
3 Outside law enforcement
4 Prosecutors
5 None
6 Don't do Crime Analysis
7 Are results used by any others?

Question # 37 Page # 37

Does your department use a computer-aided dispatch system (CAD) ?

-Check List- (Number of items: 3 Min: 1 Max: 1)
1 Yes
2 No
3 DK/NA

Question # 38 Page # 38

Please tell me the extent to which you agree or disagree with the following statement.

We spend too much time counting crime and not enough time analyzing it. Do you strongly agree, agree, disagree, or strongly disagree?

-Check List- (Number of items: 6 Min: 1 Max: 1)
1 Strongly agree
2 Agree
3 Disagree
4 Strongly Disagree
5 Neither/neutral
6 DK/NA

Question # 39 Page # 39

On a scale of 0 to 10 with zero being no effort to 10 being virtually perfect, how would you rate your department's overall crime analysis effort?

-Check List- (Number of items: 12 Min: 1 Max: 1)

1 0
2 1
3 2
4 3
5 4
6 5
7 6
8 7
9 8
10 9
11 10
12 DK/NA

Question # 40 Page # 40

What is the population of the jurisdiction your department serves? (If DK/NA, prompt: Is that under 10,000; Over 25, 000; etc.?)

-Check List- (Number of items: 6 Min: 1 Max: 1)

1 Under 5,000
2 5-9,999
3 10-24,999
4 25-49,999
5 50,000 or more
6 DK/NA

Question # 41 Page # 41

What is your formal job title?

-Check List Open- (Number of items: 7 Min: 1 Max: 1)

1 Chief of Police
2 Deputy Chief of Police
3 Sheriff
4 Chief Deputy Sheriff
5 Crime Analyst

6 DK/NA
7 Other

SKIPS from Q41
IF q40=[3,4,5] SKIP TO: 43

Question # 42 Page # 42

Finally, I need to know the total number of Part I crimes which occurred in your jurisdiction in 1999. If this information is not readily available, I can fax you a form to fill out and fax back to us. Would you like to handle it that way?

-Check List Open- (Number of items: 2 Min: 1 Max: 1)
0 Faxed
1 Number of Part 1 Crimes

Question # 43 Page # 43

That completes the survey. Thanks for your time; have a nice day, etc.

Enter the name of department, the city, and the state. Enter EXACTLY as they appear in the Call Window.

-Dbase- (Number of items: 6)
Text:
Name of Department
Text:
City
Text:
State

Question # 44 Page # 44

Enter crime index total from master data list:

-Dbase- (Number of items: 2)
Crime index total
Integer: 0 _ i _ 15,000

Telephone Survey Frequencies
Frequency Table

Is there anyone in your department whose primary job responsibility is crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	194	23.8	23.8	23.8
	No	620	76.2	76.2	100.0
	Total	814	100.0	100.0	

Are any of the persons responsible for crime analysis civilian employees?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	94	11.5	48.5	48.5
	No	100	12.3	51.5	100.0
	Total	194	23.8	100.0	
Missing	System	620	76.2		
Total		814	100.0		

Does your department have at least one computer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	24	2.9	2.9	2.9
	yes	790	97.1	97.1	100.0
	Total	814	100.0	100.0	

Does your department have at least one computer with access to the Internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	92	11.3	11.6	11.6
	yes	698	85.7	88.4	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Does your department have an official web page?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	323	39.7	46.7	46.7
	yes	369	45.3	53.3	100.0
	Total	692	85.0	100.0	
Missing	System	122	15.0		
Total		814	100.0		

Do you provide crime statistics on the web for the public to view?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	235	28.9	67.0	67.0
	yes	116	14.3	33.0	100.0
	Total	351	43.1	100.0	
Missing	System	463	56.9		
Total		814	100.0		

Do you provide a means for the public to communicate with the department via the web?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	57	7.0	15.9	15.9
	yes	301	37.0	84.1	100.0
	Total	358	44.0	100.0	
Missing	System	456	56.0		
Total		814	100.0		

For how many employees does your department provide E-mail accounts?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	207	25.4	26.2	26.2
	some	337	41.4	42.7	68.9
	most	73	9.0	9.2	78.1
	all	170	20.9	21.5	99.6
	DK/NA	3	.4	.4	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

How many police reports are entered into your department's computer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	63	7.7	8.0	8.0
	some	29	3.6	3.7	11.6
	most	87	10.7	11.0	22.7
	all	610	74.9	77.2	99.9
	DK/NA	1	.1	.1	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Are the initial case reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	36	4.4	5.0	5.0
	yes	690	84.8	95.0	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are the arrest reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	33	4.1	4.5	4.5
	yes	693	85.1	95.5	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are traffic accident reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	207	25.4	28.5	28.5
	yes	519	63.8	71.5	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are intelligence reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	297	36.5	40.9	40.9
	yes	429	52.7	59.1	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are field interview reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	328	40.3	45.2	45.2
	yes	398	48.9	54.8	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are vice case reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	260	31.9	35.8	35.8
	yes	466	57.2	64.2	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are calls for service entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	119	14.6	16.4	16.4
	yes	607	74.6	83.6	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are investigative reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	80	9.8	11.0	11.0
	yes	646	79.4	89.0	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are evidence reports entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	139	17.1	19.1	19.1
	yes	587	72.1	80.9	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are pawn shop files entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	478	58.7	65.8	65.8
	yes	248	30.5	34.2	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are nickname files entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	289	35.5	39.8	39.8
	yes	437	53.7	60.2	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Are MO files entered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	410	50.4	56.5	56.5
	yes	316	38.8	43.5	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

No reports are entered.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	720	88.5	99.2	99.2
	yes	6	.7	.8	100.0
	Total	726	89.2	100.0	
Missing	System	88	10.8		
Total		814	100.0		

Is your department connected to a state or regional violent crimes information database?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	351	43.1	46.2	46.2
	yes	409	50.2	53.8	100.0
	Total	760	93.4	100.0	
Missing	System	54	6.6		
Total		814	100.0		

Does your department participate in a formal regional information-sharing program?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	244	30.0	31.7	31.7
	yes	525	64.5	68.3	100.0
	Total	769	94.5	100.0	
Missing	System	45	5.5		
Total		814	100.0		

Is your department a member of a formal Integrated Justice Information System (IJIS)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	374	45.9	53.4	53.4
	yes	326	40.0	46.6	100.0
	Total	700	86.0	100.0	
Missing	System	114	14.0		
Total		814	100.0		

Does your department use crime mapping software?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	648	79.6	82.0	82.0
	DK/NA	23	2.8	2.9	84.9
	yes	119	14.6	15.1	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Are part I crimes mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	14	1.7	11.8	11.8
	yes	105	12.9	88.2	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Are part II crimes mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	31	3.8	26.1	26.1
	yes	88	10.8	73.9	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Are arrests mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	46	5.7	38.7	38.7
	yes	73	9.0	61.3	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Are calls for service mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	40	4.9	33.6	33.6
	yes	79	9.7	66.4	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Are corrections data mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	97	11.9	81.5	81.5
	yes	22	2.7	18.5	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Is traffic data mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	45	5.5	37.8	37.8
	yes	74	9.1	62.2	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

No data are mapped?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	113	13.9	95.0	95.0
	1	6	.7	5.0	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Are citizens allowed to view crime maps?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	74	9.1	62.2	62.2
	No	36	4.4	30.3	92.4
	DK/NA	9	1.1	7.6	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Who is allowed to generate crime maps?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Only designated unit personnel	88	10.8	73.9	73.9
	Any sworn officer	25	3.1	21.0	95.0
	DK/NA	6	.7	5.0	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Do you use "hotspot" software such as STAC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	90	11.1	75.6	75.6
	DK/NA	21	2.6	17.6	93.3
	Yes	8	1.0	6.7	100.0
	Total	119	14.6	100.0	
Missing	System	695	85.4		
Total		814	100.0		

Does your department have a formal records management system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	116	14.3	14.8	14.8
	yes	667	81.9	85.2	100.0
	Total	783	96.2	100.0	
Missing	System	31	3.8		
Total		814	100.0		

Which of the following best describes the source of your system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Provided by city or county MIS	78	9.6	11.7	11.7
	Built by department personnel	126	15.5	18.9	30.6
	Built by outside consultant	155	19.0	23.2	53.8
	DK/NA	15	1.8	2.2	56.1
	Commercial software package	293	36.0	43.9	100.0
	Total	667	81.9	100.0	
Missing	System	147	18.1		
Total		814	100.0		

How would you rate your department's records management system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	21	2.6	3.2	3.2
	only fair	111	13.6	16.8	20.0
	good	359	44.1	54.4	74.4
	excellent	169	20.8	25.6	100.0
	Total	660	81.1	100.0	
Missing	System	154	18.9		
Total		814	100.0		

The computer software we use for crime analysis is unacceptably out-of-date.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	56	6.9	8.6	8.6
	agree	219	26.9	33.6	42.2
	neutral	52	6.4	8.0	50.2
	disagree	244	30.0	37.4	87.6
	strongly disagree	81	10.0	12.4	100.0
	Total	652	80.1	100.0	
Missing	System	162	19.9		
Total		814	100.0		

The computer hardware we use for crime analysis is unacceptably out-of-date.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	39	4.8	5.9	5.9
	agree	143	17.6	21.5	27.4
	neutral	28	3.4	4.2	31.6
	disagree	311	38.2	46.8	78.5
	strongly disagree	143	17.6	21.5	100.0
	Total	664	81.6	100.0	
Missing	System	150	18.4		
Total		814	100.0		

Does your department provide training for crime analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	399	49.0	49.0	49.0
	yes	415	51.0	51.0	100.0
	Total	814	100.0	100.0	

Doe your department provide training for report writing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	121	14.9	14.9	14.9
	yes	693	85.1	85.1	100.0
	Total	814	100.0	100.0	

Does your department provide training for GIS mapping?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	642	78.9	81.3	81.3
	yes	148	18.2	18.7	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Does your department provide training for computer hardware?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	425	52.2	53.8	53.8
	yes	365	44.8	46.2	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Does your department provide training for computer software?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	284	34.9	35.9	35.9
	yes	506	62.2	64.1	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Does your department provide training for statistical analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	534	65.6	67.6	67.6
	yes	256	31.4	32.4	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Does your department provide training for graphics?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	618	75.9	78.2	78.2
	yes	172	21.1	21.8	100.0
	Total	790	97.1	100.0	
Missing	System	24	2.9		
Total		814	100.0		

Do you perform target profile analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	697	85.6	85.6	85.6
	yes	117	14.4	14.4	100.0
	Total	814	100.0	100.0	

Do you perform victim analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	620	76.2	76.2	76.2
	yes	194	23.8	23.8	100.0
	Total	814	100.0	100.0	

Do you perform link analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	663	81.4	81.4	81.4
	yes	151	18.6	18.6	100.0
	Total	814	100.0	100.0	

Do you perform temporal analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	475	58.4	58.4	58.4
	yes	339	41.6	41.6	100.0
	Total	814	100.0	100.0	

Do you perform spatial analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	443	54.4	54.4	54.4
	yes	371	45.6	45.6	100.0
	Total	814	100.0	100.0	

Do you perform financial analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	679	83.4	83.4	83.4
	yes	135	16.6	16.6	100.0
	Total	814	100.0	100.0	

Do you perform intelligence analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	509	62.5	62.5	62.5
	yes	305	37.5	37.5	100.0
	Total	814	100.0	100.0	

Do you perform productivity analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	475	58.4	58.4	58.4
	yes	339	41.6	41.6	100.0
	Total	814	100.0	100.0	

Do you perform civil litigation analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	743	91.3	91.3	91.3
	yes	71	8.7	8.7	100.0
	Total	814	100.0	100.0	

Do you perform patrol strategy analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	452	55.5	55.5	55.5
	yes	362	44.5	44.5	100.0
	Total	814	100.0	100.0	

Do you perform displacement and diffusion analysis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	703	86.4	86.4	86.4
	yes	111	13.6	13.6	100.0
	Total	814	100.0	100.0	

Do you perform flowcharting?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	606	74.4	74.4	74.4
	yes	208	25.6	25.6	100.0
	Total	814	100.0	100.0	

Do you perform program evaluation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	439	53.9	53.9	53.9
	yes	375	46.1	46.1	100.0
	Total	814	100.0	100.0	

Do you engage in case management?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	259	31.8	31.8	31.8
	yes	555	68.2	68.2	100.0
	Total	814	100.0	100.0	

Do you perform crime scene profiling?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	552	67.8	67.8	67.8
	yes	262	32.2	32.2	100.0
	Total	814	100.0	100.0	

Do you do crime forecasting?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	657	80.7	80.7	80.7
	yes	157	19.3	19.3	100.0
	Total	814	100.0	100.0	

Do you analyze crime trends?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	447	54.9	54.9	54.9
	yes	367	45.1	45.1	100.0
	Total	814	100.0	100.0	

Do you analyze workload distribution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	410	50.4	50.4	50.4
	yes	404	49.6	49.6	100.0
	Total	814	100.0	100.0	

Do you administer citizen surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	380	46.7	46.7	46.7
	yes	434	53.3	53.3	100.0
	Total	814	100.0	100.0	

Do you administer victim surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	509	62.5	62.5	62.5
	yes	305	37.5	37.5	100.0
	Total	814	100.0	100.0	

Do you administer employee surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	445	54.7	54.7	54.7
	yes	369	45.3	45.3	100.0
	Total	814	100.0	100.0	

Do you administer environmental surveys?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	756	92.9	92.9	92.9
	yes	58	7.1	7.1	100.0
	Total	814	100.0	100.0	

Do you count, analyze, or not utilize arrest totals?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilize	84	10.3	10.4	10.4
	Count	487	59.8	60.2	70.6
	Analyze	238	29.2	29.4	100.0
	Total	809	99.4	100.0	
Missing	System	5	.6		
Total		814	100.0		

Do you count, analyze, or not utilize arrest totals?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilize	55	6.8	6.8	6.8
	Count	571	70.1	70.8	77.6
	Analyze	181	22.2	22.4	100.0
	Total	807	99.1	100.0	
Missing	System	7	.9		
Total		814	100.0		

Do you count, analyze, or not utilize clearance rates?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilize	130	16.0	16.2	16.2
	Count	483	59.3	60.3	76.5
	Analyze	188	23.1	23.5	100.0
	Total	801	98.4	100.0	
Missing	System	13	1.6		
Total		814	100.0		

Do you count, analyze, or not utilize calls for service?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilize	67	8.2	8.3	8.3
	Count	485	59.6	60.2	68.6
	Analyze	253	31.1	31.4	100.0
	Total	805	98.9	100.0	
Missing	System	9	1.1		
Total		814	100.0		

Do you count, analyze, or not utilize traffic accidents?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilize	85	10.4	10.6	10.6
	Count	421	51.7	52.3	62.9
	Analyze	299	36.7	37.1	100.0
	Total	805	98.9	100.0	
Missing	System	9	1.1		
Total		814	100.0		

Do you count, analyze, or not utilize citizen complaints?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilize	82	10.1	10.2	10.2
	Count	405	49.8	50.5	60.7
	Analyze	315	38.7	39.3	100.0
	Total	802	98.5	100.0	
Missing	System	12	1.5		
Total		814	100.0		

Do you provide analytic output to elected officials?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	345	42.4	42.4	42.4
	yes	469	57.6	57.6	100.0
	Total	814	100.0	100.0	

Do you provide analytic output to the community at large?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	434	53.3	53.3	53.3
	yes	380	46.7	46.7	100.0
	Total	814	100.0	100.0	

Do you provide analytic output to outside law enforcement?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	395	48.5	48.5	48.5
	yes	419	51.5	51.5	100.0
	Total	814	100.0	100.0	

Do you provide analytic output to prosecutors?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	433	53.2	53.2	53.2
	yes	381	46.8	46.8	100.0
	Total	814	100.0	100.0	

Does your department use a computer-aided dispatch system (CAD) ?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	501	61.5	61.5	61.5
	no	298	36.6	36.6	98.2
	DK/NA	15	1.8	1.8	100.0
	Total	814	100.0	100.0	

We spend too much time counting crime and not enough time analyzing it.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	91	11.2	11.2	11.2
	Agree	342	42.0	42.0	53.2
	Disagree	279	34.3	34.3	87.5
	Strongly Disagree	32	3.9	3.9	91.4
	Neither/neutral	54	6.6	6.6	98.0
	DK/NA	16	2.0	2.0	100.0
	Total	814	100.0	100.0	

On a scale of 0 to 10 with zero being no effort to 10 being virtually perfect, how would you rate your department's overall crime analytic capacity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	59	7.2	7.2	7.2
	1	14	1.7	1.7	9.0
	2	35	4.3	4.3	13.3
	3	75	9.2	9.2	22.5
	4	88	10.8	10.8	33.3
	5	193	23.7	23.7	57.0
	6	97	11.9	11.9	68.9
	7	119	14.6	14.6	83.5
	8	93	11.4	11.4	95.0
	9	14	1.7	1.7	96.7
	10	9	1.1	1.1	97.8
	DK/NA	18	2.2	2.2	100.0
	Total	814	100.0	100.0	