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Computer Aided Dispatch in Support of Community Policing

Final Report

July 2002

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FINAL REPORT
Approved By: M Battle
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Prepared for
National Institute of Justice

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Computer Aided Dispatch in Support of Community Policing

Executive Summary

July 2002

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Computer Aided Dispatch in Support of Community Policing Executive Summary

This research project was conducted by the Institute for Law and Justice (ILJ) to determine the extent to which computer-aided dispatch (CAD) systems can support community policing and measure performance under new community policing objectives. The study was sponsored by the National Institute of Justice (NIJ) under its "Measuring What Matters" initiative. The researchers found that CAD systems have much to offer community policing because of the richness of the basic data that is collected. However, CAD can be even more effective if enhancements are made that directly support community policing.

Background on CAD Systems: Strengths and Weaknesses

CAD systems were developed by vendors in the 1960s to support two key objectives of the professional policing model: (1) satisfying citizens with rapid responses to all calls for service and (2) effecting arrests to reduce crime. CAD technology minimized the time required to dispatch patrol units and provided tools that helped police managers allocate resources more effectively (see sidebar, "Brief History and Overview of CAD Systems"). Under community policing, however, professional policing objectives have been modified and new objectives have been added. Arrests are still important, but so is problem solving to prevent crimes. Rapid response to true emergency calls is still a goal, but community policing requires flexibility for handling non-emergencies, for example by taking a report over the telephone.

Past research has consistently emphasized two important features of CAD systems: (1) they provide a rich source of data because of the detailed information they contain on what patrol officers do and (2) less than 20 percent of the citizen calls in a CAD system are for serious crime incidents. The rest are for incidents that affect the callers' quality of life to such an extent that they believe police intervention is necessary.

Since an aim of problem solving under community policing is to address many of these incidents, CAD data can be of particular benefit in identifying problems and in measuring the impact of problem solving efforts. On the other hand, CAD applications have been criticized as inadequate for measurement purposes. Several weaknesses in CAD data relate to *call*

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classification processes and schemes. For example, the type of call that appears in a CAD record usually is based on information conveyed by the caller, who may not know the difference between a burglary and a robbery or between vandalism and graffiti. A related problem is that the list of call types used in the communications center may not adequately address everything that is needed under community policing; "other type of call" is the largest volume category in some departments. Other problems relate to determining incident address (e.g., the telephone number and address from E9-1-1 systems may not be the location of the incident), which has been a longstanding problem for hot spots analysis, and to capturing data on calls that bypass the CAD system (e.g., calls made directly to officers' pagers or to storefront offices). A final problem is the need for a new vocabulary to describe CAD information. In some departments, every record gets counted as a call for service, including multiple calls on the same incident, assist units at the same incident, and administrative and self-initiated activities.

Overview of Research Approach

In this study, the researchers explored (1) current uses of CAD to support community policing, (2) new ways to use CAD data for performance measures under community policing, and (3) changes in CAD systems and related policies that may be needed to better support problem solving and other community policing activities. The project involved conducting case studies of community policing implementation in three departments (the San Diego Police Department, the Metropolitan Police, District of Columbia (MPDC), and the Aurora (Colorado) Police Department; performing CAD system reviews in these departments; developing "prototype" CAD-supported performance measures for community policing; and conducting a national survey of police departments to validate the prototype measures.

Community Policing Framework

To guide the research and analysis, a framework for describing community policing was needed. It is widely held that problem solving, partnerships, and organizational change are critical elements of community policing;[1] but the research team needed to articulate more precisely what community policing entails. To do this, they took advantage of the ideas put forth by Cordner,[2] who provided one of the few frameworks available that described community policing in other than broad philosophical terms. Cordner identifies four major dimensions of community policing and describes elements associated with each dimension (see Exhibit 1). In

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this framework, the organizational dimension includes technologies such as CAD systems, as well as other information needed to support performance appraisals, program evaluations, and departmental assessments.

Exhibit 1: Cordner's Community Policing Framework

Philosophical Dimension	**Tactical Dimension**
Citizen input	Partnerships with citizens
Broader definitions of police functions	Problem solving
Emphasis on personal service	Positive interaction
Strategic Dimension	**Organizational Dimension**
Re-oriented operations	Structure
Emphasis on prevention	Management
Geographic focus	Information (including CAD)

Prototype CAD-Supported Measures of Community Policing

After clarifying what each department sought to accomplish through community policing, the researchers examined the CAD systems and current CAD applications at the three study sites. Department personnel assisted in identifying how current CAD data could be more effectively used to support community policing, as well as deficiencies in the CAD data and how these deficiencies could be alleviated. Interviews were also conducted with vendors who had provided and supported the departments' CAD systems. The next step was to develop "prototype" measures for community policing from samples of CAD data at all three sites. These measures were developed in the areas of problem solving, support for special units or programs (e.g., gang units, drug units), resource allocation, management accountability, and citizen involvement and satisfaction. With assistance from the sites, the researchers also identified changes in CAD systems that would be needed to support community policing, such as changes in data elements captured, changes in call taker and dispatcher screens, and others.

National Survey

In the summer of 2000, ILJ conducted a mail survey of 420 police departments. The survey sample included all police departments in the country serving jurisdictions with populations of 250,000 or greater and a sample of departments in jurisdictions with less than 250,000 residents. Primary interests were to determine (1) key community policing activities,

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(2) whether the prototype measures would have utility in the departments, and (3) whether the departments' CAD systems were capable of providing the measures. The survey instrument also included questions on call management strategies.[3]

Findings

Case Studies and CAD System Reviews

The case studies revealed a number of similarities in community policing implementation at the study sites. For example, all three sites had changed to a geographic focus to achieve community policing goals, albeit with different organizational support structures; and all three implemented problem solving as a cornerstone of their efforts. Other similarities and differences are highlighted below.

Philosophical Dimension. Each site had its own community policing philosophy, while still including the essential components of partnerships, problem solving, and organizational change. Community policing in San Diego and Aurora has been well documented in the policing literature for nearly 20 years, but the MPDC's efforts are more recent. In 1998, the District launched Policing for Prevention (PFP). This community policing approach explicitly includes a major goal for "systemic prevention" and a goal for "focused law enforcement," which includes high visibility enforcement actions and police visibility generally in high crime areas. There are 83 Police Service Areas (PSAs), and the concept of partnerships is strongly linked to problem solving action plans initiated at the PSA level (see sidebar, "Policing for Prevention in the District of Columbia"). Primary means of achieving citizen input in San Diego are through 21 Service Area Advisory Boards, an extensive volunteer program, and efforts to revitalize Neighborhood Watch. In the District of Columbia, PSA meetings are the cornerstone of citizen involvement, whereas Aurora relies heavily on the work of 21 Police Area Representative (PAR) officers with community groups.

Strategic Dimension. In addition to achieving a geographic focus through police service areas, all three sites operate storefront offices, with about 30 of these in San Diego and several in the District and Aurora. Fine-tuning geographic deployment schemes, however, was an ongoing process. Drawbacks of small teams include difficulties scheduling time off, resistance by some managers to 24-hour geographic accountability, and cross-beat dispatches, which may partially

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defeat the purpose of "permanent" patrol service area assignments. Efforts to decentralize detectives and other specialized functions also met with some resistance, particularly in the MPDC. With respect to freeing up officer time for community policing, the SDPD stands out in its use of civilian community service officers, telephone report units, and volunteers to provide call handling alternatives.

Tactical Dimension. Cordner's concept of positive interaction–encouraging officers to treat all calls as opportunities to provide quality services and identify problems–was embraced at all three sites but was difficult to measure. The police partnerships discovered were often directly linked to problem solving projects and involved an array of citizen groups and agencies at all three sites. Problem identification, analysis, and assessment involved the use of CAD data at all three sites, although a number of missed opportunities were discovered.

Organizational Dimension. San Diego and Aurora had revised officer performance evaluations by including criteria related to problem solving and other pro-active work; the MPDC revised performance evaluation criteria for lieutenants and above and had goals to develop new criteria for other positions. Although the sites saw the value of CAD data in meeting their community policing objectives, CAD data was generally difficult for the average officer to retrieve. In addition, the sites were in the throes of major system overhauls (CAD system in San Diego, the RMS in Aurora, and virtually all information systems in the MPDC). In short, the study sites had taken advantage of CAD data to plan, modify, and monitor their community policing strategies. However, their efforts fell short of the full spectrum of analysis and reports that can be obtained from CAD data, in part because of technical difficulties in extracting data valuable for community policing, in a timely manner, from systems that were designed to support dispatching functions.

National Survey

Community Policing Activities

The survey questionnaire asked about 12 specific activities typically associated with community policing. The results are shown in Exhibit 2.

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Exhibit 2: Percent of Departments Engaging in Community Policing Activities

Activities	Great Extent	Moderate Extent	Limited Extent	Not at All
Gave geographic responsibility to patrol	51	26	15	8
Have a citizens police academy	48	10	13	29
Conduct beat/neighborhood meetings open to the public	32	35	21	12
Opened neighborhood substations	26	19	18	37
Adopted problem solving techniques	22	33	32	14
Developed information systems to support problem solving	17	31	36	16
Conduct citizen surveys on a regular basis	17	22	37	24
Decision-making occurs in lower ranks	16	45	36	4
Developed evaluation criteria for determining success of community policing	14	22	43	22
Decentralized detectives	10	11	18	61
Changed communications center procedures on how citizen calls are handled	9	24	36	31
Eliminated one or more ranks	5	7	13	75

Looking at selected activities, more than three-fourths of departments (77 percent) have assigned geographic responsibility to patrol (to a moderate or great extent), and about one-third have changed their communications procedures for call handling. With respect to problem solving, 55 percent of departments have adopted problem solving techniques and 48 percent have developed information systems to support problem solving. Fewer departments (36 percent) have developed evaluation criteria to measure the success of community policing. Finally, 39 percent make at least moderate use of citizen surveys.

CAD Systems and Data Access

Almost two-thirds of departments (63 percent) have a dispatch system on site that serves only their jurisdiction; 11 percent have an on-site system that serves other jurisdictions as well as their own; and 26 percent share a dispatch system that is not physically located at their department. About 54 percent of respondents said they could design queries and reports in CAD, and 46 percent said they could export CAD data to other programs for analysis.

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Types of CAD Data Routinely Used for Analysis

Location Data. Less than one-third of departments (31 percent) used all six types of location data listed in the questionnaire and shown in Exhibit 3. A large majority (88.3 percent) analyze call for service (CFS) data by street address, although analysis using apartment or suite number is less common (54.5 percent). About three-fourths of departments conduct analysis by beat or reporting area and event location (as distinct from caller address). Fewer than two-thirds routinely analyze CAD data by premise history (63.6 percent) or by reporting party name or phone number (58.7 percent).

Primary and Assist Units. Respondents were asked to indicate which of the following types of data on primary responding units were routinely analyzed: unit designation, time dispatched, time arrived, and time completed. Nearly three-fourths of respondents (73 percent) said they used all four data elements to analyze the activity of primary units; somewhat fewer (61 percent) reported using all four data elements to analyze assist unit activity.

Incident Data. Exhibit 4 shows the extent to which departments routinely used nine types of incident data for analysis. About two-thirds of respondents (65 percent) said they used at least six of the nine options, with 26 percent using all nine options. The most frequently used data element was type of call as recorded at dispatch (88 percent), and a majority of departments (64 percent) used final call type based on officer assessment. The data type least frequently used for analysis was text narrative.

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Exhibit 3: Location Data from CAD Systems

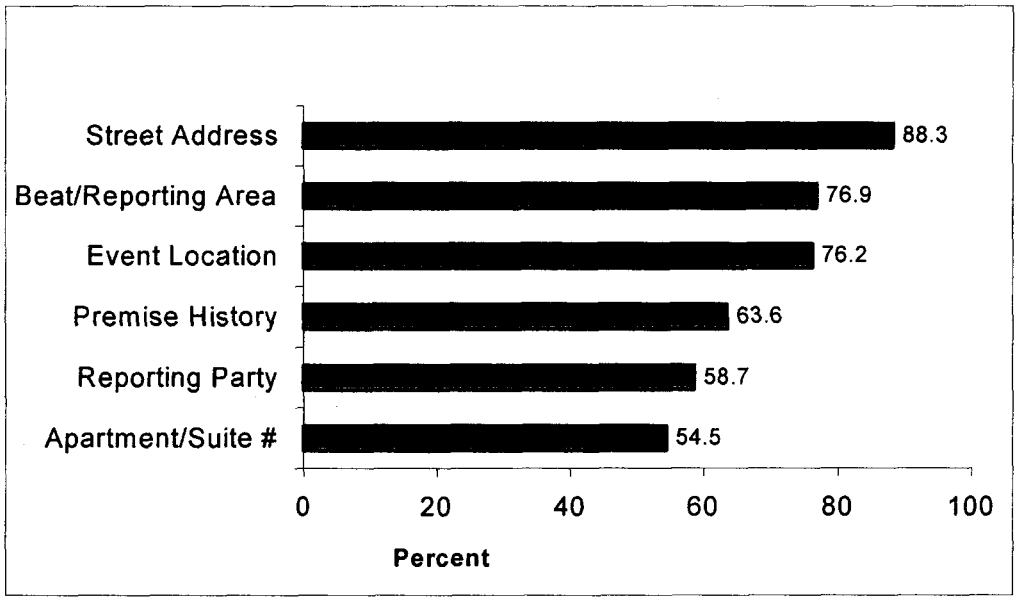
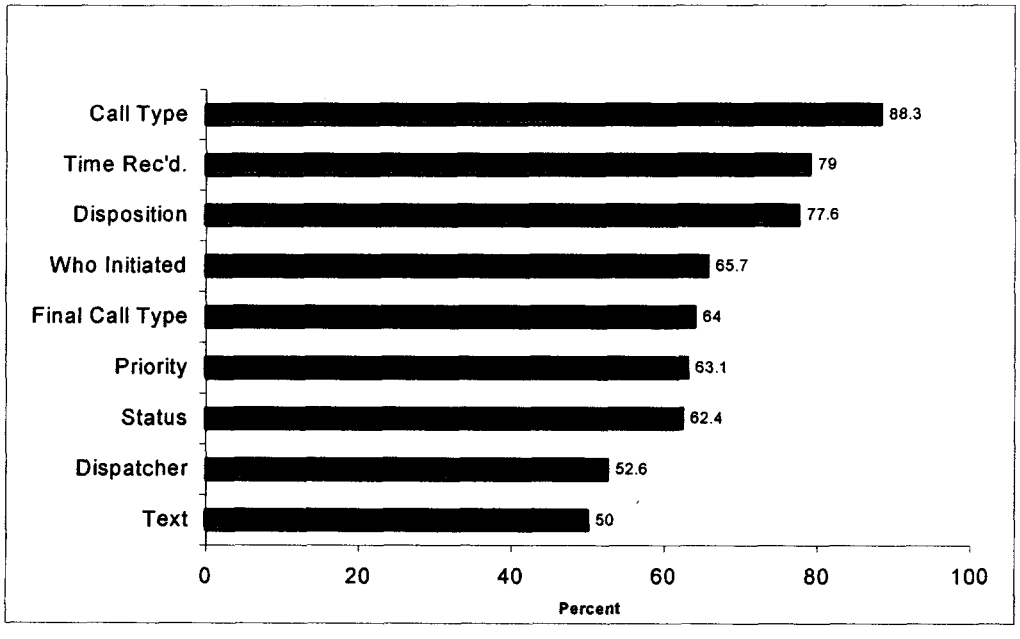


Exhibit 4: Incident Data from CAD Systems



Call Management

Call management alternatives are important in the strategic dimension of community policing, in that using such alternatives can free up patrol officer time for pro-active work.

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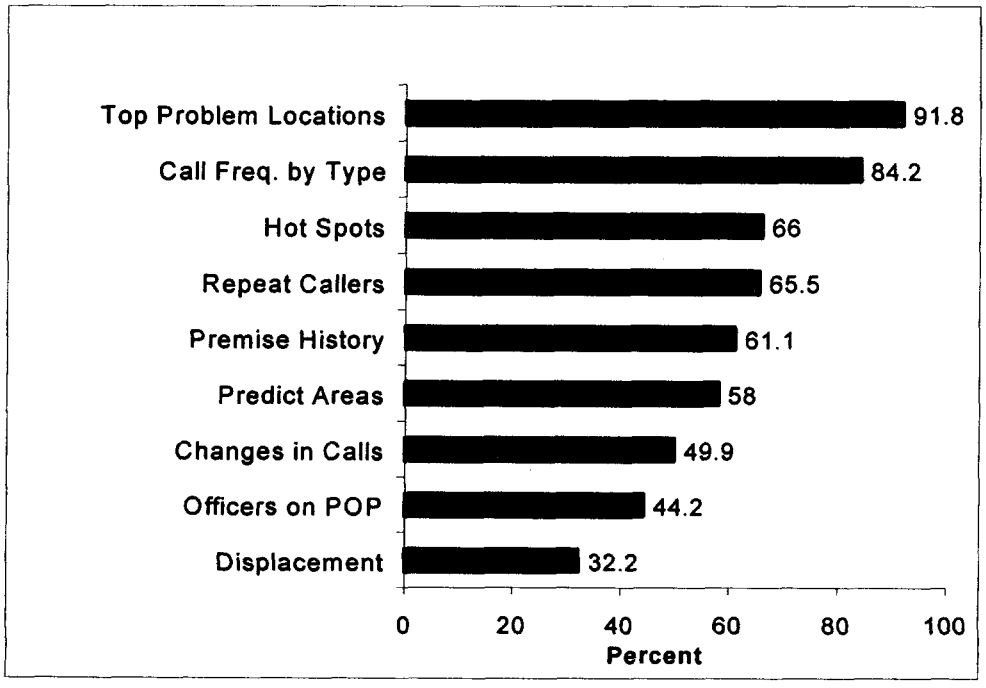
About 56 percent of respondents had a Telephone Reporting Unit (TRU), with TRUs used in 88 percent of large, 70 percent of medium-sized, and 33 percent of small departments. Only 6 percent of respondents used Internet reporting; and only 3 percent reported having 3-1-1 systems in place, although 93 percent of large departments indicated that they have discussed this possibility.

Community Policing Measures

Several survey questions asked about the extent to which departments are using various community policing measures in the areas of problem solving, resource allocation, support for specialized initiatives, management accountability, and community involvement/satisfaction. Since the questions did not specifically ask whether the CAD system generated the data for the various measures, it is likely that some data was obtained from other sources.

Problem Solving Measures. Exhibit 5 shows the percent of departments currently using each of nine measures for problem solving. Nearly 92 percent of departments report identifying top problem locations and 84.2 percent analyze call frequency by type of call. In contrast, only about half (49.9 percent) use information on changes in calls for service to assess problem solving efforts; 44 percent determine which officers are performing problem solving work; and one-third analyze displacement with respect to problem solving. Fifty departments (12 percent) reported use of all nine measures for problem solving.

Exhibit 5: Problem Solving Measures



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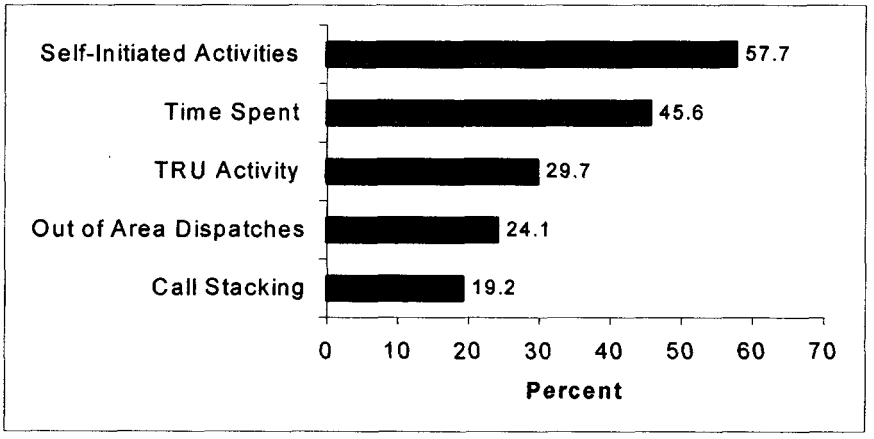
A separate question asked about use of data on problem type and problem location specifically to support special initiatives or units (e.g., gang unit). About three-fourths of respondents reported analyzing both types of data to support special initiatives.

Resource Allocation Measures. Exhibit 6 shows that a majority of departments (57.7 percent) assess officers' self-initiated activities, although less than half analyze time spent at a location or on a problem. Less than one-third analyze TRU activity (29.7 percent), review out of area dispatches (24.1 percent), or analyze call stacking activity (19.2 percent).

Exhibit 6: Resource Allocation Measures



Management Accountability Measures. Two measures that might be used in holding managers accountable for community policing activities are number and types of calls (e.g., in the geographic area for which a manager is responsible), and complaint calls. Almost two-thirds of departments (65.3 percent) said they captured and analyzed complaint calls and another 20 percent said they plan to do so. Similarly, 60 percent of departments said they use number and types of calls for management accountability purposes and 23 percent said they plan to do so.

Community Involvement and Satisfaction Measures. Five measures related to community involvement and citizen satisfaction were listed in the questionnaire (see Exhibit 7). The vast majority of agencies (93 percent) report making referrals to other agencies, and about three-fourths (76 percent) do some type of victim follow-up. More than half of departments capture information on community meetings (66 percent) and use surveys to measure citizen satisfaction (57 percent). Only one-third of departments currently use measures of fear (the survey did not capture the types of measures used).

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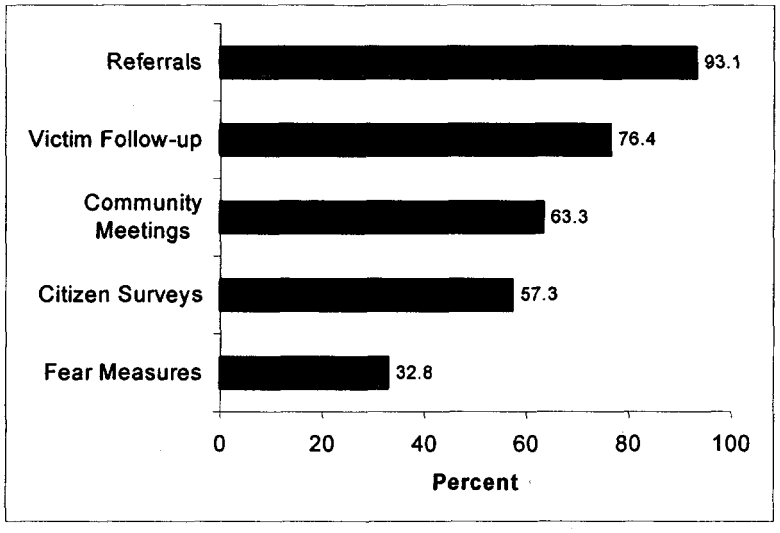
Exhibit 7: Citizen Involvement and Satisfaction Measures



Other Survey Results

- Only 30 percent of departments said their CAD systems kept records of citizen calls received by the communications center where no official response was made by the police (for example, the call was transferred to another agency).
- A large majority of respondents (84 percent) reported using call types that are specific to community policing.
- 63 percent of departments said crime analysis was performed by a centralized unit; 30 percent reported having both centralized and decentralized units; and 7 percent reported using only a decentralized unit for crime analysis.

Summary of Findings

It is clear that existing CAD systems—although designed to support a traditional, professional model of policing—do in fact provide useful data for measuring new objectives under community policing. Overall, the CAD-supported community policing measures included in the survey appeared realistic not only to the three case study sites, but also to a broader range of departments. However, there were a number of areas where CAD data were underused.

- *Access to Data Captured by CAD.* In about half of the surveyed departments, CAD systems capture considerable data that is not easily retrieved. In other words, nearly half of departments rely on "canned" CAD reports.

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- *Location Data for CFS Analysis.* In some departments, analysis of location data lacks precision. Although 88.3 percent of departments analyze CFS data by street address, 45 percent do not analyze by apartment or suite number.
- *Data on Type of Call.* Thirty-six percent of departments do not use data on "final call type" (based on officer assessment) in their analyses.
- *Referrals to Other Agencies.* Most agencies lack the capacity to analyze calls that are referred to other agencies, with only 30 percent of departments reporting that their CAD systems keep records of such calls.
- *Crime Analysis.* Crime analysis is still a centralized function for most police agencies (63 percent).
- *Problem Solving.* Only about half of departments have adopted problem solving techniques, have developed information systems to support problem solving, or have analyzed data on changes in CFS to help assess problem solving efforts. Less than half of departments analyze data on displacement or data indicating which officers work on problem solving.
- *Resource Allocation Measures.* It was surprising that only 24 percent of departments analyze out of beat or out of area dispatches, which can reduce officer time for pro-active work (as well as increase response times). Analysis of officer-initiated activities is more extensive, however, with 57.7 percent of departments assessing self-initiated activities and most others planning to do so.[4]

Implications for Policy and Practice

Compared to 15 years ago, CAD systems are much more than an efficient means of dispatching police cars to handle calls. However, as noted above, there are a number of areas where CAD data was either underused in measuring community policing, or if used, was not as reliable as it should have been.

Need for More Precise Data in CAD Systems

The final call type, which reflects an officer's assessment from the scene, may differ from the initial call classification based on information from the caller. Unless CAD data analysis includes the final call type, it will not accurately reflect the nature of crime-related calls and other problems that are phoned into the communications center. Addressing this issue is generally more of a policy issue than a technical one. Departments need to make it routine practice for officers to report the actual nature of a call for service once they have completed their "run." Depending on a department's CAD capabilities, officers may do this by phoning the information in to the dispatcher, or they may be able to enter final call type via mobile digital

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computers in the field. A more significant issue is to increase supervisors' understanding of why final call type data is important. In many departments, it should be possible to identify officers/units that do not provide this information. In turn, supervisors can be held accountable for ensuring that this is done.

Similarly, new procedures would be needed to capture officer activity on calls and other requests for police service (e.g., walk-in requests) that CAD does not capture. To the extent that these tend to be requests of a non-emergency nature, the need to capture this information may not be obvious. However, the data can be significant for avoiding undercounts of calls/requests to police; and it can be valuable for problem solving (e.g., identifying quality of life problems and fear-related issues that can be addressed before they become more serious).

Finally, departments need to assess the value of data on calls referred to other agencies for identifying community problems. Most departments do not capture data on these calls, yet they represent an opportunity to identify problems and to understand how the department is handling the total demand for service. Departments might begin by analyzing a sample of referral calls and assessing the value of this information. Creating several new classifications for calls not receiving an "official" police response could increase the value of the data.

Need to Refine Call Classification Schemes

Another problem with CAD system data is that many police departments use code classifications systems designed under a professional policing model. Those schemes need to be significantly changed to reflect the data needed under community policing. Classification schemes based almost entirely on local ordinances and state laws fail to capture data on quality-of-life and other issues of interest to community policing. A significant overhaul of the classification schemes may be needed in this regard. Similarly, CAD data can assist in measuring fear of crime—if the classification scheme for calls has the correct categories—by providing data about suspicious persons, suspicious automobiles, gangs, and other problems related to citizens' fear.

Need for Greater Application of CAD Data for Problem Solving

Only half of departments surveyed currently use data on changes in calls for service to assess problem solving efforts, and fewer than half use CAD data to analyze

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displacement—another potential measure of problem solving effectiveness. Greater use of CAD data to measure effectiveness can be encouraged—at least in part–by improving the accuracy and relevance of the data and by providing officers with decentralized access to user friendly applications that import selected CAD data. A second part of the solution is for management to place a greater emphasis on measuring problem solving effectiveness. This in turn relates to issues of training, leadership, accountability, and organizational culture.

Need for Data on Officer Time Devoted to Problem Solving

CAD systems already use codes to capture self-initiated activities of patrol officers and other personnel. The list of self-initiated activities can be expanded to include problem solving and other activities, such as community meetings and school visits. Implementing new codes for self-initiated activities is probably more a matter of will, policy, and management emphasis than technical capability. Departments that want to capture this information will need to be prepared to sell officers on the need, explain how the data will be used, and follow up to ensure compliance. A number of officers and supervisors interviewed during the case studies recommended assessing and rewarding problem solving work done by teams rather than scrutinizing time spent by individual officers.

Need for Improved Access to CAD Data

CAD data is generally difficult to retrieve, and only about half of the departments surveyed export CAD data to other programs for analysis. Exporting CAD data to a Geographic Information System (GIS) is an increasingly popular option for crime and problem analysis; the challenge is to enable officers to create their own useful maps without having to wait for a crime analyst to process their requests.

Vendors who develop CAD software are the key to improved access to CAD data. The underlying structure of the CAD system is necessarily complicated. CAD vendors' emphasis is on data structures and an underlying programming code that operates efficiently in a real-time environment. In the past, vendors have been far less concerned about uses of their data after the incident has been completed. However, there are several ways in which vendors can be enticed to make their systems more accessible to users.

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In today's marketplace, the movement is toward "open architectures," which provide buyers with detailed information on the data structures of systems. Police departments should demand these open architectures as part of a procurement process for a new CAD system. Of course, if the CAD system is already in place, then this option cannot be exercised. In this circumstance, a police department still has options. One is to contract directly with the vendor to provide modules for more detailed data from the CAD system that would be useful in the department's efforts on community policing. This approach is admittedly expensive. An alternative is to garner support from the vendor's User Group, which is comprised of representatives from all police departments that have acquired their CAD software.

Assuming that improvements can be made to data access, police departments still have their work cut out for them in three areas: (1) training, (2) access to computer terminals, and (3) a greater emphasis by management on data analysis. Training should provide examples of real crime-related problems and resource allocation issues from the department. Recruits at the academy or in field training should also be familiarized with resources available in the department for accessing CAD data. Finally, many supervisors do not realize how CAD data can help them analyze problems and manage their team's resources. If they do not see these benefits themselves, providing free time and computer access for officers will not be a priority.

Finally, the survey for this project showed that in most departments, requests for CAD data from officers, supervisors, and managers typically go to a centralized crime analysis unit. Until officers have easier access to CAD data themselves, out of date or irrelevant reports—which, historically, have been frequent complaints from field operations—may remain a deterrent to the use of CAD and other crime analysis data. Potential solutions include (1) streamlining the request and approval processes for obtaining customized crime analysis reports, (2) assigning existing crime analysts specific geographic responsibility, whether they remain located at a central office or work at a substation, and (3) surveying officers and supervisors about the types of data they consider valuable and providing that data routinely, perhaps in lieu of other regular reports that are not well used.

Need for Linkages to Other Systems

Linkages to other information systems could enhance the utility of CAD systems even further. For example, most CAD systems assign a complaint number to crimes and traffic

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accidents. Reports on serious incidents usually are entered into separate databases for analyzing the characteristics of these events. However, it is rare that linkages are established between these systems and the CAD data. The technical obstacles for making these linkages are not significant. The complaint number is usually the key between them. With most database applications, it is fairly simple to merge records together using the common complaint number as a key.

Need for Additional Analysis to Support Resource Allocation Decisions

Many departments are using calls for service (and other) data to determine new beat boundaries or patrol service areas to support geographic deployment under community policing. However, there are several areas where CAD data appear to be under-used with respect to resource allocation. For example, fewer than one-third of the departments currently analyze out of area dispatches or TRU activities, both of which can have an effect on officer time for problem solving and other pro-active work.

Most agencies are familiar with service standards for emergency response and other traditional policing services (for example, police will respond to true emergencies in less than 4 minutes). But far fewer departments (and communities) have come up with similar standards for new services under community policing. The result is that there may be high public expectations for community policing without a full exploration of the staffing implications. Not only must departments assess how officer time can be freed up through appropriate call handling alternatives, they must also involve the community in clarifying how officers should be spending that free time.

Finally, with respect to management accountability, interest in meetings such as those associated with Compstat has grown around the country. Community policing departments need to include data on calls for service to inform meetings like these since it provides a more complete picture of the issues that concern citizens enough to call the police.

Recommendations for Future Research

The survey conducted for this project included nine potential CAD-supported measures for problem solving. Fifty departments (12 percent of respondents) reported that they used all nine measures. Taking a closer look at these departments' use of CAD (and other) data for problem solving, and with what results, could reveal concrete examples of how departments can

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benefit from taking a more analytical approach to problem solving and other essential components of community policing.

The study also found that if data are not easy for officers to obtain, the chances of their using it to support problem solving are slim. Evaluations of new systems that provide decentralized access to CAD (and other) data would be of particular value to practitioners.

This project also suggested that departments can benefit from analyzing calls for service that did not receive an official police response (e.g., were referred by call takers to other agencies or resolved by communications center personnel). The value of these data for identifying emerging problems or measuring fear, however, has not been fully explored. A closer examination of the value of these data, perhaps combined with data from 3-1-1 systems or other agencies' intake records, could move this concept from the realm of theory to that of practice or reveal whether significant obstacles exist that might prevent this approach.

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Brief History and Overview of CAD Systems

The St. Louis, Missouri, Police Department is credited with the first CAD application in 1965. Powered by a computer occupying half a floor in headquarters, it enhanced the communication center's operation and improved patrol deployment. By the mid-1980s, virtually every medium and large-size police department recorded activities of its patrol officers through CAD applications. Also about this time, E9-1-1 or "enhanced 9-1-1" systems appeared that displayed the address of the telephone from which a call was made and permitted the call taker to hold a line open while the problem was investigated. By 1985, 89 of the 125 largest cities had E9-1-1.

Over the last 20 years, CAD systems have been expanded to handle call priorities, multiple unit dispatches, fire and medical emergencies, telecommunications to state and national inquiry systems, mobile digital terminals in patrol units, citywide emergency communication provisions, and many others. Many police departments have developed patrol allocation plans using queuing models with CAD calls for service as the input "demand" and patrol units as "servers." The queuing models calculate the number of units needed to satisfy predetermined efficiency objectives set by a police department. For example, the models can estimate how many patrol units would be needed to achieve an average travel time of 4 minutes to all citizen calls for service, or estimate the number of units needed to meet a predetermined objective for patrol time on preventive patrol, problem solving, directed patrol, or other activities.

Today's CAD systems are further enhanced with applications linking to a department's records management system. In addition, some cities have implemented the 3-digit number, 3-1-1, for citizens to call for needed services, including police responses to non-emergency situations. Operationally, the telephone company converts the 3-1-1 number to the non-emergency 7-digit number normally used at the police department. From a CAD viewpoint, the introduction of 3-1-1 has no effect on the system. Call takers enter the same information into the CAD system, and the system then takes appropriate actions for handling the non-emergency event, such as assigning a lower priority to the dispatch or routing the call to a telephone report unit.

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Policing for Prevention in the District of Columbia

MPDC is in a unique position as the primary law enforcement agency for the nation's capital. MPDC routinely handles demonstrations and special events, protects various federal facilities and dignitaries, and coordinates with more than 20 separate law enforcement agencies that have limited jurisdiction within the District. In the District of Columbia, community policing, known as "Policing for Prevention," is a fairly recent development.

The PFP organizational strategy was developed under Chief Charles Ramsey in 1998 and aims to (1) intervene early and effectively in crime problems through more focused and proactive law enforcement; (2) help stabilize communities through neighborhood-based problem solving; and (3) promote long-term (systemic) prevention by addressing the underlying conditions that lead to crime. Focused law enforcement emphasizes addressing hot spots of crime and disorder, repeat offenders, and repeat victims. It also gives priority to the most serious crimes, to crimes that most concern a particular community, to groups at highest risk for violence and other victimization, and to communities in distress or transition.

Prior to Chief Ramsey's appointment, the department had already begun a move toward community policing by revamping the beat structure and subdividing its seven police districts into 83 Police Service Areas (PSAs). The PSA structure is used as the basis for deployment of resources, assignment of calls for service, accountability, community relations, crime analysis, and problem solving. Milestones over the past several years have included:

- Replacing the sergeants who managed the PSAs with lieutenants
- Implementing a top-to-bottom geographic-based organizational structure with three Regional Area Commands, each headed by an assistant chief
- Launching Partnerships for Problem Solving to train officers, volunteers, and other agency representatives in problem solving and related skills
- Introducing new management tools, including PSA Action Plan forms and Targeted Organizational Performance Sessions (TOPS)
- Adopting a Performance Management Program designed to evaluate performance of the ranks of lieutenant and above
- Creating the Policing for Prevention Group to be responsible for researching, planning for, and implementing community policing in the department.

In addition, the department has been replacing all major information systems, including the CAD system (which was cut over in December 1999), a 3-1-1 system (November 1999), and an investigative case management system (January 2001). The MPDC was also planning a new automated field reporting system, records management system and by December 2003, a new police personnel performance management system.

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Endnotes

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1 The Community Policing Consortium defines community policing as follows: " At the center of community policing are three essential and complementary core components: community partnership, problem solving and change management.... Change management requires a clear recognition that forging community policing partnerships and implementing problem solving activities will necessitate changes in the organizational structure of policing." http://www.communitypolicing.org/about2.html (November 20, 2001).

2 Gary W Cordner, "Community Policing: Elements and Effects." In Critical Issues in Policing: Contemporary Readings (Third edition), edited by Roger G. Dunham and Geoffrey P. Alpert. Prospect Heights, Illinois: Waveland Press, 1997.

3 During this period, ILJ had a separate grant from the COPS Office to study call management strategies for community policing, with a survey planned for that project as well. The researchers felt there was enough overlap to combine the surveys for the two projects. Thus the 24-item survey instrument included questions on call management strategies in addition to questions on CAD and community policing measures.

4 Unfortunately, we could not tell from this survey the extent to which departments use CAD codes for problem solving, community meetings, and similar activities associated with community policing. Two-thirds of departments (66 percent) currently capture information on community meetings, but not necessarily via the CAD system.

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Chapter 1

Introduction and Project Overview

Community policing represents a broadening of police functions, including an emphasis on objectives to solve problems, prevent crime, build partnerships with citizens and other organizations, and provide neighborhood-oriented services. An unresolved issue is how to measure success in those endeavors. As Langworthy (1999) explains, "It is no longer sufficient to measure organizational crime-control prowess (which we never did very well). Now we must address crime control plus the expectations created under the rubric of community policing."

Since their introduction in the 1960s, computer-aided dispatch (CAD) systems have been the supporting backbone for measuring the performance of patrol operations. They operate in real-time environments in police communications centers to (1) record information from citizens who call for police assistance, (2) assist dispatchers in sending patrol units and supporting units to scenes, (3) track the activities of all field units, and (4) provide data to police managers for improved resource allocation of patrol personnel. In these capacities, CAD systems became a key data source for describing what police officers actually do during their tours of duty. Under the professional policing model, CAD data has served as the basis for performance measures important to the two key objectives of professional policing: effecting arrests to reduce crime and satisfying citizens with rapid responses to *all* calls for service. In fact, private vendors developed CAD systems to support professional policing by providing the technological means of minimizing the time required to dispatch patrol units to scenes and by providing tools to police managers to allocate police resources more effectively for rapid responses and increased arrests.

Under community policing, those objectives have been modified and other objectives have been added. While police departments maintain their interests in effecting arrests, community policing brings an emphasis on problem solving to prevent crimes in the first place. Moreover, today's emphasis continues the objective of providing a rapid response to true emergency calls but introduces flexibility for handling non-emergency calls. Under community policing, non-emergency calls may be handled by taking a report over the telephone, holding the

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call in the CAD system until the unit in the area of responsibility becomes available, allowing citizens to report minor offenses online, and other means.

The key question addressed in this research project was to determine the extent to which CAD systems can support community policing and measure performance under new community policing objectives. In a sense, the project asks whether you can "teach an old dog new tricks." Our conclusion, as documented in this report, is in the affirmative. CAD systems have much to offer to community policing because of the richness of the basic data that is collected. However, they could be even more effective through enhancements that would more directly support several new objectives under the community policing model. These changes are discussed later in this report.

Measuring What Matters for Community Policing

The project described in this report was conducted by the Institute for Law and Justice (ILJ) and sponsored by the National Institute of Justice (NIJ) under its "Measuring What Matters" initiative. In its solicitation, NIJ posed two questions about the relationship between CAD systems and the need to measure police processes under community policing (NIJ, 1997):

- How can coding and reporting of CAD and service call data be improved to better serve police operations and performance evaluation?
- How can measures be improved to take into account time and space information on crime, communities, and policing activities?

In response to those questions, the ILJ research team explored (1) current uses of CAD to support community policing, (2) new ways to use CAD data for performance measures under community policing, and (3) changes in CAD systems and related policies that may be needed to better support community policing. The project also looked at uses of CAD data to support other measurement approaches, such as citizen surveys.

The importance of CAD systems for community policing was emphasized by Darrel Stephens (1995) at the first meeting of the Policing Research Institute:[1]

[1] The Policing Research Institute was a series of three meetings sponsored by NIJ and the COPS Office in 1995 and 1996 to examine the implications of community policing for measuring organizational performance. At the time of the statement, Darrel Stephens was Chief of Police, St. Petersburg, Florida, Police Department.

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> Police call data is one of the best sources of information that police have–and least exploited–about citizen concerns and their (the police) work in general. Calls about noise disturbances, street corner drug dealing, drinking on the street, graffiti, etc. are all good indications of the concern about disorder. Regular analysis of call information–frequency, type, location, etc.–can give police a strong indication of the nature of the problems and in some cases, insight into what might be done to improve the situation.

In short, citizens call police departments about what matters to them. Police departments under community policing need to develop objectives for addressing crime-related problems and develop new measures that assess police performance with respect to the new objectives and activities. Measures of quality-of-life offenses, citizen fear, and police problem solving efforts should be prominent.

CAD systems are potentially more beneficial than in the past precisely because they capture crucial data for measuring these important matters. However, the CAD systems at many departments have not kept pace with community policing objectives. The vast majority of departments nationwide are now operating under community policing, but they continue to use CAD systems developed for professional policing.

One possible reason for this is that a change to community policing requires an extraordinary amount of organizational energy, with continued energy needed to sustain the change. Departments may simply not have had the time and energy to focus on the role of CAD systems in community policing. Another reason may be that departments are unsure what they want for performance measurements under community policing; therefore, they are unsure how to take advantage of CAD data. Making changes to CAD systems or requiring more reports from CAD data also have financial implications, since most departments have purchased their systems from outside vendors at considerable cost. Finally, in some departments there may be a feeling that information systems in general are not as important under community policing. Whatever the reasons for lack of attention, the time was ripe for this project's examination of CAD's potential to support community policing and measure performance.

Our starting point involved looking at CAD systems that have evolved over many years, rather than devising a new measurement system. With this in mind, the project addressed the following key questions:

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- Can CAD data be used in different ways to support community policing and develop measures for what a department is doing under community policing?
- Do CAD systems have to be changed in subtle, or perhaps more fundamental, ways for community policing?
- Are call classification systems in communication centers adequate for community policing needs?
- What should be the link between CAD systems and problem solving activities?

Overview of Project Approach

ILJ completed this project with the support of three police departments that participated in case studies and assisted with other research objectives: San Diego, California; Aurora, Colorado; and the Metropolitan Police, District of Columbia (MPDC). All three departments were interested in exploring how their CAD systems could be used more effectively. San Diego and Aurora have been national leaders in changing their departments to a community policing approach. While their CAD systems were instrumental in planning some of those changes, these departments had not developed new measures from CAD data; and they had not significantly changed their CAD systems for better support of community policing.

The shift to community policing in the MPDC gained momentum in 1998 with the appointment of a new chief of police, Charles Ramsey. Shortly after his appointment, the department embarked on a major effort to replace all information technology (IT) systems in the department, beginning with the CAD system. These changes were made with the MPDC's own version of community policing in mind ("policing for prevention") and offered an excellent opportunity to build in new ways to help measure performance.

In fact, each department was implementing its own version of community policing, and this is not surprising. As discussed in Chapter 2, there is general agreement throughout the country on several key principles of community policing but much diversity in terms of emphasis and approach. Thus an important initial task for this project was to closely examine the history, context, implementation, and current objectives for community policing at the three sites.

After clarifying what each department was striving to accomplish through community policing, the study team examined the CAD systems and current CAD applications at the three departments. We were then able to work with commanders, supervisory personnel, patrol

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officers, and others to identify how current CAD data could be more effectively used in support of community policing, what deficiencies existed in the CAD data, and how these deficiencies could be alleviated. This task also involved conducting interviews with vendors who had provided and supported the departments' CAD systems and reviewing system documentation.

At this point in the study, the research team developed "prototype" measures of interest for community policing from samples of CAD data at all three sites and obtained feedback from the sites on those measures. The researchers, with assistance from the sites, also identified changes in CAD systems that would be needed to support community policing, such as changes in data elements captured, changes in call taker and dispatcher screens, and others.

The research team believed that, together, the community policing objectives and approaches at the three case study sites would be fairly typical of those seen nationally in medium-size to large departments where there is an organizational commitment to community policing. We also believed that the CAD systems in place when the study began were fairly typical. That is, the systems were not new; they had been designed to support a professional policing model; and they had not been modified extensively to support community policing.

To validate these assumptions, ILJ conducted a survey of 420 other police departments that asked, among other things, whether the proposed performance measures made sense in their departments and whether their CAD systems were capable of providing the measures. In addition, we conducted a technical examination of a widely used commercial CAD system to help ensure that our recommendations for system enhancements and modifications would be realistic.

A final project objective was to disseminate our findings on CAD support for new community policing measures. We are committed to enhancing the information provided on ILJ web pages dedicated to this project, and we have been offering the findings for discussion through other forums, including policing association meetings, user groups that currently exist for CAD applications, and researcher-practitioner forums focused on measuring what matters for community policing.

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Report Organization

The next chapter (Chapter 2) explains the framework used for analyzing CAD support for community policing. It reviews how policing organizations have been shifting from a professional model adopted to achieve greater efficiency and accountability toward a community policing model that takes a much broader view of police work. We also discuss the fit between CAD systems and the professional model; discuss why new measures are needed for community policing; and review specific ways in which CAD systems might support these new measures.

Chapters 3 and 4 discuss the extent to which CAD systems are currently used to support new community policing measures. Chapter 3 summarizes the case studies at the three sites with an emphasis on their community policing activities and a review of their current CAD systems. Chapter 4 provides a variety of prototype, CAD-supported, community policing performance measures identified by the research team in cooperation with the study sites. Chapter 5 reports on the results of our survey of police departments, which was conducted primarily to validate the prototype measures. It also offers conclusions based on both the case studies and survey results.

Chapter 6 summarizes our findings on how CAD support for community policing can be enhanced. It highlights data that hold promise for measuring community policing but that are often underused or misinterpreted. Technical issues and solutions, as well as needed changes in policies and procedures, are also discussed. Finally, this chapter comments on the needs assessment process with respect to acquiring new CAD systems, areas for future research that might be of particular value to police practitioners, and the concept of changing the organizational culture toward one that places a higher value on data analysis.

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Chapter 2

Policing Models and the Role of CAD Systems

CAD Systems and Professional Policing

Policing is often described as having gone through several philosophical evolutions to reach today's emphasis on community policing (Reiss, 1992; Goldstein, 1990; Sparrow, 1988; Kelling and Moore, 1988; Langworthy and Travis, 1994). Peacekeeping, order maintenance, and service responsibilities were prominent in this country's earliest police organizations (Van Maanen, 1978; Walker, 1995), which are described by some as following a "watchman model." The period extending roughly into the 1930s is often called policing's "political era." During those years, emergency response capabilities grew, but decentralized control made precincts subject to political manipulation and corruption. Eventually, the decentralized organizational structures found in larger departments also proved inadequate for managing services enhanced by "new" technologies (telephones, radios, cars).

The "reform era" launched in the 1930s eventually produced what is called the professional model of policing. This model is characterized by a centralized command structure, which was intended to control political influences and corruption as well as manage police work as supported by new technologies. In fact, the introduction of 9-1-1 as an emergency number is seen as a driving force behind the centralization of police services in the professional era (Maguire, 1997), and rapid response became a primary strategy for addressing serious crime. Professional police organizations are often characterized as closed and isolated from the public, with officers on random patrol staying in their cars and administrators reluctant to share information or decisionmaking processes with citizens. On the positive side, other reforms included a new emphasis on education and training, as well as increased pay and benefits for officers.

Brief History and Overview of CAD Systems

CAD systems have both supported and served as a driving force behind the professional model of policing. The St. Louis, Missouri, Police Department is credited with the first CAD application in 1965 (Colton, 1978; Larson, 1978; Manning, 1992a). Powered by a computer

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occupying half a floor in headquarters, it enhanced the communication center's operation and improved patrol deployment (McEwen, 1966). By the mid-1980s, virtually every medium and large-size police department recorded activities of its patrol officers through CAD applications. Also about this time, E9-1-1 or "enhanced 9-1-1" systems appeared that displayed the address of the telephone from which a call was made and permitted the call taker to hold a line open while the problem was investigated. By 1985, 89 of the 125 largest cities had E9-1-1.

Over the last 20 years, CAD systems have undergone a series of what S. C. Gilfillan, historian of science, would characterize as *evolutionary improvements,* including expansion to handle call priorities, multiple unit dispatches, fire and medical emergencies, telecommunications to state and national inquiry systems, mobile digital terminals in patrol units, citywide emergency communication provisions, and many others. With support from the Federal government, many police departments developed patrol allocation plans using queuing models with CAD calls for service as the input "demand" and patrol units as "servers" (McEwen, 1966; Bottoms, 1972; Larson, 1978; Chaiken *et al.*, 1975). The queuing models calculated the number of units needed to satisfy predetermined efficiency objectives set by a police department. For example, the models could estimate how many patrol units would be needed to achieve an average travel time of four minutes to all citizen calls for service. Other objectives could be included in the queuing analysis, such as estimating how many units would be needed to assure a predetermined objective on patrol time for preventive patrol or always having a predetermined minimum number of patrol units available for emergency calls. Today, new CAD systems purchased by police departments are further enhanced with applications linking to a department's records management system.

The next sections provide a general overview of call taking and dispatch activity, as well as CAD system elements. This is followed by a discussion of CAD systems and their support for performance measures for professional policing.

Communications Center Operations and CAD System Elements

A CAD system is the primary information technology for police communications centers to process calls for service. Designed as a work order processing system, a CAD system defines the information that a call taker will collect. The system then transfers that call (work order) to the dispatcher assigned to cover the geographic area in which the incident is occurring. The

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CAD system recommends police units based on the location, type of call, and availability of police units. Tracking every dispatcher action and change in resource status, the system creates a comprehensive history of the police actions associated with an event. Because of their essential role coordinating and automating the police response, almost all work done by communications centers is processed through the CAD system.

Call Taking Activity

Calls for service received through a 9-1-1 system or via a department's non-emergency seven-digit numbers are answered by designated 9-1-1 operators (call takers). As the primary answering point for all 9-1-1 calls originating within a jurisdiction, the call taker first determines if the caller needs police, fire, or emergency medical assistance. If the call is an emergency request for fire or emergency medical services (EMS), the call taker immediately transfers the caller to the appropriate service. If the call requires a police response, the call taker begins a screening process to determine the citizen's specific needs. Based on these needs, the call may be sent to a dispatcher for assignment to a field unit, sent to a telephone report unit (TRU), or handled directly by the call taker (e.g., by providing referrals to other agencies).

Several cities have implemented the three-digit number, 3-1-1, for citizens to call for needed services, including police responses to non-emergency situations.[2] In Dallas, where 3-1-1 is a city service, call takers felt that the use of 3-1-1 reduced the number of times citizens get transferred when trying to reach various city departments. For police departments with 3-1-1 as a non-emergency number, a key advantage is that 9-1-1 is maintained for its original intent as a quick way of contacting police in true emergency situations. Operationally, the telephone company converts the 3-1-1 number to the non-emergency seven-digit number normally used at the police department. The advantage of the 3-1-1 number is the convenience to citizens of simply having to remember a three-digit number to call rather than the seven-digit non-emergency telephone number. Police departments with 3-1-1 numbers usually have a designated group of call takers to receive these calls while another group is devoted to 9-1-1 calls. From a CAD viewpoint, the introduction of 3-1-1 has no effect on the system. Call takers enter the same information into the CAD system, and the system then takes appropriate actions for handling the

[2] For example, Chicago, Illinois, and Dallas Texas, use 3-1-1 as a number to call for all citywide services. The police departments in Baltimore, Maryland; San Jose, California; Detroit, Michigan, and Las Vegas, Nevada, have established 3-1-1 for non-emergency police services.

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non-emergency event, such as assigning a lower priority to the dispatch or routing the call to a telephone report unit.

When a call requires the assignment of a field unit, the call taker will normally enter the event address, the nature of the call, and other relevant information into the CAD system. Searching a geographic file (geofile) validates the address. The geofile match results in the determination of the police area of responsibility (e.g., district, beat, precinct, reporting area, etc.), and the system routes the call to the correct dispatcher for that area and recommends available units for assignment.

Dispatching Activity

Calls for service are automatically routed to dispatchers based on the location of the event. When the dispatcher receives the incident information, the CAD system includes recommendations on units for assignment based upon the event location, call type, and unit availability. Calls are then dispatched first by priority and then by the time received. Hence, the highest priority, oldest incidents are dispatched first. Units are selected for assignment by service area with any patrol car in that area having the ability to handle the call.

An interesting feature of most CAD systems is that they maintain an on-line history–usually six months–of calls for police service. The dispatcher therefore has immediate information available on prior calls to a specific address and can relay relevant information to responding patrol units. CAD systems can also maintain notes about a specific location, such as the knowledge that the location is a known drug house. This information can also be provided to responding officers for an extra margin of safety.

A CAD system automatically time stamps many activities related to incident processing. These time stamps are added, for example, when the initial call is received into the communications center, the call is transferred to the dispatcher, a patrol unit is assigned, the unit arrives at the scene, and the incident is completed. The time stamps are then used to create subsequent reports from the CAD data to provide information on the amount of time that field units devote to citizen calls. Under community policing, this information is important because it provides an indication of how much time remains for community policing activities. These reports are a good example of how a CAD system can provide support to community policing without any changes to the system itself.

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Summary of CAD System Elements

CAD systems, including the systems in the three participating police departments, have several common features. They record and store the following information about citizen calls:

- Information provided by the caller about the time and location of the incident, along with a short narrative on the problem
- Information about the police response including all units dispatched to the incident, time of dispatch, time of arrival, and time completed (for each incident)
- Information about officer activities at the scene, such as record checks on automobiles and people at the scene
- Comments between officers and dispatchers about the incident (entered through mobile digital computers (MDCs), such as problems in finding the address or complainants gone on arrival
- Information on whether arrests occurred at the scene, whether a crime report was written, whether specialized units (e.g., crime scene units) were requested, the final disposition of the incident, and other information of local use.

CAD applications also provide information to dispatchers and field supervisors about the status of all units and about pending calls (i.e., calls that have not yet been dispatched because all units are busy). In addition to citizen calls, CAD applications record information about self-initiated activities by patrol officers, including the type of activity (car stop, suspicious person stop, etc.) and the time of the activity. Moreover, all of the above information is captured not only for patrol officers, but also for any other personnel in the field –sergeants, detectives, traffic units, canine units, and others.

CAD Systems and Performance Measures for Professional Policing

The professional model stressed efficiency and technical competence in crime control (Manning, 1977). It emphasized the law enforcement function of the police, linking rapid response to arrests and crime reduction. Police management came to depend on automation (especially CAD systems) to guide decisions based on efficiency measures. Indeed, Carte (1976) laments that the dreams of police reformers such as August Vollmer and O.W. Wilson were transformed into a style of policing that uses professionalism as "a synonym for technology." Along the same lines, Sparrow, *et al.* (1990) quote a participant at one of Harvard's Executive Session on Policing as saying, "We have created a monster."

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The crucial point is that CAD systems were developed to support a professional policing philosophy of (1) improving operational efficiency and (2) achieving crime control through arrests. If it has become a "monster," it is because of an inherent conflict between the successful assimilation of CAD systems into police operations and the organizational movement to go "Beyond 9-1-1." A new policing philosophy emerged–community policing–but key CAD applications remained the same. Often, this problem was compounded by a failure to include communications center personnel in the process of planning for community policing.

Community Policing

The crux of the research in this project is on how CAD systems fit into a paradigm of community policing. This section reviews some of the factors that influenced the shift to community policing; reviews several frameworks for describing community policing, including one from Cordner (1995, 1997) that helped this project in linking community policing and performance measures; and discusses key measures for community policing which might be supported by CAD data and which were explored during this project.

Any number of influences converged in the 1970s and 1980s to convince policing leaders that change was needed. Research showed that rapid mobile response and random patrol were only rarely useful in catching criminals and solving crimes (Kelling, Pate, *et al.*, 1974). The public demand grew for more equitable police practices and an end to abuse of force (Williams and Murphy, 1990). Ideas like problem oriented policing (Goldstein, 1979), the "Broken Windows" theory (Wilson and Kelling, 1982) and hot spots analysis (Sherman, 1987) sparked police to think in new directions. The more generalized "reinventing government" movement and its emphasis on customer service also had ramifications for policing. Changes in population demographics, increases in drug- and gang-related violence, and economic decline in the nation's inner cities are also cited as influencing the movement toward community policing (Community Policing Consortium, 1994). In short, police and communities began to realize that a tremendous amount of organizational energy was being expended on strategies whose effectiveness was questionable.

In the early 1980s, a number of police agencies participated in experiments that paved the way for current conceptualizations of community policing. Most of the experiments were

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developed as special problem solving projects within traditional departments (Brown, 1989; Trojanowicz and Bucqueroux, 1990; Goldstein, 1990; Hayeslip and Cordner, 1987).

Newport News, Virginia, was perhaps the only department in that era to attempt department-wide problem solving (Eck and Spelman, 1987). Nevertheless, many change advocates emphasized that community policing was a philosophy, not a special program, and had a vision for organization-wide change.[3] The philosophy had wide public appeal and was pushed forward when the 1994 Violent Crime Act earmarked several billion dollars for law enforcement, with funding tied to their willingness to implement community policing.

Frameworks for Describing Community Policing

Community policing has been characterized as both a philosophy and an organizational strategy. In 1994, the Community Policing Consortium[4] in its *Framework for Action* publication stated that "[C]ommunity policing is, in essence, a collaboration between the police and the community that identifies and solves community problems." It went on to say,

> Community policing consists of two complementary core components, *community partnerships* and *problem solving*. To develop community partnerships, police must develop positive relationships with the community, must involve the community in the quest for better crime control and prevention, and must pool their resources with those of the community to address the most urgent concerns of community members. Problem solving is the process through which the specific concerns of communities are identified and through which the most appropriate remedies to abate these problems are found.

As reflected in the definition above, problem solving is considered an integral part of community policing. Goldstein's vision of problem oriented policing may be considered separately from community policing (Scott, 2000), but in a general sense, problem solving has been incorporated into the community policing philosophy adopted by most departments.

Because no single community policing model has been forthcoming for departments to follow, the actualization of this definition has occurred in a variety of ways. Moore (1994) took

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[3] There are distinctions to be made between problem oriented policing and community policing (Scott, 2000), and some of those are noted later in this chapter. We use the term community policing broadly to include both.

[4] Consortium members are the International Association of Chiefs of Police (IACP), National Organization of Black Law Enforcement Executives (NOBLE), National Sheriffs' Association (NSA), Police Executive Research Forum (PERF), and Police Foundation.

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the optimistic view that police departments are participating in a grand national experiment and that "it is partly the ambiguity of the concept that is stimulating the wide pattern of experimentation we are observing." Similarly, Skogan (1994) stated that community policing "is not a clear-cut concept, for it involves reforming decision-making processes and creating new cultures within police departments, rather than being a specific tactical plan."

Most people agree today that community policing is still evolving. Even so, there needs to be some common understanding of what community policing entails. Since 1994 when the Community Policing Consortium and COPS Office published the community policing framework noted above, others have offered definitions and conceptual frameworks to describe community policing and define its parameters. A number of these newer discussions emphasize organizational change issues. In fact, organizational change is included as a core component in the Consortium's current definition of community policing.[5]

> At the center of community policing are three essential and complementary core components: community partnership, problem solving and change management.... Change management requires a clear recognition that forging community policing partnerships and implementing problem solving activities will necessitate changes in the organizational structure of policing.

Clearly, interest in organizational change issues has increased as at least some departments have moved toward department-wide implementation. NIJ has sponsored several studies in this area that have produced frameworks for describing the change process. For example, Fleissner (1997) described community policing within departments as proceeding in four stages (awareness, experimental, commitment, and institutional), observing that no agency he studied had institutionalized the approach to the point where it had become ingrained in all agency operations.

Others completed works on organizational change and community policing as our study of CAD support was coming to a close. Greene (2000) discusses four "levels of change for community policing:" (1) environmental, which includes reductions in crime, fear, and problems; (2) individual (e.g., greater job satisfaction), (3) group (e.g., more teamwork), and (4) organizational. Included in Greene's organizational level are changes in technology and in the

[5] http://www.communitypolicing.org/about2.html (November 20, 2001).

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ways in which organizations measure effectiveness, as well as changes in culture, structure, and human resources. Connors and Webster (2001) describe organizational transformation to community policing as involving two broad stages (planning and developing, and implementing and anchoring) and discusses three factors critical to the transformation: information technology, leadership, and additional resources. Similarly, Cordner (1997) discusses changes in information technology (including CAD systems) under what he calls the organizational dimension of community policing.

In short, when the study began, it was widely held that problem solving, community partnerships, and organizational change were critical elements of community policing. To help guide our research and analysis, however, we wanted to be able to articulate more precisely what it is that community policing entails.

Cordner's Community Policing Framework

Our approach was to take advantage of the ideas put forth by Cordner (1995, 1997), which was one of the few available frameworks to describe community policing in other than broad philosophical terms (for alternative approaches published before our study began, see Cardarelli and McDevitt. 1995; Kratcoski and Dukes, 1995; and Seagrave, 1996).

Cordner (1997) identifies four major dimensions of community policing–philosophical, strategic, tactical, and organizational–along with the most common elements associated with each dimension. The philosophical dimension includes the central ideas and beliefs underlying community policing. Like a number of others (e.g., Kelling and Moore, 1988; Kennedy, 1993; Buerger *et al.*, 1999), he emphasizes that community policing represents a broadening of police functions.

The strategic dimension describes the key operational concepts that translate philosophy into action, and the programmatic dimension translates ideas, philosophies, and strategies into concrete programs, tactics, and behaviors. Finally, the organizational dimension is concerned with the restructuring of police agencies, management, and information needs.

Listed below are examples of issues under each of the four dimensions. These are discussed in greater detail below.

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Philosophical Dimension
- Citizen input
- Redefinition of functions more broadly
- Emphasis on personal service

Strategic Dimension
- Re-orientation of operations
- Emphasis on prevention
- Geographic focus

Tactical Dimension
- Partnerships with citizens
- Problem solving
- Positive Interaction

Organizational Dimension
- Structure
- Management
- Information

Philosophic Dimension. The philosophic dimension includes the central ideas and beliefs underlying community policing. Three of the most important elements of this dimension are (1) *Citizen Input* (e.g., the citizens should have open access to police organizations and the opportunity to influence how they are policed); (2) *Broad Police Function* (e.g., order maintenance, social service, and general assistance responsibilities, not just a narrow crime fighting function); and (3) *Personal Service* (e.g., tailored policing based on local norms and values and individual needs).

Strategic Dimension. The strategic dimension includes the key operational concepts that translate community policy from philosophy to action. These are the links between broad ideas and beliefs and the specific programs and practices by which community policing is implemented. The key elements associated with this dimension are (1) *Re-Oriented Operations* (e.g., focusing on positive interactions, replacing ineffective and isolating practices with more effective and interactive practices, and increasing the efficiency of traditional functions to enable officers to free up time for community-oriented activities); (2) *Geographic Focus* (e.g., emphasizing a geographic basis of assignment and accountability by shifting the fundamental unit of patrol accountability from one of *time* to one of *place*); and (3) *Emphasis on Prevention* (e.g., achieving a more proactive and preventive orientation, encouraging better use of patrol officer time on pre-planned or directed patrol activities, and fostering a greater emphasis on social welfare, particularly with respect to juveniles).

Tactical Dimension. This dimension focuses on identifying the concrete programs, practices, and behaviors a police agency uses to translate its underlying community policing philosophies, ideas, and strategies into action. The key elements of this dimension are (1) *Positive Interaction* (e.g., officers should seek opportunities to engage in positive interactions

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with members of the community, looking at every call for service as a chance for positive interaction, quality service, and problem identification); (2) *Partnerships* (e.g., police not only cooperate with citizens and community, but actively solicit input and participation); and (3) *Problem Solving* (e.g., whenever possible police attention should be directed towards underlying problems and conditions. Problem solving should be a standard operating method, not an occasional special project, and should involve community input and partnerships).

Organizational Dimension. This dimension recognizes that implementation of community policing is greatly influenced by the organizational environment. As Cordner describes it, the organizational elements are not really part of community policing *per se*, but they are often crucial to successful implementation. These elements include: (1) *Structure* (the types of restructuring most commonly associated with community policing include decentralization, flattening, de-specialization, teams, and civilianization); (2) *Management* (e.g., styles of leadership, management, and supervision that give more emphasis to organizational culture and values than to written rules and formal discipline; statements of mission and values; continuous strategic planning focused on mission accomplishment and adherence to core values; coaching, empowerment, and support for intelligent risk taking); and (3) *Information* (e.g., access to the type of quality information that has not traditionally been available in police agencies, including performance appraisals tailored to COP, program evaluation, departmental assessment, information systems that support broader police functions than just enforcement and call handling, crime analysis, and geographic information systems.

In summary, we were able to describe community policing at the three sites in terms of these dimensions and then determine how CAD applications related to them. This systematic approach to identifying community policing measures also allowed for comparison across sites in terms of measurement needs.

Community Policing Variations and Alternative Approaches

It is clear that community policing implementation varies considerably from one jurisdiction to the next. However, not everything done in the name of community policing actually is. For example, some departments operate a collection of community outreach programs (e.g., Neighborhood Watch, citizen's academy, Explorers, public information campaigns, volunteer programs). It is likely that many of these programs pre-dated community

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policing (Gaines, 1997; McEwen and Pandey, 1997). These efforts do engage community members in policing activities, but if a department is not engaged in problem solving or organizational change, it could not legitimately be said to be doing community policing according to the most widely accepted definitions.

Recently, Scott (2000) listed several "movements in police reform" which he characterizes as "parallel or complementary to problem oriented policing." In addition to team policing and community policing, he includes "Broken Windows and Zero Tolerance Policing," "Crime Mapping and Hot Spot Policing," "CPTED (Crime Prevention Through Environmental Design)," "Situational Crime Prevention," and "Crime Analysis and Compstat."

Many policing agencies incorporate into their community policing approaches elements of the "Broken Windows" theory (Wilson and Kelling, 1989). For example, they advocate early attention to signs of neighborhood blight, disorder, and relatively minor crimes. As we discuss throughout this report, CAD systems have considerable potential in helping to identify such conditions. Similarly, hot spots analysis has greatly improved law enforcement's ability to identify problem locations. Sherman, *et al.* (1989) analyzed CAD data from Minneapolis, Minnesota, on 323,979 calls to police over all 115,000 addresses and intersections in the city. Their findings showed that three percent of the addresses accounted for 50 percent of the calls. This research is arguably the most cited to persuade police of the need for problem solving approaches.

However, an "identify and fix" approach (Skogan, 2000) does not qualify as the type of analytical problem solving envisioned as part of community policing, nor does "zero tolerance" policing where there is little effort to develop solutions to problems other than making arrests. The discussion on performance measures for community policing below does not assume proficiency in all areas of community policing, but it does assume a level of effort in each of the four dimensions outlined by Cordner.

Information Technology and Community Policing

Prior research on the role of information technologies in police departments also played a role in this study. In this regard, the work of Manning (1988, 1992a, 1992b, 1993) was especially important. Manning (1992a) makes the point that technologies (including CAD systems) get embedded in organizations and therefore shape organizations and are shaped by

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them. Other authors (Davenport, 1997; Bamberger, 1991; Gash, 1991) express similar viewpoints about the need to understand an organization's *information ecology*, defined as the total information environment within an organization. CAD systems are only one source of information for measurement.

Sparrow (1991) states in straightforward language that "[I]t is no longer possible to separate organizational strategy from information technology strategy." Unfortunately, that separation is precisely what is occurring when police departments move into community policing without examining their information technologies.

Abt Associates (2000) looked at this problem of linkages between information technologies and community policing in considerable depth in its Information Systems Technology Enhancement Project (ISTEP). Nearly ten years after Sparrow's comment, they came to the same conclusion on the relationship between organizational strategy and information technology strategy:

> In the initial stages of this project the ISTEP team developed a conceptual framework document. The conceptual framework provided structure for the team in completing phase one of the project, and now assists police departments struggling with information technology (IT) planning in support of community- and problem-oriented policing. The conceptual framework identifies seven key information domains that should be developed if police departments want to implement community policing effectively. The seven domains are (1) community interface; (2) inter-organizational linkages; (3) work-group facilitation; (4) environmental scanning; (5) problem orientation; (6) area accountability; and (7) strategic management.

Several others note the importance of information technology to problem solving, a key element in community policing (LaVigne, 1999; Wartell and Greenhalgh, 2000; Rich 1999).

The Chicago Police Department was a forerunner in the use of information technology throughout an organization. The Information Collection for Automated Mapping (ICAM) program allows officers to produce individualized crime maps and reports. Officers specify the crime types, geographic area, dates, and times to ICAM, which then produces computer maps and reports matching these parameters. Officers not only use this information for their own problem solving and investigations, but often share the products at community meetings. In an effort to involve citizens in problem solving, the department developed Citizens ICAM that is

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accessible at the department's Web page on the Internet. Citizens ICAM works on the same principles and gives citizens access to crimes reported to the Chicago Police Department.

CAD Systems and Performance Measures for Community Policing

Professional policing and community policing share a belief that police *can* have an impact on crime. But data on reported crime clearly should not be the sole measure of that impact. So far, community policing organizations have not been much more successful than traditional agencies at measuring their crime fighting success. As Stephens points out, the release of UCR statistics comparing this year with last is still an "annual ritual" involving the police, politicians, and the media (Stephens, 1996).

Few rigorous studies of community policing's impact on crime have been conducted,[6] although a number of articles have discussed how this might be done. One way, and the focus of this study, is to improve departments' capacity to analyze, and place greater emphasis on, call for service data as a measure of police impact on crime and related problems. Other approaches include measuring reductions in repeat victimizations for certain types of crimes such as domestic assault (Sherman, 1998); selectively evaluating effectiveness in preventing specific types of crime in specific locations (Bayley, 1996); and conducting local victimization surveys (e.g., recent OJP efforts to adapt National Victimization Survey questionnaires and software for local use). In short, under community policing, there is a continuing need to demonstrate impact on crime more accurately and completely. As Bayley (1996) points out, in part because they lack measures of effectiveness, policing agencies are missing opportunities to take credit for much of what they do.

It is also important to measure the broader functions emphasized under community policing. Kelling (1996) makes the point that even in private sector organizations, profit is an important goal, but it is not the only goal. Similarly, he says, reducing crime is "one element of the bottom line in policing [but] it is not *the* bottom line," noting that multiple goals require multiple measures of success. New mission statements under community policing do indeed express multiple goals, not only to reduce crime but also to solve crime-related problems, improve the quality of life, reduce fear, build partnerships, or even mobilize neighborhoods.

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[6] One exception is the long-term evaluation of Chicago CAPS by Skogan, Hartnett *et al.* (various publications since the evaluation began in 1994).

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Problem solving includes addressing behaviors and conditions that are not necessarily violations of criminal law. Moreover, the philosophy holds that the community should be involved in identifying which problems are most important and should also be enlisted to help resolve them. Obviously, a recurring theme in this research project was the potential value of CAD systems to help capture data not typically available in crime and arrest reports and use it to assess changes in crime and problems. As discussed below under "What Can CAD Systems Measure," CAD systems capture data on time and place; but departments may also need to take this a step further, using CAD data in conjunction with census and other data sources to understand more specifically who has been affected by problem solving efforts. For example, Skogan and Hartnett (1999) report impressive results from the Chicago CAPS effort in neighborhoods that are primarily African American and white, but less impact in predominately Hispanic neighborhoods. With respect to goals to "build partnerships," there may also be a role for CAD data, depending on whether a department can clarify such a goal in more concrete terms.

Various changes in the "organizational dimension" are also goals under community policing. The more traditional use of CAD data in assessing how officers spend their time is critical, given that officers must have freed-up blocks of time if problem solving and other community policing activities are to occur. CAD applications give management some objective ways to determine how employees are using the time that is actually available when not answering calls or handling other obligations (e.g., going to court). CAD data has its limits in measuring changes in organizational culture (achieving a more diverse workforce, for example), but it could be valuable in assessing organizational support for problem solving and other activities associated with community policing. For example, it might show that an administrative decision to handle more calls through telephone reports has freed up time for community policing. CAD data is also one means of holding managers accountable under community policing. Because crime and clearance rates are no longer the only means of measuring success, CAD data can offer additional information about an area. Managers should be aware of the numbers and types of calls in their area as well as the numbers and types of complaints.

Other aspects of community policing's organizational dimension have to do with information technology itself, including CAD systems. Relevant questions might include: How

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has the technology been directed toward improving information flow within the department? Is CAD data more accessible now than in the past? Does CAD data (e.g., repeat calls to the same address) contribute to decisions made about which problems to address? Is it used to help assess the effectiveness of interventions?

What CAD Systems Can Measure

Past research has consistently emphasized two important features of CAD systems. First, these systems provide a rich source of data because of the detailed information they contain on what patrol officers do. Second, less than 20 percent of the citizen calls in a CAD system are for serious crime incidents–the rest are incidents that affect the quality of life of the callers to such an extent that they believe police intervention is necessary. An aim of problem solving under community policing is to address many of these disorder incidents; and as a consequence, CAD data can be of particular benefit in identifying problems that need to be addressed and in measuring the impact of problem solving efforts.

The richness of CAD data to explore these features derives from the *time* and *space* characteristics that are captured. CAD applications record the time (including date) of the incident and the times of important actions by police. Characteristics of space are captured through the address of the incident, thereby providing the potential to expand analysis to neighborhoods, beats, census tracts, and other geographic constructs.

Before this study began, we identified several potential CAD applications and measures for supporting community policing through process and impact measurement. Such a list was possible because CAD systems have been around for many years and because the literature continues to grow on information needs under community policing. The list was only a starting point because our efforts at the three sites resulted in suggestions for other measures. We also anticipated that the sites would consider some measures to be of minimal value and that we would drop some of the potential measures from the list.

Existing Hot Spots. CAD data can be used to identify the addresses in a city with the highest frequencies of calls for service over a given time period, such as the last six months. These addresses could be the basis for problem solving assignments. Subsequent analysis could measure the impact of problem solving at an address with success indicated by a reduction in calls and perhaps the list of highest frequencies no longer including the particular address.

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Emerging Hot Spots. It is also possible to use CAD data to identify addresses (or areas) that are starting to become hot spots. Such addresses are candidates for preventive activities by police before they escalate to serious hot spot problems.

Analytical Maps of Calls. Computer mapping has community as well as internal applications, such as discussing maps of calls or crimes at community meetings. The maps may show that citizens' concerns are indeed legitimate, or the maps may suggest that no problem exists or that a problem is less prevalent than people believe. In other NIJ-funded projects, researchers are developing tools for analyzing spatial-temporal relationships. These tools are candidates for measuring performance and were reviewed during the course of this project for applications with CAD data.

Changes in the Mix of Calls for Service. As community policing becomes a reality over time, a change in the mix of calls for service from citizens may take place. For example, citizens may call on more quality-of-life incidents than in the past because they know that police now are more responsive to these incidents. CAD data can serve as the basis for analyzing this mix over time and space.

Changes in the Levels of Calls for Service. In line with the previous measure, CAD data can provide insight into whether citizen calls for service are increasing or decreasing over time and space. This information has important resource allocation implications.

Differential Processing of Citizen Calls. Many departments have implemented alternative methods for handling citizen calls, such as taking the report over the telephone or dispatching a Community Service Officer (CSO) to the scene. CAD data can be used to develop a picture of how calls are handled by the department.

Qualitative Analysis of Transmissions. With the advent of Mobile Digital Computers (MDCs) in patrol units, more information about incidents is now captured by CAD systems. Officers use MDCs to converse with dispatchers about what is happening at an incident, to make records checks, and in some departments, to enter brief narratives about an incident. This information has been untapped as a possibility for qualitative analysis of what occurs at incidents.

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Customer Satisfaction Surveys. Some departments have used CAD data as the basis for surveys to determine whether citizens were satisfied with police actions at incidents. Because the CAD system record includes name, address, and telephone number, a sampling procedure of CAD records can provide the basis for these surveys.

Field Audits to Track 9-1-1 Calls. An alternative to a customer satisfaction survey is to select a sample of calls from 9-1-1 tapes and track these calls to their completion. This approach combines data from conversations between citizens and call takers, dispatcher entries, and officer actions. Such audits usually require on-site visits to citizens for interviews.

Measures with Other Community Data. Using the incident address, CAD data can be merged with other files to develop profiles of communities and police activities. For example, the census tracts for citizen calls can be automatically determined from CAD addresses and merged with other census data for analysis. This procedure opens the door for a larger variety of measures.

Measures of Self-Initiated and Problem solving Activities. In addition to information about citizen calls, CAD applications capture information on self-initiated activities by officers. These activities include incidents that officers come across during patrol, traffic stops of drivers, and other actions. In some departments, patrol officer time on problem solving is captured in the CAD system as self-initiated activity. If the department conducts an analysis of its problem solving efforts, it is then possible to compare the success or failure of their efforts to the amount of time expended on solving the problem.

Measures of Fear. The usual approach for measuring fear of crime is through surveys of citizens either by telephone or in person. Another potential approach is with CAD data if the classification scheme for calls has the correct categories and these categories are applied correctly by call takers and dispatchers. Under these conditions, CAD data can provide measures on calls about suspicious persons, suspicious automobiles, gangs, and other problems related to citizens' fear.

Travel Time to Emergency Calls. The classic experiments by the Kansas City Police Department showed that rapid response to all calls was not a worthwhile objective. However, commanders still want to know whether they are achieving rapid response to true emergencies.

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These emergencies usually account for less than 5 percent of the total calls but are almost always serious in-progress incidents.

Percent of Time on Citizen Calls. Some departments want to know how much time patrol officers devote to citizen calls for service. If officers are having to spend most of their shift responding to calls, they may not have sufficient time for community policing activities. In police departments that have split forces (with part of the force answering calls and part devoted to community policing), this measure is important for analyzing what the call-answering portion of the force is doing.

Time Between Calls. A corollary to the previous measure is the amount of time between calls for service (see McEwen, 1992). If all patrol officers are supposed to be performing community policing activities, then they need sufficient time between calls for these activities. This measure determines whether adequate time is available.[7]

Weaknesses of CAD Systems

CAD applications have been criticized as inadequate for measurement purposes because of several deficiencies. Some criticisms are valid when considered in light of the measures just described and were addressed during the course of this research.

Call Classification. Several weaknesses in CAD data relate to call classification processes and schemes. For example, the type of call that appears in a CAD record usually is based on information conveyed by the caller, who may not know the difference between a burglary and a robbery or between vandalism and graffiti. Some departments get around this problem by having the responding officer give the correct call type to the dispatcher, who then enters this designation into the system.

A related problem is that the list of types of calls used in the communications center may not adequately address everything that is needed under community policing. At its extreme, the "other type of call" category is the largest volume category in some departments. The lists of

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[7] The average time between calls can be calculated in a straightforward manner. Suppose a patrol unit handles n citizen calls requiring a total of t minutes during a shift. The average time between calls is found by subtracting t from the total shift time and dividing by $n+1$ (which is the number of intervals between calls). For example, a patrol unit on an 8-hour shift that handles 7 calls requiring 220 minutes has 260 minutes of "free" time or an average of 32.5 minutes between calls.

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call types in the three departments participating in this study were examined closely for inclusiveness.

Incident Address. Another problem is that the telephone number and address from E9-1-1 systems may not be the location of the incident. A relative or neighbor may be reporting the incident rather than the victim. Unless the address is corrected, the subsequent analysis and measures will place these incidents at the wrong locations.

Missed Calls. A situation that is emerging under community policing is that the CAD system may not capture all citizen calls. In an era of expanded communications capabilities, police officers in some cities carry pagers or cellular phones, allowing citizens to contact them directly. Alternatively, some departments have established neighborhood police substations where officers can be contacted directly by telephone or walk-in. Because these calls bypass CAD systems, the utility of measures derived from CAD data may be dampened.[8]

Need for Clarity on What a CAD System Is Capturing. A final problem is the need for a new *vocabulary* to describe CAD information. In some departments, every record gets counted as a call for service, including multiple calls on the same incident (especially with automobile accidents), inquiries handled by call takers ("Is my husband in jail?"), assist units at the same incident, administrative activities of officers (court time, getting gas for the car, meals, etc.), self-initiated activities of other department personnel (traffic units, canine units, detectives, supervisors, etc.), and many others. Especially for measures associated with community policing, a taxonomy for CAD data should be developed that addresses the kaleidoscope of activities.

The weaknesses noted above and others were examined throughout the study and are discussed in greater detail in subsequent chapters of this report.

Summary: Community Policing and the Role of CAD Systems

The main point to take away from this chapter is that the vast majority of CAD systems in use today were designed to support–and have been a significant factor in shaping–a professional model of policing, not a community policing model. No better example of the

[8] However, the response of patrol officers may be captured in the CAD system as a self-initiated activity.

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conflict can be found than the description by Sparrow (1993) of the difficulties in implementing community policing in Houston, Texas, because the CAD system simply could not accommodate the new policing approach.

In Chapter 1, we noted several possible reasons why CAD systems generally were not geared up to support performance measures under community policing. One potential reason is that many agencies are unsure what those measures should be. Several recent surveys seem to support this contention. For example, in one survey of 337 law enforcement agencies involved in community policing implementation (ILJ and ODS, 1999), only about one-third said they had made extensive (12 percent) or moderate (24 percent) revisions to performance evaluation criteria because of a shift to community policing.

In reality, most police agencies today are still heavily invested in the professional model of policing (Wilkenson and Rosenbaum, 1994; Bayley, 1994; Connors and Webster, 2001). Efficiency is still a driving force; and crime control through arrests remains an objective, although problem solving, partnership building, crime prevention, and organizational change objectives are receiving much greater emphasis than in the past.

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Chapter 3

Case Studies of Community Policing

This chapter describes the results of two major project tasks. The first task was to document how the three study sites–San Diego, Aurora, and the District of Columbia–had approached the implementation of community policing. The second, related task was to examine CAD applications in the three departments and determine how existing CAD data was actually used, or could be used, to support community policing measures. This groundwork supported the tasks that are described in Chapter 4 on developing a prototype set of CAD-supported community policing measures.

Case Study Methods and Approach

The case studies for this project were conducted to gain a complete and accurate understanding of how each of the three departments approached community policing.

Case Study Methods

Case study methods included interviewing key personnel at each department; conducting focus groups of sergeants and officers; reviewing documents related to community policing changes; and conducting ride-along interviews with officers. As we discussed in Chapter 2, Cordner (1997) devised a framework that describes four dimensions of community policing–philosophical, strategic, tactical, and organizational–and identified elements associated with each dimension. This construct proved valuable in examining community policing at the study sites.

For the philosophical dimension, we reviewed how each department had gone about redefining its functions more broadly (objectives for fear reduction, domestic violence, etc.), how it was obtaining citizen input (beat meetings, community surveys, etc.), and its emphasis on the concept of "personal service."

Under the strategic dimension we looked at how police operations had been "re-oriented" to meet community policing objectives, as well as the "preventive focus" in each department. With respect to re-oriented operations, Cordner is looking for community policing practices that put less emphasis on patrol cars (e.g., traditional preventive patrol, rapid response to low priority

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calls) and more emphasis on positive face-to-face interactions between police and citizens. Related to this is the extent to which the department has found ways to perform necessary functions more efficiently (e.g., using telephone report units or community service officers to handle certain non-emergency calls) in order to free up time and resources for more focused, community-oriented activities.

For the tactical dimension, we concentrated on partnerships with citizens and other organizations, and on problem solving. For the organizational dimension, key areas of interest were changes in structure (decentralization, flattening, teams, etc.), management practices in support of community policing (e.g., strategic planning), and information. In Cordner's framework, information covers officer performance and the effectiveness of various community policing efforts, as well as information systems such as a CAD system.

By way of background on the three sites, Exhibit 3-1 on the following page gives demographic information about the three sites as reflected in the 2000 Census. As seen in the exhibit, San Diego has the largest population with about 1.2 million residents followed by the District of Columbia with a population of 572,059 people and Aurora with 276,393 people. The median ages across the three sites also differs with the District have a slightly older median of 34.6 years compared to 32.5 years for San Diego and 31.7 years for Aurora. There are also significant differences in the distribution of races as reflected by the number of people who marked they were one race only. Aurora has the highest percentage of white population at 68.9 percent compared to the District at 30.8 percent. More information on the characteristics of the sites are provided in the summaries of each case study.

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Exhibit 3-1: Demographics of Study Sites

	San Diego	Aurora	District of Columbia
Population	1,223,400	276,393	572,059
Males	616,884	136,901	269,366
Females	606,516	139,492	302,693
Median Age	32.5 years	31.7 years	34.6 years
Adults (18 years or older	929,492 (76.0 %)	20,185 (72.4 %)	457,069 (79.9 %)
Race (1 race checked)	95.2 %	95.8%	97.6 %
White	736,207 (60.2 %)	190,311 (68.9 %)	176,101 (30.8 %)
African American	96,216 (7.9 %)	137,104 (13.4 %)	343,312 (60.0 %)
American Indian	7,543 (0.6 %)	2,248 (0.8 %)	1,713 (0.3 %)
Asian	166,968 (13.6 %)	12,066 (4.4 %)	15,189 (2.7 %)
Hawaiian	5,853 (0.5 %)	501 (0.2 %)	348 (0.1 %)
Other	151,532 (4.8 %)	22,485 (8.1 %)	21,950 (3.8 %)
Occupied Housing Units	450,691 (96.0 %)	105,625 (96.7 %)	248,338 (90.4 %)

Detailed case study reports were prepared. The sections that follow summarize those reports.

Community Policing in San Diego, California

Background on San Diego and the Police Department

San Diego is the seventh largest city in the United States and the second largest in California (after Los Angeles). Covering an area of over 324 square miles, the city's southernmost portion abuts the Mexican border. Just across that border is Tijuana, Mexico, with a population of over 1 million persons, at least 30 thousand of whom commute to jobs in San Diego. Another 50,000 to 60,000 undocumented persons and transients also live in San Diego.

San Diego has long served as a key U.S. military and naval complex, and its economy is built around tourism, the military, maritime trade, manufacturing support, and technology. San

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Diego's population has the highest percentage of college graduates in the nation. In the first half of the 1990s, many cities reduced services and increased fees and taxes; but public safety spending in San Diego–particularly police spending–was significantly increased.

In 1998, the San Diego Police Department (SDPD) had an authorized staff of 2,683 employees (approximately 75 percent sworn and 25 percent civilian). Although the SDPD's ratio of 1.77 sworn officers per thousand population is one of the lowest among big cities in the U.S., San Diego was rated by the FBI in 1998 as the "second safest big city in the nation," with reported Part I crimes decreasing by 36 percent from 1992 through 1997.

Overview of Community Policing Development in San Diego

In 1973, the SDPD introduced community policing concepts into what was otherwise a traditional policing environment. Implemented with grant support from The Police Foundation, the Community Beat Profiling Project–later known as the Community-Oriented Policing System (COPS)–represented the first of four phases in the development of community policing, which the department terms Neighborhood Policing. For the Beat Profiling project, officers were to systematically develop their knowledge of unique beat characteristics, people, and problems; and to identify resources for addressing them (SDPD, no date).

Because it had some strong advocates, the concept of community policing remained alive in the SDPD and support elements were added (e.g., training, crime analysis, information systems). However, implementation occurred slowly, with other priorities receiving more attention. One of the missing ingredients was a systematic approach to problem analysis by police officers. This issue came to the fore in 1988, and a second phase of interest in community policing began when the department participated in a field experiment in a problem oriented policing (POP) approach to drug enforcement.[9] A key project component, WECAN (Walking Enforcement Campaign Against Narcotics Campaign) was considered a success by many within and outside the department. The problem solving approach was given an important boost when Captain Jerry Sanders (later Chief of Police) agreed to implement problem solving in the Southeast Division.

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[9] The SDPD was one of five departments selected by the Bureau of Justice Assistance (BJA) to participate in this initiative. The Police Executive Research Forum (PERF) provided training and technical assistance to the SDPD during the field experiment and afterward.

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By January 1990, SDPD Chief Burgreen decided that problem solving should be expanded department-wide, and a 22-member Implementation Advisory Group developed a strategy. Officers were assigned as POP Coordinators in each of the field operations divisions. Monthly meetings of a Problem Analysis Advisory Council (PAAC) were established, where officers made presentations on their problem solving activities and discussed alternative means of addressing problems. "Mini-PAACs" were also held in many divisions to address issues within particular service areas. By 1992, specialized Neighborhood Policing Teams were created in all divisions to work on neighborhood problems in partnership with residents.

In 1993, a third phase began when Chief Jerry Sanders launched a Neighborhood Policing Restructuring Project and appointed a steering committee composed of sworn and civilian employees from throughout the SDPD. Project goals were to (1) develop a plan to convert from a beat structure based primarily on census tracts to one that is community based; (2) incorporate problem solving procedures into all levels of the department and into all department functions; (3) reduce or eliminate any friction or gaps between the Neighborhood Policing Teams and regular patrol units; and (4) develop a team policing structure for all patrol forces. By 1994, the steering committee had developed 42 specific recommendations for meeting these goals, which guided implementation over the next few years.

By 1997, the SDPD had moved into a fourth phase involving a strategic planning process. Seven major areas for improvements were identified; over 200 people (including representatives of other agencies, business, and others) formed work groups to address those areas; a strategic planning unit was created within Neighborhood Policing; training sessions were conducted; and a written plan was developed that included specific strategies and action plans for all departmental units. Changes were also made in officer performance evaluation criteria to more accurately reflect the department's Neighborhood Policing emphasis.

Four Dimensions of Community Policing

Philosophical Dimension

Neighborhood Policing in San Diego "is a philosophy that [involves] listening to, interacting with, and working as full partners with the community regarding police matters. . . . Neighborhood policing acknowledges the importance of trusting officers and encourages them to move out of their patrol cars and into the community (SDPD, 1995, 4). The training guide

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containing these statements also explains the SDPD's understanding of "professional policing," "problem oriented policing," and "community or neighborhood policing." Both professional policing and problem oriented policing are viewed by the SDPD as components of their overall neighborhood policing philosophy.

Citizen Input. Some of the ways in which the SDPD has obtained citizen input include

- **Community mapping public meetings**. As part of the Neighborhood Policing Restructuring Project, over 800 citizens attended meetings held throughout the city to identify what citizens meant when they talked about their neighborhoods. The outcome was the identification of 101 neighborhoods, which the SDPD consolidated into 21 "Service Areas," replacing the previous beat structure.
- **Service Area Advisory Boards.** Each of these 21 boards hold quarterly public meetings to identify priority problems (usually three) for the police to focus on.
- **Citywide Service Area Advisory Board (SAAB)**. This board is composed of one member from each of the 21 service areas. Among other things, it affords an opportunity to identify problems that have a citywide impact.
- **Citizen involvement in problem solving projects**. SDPD officers place a high priority on involving citizens in the design of their POP projects.

San Diego's community policing model includes not only citizen input but citizen responsibilities, which the department has spelled out in a publication distributed widely to citizens in San Diego (SDPD, 1996). In fact, the SDPD is a national model in terms of the work citizens do for the department. Almost 6,000 people are active in a revitalized SDPD Neighborhood Watch Program (reforming this longstanding program became a priority under Neighborhood Policing). The SDPD volunteer programs[10] are even more impressive, with nearly 1,200 volunteers devoting over 182,000 aggregate hours of service in 1997. This translates to nearly 100 full-time employees a year, a major contribution with respect to freeing up officer time for community policing. To give just a few examples, volunteers are involved in fingerprinting and in lifting selected latent prints, conducting problem solving projects, responding to emergencies with officers and assisting victims, taking cold crime reports, and many other areas.

[10] SDPD volunteer programs include the Reserve Police Officer Program, Retired Senior Volunteer Program, Volunteers in Policing, Crisis Intervention Unit, and Emergency Management Volunteers.

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Broadened Police Function. The SDPD has defined a police problem as anything that requires a recurring use of police resources. This definition clearly reflects a broad view of the police function. The SDPD *Problem Oriented Policing Training Guide* (1995) lists over 50 types of POP projects that can be opened by police officers. Many of these address non-crime issues such as zoning, neighborhood "eyesores," behaviors by mentally ill persons, land use violations, and many others. For this project, the SDPD Crime Analysis Unit prepared a summary computer run on the types of POP projects undertaken in one service area. These, along with our own observations, confirmed that the SDPD, while still emphasizing the primacy of its law enforcement role, is open to undertaking whatever actions are best suited to resolve problems.

Personal Service. SDPD officials said the "will of the community" is considered deciding which enforcement activities are conducted; and they appeared to take seriously the concept of shared decisionmaking about enforcement priorities in particular service areas. In addition, SDPD problem solving efforts clearly take into account neighborhood values. The 429 POP projects conducted by the SDPD in 1997 provide strong evidence that the department tailors its efforts to the problem at hand, whether the problem is one of illegal dumping or a series of commercial robberies. SDPD training materials consistently emphasize the need for positive interaction between the police and the community.

Strategic Dimension

Re-Oriented Operations. Between 1993 and 1996, the SDPD restructuring process included redrawing beat boundaries to create 21 new patrol service areas, decentralizing certain investigative operations to the divisional level, and making other changes in operations. The department encourages "ride and talk" practices and uses walking, street bikes, motorcycles, and horse patrol. In addition to operating eight division stations, the SDPD has over 30 "storefront" locations staffed by department employees and volunteers. Citizen surveys suggest that these SDPD efforts are rated highly (75 to 80 percent positive ratings in independent polls).

With respect to freeing up officer time, the SDPD is a national leader in implementing call handling alternatives. The department does not dispatch officers to certain low priority and cold calls for service; it operates Telephone Report Units (TRUs) in each division; and it takes walk-in reports at the storefront offices. In addition, the department employs Community

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Service Officers (CSOs) in every division to respond to low priority calls, provide event security, and control traffic; and citizen volunteers help divert some activities from patrol (e.g., vacation house checks, checks on invalids). The SDPD has also received significant funding under the COPS MORE program, which has the goal of improving efficiency and freeing up time through the use of technology.

Geographic Focus. Neighborhood Policing in the SDPD has a distinct geographic focus. The Neighborhood Restructuring Project (1993-1996) identified 101 neighborhoods and grouped them into service areas. Lieutenants were given 24-hour responsibility for the patrol and investigative staff assigned to their service areas. Officers were organized into five- or-six-officer teams, each supervised by a sergeant.

From 1992 through 1996, the SDPD deployed Neighborhood Policing Teams (NPTs). This was essentially a split force concept. Most patrol units were primarily responsible for answering calls for service, while the NPTs pursued problem solving activities in specific neighborhoods. With restructuring, the NPTs were abandoned in favor of a patrol-wide model, with all officers collectively responsible for handling radio calls and for working with the community to resolve problems. Each service area itself became one very large beat. The department called this "fluid patrol." After about 18 months, an internal assessment identified a number of problems with fluid patrol. Officers were concerned that the small teams made it difficult to get time off and to get time away from the radio to do proactive work. Another concern was that the service areas were too large for officers to become familiar with residents, business owners, and chronic offenders. Although data on citizen calls did not always support the view that insufficient time was available for problem solving, the department saw a need to explore alternative geographic-based command structures and staffing models.[11]

Prevention Emphasis. In addition to the crime prevention efforts noted earlier (problem solving, Neighborhood Watch, volunteer programs), the 30 storefront and satellite offices provide crime prevention services. The SDPD also operates a centralized crime prevention unit

[11] At the time of our study, the SDPD had just received an NIJ research grant, "Effects of Geographical and Staffing Restructuring Models on Community Policing," to compare the beat model to the service area model using control and treatment areas in each of two divisions. However, the intent of this experiment was not to return to a traditional policing model, but to continuously improve the geographic focus and effectiveness of service area-based Neighborhood Policing.

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and an array of other programs, including landlord/tenant training, mock robbery training for bank employees, and Crime Prevention Through Environmental Design (CPTED). Work with juveniles includes the inter-agency program, STAR/PAL; and the volunteer work of individual officers and investigators as mentors and tutors.

Tactical Dimension

Positive Interaction. Cordner suggests community policing involves a conscious effort to offset inevitable negative encounters (e.g., arrests, tickets) with positive interactions, such as spending a bit more time at the scene to try to identify underlying conditions, secure additional information, and create satisfied customers. The SDPD Neighborhood Policing and problem solving philosophies, strategies, and training manuals all support this concept; and favorable citizen survey data also suggest that positive interactions are occurring.

Partnerships. The SDPD's extensive volunteer programs, numerous community meetings, and service area advisory boards are examples of partnerships developed with citizens. The department also encourages citizens to transmit complaints about drugs and other problems using a form on the SDPD web page, and it published guides that explicitly define the roles of both police and community members in addressing problems. The SDPD has also had notable successes working with the San Diego Organizing Project (a church-based local organization) and Safe Streets Now!, among others, to develop community support for problem solving efforts. Cordner's "partnership" element does not explicitly address interagency partnerships with the police, but there are many examples of these as well. In addition, two strategic planning work groups of 20 to 25 persons each devoted their efforts to partnership matters.

Problem Solving. The SDPD has more than 12 years of experience with problem solving and hosts an annual national conference on the topic. Clearly, it is a standard operating method, particularly in patrol. All officers receive extensive problem solving training that emphasizes the SARA (Scanning, Analysis, Response, Assessment) approach developed by the Police Executive Research Forum (PERF). Officers can request to open a POP project and, once approved, are responsible for its accomplishment.

Some of those interviewed for this study estimated that 30 to 35 percent of SDPD patrol officers were involved in problem solving efforts, noting that a realistic goal would be to have 50 percent of line patrol officers involved. The department's POP Track system aids in monitoring

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the status of problem solving projects and the CAD system captures officer time on problem solving. Although detectives have not been as involved as patrol, there have been successes, and efforts have been made to encourage investigative units to use problem solving. In addition, many of the support units make extensive use of problem solving.

Finally, public comments by former Chief Jerry Sanders and his successor, Chief David Bejarano, suggest consistency at the top with respect to what constitutes a problem and the importance of citizens' views. Speaking at a 1997 NIJ national conference, Chief Sanders said, "I've come to understand that disorder problems are just as important as crime problems. At community meetings, people don't separate those."[12] Similarly, Chief Bejarano noted in a March 2000 interview with *San Diego* magazine that the prominent theme at many community meetings is traffic safety, not drugs or gang problems, although those are important as well.

Organizational Dimension

Structure. Under "structure" in the organizational dimension, Cordner includes decentralization, flattening, de-specialization, teams, and civilianization as important strategies associated with community policing.

Decentralization. SDPD field operations are decentralized into eight area commands (and a ninth Traffic/Special Resources command). Within each division, resources have been further decentralized into 21 service areas, each headed by a lieutenant; and within each service area, officers are assigned to teams headed by a sergeant. Although crime analysts operate out of a centralized unit, each analyst is responsible for specific divisions and service areas. Thus, the SDPD, while retaining clear lines of authority and accountability, also provides significant scope for independent action and responsiveness to neighborhood conditions and problems.

Flattening. Patrol officers are separated from the Chief of Police by only four positions: sergeant, lieutenant, captain, and assistant chief. In the 1990s, the SDPD eliminated its deputy chief and commander positions and was eliminating by attrition the sworn position of police agent (similar to corporal), with only 16 police agents left when our study began. Also, the executive lieutenant position in each division was replaced by administrative or staff sergeants.

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[12] Plenary speech, 1997 National Conference on Criminal Justice Research and Evaluation in Washington, D.C., sponsored by the National Institute of Justice

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De-Specialization. There are still a considerable number of specialized units in the SDPD, but the department eliminated specialist Neighborhood Policing Teams in favor of having all officers perform problem solving. In addition, the department decentralized several specialist functions to the division level. Each division had generalist investigators, juvenile officers and detectives, and auto theft detectives; and the department was experimenting with moving a narcotics unit to the Central Division.

Teams. All major planning and task force efforts, ranging from strategic planning to investigative restructuring, were comprised of teams drawing representatives from throughout the department (both sworn and civilian). The composition of SDPD strategic planning work groups extended outside the department. All field operations units are organized into teams, and most support units function as teams.

Civilianization. All evidence available indicated that the SDPD was fully committed to assuring that positions that *can* be performed by civilian employees *are* performed by civilians. The SDPD employs civilian CSOs and Code Compliance Officers in all divisions; and it has professional civilians in crime analysis, information systems, and virtually all support service operations. However, there may be other opportunities because increased civilianization was listed as one of the key strategies of the SDPD's strategic plan.

Management. Like most departments, the SDPD did not begin a formal strategic planning process for community policing until implementation was well under way. Other management concepts discussed by Cordner include coaching and mentoring, empowerment, and selective discipline.

Strategic Planning. The SDPD's statement of vision, values, and mission was introduced in 1994 by the Chief of Police during training sessions. A first draft of the department's strategic plan was published on the Web in 1998 (the planning process was described earlier). The next phase was to develop performance measures and a reporting system to track accomplishments. The SDPD views strategic planning as a continuing process.

Coaching and Mentoring. Every SDPD Neighborhood Policing training manual reviewed for this study emphasized the role of senior officers and supervisors as coaches and mentors for younger officers. SDPD officials have made deliberate efforts to enlist these senior line officers and supervisors–the opinion leaders–in their neighborhood policing and problem

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solving training efforts. Neighborhood Policing support team staff said they believed "learning by doing" was superior to formal classroom training in this respect, and they were working their way through the various divisions in the role of "on-the-street" coaches.

Empowerment. Observations and documents suggest that SDPD managers want officers to use the SARA process, keep them informed, and document their efforts. Once a project has been approved, however, SDPD management expects officers to carry out their proposed projects with only coaching, not close supervision.

Selective Discipline. Less than 25 years ago, reports state that SDPD patrol officers were given two-day suspensions if caught with their helmet straps unfastened, which may exemplify the type of "technical" rules violation to which Cordner refers. CAD data is an important element of the fact-finding process regarding complaints. Beyond that, it was not productive to speculate about SDPD disciplinary practices resulting from neighborhood policing.

Information. Cordner discusses information with respect to information systems, crime analysis, and geographic information systems; but he also emphasizes a need for information that can support performance appraisals, program evaluations, and departmental assessments.

Performance Appraisal. At the time of our site visits, an SDPD task force had completed a year-long effort to develop a revised performance appraisal method for Police Officer I and II positions. While prior procedures recognized officers' problem solving activities, the new version–based in part on research by the Community Policing Consortium (Oettmeier and Wycoff, 1997)–provided supervisors with an improved means of assessing officer performance in relation to Neighborhood Policing, according to initial reports. Measures for achievement of problem solving and team goals were included, as well as more standardized measures of officer performance. There were concerns that some (perhaps overly ambitious) officers would open numerous POP projects simply because this was a measurement variable of importance (i.e., "you get what you inspect"). Plans were made to carefully monitor such measures for validity. The department also planned to make changes over several years in the performance appraisal process for civilian employees, investigators, and sergeants.

Program Evaluation. The SDPD is one of the most evaluation-oriented police organizations in the nation. It hosts international conferences on community policing, problem solving, and crime analysis, and has long served as a test site for research on policing

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innovations. The department has a strong in-house evaluation capability and works with university researchers and other outside consultants to evaluate specific projects. The SDPD also has outstanding data systems to support program evaluation. The study noted earlier on the effects of geographic and staff restructuring models on community policing illustrates well the SDPD's evaluation capabilities. In addition to collecting extensive data on efficiency, the project involves treatment and control sites in two divisions. Pre- and post-intervention measures included officer and citizen satisfaction; minutes per shift spent on problem solving; number of field-initiated reports and officer-initiated activities per shift; and others.

Departmental Assessment. San Diego is committed to a city-wide program of organizational performance measurement. Specifically, the annual budget process requires the police department to report on a wide range of measures and includes an independent survey of community satisfaction using specific measures of police performance. Generally, this is seen as a long-term effort that will be improved incrementally. Performance measurement information is posted on the City of San Diego web page and published in a report, with a full section devoted to the police department (Uberuaga, 1998).

Information Systems. The SDPD participates in the Automated Regional Justice Information System (ARJIS), which serves all San Diego County law enforcement agencies using standardized crime reports and related data. Key information from field reports is entered into ARJIS to serve as a computer index to the reports and as an investigative and reporting tool.

At the time of our site visit, the SDPD was in the process of acquiring a sophisticated records management system. The plan was for the system to encompass crime and incident reports; reports on adult arrests, juvenile contacts, and field interviews; and additional information on property, suspects, victims, and witnesses. Desired system functions included incident/case information transfer from the CAD system, case/arrest tracking and management, automated report distribution, automated ARJIS update, and many others. The department planned to make all of these functions available to SDPD officers through over 750 laptops and 400 standard PCs.

The SDPD has a wide array of in-house systems to support its operations. The CAD system (discussed later) was basically designed to support field operations. All radio cars are equipped with mobile digital computers. ARJIS is the central source of summary data for crime

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analysis purposes, but the department also accesses such systems as the POP Track System, which was developed by department personnel (on their own time), and a variety of other specialized databases to address and manage SDPD problem solving activities. The SDPD web site provides the public with continually updated crime information by neighborhood.

Crime Analysis. The SDPD has almost 25 years of experience in crime analysis and is viewed as having one of the country's finest crime analysis units. With approximately 15 civilian staff members, crime analysis operates as a centralized unit, with each analyst having both functional and geographic responsibilities. Each patrol division, for example, has a specific analyst assigned to assist it. Crime analysts produce routine reports and frequently provide "on-request" analytical services for officers in support of problem analysis and assessment. Analysts also present briefings to service area advisory boards, provide support to SDPD investigative units, and assist various management and strategic planning efforts.

Geographic Information Systems. When our study began, the SDPD crime analysis unit used a Unix-based GIS to create all maps; but now it makes extensive use of PC-based mapping software. The SDPD gathers GIS data from a variety of sources. The base maps (e.g., streets, schools, land use, orthophotography) are provided by SanGIS, a regional consortium, and coverages (such as trolley stations and commercial centers) are maintained by SANDAG, the local council of government. In addition, the SDPD has created its own coverages of neighborhoods, service areas, and police facilities. Plans for a regional Internet mapping application are in the works; the public will be able to map specific crime, arrest, and call for service data on a current basis.

Community Policing in Aurora, Colorado

Development of Community Policing in Aurora

Community policing was launched in Aurora in the late 1980s, although two programs can be considered forerunners of the approach. One of these was DART (Drug Area Resource Teams), launched in 1981. DART was driven by statistics on Part I crimes and drug trafficking, but it did have a geographic focus, targeting these crimes in selected areas of the city. DART results were visible to residents, some of whom came to talk about DART officers as "theirs."

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The second forerunner was the PAR (Police Area Representative) Program under the department's Crime Prevention Unit (CPU). With PAR, the concept of assigning a single officer to work in a specific area developed. The jobs of PAR officers included listening to residents and developing problem solving approaches, not just lecturing on crime prevention. They had flexible hours; did not handle calls for service; and traveled on bikes or foot as well as in cars. In 1983, there were five PAR officers, each assigned to one of five PAR areas. Their efforts received a positive evaluation and were popular with citizens.

An organization-wide transformation to community policing began in 1986, and the 1987 expansion of PAR to 21 officers serving 21 areas was one of the first steps. Chief Jerry Williams (1986 through 1992) brought in nationally recognized consultants to help launch community policing throughout the department. Dr. Robert Trojanowicz and his team from the Michigan State University (MSU) Community Policing Center assisted with assessment and planning; and Darryl Stephens (executive director of PERF at that time) assisted with an orientation for all department members. The blueprint, which was developed with assistance from MSU, included objectives for employee involvement in planning; internal and citizen surveys; community oriented programs and process changes; and techniques for monitoring progress. In addition to the pre-implementation surveys, PAR officers conducted an initial needs assessment (21 beats—the entire city) to determine crime problems and trends, citizen concerns, and possible solutions. These assessments led to six strategies for addressing problems through a community policing approach. A Core Team and other teams were involved in developing an implementation plan.

Key implementation issues for community policing under Chief Williams included performance evaluation; rewarding community policing efforts; internal and external communication; patrol officer availability for community policing interaction; police mini-stations; and special programs. After Chief Williams resigned, the department was headed by James Everett (1993 - 1995) and then Verne Saint Vincent starting in May 1995. Community policing continued in patrol during Everett's tenure, but its administration was centralized within the Special Operations Bureau. At the time of our site visit, Chief St. Vincent was engaged in strategic planning efforts that included considering the directions in which community policing should go.

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Four Dimensions of Community Policing in Aurora

Philosophical Dimension

The philosophy underlying community policing has not changed in Aurora since its introduction in 1987. Chief Williams used a definition from Trojanowicz and Bucqueroux that described community policing as a "proactive, decentralized approach designed to reduce crime, disorder, and by extension, fear of crime, by intensely involving the same officer in the same community on a long-term basis, so that residents will develop the trust to cooperate with police by providing information and assistance to achieve those three crucial goals." Williams wanted the community policing message to be consistent and to be tied to all department activities. A slogan to help convey that message, "Community Commitment," was still seen on patrol cars more than 10 years after it was introduced.

Citizen Input. The Aurora Police Department has several vehicles for citizen input:

- Neighborhood Watch system. With the PAR officers as the "connect" with the neighborhoods, this system has been in place for some time.
- Volunteer program. Over 120 volunteers support police activities, including an active group of volunteers who assist domestic violence victims
- Chief's Roundtable
- North Aurora Apartment Coalition (NAAC)
- Downtown Aurora Business Association (DABA). Meets regularly; a representative from the police department attends.
- Concerned Citizens About Minorities in Aurora (CCAMA). This long-standing group of Aurora citizens provides input to the city and police department.

Broad Police Function. One example of this concept in Aurora is the commitment of police resources to the Aurora school systems. Both major schools systems have school resource officers at the middle and high school levels. Another example is the PAR business officers' work using Crime Prevention Through Environmental Design (CPTED) methods to input and stay involved in development issues throughout Aurora. Fear reduction and quality-of-life issues are part of the daily work of all PAR officers.

In addition, the Aurora Police Department has also been working with parole and probation to provide more meaningful coordination and cooperation with both services. While

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these efforts at the time of our study were not as structured as Boston's Operation Night-Light, the foundation was in place for a similar program to develop.

Personal Service. Cordner makes the observation that policing works best when officers know the citizens and deliver personalized service. Since the inception of community policing in Aurora, one of the goals has been to intensely involve the same officer in the same community over time. The trust that has developed between PAR officers and citizens in their assigned areas is very likely the best example of personal service. The emphasis is on having officers work an area for several years to develop the relationships needed for meaningful problem solving. This is one of the true strengths of Aurora's community policing efforts. It should be noted, however, that since 1988 the entire patrol force bids for beats on an annual basis.

Strategic Dimension

Cordner identifies the following three major elements of community policing's strategic dimension: re-oriented operations, prevention emphasis, and geographic focus.

Re-Oriented Operations. The PAR program is the essence of re-oriented operations in Aurora and can be viewed as the cornerstone of the entire Aurora community policing effort. Early on, a goal for patrol and PAR was to have a PAR officer and the beat officers in all beats working as a team that could change positions based upon community or officer needs. For example, a midnight officer with a specific problem to resolve could change places with the PAR officer on that beat for a day or even several weeks to resolve the problem. This does occur but not with the frequency that was initially envisioned.

Directed patrol has been used over the course of the community policing transition. Bike patrols are used, and in the old business sections of northwest Aurora, foot patrol by permanently assigned officers is the norm. Other patrol techniques include "strolling" (walking in high crime areas) and the use of off-duty patrol officers (volunteer overtime) to assist in traffic enforcement at high incident accident locations. Cordner also mentions differential response and case screening as additional activities that fall under the area of re-oriented operations. Aurora has been involved in differential response since 1993, and case screening processes are used.

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Geographic Focus. According to Cordner, policing should be organized and deployed to maximize the extent to which specific officers work in specific neighborhoods. This style of deployment has been the practice in Aurora since 1988, with the citywide expansion of PAR.

Prevention Emphasis. Crime prevention in Aurora is a focus of various youth programs, CPTED, and the work of PAR officers. Aurora has been using CPTED for a very long time, with PAR officers playing an active role along with the fire department in discussions on planning new buildings. Youth programs are generally coordinated through the PAR officers and the School Resource Officer program; and the DARE program is implemented in the elementary schools.

Tactical Dimension

Positive Interaction. Cordner's examples of this include spending a little extra time in handling calls, school based programs, and interactive patrol. Aurora has a sophisticated set of school programs, which are a priority for the department. The other two examples are more difficult to quantify in current or past activities in Aurora. Clearly, positive relationships have been developed not only by PAR officers but also by many patrol officers; and this has been enhanced by the beat assignment process. A new team configuration, which began in January 1998, was seen as having many positive results, and plans for assessing this approach included surveying officers and supervisors and involving citizens in the assessment process.

Partnerships. The work of the PAR officers with their neighborhood groups is one of the best examples of partnerships in Aurora. Interactions with neighborhood associations pre-dated the move toward community policing, but with the new organizational focus, the frequency and intensity of contacts increased between PAR officers and neighborhood associations, and between school resource officers and students and faculty. An example of a close partnership is the one between the Student Attendance Review Board (SARB) in the Cherry Creek School District. The SARB uses a collaborative problem solving approach and includes representation from the school board, principal and staff, social services, mental health, citizen volunteers, and law enforcement. Members work with students to resolve attendance and discipline problems before they need to be adjudicated.

Chief Everett instituted a Citizen Police Academy in Aurora early in his tenure. From the beginning, this initiative was extremely successful, and in 1998 it was expanded to include a

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Senior Citizen Police Academy. Citizen patrols, another of Cordner's examples of partnerships, have not been used in Aurora. However, there have been citizen marches in different areas of the city, organized by the area PAR officer to increase neighborhood solidarity with respect to a crime problem.

The volunteer program in Aurora has for many years been primarily focused in the domestic violence area. Non-sworn, full-time departmental personnel coordinate the program, which involves not only the police department but also the city prosecutor and the chief judge of the municipal court. Volunteers also assist the Victim Services Unit with many different issues. The victim advocacy portion of the volunteer program grew and became a stand-alone program. Other examples of volunteer work assignments include assisting detectives with the pawn shop detail and working in the Career Criminal Unit.

Problem Solving. Problem solving as described by Goldstein has been a part of the community policing efforts in Aurora since 1987. In the early days, training on the SARA model was a required part of in-service training. Problem solving continues to be a critical component in both the recruit and in-service training curricula for the Aurora Police Department Training Academy. Problem solving has been an important part of the PAR officer's repertoire to address problems on their beats. The PAR officers are not assigned calls for service and therefore have more undedicated time to use for resolving problems.

Over the years, problem solving in patrol seemed to lose its punch as the majority of community policing efforts were centralized within Special Operations. The emphasis on problem solving and the recognition and reward system for problem solving seemed to dwindle. Unfortunately, problem solving successes and failures were not systematically captured, resulting in a missed opportunity to use those experiences as training aids.

Even so, there are a number of indications that problem solving is a dominant style of dealing with problems throughout the organization. For example, patrol officers as well as specialty units and investigators are using crime analysis to identify hot spots and then using the SARA process to address problems. At one point, DART and SWAT were combined, but after the SWAT function was separated from DART in 1994, DART was able to "re-focus" on effective problem solving. DART officers have worked both in uniform and undercover to address loitering, drug sales, and related issues in target areas.

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Organizational Dimension

Structure. This element includes the notions of de-centralization, de-specializing, de-formalizing and flattening the hierarchy of the organization. Aurora has not flattened the organization; in fact, a Deputy Chief position was added. However, the department has made progress in de-centralizing.

In addition to opening a substation in northwest Aurora in 1984, a series of police mini-stations throughout the city have served as gathering points for the community as well as places where officers can perform work and meet the community. A staffed mini-station (one officer and one volunteer) at the Aurora Mall is considered a great success. The need for it was justified by the high number of calls for service that came from the mall. Beat officers were spending most of their time just responding to those calls. By opening up and staffing the mall mini-station with officers who could handle virtually every type of call, beat officers could concentrate on other issues. At the same time, merchants at the mall benefited from a constant police presence.

Management. In the mid-1980s, the management style of the Aurora Police Department underwent a major change to a participatory style involving teams as work units. Coaching and mentoring were used at the command level and encouraged at all levels. This emphasis appeared to diminish after 1992; however, the current strategic planning process may place more emphasis on the participatory management style in the future.

The entire performance evaluation system was revised to conform to community policing during the timeframe of 1988 to 1991. Our interviews suggested that additional work was still needed, but the strategic planning process is available to address this issue. The discipline process remains quite traditional and is driven by the Civil Service Commission of the City of Aurora. The promotional system is also governed by civil service and places restrictions on police administrators that are difficult to change. A meaningful, regular rewards program has been in place since the mid-1980s and continues to work well.

Information. The Aurora Police Department has been updating its technology continually since the mid 1980s. The upgrades stared with a new CAD system, followed by an 800 MHz radio system (1988-1991). An Optical Disc system was then added (1990-1991). A records management system called Police Information Management System (PIMS) became

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operational in 1994, and replacement of third and fourth generation MDTs with laptops for all patrol cars followed. In 1998, computers were placed on all detectives' desks, and specifications were developed for a new state-of-the-art CAD system. Coordinating these systems was seen as a priority for the strategic planning process in Aurora. Crime analysis provides maps and a great deal of incident information to assist officers with specific problems. Technology advances over the next several years will allow the amount and the quality of the information available to be far more usable.

Community Policing in the District of Columbia

Background on the City and Police Department

The District of Columbia covers 68 square miles and is home to 570,000 residents, host to an additional 1.5 million commuters on a typical workday, and a tourist destination for hundreds of thousands of people each year. The Metropolitan Police, District of Columbia (MPDC) has over 4,400 employees, including 3,600 sworn officers and over 800 civilians.

In 1999, the MPDC staff processed more than 850,000 calls for service. As the primary law enforcement agency for the nation's capital, MPDC routinely handles demonstrations and special events, protects various federal facilities, and escorts and protects dignitaries. In addition to cooperating with police departments in nearby Maryland and Virginia, the MPDC coordinates with more than 20 separate law enforcement agencies that have limited jurisdiction within the District, including the U.S. Park Police, U.S. Capitol Police, and U.S. Secret Service Uniform Division. All of these agencies process their arrestees through MPDC, with each prisoner assigned an MPDC Complainant Control Number (CCN).

For the past several years, the department has been replacing all major information systems, including the CAD system (which was cut over in December 1999), a 3-1-1 system (November 1999), and an investigative case management system (January 2001). The MPDC is planning to implement an Automated Field Reporting System (AFRS), a new Records Management System (called PRIDE), and a police Personnel Performance Management System (PPMS) by December 2003.

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Development of Community Policing in the MPDC

The overall organizational vision of community policing in the MPDC is captured in the department's "Policing for Prevention" strategy, which was developed under Chief Charles Ramsey in 1998, soon after his appointment. Prior to his appointment, the department had already begun a move toward community policing. In 1997, the MPDC revamped the beat structure, subdividing its seven police districts into 83 Police Service Areas (PSAs). The next step was the assignment of one sergeant and a team of police officers to each PSA (ideally for a minimum of one year). This was intended to enable officers to answer calls for service in a specific geographic area, as well as to begin or expand work with residents to tackle crime and disorder problems.

Within Chief Ramsey's first two years, much of his effort–in addition to clarifying his expectations for Policing for Prevention– was directed toward securing the needed resources and management accountability systems. Key milestones included the following:

- Replacing the sergeant as the manager of each PSA with a lieutenant
- Implementing a top-to-bottom geographic-based organizational structure with three Regional Area Commands, each headed by an assistant chief
- Clarifying and providing training on the authorities, accountabilities, and duties of the key managers and supervisors in the field under Policing For Prevention
- Launching Partnerships for Problem Solving, a program to train officers, volunteers, and other agency representatives in problem solving and related skills
- Introducing new management tools, including PSA Action Plan forms and Targeted Organizational Performance Sessions (TOPS)
- Adopting a Performance Management Program designed to evaluate performance of the ranks of lieutenant and above
- Creating the Policing for Prevention Group (under the MPDC's Office of Organizational Development) to be responsible for researching, planning for, and implementing community policing in the department.

Four Dimensions of Community Policing in the MPDC

Philosophical Dimension

Policing for Prevention (PFP) at the MPDC aims to (1) intervene early and effectively in crime problems through more focused and proactive law enforcement; (2) help stabilize

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communities through neighborhood-based problem solving; and (3) promote long-term (systemic) prevention by addressing the underlying conditions that lead to crime.

Citizen Input. According to interviews with MPDC staff, citizen input was not directly sought when the department was developing the Policing for Prevention strategy. However, citizen input was sought in the development of the Partnerships for Problem Solving (PPS) program. During the fall of 1998, working groups of residents, police, and other agencies were formed to develop a problem solving model. There are now significant additional examples of citizen input, including the Chief's Citizens' Advisory Council (CAC); citizen advisory councils at each district, which help district commanders identify priorities and problem solving strategies; and PSA community meetings.

A key goal of the PPS program is to move away from the traditional model of the police "servicing" the community. In other words, the MPDC has sought to involve citizens not only in *identifying* problems, but also in actively solving them. The MPDC is also developing a citizens' handbook, which will outline the citizens' role in Policing for Prevention.

Broad Police Function. The PFP vision reflects the MPDC's commitment to re-defining the police function. Under PFP, the overarching task of officers, sergeants, and lieutenants within each PSA is to work with residents to enhance neighborhood safety. The different PSA Action Plans demonstrate goals such as resolving conflicts, helping victims, preventing accidents, solving problems, and fighting fear, as well as reducing crime through enforcement of laws and apprehension of offenders. MPDC partnerships with a number of other agencies also reflect a concern to respond to quality of life concerns.

Personal Service. Efforts to provide personal policing service to citizens are being made at the level of officer-citizen interaction. However, concerns were expressed about a lack of beat integrity–officers pulled from their PSA to handle pressing calls for service in another PSA. This naturally impacts the level of personal service that can be offered by patrol officers. Personal service is evidenced in programs conducted by offices such as the Office of Youth Violence Prevention and by way of programs that address the monitoring and integration of individuals on parole and probation.

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Strategic Dimension

Re-Oriented Operations. The MPDC is addressing "re-oriented operations" under the PFP goal of focused law enforcement, which encourages police to be more strategic and efficient in the use of enforcement resources. Focused law enforcement emphasizes addressing hot spots of crime and disorder, repeat offenders, and repeat victims. It also gives priority to the most serious crimes, to crimes that most concern a particular community, to groups at highest risk for violence and other victimization, and to communities in distress or transition. At the same time, focused law enforcement is seen as supporting the other major PFP goals, because it aims to provide communities with short-term relief from crime in order to create the opportunity for neighborhood problem solving and long-term prevention projects. Focused law enforcement in the MPDC is closely tied with the department's new information technology systems, including the new CAD system. Similarly, other strategies such as decentralization and building partnerships relate to focused enforcement goals.

Police in the districts, PSAs, and various offices (e.g., Office of Youth Violence) have also made concerted efforts to increase the *visibility* of police in the PSAs and to draw upon various specialists when needed. One way high visibility and specialist support can be combined is by using specialized "focused mission teams," which were introduced in the fall of 1998 and are located in each district. One example of focused enforcement is the Summer Mobile Force, implemented in the summer of 1999. Officers worked on their days off to bolster the number of police in neighborhoods with particularly high levels of crime and disorder. Activities included taking part in neighborhood anti-crime walks and setting up traffic check points. The high visibility Summer Mobile Force officers apparently had a significant impact on reducing crime and restoring public confidence.

Geographic Focus. In 1997, the MPDC introduced the Police Service Area (PSA) system, which consists of 83 geographic units ranging in size from a single neighborhood of several square blocks, to a few square miles encompassing several neighborhoods. To the extent possible, PSA boundaries follow neighborhood boundaries. Each PSA team is led by a lieutenant, who is accountable for the overall quality of policing services in that PSA. Individual residents, community organizations, and others work with the PSA teams by providing information, participating in PSA community meetings, and helping to design and implement problem solving strategies.

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The 83 PSAs are in turn organized into 7 police districts, each containing 9 to 14 PSAs, and each led by a district commander. The seven districts are further grouped under one of three Regional Operations Commands, managed by a Regional Operations Command Chief (ROC Chief). This structure was implemented in the fall of 1998. Each district is a "full-service" operation that includes patrol, tactical, investigative, and administrative services. Each district is responsible for analyzing the problems of its PSAs and developing a district-wide plan of action for addressing common problems in the district. The PSA structure is used as the basis for deployment of resources, assignment of calls for service, accountability, community relations, crime analysis, and problem solving.

In practice, most ownership of and accountability for problem solving in a PSA is apparently occurring at the lieutenant level. Some officers note that they are frequently dispatched outside of their PSAs, which has the effect of limiting the time they have available for problem solving.[13]. The geographic focus is also enhanced by the location of workstations or mini-stations in several districts (e.g., in a supermarket in one district, in a municipal service center in the eastern region).

Prevention Emphasis. A prevention theme runs through all three components of the MPDC's Policing for Prevention strategy. For example, the MPDC publication, *The Role of the PSAs: Policing for Prevention Handbook* encourages officers to use a wide range of specific activities as crime prevention opportunities. However, we will focus here on the third PFP goal, which is systemic prevention. Briefly, systemic prevention expands the focus from individual offenders and specific, targeted communities to a broad look, in partnership with other agencies, at the sources of crime and possible measures to address them long-term. Prevention activities in the PSAs are limited, although individual officers and PSA teams are involved in a number of projects (e.g., working with the schools, CPTED projects, and others). While the majority of police interviewed agreed with the concept of systemic prevention, they cite a lack of both police and community resources to address deeply entrenched problems like poverty and unemployment. The main areas in which the MPDC has worked toward systemic prevention are in the areas of youth, domestic violence victims, and victims of crime generally.

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[13] A department regulation requiring two-officer cars also reduced the amount of patrol time available for problem solving.

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With respect to youth, in 2000 the MPDC established the Office of Youth Violence, which focuses on providing alternatives to juveniles and young adults ages 14 to 26 who are at high risk of gang involvement and other activities that could lead to crime and violence. In particular, the Office aims to direct resources into improving options in the areas of employment, education, parole, drug treatment, and social education. In choosing the PSAs in which to undertake projects, the Office prioritizes geographic areas that have existing resources and partnerships with which the police can form their own linkages to maintain contact with juveniles and their families. At the time of our report, projects were operating in ten PSAs, although the partnership models have the potential to be implemented citywide.

In relation to domestic violence, a domestic violence coordinator works with agencies across the justice, health, and victim advocacy communities. MPDC accomplishments include launching a recruit curriculum on domestic violence; helping establish a SANE (Sexual Assault Nurse Examination) program at Howard University; interviewing victims who have reported either domestic violence or adult sexual assault to the MPDC; and creating a shared District-wide database on domestic violence. With regard to victims of crimes generally, the MPDC established new follow-up procedures, including providing copies of police reports and information on crime victim compensation.

Tactical Dimension

Positive Interaction. As noted earlier, a PFP handbook specifically encourages officers to consider how each call for service might present an opportunity for positive interactions. It is difficult to measure the extent to which this is done. However, other types of positive interactions are evident. For example, in one district, police redirected donations to the department to a Citizens' Advisory Council to organize a Christmas party for 450 children. Other positive interactions occur through community and PSA meetings and problem solving work (e.g., police bringing abandoned cars to a district station to await collection by the Department of Public Works, giving residents an immediate solution to this problem). The MPDC also emphasizes improving services to victims of crime. It has provided in-service and recruit training on interacting with crime victims, used a recruit class to administer a telephone survey to 400 victims of selected Part I crimes, and hand-delivers a package containing the crime report and other materials to certain crime victims.

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Partnerships. The "neighborhood partnerships" goal of PFP envisions the police partnering with community members and other city agencies to fix the physical conditions that breed crime, and to restore a positive, visible policing presence in neighborhoods. Partnerships for Problem Solving (PPS) is based around a monthly meeting in each PSA, in which officers and community members identify, discuss, and prioritize local crime and disorder problems. Citizen participation at PSA meetings varies from 5 people to 30 or more. Some citizens occasionally attend meetings in adjoining PSAs (e.g., if crime displacement is an issue).

Police officers and officials in interviews repeatedly emphasized the power of solved problems to increase citizen support for and interest in policing activities, and several stressed the value of visibly celebrating these successes. Examples given of citizen involvement in problem solving included residents keeping watch on construction supply trucks to prevent thefts; working toward revocation of liquor licenses where establishments contribute to loitering, noise, and trash problems; and advising local businesses on how to prevent loitering.

Examples were also provided of police partnerships with community interest groups and with other agencies. One MPDC police district established the first Gay and Lesbian Liaison Unit in the country. Other partnerships include various drug and homicide task forces at both the citywide and PSA levels; a broad based task force[14] to address problems pertaining to ABC establishments in one popular area of the city; partnerships with ward-level representatives of the Mayor's Neighborhood Services Initiative; partnerships between PSAs and probation and parole; and partnerships between PSAs and Neighborhood Stabilization Officers (NSOs). (One NSO serves every three PSAs, is the point of contact with the Department of Consumer and Regulatory Affairs, and has the authority to secure abandoned and nuisance properties found in violation of regulations or ordinances).

Another partnership involves the DC Mayor's Citywide Call Center and the associated MPDC City Service Request Form. This form is used by police to request safety-related services from other agencies (e.g., street light repairs, trash removal), and to track the progress of

[14] This task force included representatives from the Alcoholic Beverage Control (ABC) Division of the Department of Consumer and Regulatory Affairs, Fire Marshall's Office, Department of Public Works, Corporation Counsel's Office, U.S. Attorney's Office, Health Department, local Business and Professional Association, local Business Improvement District, a local university, the MPDC, the Advisory Neighborhood Commissioner for the area, local civic groups, and concerned citizens of the PSA.

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requests. The department has modified the tracking system and installed it on district computers so that police personnel can enter requests directly. Citywide reports from the system are available from headquarters, and the department plans to install the reports software in the district stations. District commanders can use the reports to look at the nature, location, and frequency of requests made citywide and identify the police personnel who made the requests.

Problem Solving. As discussed above, problem solving is undertaken through the PPS program. PPS outlines a five-step method to be used in problem solving: (1) target a problem; (2) understand the problem; (3) create a plan; (4) take action and review progress; and (5) celebrate and create a lasting community presence. PSA community meetings are used to identify and prioritize problems. In fact, one PSA team reported holding two community meetings each month, one to focus on drug problems and homicides in one part of the PSA, and one to address trash, nuisance, and similar concerns in another part of the PSA.

Police officers expressed general approval of the five-step problem solving model, especially as it facilitated the progress of community meetings. Some said they are more intuitive and do not necessarily use the five-step method. In contrast, one lieutenant said that in selecting a problem, he considers input from PSA meetings, citizen complaints; data on offense types, locations, and times; information from the U. S. Attorney's Office; and other data.

A PSA action plan follows the five-step PPS model by including a problem description and an analysis of the problem; a community vision; short- and long-term goals; strategies for each partner to take; and methods to sustain success. An action plan is considered finished only when three citizens and the district commander have signed off on it. Because PSA lieutenants are responsible for developing the action plans, ownership of a problem by others can become an issue. Lieutenants have different ways of involving officers (e.g., assigning each officer in the PSA five tasks a month that relate to the current action plans; assigning one officer in the PSA to each action plan). Action plans can be saved to the central computer server once they are completed, allowing users to share strategies and commanders to monitor and review the plans.

Examples of problems addressed in the PSAs include panhandling by homeless people; drug dealing and other offenses facilitated by the location of 13 pay phones in a two-block area; and numerous drug, crime, and other problems occurring near an elementary school. Officers and officials emphasized that addressing quality of life issues builds community confidence in

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the police, with citizens often measuring police effectiveness by their ability to solve these neighborhood concerns. PSA problem solving success stories are published in "The Dispatch" and on the MPDC web page. The Office of Organizational Development staff identify potential success stories, interview police and community partners, substantiate the claim of the crime reduction through data analysis, and take photos. Problem solving training has been conducted in all 83 PSAs, and police and community members attend the training together.

Organizational Dimension

Structure. There is no evidence of organizational flattening within the MPDC. However, the concept of teams is the basis of operations in the PSAs. Each PSA has a lieutenant, sergeants, and a number of patrol officers who make up the PSA team.

Decentralization and De-Specialization. The concept of decentralization has been embraced by the MPDC. Primary decisionmaking and accountability for policing activities was pushed down to the level of lieutenant, at least conceptually, with responsibilities for monitoring and evaluation working upwards through the districts and the ROCs, and ultimately to the Chief of Police. There are several important caveats to this process of decentralization. There is a continuing perception among many officers that power, authority, and decisionmaking still emanate from headquarters. Many officers cite a need to achieve beat integrity in the PSAs. Finally, impact of decentralizing detective and other special units is still an open issue. At the time of our case study, property crime, homicide, sex offenses, and violent crime detectives were reassigned to the districts, while narcotics (the biggest specialist team) and auto theft (especially the information clearinghouse resources) were retained at headquarters. The system of redeployment at the MPDC also affects decentralization. Under redeployment in January 2001, sworn personnel working in centralized units spent one week in every four assigned to a district (generally, the same district each time). There, they undertook whatever work was required of them, including ancillary assistance in problem solving tasks (e.g., conducting drug roadblocks).[15]

[15] In mid-December 2001, Chief Ramsey presented the Mayor with a plan to disband some specialized units in the districts, including those dealing with outstanding warrants, traffic enforcement, and curfew violations, and reassign those officers to community patrol.

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It was envisioned that detectives would be multi-specialized under the PFP model. Multi-specialization recognizes that some offenses (e.g., drugs and homicides), are often linked. However, acceptance of this concept–and of decentralization–remains unresolved within investigations.

Management. In implementing the PFP model, the MPDC has made efforts to revise the duties, authorities, and accountabilities of key managers (the ranks of lieutenants and above) and supervisors in the department (MPDC, 2000). Training for managers in FY 2001 included a three-day workshop for all lieutenants and captains, where they produced an action plan for their PSAs, as well as other training on completing action plan forms. A Managerial Practices Handbook was being prepared to explain the theory and concepts behind the MPDC's organizational changes, with a particular emphasis on accountability.

A key step toward institutionalizing PFP is represented by a goal for FY 2001-2002 to develop promotional criteria and assessment procedures that are consistent with PFP. A Performance Management Program is now being used to evaluate the performance of lieutenants and above. Previously, there was no performance evaluation system in the MPDC for the ranks of captain and above.

Progress on PSA Action Plans is monitored by district commanders through monthly PSA Performance Review Sessions and quarterly mini-TOPS (Targeted Organizational Performance Sessions) held to assess the entire state of affairs in each PSA. The MPDC is encouraging district commanders to take on a managing, coaching, mentoring role in these sessions rather than a position of control and direction. In addition, awards have been given to officers (and citizens) for community policing achievements. The preference has been to give general awards, rather than creating special community policing awards, to help convey a message that PFP is the way the department does business.

A system of PSA Performance Indicators has been devised to enable lieutenants and district commanders to measure the success of PSA policing and problem solving. These are divided into PSA Outcome Indicators and PSA Output Indicators. The former measure the impact of a problem solving activity on neighborhood conditions, for example, by measuring increases or decreases in calls for service, levels of specific reported crimes, numbers of youth victims, results of community satisfaction surveys, and officer observations. Output indicators

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measure officers' activities in the PSA and may include numbers of arrests, abandoned vehicles towed, ABC violations issued, search and arrest warrants executed, tickets issued, response time (dispatch to scene), and time spent working on the PSA Action Plan. The MPDC continues to work on these indicators. The department was also in the process of determining which existing or new CAD codes would assist them in collecting performance indicator data.

Information. Patrol officers depend heavily on radio dispatch for information. Generally, officers contact dispatch only if they have cause to inquire about an address or individual; however, dispatch does not always run all categories of information about an individual (for example, whether they are the subject of a stay away order or conditional release). Hence PSA police sometimes miss opportunities to identify individuals whose movements within the PSA are restricted.

Crime analysis in the MPDC is located at both the district and headquarters levels. District crime analysis units input data, such as offense reports, and provide simple reports, for example, PD 93 forms that detail crimes occurring in a PSA for a given period of time, usually the previous 24 hours. The central crime analysis unit has the equipment and resources to provide more sophisticated analysis, including analysis of calls for service; offense type, location, and time; crime maps; repeat calls lists; warrant lists; etc. Reports and maps from central crime analysis are generally requested by district commanders on their own behalf or on behalf of lieutenants, with some lieutenants requesting analysis independently. Multiple district-level approvals are required to place a request, and this was cited as an obstacle to obtaining timely reports. Central crime analysis also aims to target analysis to a district's specific needs. For example, the unit might choose to provide robbery reports for a district experiencing an increase in that offense, while providing a report on auto theft for a district with that problem.

Other, "low tech" means of sharing information include communication log books, which are used by PSAs for transferring information within a PSA; roll call; and the weekly newsletter, "The Dispatch." However, over the past several years, the MPDC has been implementing several new computer systems that have the potential to significantly impact community policing activities by increasing officers' access to information.

The WACIIS system was first used by the MPDC (specifically, homicide and narcotics investigators) in 1994. The original system was UNIX-based and was able to provide

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information on linked data, for example, offenses, addresses, and vehicles. The new WACIIS is a "point and click" system using a Windows-based graphics interface, and it has been made available for use by all officers. Officers can use WACIIS mainly for entering offense reports, accessing offense records data, and running simple reports.

Summary of Dimensions Across the Sites

Exhibit 3-2 summarizes the activities under each dimension across the three study sites. A review of the exhibit shows both similarities and differences in how community policing operates within these cities. For example, all three sites have made a concerted effort to obtain citizen input for their community policing activities. The three sites also have changed to a geographic focus to achieve community policing goals, albeit with different organizational support structures. In addition, the three sites have implemented problem solving as a cornerstone of their efforts.

The following subsections discuss each of the four dimensions in more detail as they relate across the three study sites.

Philosophical Dimension

Each of the three study sites had its own "take" on community policing, while still including the essential components of partnerships, problem solving, and organizational change. Neighborhood Policing in San Diego began with experiments in beat profiling and problem solving, greatly expanding and refining these strategies over nearly 25 years. Aurora has almost 20 years of experience with community policing. There, the emphasis is on neighborhood-level crime prevention and problem solving, with PAR officers working throughout the city and strong linkages maintained between the police and the schools.

Policing for Prevention (PFP) in the District of Columbia is a comparatively recent development, although an important step—delineation of Police Service Areas—was taken prior to 1998. PFP as a philosophy is distinct from the other two sites. It explicitly includes as one of three major goals "focused law enforcement," which includes high visibility enforcement actions and police visibility generally in high crime areas. The concept of partnerships is strongly linked to problem solving action plans initiated at the Police Service Area level; and the PFP philosophy emphasizes "systemic prevention" as a major goal.

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Exhibit 3-2: Comparison of Community Policing

Philosophical Dimension	San Diego	Aurora	District of Columbia
Citizen Input	Community mapping public meetings	Neighborhood Watch	Established PPS program.
	Service Area Advisory Boards	Volunteer program.	Established Chief's Citizens' Advisory Council (CAC)
	Citywide Service Area Advisory Board	Chief's Roundtable.	Established citizen advisory councils in each district.
	Citizen involvement in problem solving projects	North Aurora Apartment Coalition (NAAC)	Established PSA community meetings.
	Neighborhood Watch Program	Downtown Aurora Business Association (DABA).	
	SDPD Volunteer Program	Concerned Citizens About Minorities in Aurora (CCAMA).	
Broadened Police Function	Expanded definition of "problems" for police to address	Established school resource officers.	Increased emphasis to work with citizens.
		Worked with PAR using CPTED methods.	Partnerships with other agencies to respond to quality of life concerns in communities.
		Increased coordination with probation and parole agencies.	
Personal Service	Shared decision making with the community	Maintain officers in their same area of assignment.	Increased interactions between officers and citizens.
	Neighborhood values considered in problem solving efforts		

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Exhibit 3-2: Comparison of Community Policing (Continued)

Strategic Dimension	San Diego	Aurora	District of Columbia
Re-Oriented Operations	Redrew beat boundaries to create 21 new patrol service areas	Established PAR program.	Address hot spots of crimes and disorder.
	Decentralized certain investigative operations	Established bike and foot patrols.	Give priority to repeat offenders, victims, and locations.
	Encourage "ride and talk" practices		Increase "visibility" of officers in neighborhoods.
	30 "storefront" locations		
	Implemented call handling alternatives		
	Employs CSOs		
Geographic Focus	101 neighborhoods grouped into services areas	Did citywide expansion of PAR.	Established 83 PSAs.
	Lieutenants given 24-hour responsibility		
	Officers organized into 5- or 6-officer teams		
Prevention Emphasis	Storefront and satellite officers provide crime prevention services	Involvement in youth programs.	Encourage wide range of specific activities for crime prevention.
	Department operates a centralized crime prevention unit.	Use of CPTED principles.	Established Office of Youth Violence.
	Implemented several programs: landlord/tenant training, mock robbery training for bank employees, and CPTED.		Established position of domestic violence coordinator.
	Juvenile program established called STAR/PAL.		

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Exhibit 3-2: Comparison of Community Policing (Continued)

Tactical Dimension	San Diego	Aurora	District of Columbia
Positive Interaction	Supported through problem solving philosophies, strategies, and training manuals	Allow extra time for handling calls.	Established PSA community meetings.
		Participate in school programs.	Improve services to crime victims.
Partnerships	Volunteer programs	Work of PAR officers with neighborhood groups.	Increase citizen involvement in problem solving.
	Service area advisory boards	Partnership between Student Attendance Review Board (SARB) and Cherry Creek School District.	Established Gay and Lesbian Liaison Unit.
	Establishment of SDPD Web page	Establishment of Citizen Police Academy.	Established police partnerships to combat local problems.
	Work with San Diego Organizing Project	Use of volunteer program.	
	Work with Safe Streets Now!		
Problem Solving	Officers received SARA training.	Officers received SARA training.	Established five-step problem solving process as part of PPS.
	POP Track system		

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Exhibit 3-2: Comparison of Community Policing (Continued)

Organizational Dimension	San Diego	Aurora	District of Columbia
Structure	Field operations are decentralized into eight area commands.	Opened mini-station at the Aurora Mall.	Decentralized several investigative units.
	Established six basic ranks: officer, sergeant, lieutenant, captain, and assistant chief.		
	Eliminated specialist Neighborhood Policing Teams		
	All field operations units are organized as teams.		
	Employ civilian CSOs and Code Compliance Officers.		
Management	Statement of vision, values, and mission introduced in 1994.	Revised performance evaluation to conform to community policing.	Developed promotional and assessment procedures consistent with PFP.
	Issue regular strategic plans.		Establishment of TOPS.
	Senior officers and supervisors encouraged to be mentors of officers.		Established system of PSA Performance Indicators.
	Encourage use of SARA.		
Information	Revised performance appraisal method for officers.	Introduction of new CAD system.	Established crime analysis in districts and headquarters.
	City budget process requires SDPD to report on a wide range of measures.	Introduction of a records management system.	
	SDPD participates in ARJIS for crime reports and related data.	Introduction of MDCs.	
	Operates centralized crime analysis unit with analysts responsible for each district.		

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Primary means of achieving *citizen input* in San Diego are through its 21 Service Area Advisory Boards, an extensive volunteer program, and efforts to revitalize Neighborhood Watch. In the District of Columbia, Police Service Area (PSA) meetings are the cornerstone of citizen involvement in problem solving, whereas Aurora relies heavily on the work of PAR officers with citizen and other groups. Both San Diego and the District also emphasize citizen responsibilities in publications delineating specific ways citizens can get involved. All three sites have embraced the concept of *broadened police function*, with quality of life as well as crime problems addressed through problem solving action plans.

Strategic Dimension

There are similarities across the sites in their approaches to achieving a *geographic focus* by *re-orienting patrol operations* under community policing. In San Diego, this involved identifying 101 neighborhoods, redrawing beat boundaries, and grouping the neighborhoods into 21 patrol service areas. The MPDC identified 83 Police Service Areas (PSAs) throughout the city. Aurora assigned a PAR officer to each of the city's 21 beats. All three sites make use of storefront offices, with about 30 of these in San Diego and several in the District and Aurora. Re-orienting patrol in these ways does represent progress toward humanizing officers' relationships with residents and increasing officers' knowledge of specific areas and their problems and resources. Fine-tuning these systems, however, tends to be an ongoing process. For example, small teams can make it more difficult for officers to schedule time off; managers may not see how they can assume geographic accountability 24 hours a day, 7 days a week; and cross-beat dispatches may partially defeat the purpose of "permanent" PSA assignments.

With respect to freeing up officer time, the SDPD stands out in its use of CSOs, TRUs, and even volunteers to provide call handling alternatives. Decentralization of detective and other specialized functions remains an issue in the study sites and indeed, for many departments throughout the country. San Diego has decentralized selected investigative operations to the divisional level. The District has taken aggressive steps forward (and some steps back) in its efforts to decentralize investigative and other specialized functions.

Finally, *prevention* resounds as a community policing theme at the three sites: in San Diego's problem solving work; in the District's overall "Policing for Prevention" strategy and

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specific "systemic prevention" goal; and in Aurora's PAR officers' work with community groups and through CPTED. Prevention programs are evident at all sites.

Tactical Dimension

Positive interaction is embraced as a concept at all three sites, although it is difficult to measure in terms of how individual officers interact individual citizens when the officers respond to calls. The police *partnerships* we discovered were often directly linked to *problem solving* projects. Virtually every conceivable partner—individual citizens, mental health agencies, departments of public works, and a host of others—was involved to some extent across the three sites.

Problem identification, analysis, and assessment involved the use of CAD data at all three sites. However, as discussed later in the report, missed opportunities were discovered.

Organizational Dimension

Under structure in the organizational dimension, Cordner includes decentralization, flattening, de-specialization, teams, and civilianization as important strategies associated with community policing. There is some overlap in this conceptualization with the strategic dimension. *Reoriented operations* as a strategy often includes decentralization and formation of patrol teams (as in San Diego and the District), with some consideration given to de-specialization. Flattening was associated with community policing in San Diego, but not in the District or Aurora. Similarly, civilianization supports the strategy of freeing up sworn officer time for problem solving.

Performance measures and information systems were key focus areas for this study and are treated in detail in the rest of the report. San Diego and Aurora revised officer performance evaluations by including criteria related to problem solving and other pro-active work; the District revised performance evaluation criteria for lieutenants and above and has goals to develop new criteria for other positions. All three sites saw the value of hard data from their CAD systems to aid in meeting community policing objectives for problem solving, resource allocation, and many special operations and projects. At the same time, CAD data was generally difficult for the average officer to retrieve, and the sites were in the throes of major system

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overhauls (CAD system in San Diego, the RMS in Aurora, and virtually all information systems in the MPDC).

CAD System Support for Community Policing

Another major project task was to review the CAD systems at the three participating police departments. Project staff with strong technical backgrounds in CAD applications and other information technologies for policing documented how calls were processed through the communication centers and made on-site observations of call takers and dispatchers. In addition, available documentation on the CAD systems at each site was obtained, with an emphasis on screens for capturing citizen call-in information, self-initiated activities by officers, and call for service data. We also determined how CAD data have been used by the departments in recent years. We knew that each department generated reports on calls for service. The question was the extent to which those reports were beneficial to community policing. In addition, we looked at whether the departments had an inquiry capability to obtain information on calls as part of their record management systems.

After completing the community policing case studies and reviewing the CAD systems at the three sites, the researchers identified five primary areas in which existing CAD data can be used to support community policing measures:

- Problem solving
- Support for special units, teams, or programs
- Patrol plan analysis/resource allocation
- Management accountability
- Community involvement/satisfaction.

These five areas are explained more fully in Chapter 4, but they are used below to group the CAD reports we found at the case study sites that were *actually used* or that *could have been used* to support community policing. Of course, some reports can be used to support more than one area.

CAD System Support in San Diego

SDPD members interviewed for this project reported that the CAD system provided excellent support for field operations but was being upgraded to better meet department needs for

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timely data analysis. The system was not one that officers could easily access to get the CFS information needed for problem solving. However, officers could request and obtain CFS data in virtually any format from a centralized crime analyst assigned to that officer's unit or division.

The SDPD used CAD data in a number of reports and maps. Some of these were done routinely in areas throughout the city; others were provided on request. SDPD used raw data from the CAD system as well as data exported to an MS Access database and to their GIS. The reports and data elements listed below were particularly valuable for community policing.

Problem Solving

- **Top 10 Summary Report**. This lists the ten addresses with the most calls for a specific time period and area. SDPD usually runs this report monthly for each of the 21 service areas. The report includes address, number of incidents, and total out of service time and is used for problem identification and hot spot analysis.
- **Hot Spot Map**. This map depicts similar information to the Top 10 Summary Report except the addresses are plotted on a map. It also supports problem identification and hot spot analysis.
- **Premise History.** Any employee can search the CAD system for a location's premise history. There is information about the topic, date, officer or dispatcher who entered it, and a paragraph description of the issue.

Patrol Plan/Resource Allocation

- **Beat Study.** This report compares officer activity in one area with another. Percentages are determined by taking the activity of the officer in the beat assigned and dividing by the total activity of the officer. This report is used to measure time spent and beat responsibility/out of area.
- **Response Time Report**. SDPD regularly does a Response Time Report to evaluate average response times by priority. The report contains a citywide average as well as each of the eight divisions broken down by Priority E, 1, 2, 3, and 4. This report is used for resource allocation/analysis of call stacking.
- **Telephone Report Unit (TRU) Incident Report**. This report categorizes by dispatch group (one for each of the eight divisions) and then lists call type, description, and number of calls. It is used for resource allocation.

Multiple Uses

- **Location Report.** This shows all calls at an address for a specified time period and includes incident number, date and time of call, address, call type, disposition, beat, reporting party and phone, and out of service time. It is used for

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problem identification, hot spot analysis, time spent, self-initiated activities, special support, and management accountability.

- **Call Type Report.** Similar to the location report, the Call Type Report shows all calls of a specific type in an area. A report can be run for "POP" call type to find out where all the POP project out of service time is being spent. This report is used for problem identification, hot spot analysis, time spent, special support, and management accountability.

Management Accountability

- **Out of Service Time Report**. The Out of Service Time per Officer Shift Report is done annually or more often as requested. Broken down by division, it lists out of service time per officer shift, uncommitted time per officer shift, and percent of uncommitted time. When SDPD went to Neighborhood Policing, the goal was to give officers 40 percent uncommitted time. This report is used to measure the success of that goal and falls into the time spent and management accountability categories.

CAD System Support in Aurora

We found that the Aurora Police Department produced a wide variety of regular reports through the CAD system. In addition, officers could do their own queries or request special reports. CAD data was downloaded into Aurora's Records Management System, but the data was not generally used for analysis and mapping. At the time of the study, the following reports were produced.

Problem Solving

- **Case Register**. This daily report is a list of all cases, with details, for a specific time period. A separate, related report is the Special Traffic Register, which separates out all traffic-related calls. These reports could be used for problem identification.

- **Grid Search**. A search of all calls by grid for a district is a popular request made by the District Captain. The report has the address, date, beat, nature, remarks, disposition, and incident number. This could also be used for problem identification.

- **Event Search**. This report is used by the community policing teams to review all events in a beat for a specific time period. It includes address, date, grid, nature, disposition, incident number, case number (if applicable), time, day of week, and building. This report can be used for problem identification or assessment.

- **Calls to Specific Location Report**. Officers can request a monthly report of all calls to a specific address, address range, or area. The report lists the fields

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requested by the officer but may include: address, apartment, date, beat, nature, disposition, incident/case number, time, and day of week. This report is used for problem identification and special support.

- **Listing for the Aurora Mall**. This report is a list of monthly calls at the Aurora Mall requested by an officer. It includes incident number, nature, address, date, and time. It is used for problem identification and special support.
- **Event Search by Disposition**. The two PAR areas receive this monthly report of Events by Disposition (final call type). The list of calls includes address, date, grid, nature, disposition, incident/case number, time, day of week, and building. This report is used for problem identification.
- **City Parks Incident Report**. A weekly report is produced for calls at all city parks. It is categorized by park (includes address and name) and lists date, time, nature, and incident number. It could be used for problem identification and special support.
- **False Alarm Report**. This report lists all False Alarm calls by address. It could be used for problem identification.

Support for Special Units/Projects

- **Vice Calls**. This is a weekly report of vice calls for one of the Police Area Representatives (PAR) areas sorted by disposition. It includes address, date, grid, nature, disposition, incident number, case number (if applicable), time, day of week, and building. It is used for problem identification and special support.
- **Apartment Complex Report**. This monthly report lists calls at certain apartment complexes. A unique feature of Aurora's CAD system is a separate apartment field, allowing officers to quickly identify which apartments are the biggest problems in a complex. This report is also used for problem identification and special support.
- **Gang-Related Event Report**. This report lists all gang-related events citywide for one month. It includes complainant name, date, time, nature, beat, day, address, incident, and report number. It could be used for problem identification and special support.

Patrol Planning/Resource Allocation

- **Patrol Analysis by Beat and Hour**. A second type of Patrol Analysis is also done monthly. This report breaks down numbers of calls by beat and hour of the day. It might be used as a time spent measure.
- **Volunteer Coordinator Summary**. This report is a monthly summary of all calls that have been referred to a volunteer. It includes beat, grid, disposition, date, time, location, and day of week. This report would be helpful for resource allocation/TRU.

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Management Accountability

- **Calls for Service by Nature Report.** This is a monthly report of the number of calls for each nature code for each beat. It could be used for management accountability.
- **Calls for Service by Beat Report**. This is a monthly report of numbers of calls for each beat for each priority. It could be used for problem identification or management accountability.
- **Patrol Analysis**. A Patrol Analysis report is done monthly. It includes a list of every call sorted by nature code, the numbers of calls by priority, and the average response time for priority 1 calls. It could be used to measure time spent and for management accountability.
- **Field Activity Report**. This monthly stat sheet is distributed to team sergeants at the first of every month. It includes each officer's activity regarding summons, reports, arrests, detox, field interviews, and building checks. It can be used for management accountability.

Community Involvement/Satisfaction

- **Victim Services Register**. This is a daily list of all crimes where the "nature" requires victim contact. The report includes all information related to the call. This report is used for victim follow-up.

CAD System Support in the District of Columbia

It seems that CAD data could play an extremely significant role not only in PSA and district planning, but also in the MPDC's systemic prevention projects (in the areas of youth violence, domestic violence, and general victimization). At the time of our case study, some limited use was made of CAD call for service data by PSA and district police and by offices such as the domestic violence office. As noted earlier, the department's new CAD system, which came on line in December 1999, was acquired and refined specifically with Policing for Prevention objectives in mind, including decentralized, easy access to information by all authorized personnel. The same was true of the department's new records management and other information systems, which are in various stages of completion. However, at the time of our study, the new CAD system was severely underused as an information and analysis tool for officers. Generally, the system was still viewed primarily as a mechanism for police officer dispatch and 9-1-1 accountability.

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In fact, reliance on CAD data for decisions about deployment and other activities presented problems, as data extracted from CAD was not an accurate reflection of policing in the District. For example, it was not routine practice for MPDC officers to notify radio dispatch of the actual nature of a call for service once they had completed their "run." Therefore, there was often a disparity between the nature of a call for service and the nature of the actual incident. Police practices and procedures for communicating this information with radio dispatch needed to be addressed to improve CAD's reliability as a tool for information and analysis.

Keeping in mind the need for this and other procedures to catch up with IT capabilities, the new MPDC systems will significantly improve access to information at the MPDC. One of these planned systems is IRMA which can extract and analyze information from several systems, including CAD data. IRMA is geared towards the officer as user and will have easy-to-use, "point and click" features. It enables officers, sergeants, and lieutenants to produce simple reports and crime maps. These can be valuable, for example, in demonstrating numbers and types of calls for service to participants at PSA community meetings. By enabling officers to undertake their own simple analysis tasks, IRMA in turn can free up the MPDC crime analysis units to do more sophisticated crime analysis. Initially, one to three computers in each district will have access to IRMA. The long-term vision is for every computer in the MPDC to have access to IRMA via a browser.

A significant number of MPDC police who were interviewed noted the increase in volume of quality of life issues and concerns being directed to the police. Many of these issues are fielded at PSA community meetings. During interviews, we asked MPDC officers, sergeants, lieutenants, and commanders what CAD data they would like to be able to access from computer terminals to help them in their community policing role. Interviewees came up with a significant list of data that they felt could be useful for making decisions about deployment and policing priorities, for answering community questions and concerns, and for use in the PPS problem solving process. Data listed by interviewees fell naturally into five categories: information about PSA offenses and incidents; information about specific addresses within a PSA; information about offenders and individuals; internal MPDC information; and information about other agencies. Although many of these data elements cannot be produced by any CAD system alone, we have included the entire list. It provides an excellent summary of the types of information *officers* want to support their work at the PSA and district levels.

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- PSA offenses and incidents
  - Calls for service and offense data for a PSA – by offense, location, and time
  - Calls for service and offense data for bordering PSAs - by offense, location, and time
  - Arrest information
  - Activities of individual officers (e.g., number of runs, number of arrests)
- Information about specific addresses within a PSA
  - Calls for service and background history for specific addresses
  - Activities of other agencies, such as Department of Public Works, at specific addresses
  - Households where domestic violence has taken place
  - Property owners' names, addresses, and phone numbers (for example, this would help when incidents occur at group houses)
  - Barring notice information (i.e., people who have been banned from named properties)
- Information about offenders and individuals
  - People who have been found in possession of guns
  - Violent persons
  - Vehicle tag lists
  - Other vehicle information
  - Ages of offenders (this would be especially useful for such departments as the MPDC's Office of Youth Violence)
  - Individuals on parole and probation and the conditions of same
  - Repeat offenders
  - Individuals who are the subject of a stay away order
  - Individuals who are the subject of a protective order
  - Suspect information
  - Individuals who are the subject of a warrant
  - Fingerprint capacity (D.C. does not require people to keep identification on their person)
  - Youths referred by police to other agencies, and details of those agencies
- Internal MPDC information
  - Copies of forms regularly used by police (one sergeant commented that until recently, all of the necessary forms were on the district computers, but that they are now not available)
  - Names of detectives assigned to specific cases
- Information about other agencies
  - Names and phone numbers of referral agencies (e.g., CSOSA).

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- Other information
  - Data that is currently on Westlaw, Lexus, Nexus, and RAPIDS

Most officers and officials observed that they would like to access such information both in patrol cars and at district police stations. This access would reduce the number of requests for information that are currently made to radio dispatch. It would provide information to both officers in the field and to sergeants and lieutenants at district stations. The latter could use the data to recommend policing activities and staff deployment; track the activity of police cars on calls for service; and assist in developing PSA Performance Indicators. Data would also be more accurate and timely than is now the case. As one interviewee observed, access to timely CAD data could encourage officers to be better information gatherers (because they know the data will be analyzed and put to use).

Clearly, officers need improved access to a wider range of data categories and easy methods of analyzing and interpreting the data. Several interviewees noted that officers also need training on how to explore the *conditions* of problems and use the data to formulate action plans.

Summary

San Diego and Aurora, with many years of experience in community policing, made significant use of CAD data to support resource allocation decisions, problem solving work, and other activities under community policing. Yet even these experienced sites had missed a number of opportunities for making more extensive use of CAD data. There were any number of reasons for this, including technical difficulties in extracting data valuable for community policing, in a timely manner, from systems that were designed to support dispatching functions. The District had the disadvantages of (1) less experience than the other sites with systematic approaches to problem identification and analysis and (2) the launching of major organizational changes in an environment where virtually all IT systems were out of date. On the other hand, MPDC had the advantage of being able to gear its new systems to specifically support decentralization, problem solving, and other key components of Policing for Prevention.

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The next steps in our study—discussed in Chapters 4 and 5—were to (1) develop "prototype" CAD-supported measures that might apply in most community policing agencies (not just the case study sites) and (2) conduct a national survey of policing agencies to validate the prototype measures. In other words, we moved from studying how CAD systems typically *did* support community policing to exploring their potential for doing more.

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Chapter 4

CAD-Supported Measures for Community Policing

Introduction

Chapter 3 discussed community policing implementation at the three study sites. While each site had its own version of community policing, they also had key objectives in common with respect to five overarching areas:

- Problem solving
- Resource allocation
- Support for specialized initiatives
- Community involvement
- Citizen satisfaction

Chapter 3 provided details on CAD system reports and data elements at the three sites that were used to measure efforts associated with these areas. In this chapter, we provide more details along with several other performance measures that could be generated at these three sites in support of their community policing philosophies. Chapter 5 presents the results of a national survey conducted by ILJ to verify that other police departments have interests in this collective set of measures and are capable of obtaining them from their CAD systems.

Police agencies can derive CAD-supported measures with two major analytical approaches. The first is directly from the CAD system. The system can provide printouts of raw data for someone to analyze, can produce canned or customized reports, and can do analysis within the system. The second method is to export CAD data to another system, such as spreadsheets, other databases, or a Geographic Information System (GIS). These ancillary systems can then be used for different types of analysis and production of measures.

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Problem Solving

CAD data is very useful in support of a SARA approach, as practiced in San Diego and Aurora, and the five-step approach at the MPDC. Each step in these approaches can benefit from data available in CAD systems.

For example, CAD data can be used to identify the most frequent call locations. This can be done by tabulating the number of calls at each location in the system for a given time period. A typical analysis would result in the 10 locations within a district with the highest number of calls over the last month. Further breakdowns could be obtained based on call types, such as quality of life issues, drug complaints, false alarms, juvenile -elated calls, and traffic accidents.

An alternative approach is to identify exiting hot spots of calls for service. The objective here is to identify general areas, rather than specific locations, that have a concentration of calls for service. Thus, for example, the problem may be identified as drug selling in a relatively small area of the city as opposed to a specific location such as an intersection.

These two approaches for problem identification can also be used to identify emerging hot spots in the city. Emerging gang activity in an area could be identified with the aim of introducing increased patrol or other preventive methods before the gang problems escalate to more serious activities. Similarly, a given address with no calls in the past may be identified as having a rash of recent calls. Police action at the specific location may alleviate these calls and prevent a major incident.

Once a location or area has been identified as a problem, other CAD data can shed light on more specifics. For example, the CAD system can provide information on the types of calls, times of the calls, dispositions, and responding units. The information can be provided for past time periods to determine the trends of calls at the location or geographic area of interest. It is then up to the police department to determine the most appropriate response to the problem.

Evaluations of the efforts on an identified problem can include the analysis of CAD data. For the same location or area and for comparable time periods, did the number of calls go up or down, and by how much? Has there been a displacement of calls either spatially or temporally as a result of the responses to the problem? If so, to what extent is the displacement?

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With appropriate modifications, a CAD system can be used to track the amount of time that officers devote to problem solving activities. Two approaches can be developed for tracking officers' time on problem solving. One is to establish a radio code specifically for problem solving efforts for officers to notify dispatchers indicating they are working on problem solving. These officers can usually be interrupted if they need to be dispatched to a high priority call. A second, more detailed approach is to assign a number to each identified problem and capture this number in the CAD system. This approach has the advantage of providing statistics on the amount of time devoted to a particular problem while the first approach gives statistics on total time on problem solving efforts.

Several reports from the study sites serve as examples of CAD data to support problem solving efforts. In this regard, the San Diego Police Department has its "Top 10 Summary Report," "Hot Spot Map," and "Premise History" reports. Aurora has several specialized reports to support problem solving; these include listings of calls by grid, event searches in a beat, monthly report of all calls by location, and false alarm calls by address.

Exhibit 4-1 summarizes the CAD fields that serve as the basis for these reports and others that have been discussed above.

Exhibit 4-1: CAD Data in Support of Problem Solving

Problem-Related Data

- Event address
- Data and time of call
- Units responding
- Premise history
- Beat or reporting area
- Type of call
- Dispositions of calls

Problem Solving Activities

- Officer number/name
- Start time for problem solving activity
- Ending time for activity

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Resource Allocation

Another growing use of CAD data in a community policing agency is for patrol plan analysis and up-to-date resource allocation.[16] CAD data has been used historically for these purposes but usually only once per year and based entirely on the volume of citizen calls and the amount of time these calls take. Successful community policing may require more frequent data analysis and additional CAD-supported measures. These measures can be broken down into time spent, self-initiated activities, call stacking and delayed responses, telephone report unit activity, and beat responsibilities.

Managers need to know how much time is devoted to citizen calls as they attempt to free officer time to do problem solving and other work with the community. In this regard, community policing activities have been layered on top of the need to respond to citizens when they call for assistance. There are many traditional measures of patrol activities that are supported by CAD data and that are still relevant:

- Number of citizen calls for service by district, reporting area, and other geographical breakdowns
- Breakdown of calls for service by priority and type of call
- Breakdown of calls by hour of day and day of week
- Average travel time to calls by priority and type of call
- Average service time (from dispatch time to time of completion) for calls
- Number of assignments outside each unit's area of responsibility
- Number of calls resulting in an arrest and average service time for these calls
- Number of calls that require only one unit assigned, two units assigned, etc.
- Average amount of time on calls by backup units
- Number of self-initiated activities for traffic stops, person checks, etc.
- Amount of time for self-initiated activities
- Percent of each unit's shift devoted to calls for service and self-initiated activities
- Average amount of time between activities

[16] Some agencies have developed or purchased special software for patrol planning. This additional software generally uses exported data from the CAD system.

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- Number of times that all units in the field were busy and the average number of calls waiting during these occurrences
- Changes in the volume and types of calls assigned to the field over time (i.e., has community policing resulted in a change in the number of citizen calls or in the types of calls for which citizens call the police)
- Changes in the types of call handled by special units, such as more calls into the telephone report unit
- All of the above information for specialized unit assignments, such as telephone report unit, traffic accident units, supervisors, canine units, mobile crime units, and others.

Another feature of most CAD systems is that they capture data on units assigned in the field. Each unit signs on to the CAD system at the start of the shift and signs off at the end of the shift. CAD data can therefore be used to calculate how many units were actually fielded by day of week and shift. Measures that can be derived from unit data in a CAD system include the following:

- Number of fielded units by day of week and shift
- Number of units by type (patrol units, supervisors, canine, etc.) by day of week and shift
- Total unit time by week and shift.

If a police department has modified its CAD system to capture time on problem solving activities, the above list can be expanded to obtain other measures:

- Units that worked on problem solving
- Total amount of time by patrol units on problem solving activities
- Total time by patrol units on specific problem solving activities
- Problem solving activities by geographic area (e.g., district or reporting area), day of week, and shift.

As a by-product of the above analysis, these reports are beneficial in holding managers accountable under community policing. Police managers can use CAD data on a regular basis to evaluate the number and types of calls in their areas of responsibility. This data should supplement the other data they obtain to evaluate the neighborhood crime picture.

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The San Diego Police Departments has made effective use of CAD data for resource allocation purposes. For example, it produces a report that compares officer activity in one area with another and a Response Time Report to evaluate average response times by priority. This latter report contains a citywide average by priority as well as averages for each of the eight divisions. The Aurora Police Department issues a Patrol Analysis by Beat and Hour report showing the numbers of calls by beat and time of day. The Metropolitan Police, District of Columbia has used a special program called *Staff Wizard* to analyze its patrol operations. This program makes extensive use of CAD data as input and produces a variety of performance measures on patrol operations.

Exhibit 4-2 lists the fields from a CAD system that are relevant to these reports and other measures discussed in this section.

Exhibit 4-2: CAD Data in Support of Resource Allocation

Citizen Call Data
- Event address
- Data and time of call
- Units responding
- Premise history
- Beat or reporting area
- Type of call
- Dispositions of calls
- Day of week of call

Self-Initiated Activities
- Unit designation
- Starting time for activity
- Type of activity
- Ending time for activity

Unit Related Data
- Unit designation
- Unit's starting time on shift
- Area of assignment
- Area of assignment
- Unit's ending time on shift

Problem Solving Activities
- Officer number/name
- Start time for problem solving activity
- Ending time for activity

Support for Special Initiatives

CAD data can be used to support special initiatives, such as the activities of specialized units (gang enforcement, vice, drugs, etc.), teams, or programs related to community safety.

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CAD data can be beneficial in proactively determining where these units should concentrate their efforts and the amount of time they devote to their activities.

An especially useful application of CAD data focuses on citizen calls and self-initiated activities in special locations such as shopping malls, parks, schools, and apartment complexes. CAD systems recognize these special locations either through their specific addresses or through the establishment of alias locations in the system. An alias location is one that has a designated label, such as Forest Park, rather than a street address. The system maintains a list of these locations along with the district, reporting area, and other information about them. A call taker simply enters the alias name in the address and the call goes to the correct dispatcher.

Citizen calls and self-initiated activities can therefore be accumulated for these special locations. Information about them can be analyzed to determine the number of calls by day of week and time of day to support specialized units and programs in these areas.

If specialized units are assigned to these areas, the CAD system can capture the types of activities and amount of time spent on them. As with problem solving efforts, the CAD system may need to be modified to capture the information. Once captured, the data can be used for a variety of reports on efforts made.

CAD data field relevant to support for special initiatives is shown in Exhibit 4-3.

Exhibit 4-3: CAD Data in Support of Special Initiatives

Location Related Data

- Event address
- Data and time of call
- Units responding
- Premise history
- Beat or reporting area
- Type of call
- Dispositions of calls
- Day of week of call

Specialized Unit Related Data

- Unit designation
- Unit's starting time on shift
- Area of assignment
- Area of assignment
- Unit's ending time on shift

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Community Involvement

One of the premises of community policing is that the community will become more involved in problems in their neighborhoods. The expansion of problems beyond just crime incidents is a major shift of emphasis in community involvement. Collaboration with community members raises the question of what kinds of information will serve as the basis for joint efforts. Information on crimes can be provided to citizens through analysis by the local police departments from their records management system and crime analysis units. However, these systems generally do not contain CAD data. The need for CAD data is exemplified by the fact that police departments and community members want to address other problems in their areas besides crime.

Maps of calls for service are one of the primary ways in which some police departments have filled the need to provide more information on problems to community members.[17] Because most CAD systems determine the longitude and latitude of calls for service, it is a relatively short step to the production of maps showing the number and types of calls that are occurring in a geographic area. These maps will reflect possible citizen concerns on vandalism, vice, traffic accidents, and other quality of life issues in an area. They can serve as the basis for determining whether a problem actually exists in the community and the extent of the problem as measured by the volume of calls into the police department.

The maps may serve as the basis for discussion at community meetings with police representatives. Of course, the police departments may also have supporting information on these calls for service along the lines previously discussed on problem solving applications. If the police and community members take corrective actions, new maps for a later time period will show whether their efforts have been worthwhile.

CAD data fields relevant to support for community involvement are shown in Exhibit 4-4.

[17] Some police departments provide maps of calls for service on the department's Web site for easier access by citizens.

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Exhibit 4-4: CAD Data in Support of Community Involvement

Location Related Data

- Event address
- Data and time of call
- Units responding
- Premise history
- Beat or reporting area
- Type of call
- Dispositions of calls
- Day of week of call

Citizen Satisfaction

Because citizens are working to a greater extent with police under a community policing philosophy, an expectation arises that they will be more satisfied with the police. Many police departments conduct annual surveys of citizens–usually telephone surveys–to determine satisfaction with police services. These surveys are measures of overall performance by the police. In addition, they are another source of information for problems and concerns in neighborhoods. These surveys do not depend on CAD data as a source for the sample of citizens that are called. However, the survey may include questions about any contacts between the citizen and police including calls made for assistance.

One area frequently included in citizen surveys concerns their perceptions on the fear of crime in their neighborhood. The question may be phrased as "Are you more or less fearful while walking in your neighborhood than a year ago?" Responses will indicate in a subjective manner whether citizens' fear has increased or decreased over time. An alternative to this approach is to use CAD data as a surrogate measure of community fear. For example, certain types of calls, such as "suspicious person" and "suspicious vehicle," connote feelings of fear by the caller. The volume and locations of these calls are a measure of community fear that can be obtained from CAD data.

Another type of survey focuses on client satisfaction with police services. With this approach, the aim is to determine the satisfaction with police services for citizens who have called for police assistance. A client satisfaction survey generally asks for the citizen's satisfaction with the call taker in the communications center, response time to the event, demeanor of police officers at the scene, overall responses to the problem, and general

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satisfaction with the delivery of police services. Comparisons of changes over time with multiple surveys will indicate whether the satisfaction has changed.

CAD data is an excellent starting point for these surveys because it provides the population of callers from which to draw a sample for the survey. For example, citizen calls for the last six months can be accessed from the CAD system and a random sample of calls can be obtained.[18] The sample then becomes the basis for the survey of citizens.

One problem with such a survey is that the CAD record may not include the name of the complainant or victim involved in an incident. For example, a person may call about a traffic accident at a corner near their house. The client satisfaction survey may want to talk to the parties involved in the accident rather than this caller. Without modification, the CAD system will record the telephone number and address of the caller, not the parties involved in the accident. This problem points to the need to link CAD data with other information systems, such as a records management system, for a more complete and accurate picture on police activities. We will discuss this problem in more detail in the last chapter of this report.

The Metropolitan Police, District of Columbia recently completed a telephone survey of citizens who had called the police for services. The CAD system served as the basis for the survey.

CAD data fields relevant to support for citizen satisfaction are shown in Exhibit 4-5.

Exhibit 4-5: CAD Data in Support of Citizen Satisfaction Measures

Event-Related Data
- Event address
- Data and time of call
- Units responding
- Premise history
- Complainant's name
- Call taker in communications center
- Beat or reporting area
- Type of call
- Dispositions of calls
- Day of week of call
- Complainant's telephone number

Unit-Related Data
- Unit designation
- Unit's starting time on shift
- Area of assignment
- Unit's ending time on shift

Officer-Related Activities
- Officer number/name

[18] One approach to the sampling procedure is to develop an SPSS database of citizen calls. SPSS has a built-in function that will randomly choose records from the database for the sample.

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Summary

As seen in this chapter, CAD data offers a rich source of information to support community policing. The three study sites have taken advantage of CAD data to plan, modify, and monitor their community policing philosophies. Their efforts have, however, fallen short of the full spectrum of analysis and reports that can be obtained from CAD data. This chapter has highlighted several of these prototype measures that could be obtained by the sites. In the next chapter, we present the results of a national survey that discusses the community policing activities of other police departments and whether the agencies believe their CAD systems can support these efforts.

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Chapter 5

Results from National Survey

Methodology for National Survey

In the summer of 2000, ILJ conducted a mail survey that resulted in 420 completed responses from police departments across the country. Our primary interests were to (1) determine the key community policing activities in other police departments, (2) determine whether key prototype measures would have utility in the departments, and (3) whether the departments would be able to calculate the measures. During this period, ILJ had a separate grant from the COPS Office to study call management strategies for community policing, with a survey planned for that project as well. The researchers felt there was enough overlap to combine the surveys for the two projects. Thus the 24-item instrument included questions on call management strategies in addition to questions on CAD and community policing measures.

The survey sample of police departments included all departments in the country serving jurisdictions with populations of 250,000 or greater and a sample of departments in jurisdictions with less than 250,000 residents. The questionnaires were mailed with a cover letter to the attention of the chief of police in May 2000, with a follow-up mailing to non-respondents in August 2000. Of the 695 departments in the sample, 467 (67.2 percent) returned the survey; however, 47 of the 467 noted that their departments had no CAD system and did not complete the rest of the questionnaire. Thus we analyzed responses for 420 (60.4 percent) agencies. Approximately 60 percent represented jurisdictions with 50,000 or fewer residents (27 percent were from very small jurisdictions with populations under 25, 000); 27 percent were from jurisdictions with between 50,000 and 250,000 residents; and 13 percent were from large jurisdictions with populations greater than 250,000.

The survey asked first about the community policing activities that were ongoing within their cities. The purpose was to determine the prevalence of activities in other cities and the extent to which our three study sites were collectively representative of the nation. As seen below, our conclusion is that they reflected most other police agencies. A second part of the survey asked about their existing CAD systems and the types of data available from them. This

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was followed by questions about the extent to which they were using various performance measures for community policing. Finally, the survey asked about problems in accessing and using their CAD data.

Community Policing Activities

The questionnaire asked about the extent to which departments engage in 12 specific activities typically associated with community policing. The results are shown in Exhibit 5-1.

Exhibit 5-1: Percent of Departments Engaging in Community Policing Activities

Activities	Great extent	Moderate extent	Limited extent	Not at all
Gave geographic responsibility to patrol	51	26	15	8
Have a citizens police academy	48	10	13	29
Conduct beat/neighborhood meetings open to the public	32	35	21	12
Opened neighborhood substations	26	19	18	37
Adopted problem solving techniques	22	33	32	14
Developed information systems to support problem solving	17	31	36	16
Conduct citizen surveys on a regular basis	17	22	37	24
Decision-making occurs in lower ranks	16	45	36	4
Developed evaluation criteria for determining success of community policing	14	22	43	22
Decentralized detectives	10	11	18	61
Changed communications center procedures on how citizen calls are handled	9	24	36	31
Eliminated one or more ranks	5	7	13	75

Looking at activities conducted to a moderate or great extent, we found that more than three-fourths of departments (77 percent) have assigned geographic responsibility to patrol, with about two-thirds conducting beat or neighborhood meetings (67 percent); a majority (61 percent) reported an emphasis on decisionmaking in the lower ranks. More than half (58 percent) operate citizens' academies and about half (47 percent) make at least moderate use of neighborhood mini-stations.

With respect to problem solving, slightly more than half of the departments (55 percent) have adopted problem solving techniques to a great extent (22 percent) or moderate extent (33

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percent), although an additional one-third (32 percent) make at least limited use of problem solving techniques. In line with this, 48 percent of departments have developed information systems to support problem solving to at least a moderate extent. Fewer departments (36 percent) report having developed evaluation criteria to measure the success of community policing. A similar number of departments (39 percent) make at least moderate use of citizen surveys; and about one-third have changed communications procedures for call handling.

Finally, with respect to organizational change, only 21 percent of departments have decentralized detectives to a moderate or great extent, although 44 percent of large agencies (jurisdictions with populations over 250,000) say they have decentralized detectives to a great extent. Only 12 percent of departments have eliminated one or more ranks as part of community policing. The results on flattening were not surprising since they are in line with other recent research on community policing and organizational change (see, for example, Connors and Webster (2001)).

CAD Systems and Data

CAD Systems and Data Access

Respondents were asked whether they shared a CAD system with other jurisdictions and where the system was housed. Of the 413 agencies responding to this question, 63 percent have a dispatch system on site that serves only their jurisdiction; 11 percent have an on-site system that serves other jurisdictions as well as their own; and 26 percent share a dispatch system that is not physically located at their department.

Another question asked about the level of access to CAD data: whether the department could do only limited searches and canned reports; could design its own queries and custom reports within CAD; and/or could export CAD data to other programs for various types of analyses. About 54 percent of respondents said they could design queries and reports in CAD, and 46 percent said they could export CAD data to other programs for analysis.

Types of CAD Data Routinely Used for Analysis

We also wanted to determine the specific types of data captured by CAD that departments use for analysis. The questionnaire grouped these data types into four categories

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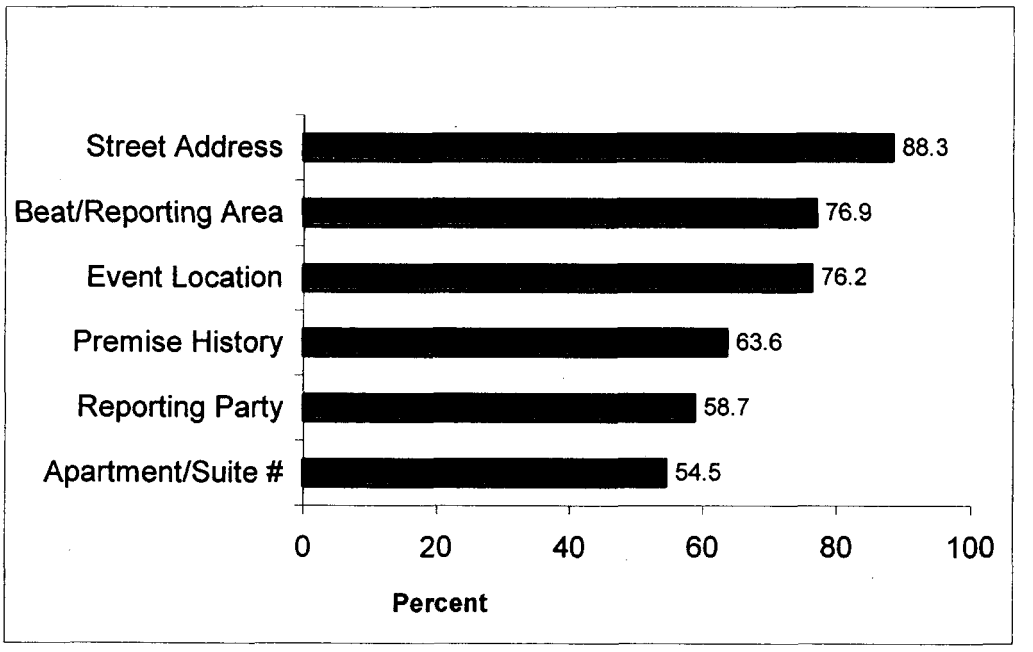
(location, primary unit assigned, assist units, and incident data). Respondents were asked to check all data types routinely used for call for service analysis.

Location Data. Less than one third of respondents (31 percent) used all six types of location data listed in the questionnaire and shown in Exhibit 5-2. A large majority of departments analyze CFS data by street address (88.3 percent), although analysis using apartment or suite number is less common (54.5 percent). About three-fourths conduct analysis by beat or reporting area (76.2 percent) and event location (as distinct from caller address) (76.9 percent). Fewer than two-thirds routinely analyze CAD data by premise history (63.6 percent) or by reporting party name or phone number (58.7 percent).

Exhibit 5-2: Location Data from CAD Systems



Primary and Assist Units. Respondents were asked to indicate which of the following types of data on primary responding units were routinely analyzed: unit designation, time dispatched, time arrived, and time completed. Nearly three-fourths of respondents (73 percent) said they used all four data elements to analyze the activity of primary units. Somewhat fewer departments (61 percent) reported using all four of the same types of data (unit designation, time dispatched, time arrived, and time completed) to analyze assist unit activity.

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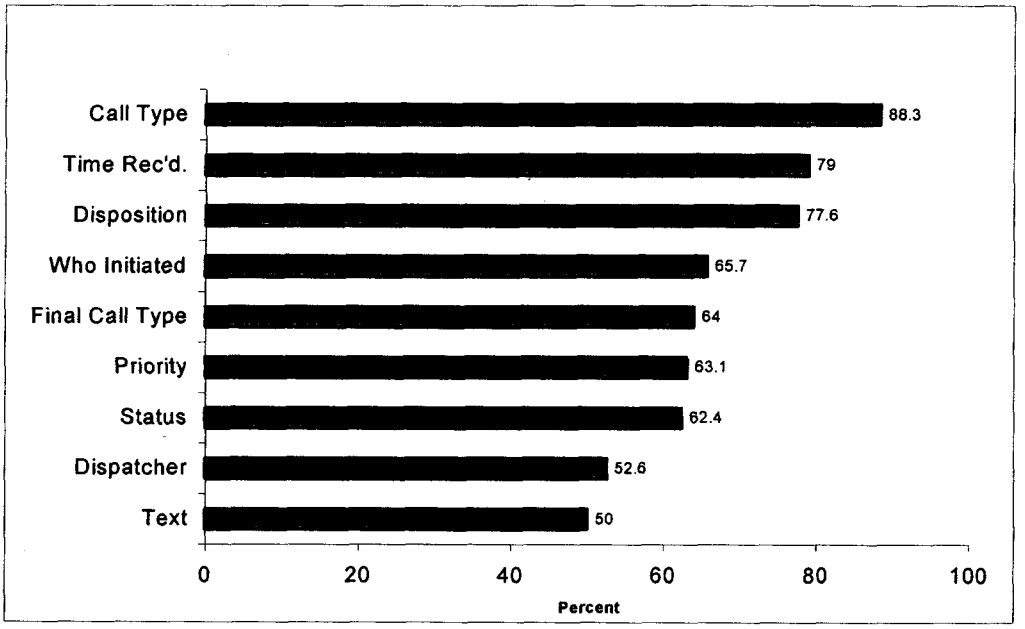
Incident Data. The questionnaire asked which of the following nine types of incident data were routinely used for analysis: whether the call is initiated by an officer or a citizen, priority, time received, type of call (based on dispatch), status (in progress, report needed), final call type (based on officer assessment), disposition (report issued, arrest made), text narrative, and dispatcher. About two-thirds of respondents (65 percent) said they used at least six of the nine options, with 26 percent using all nine options. The most frequently used data element was type of call as recorded at dispatch (88 percent), and a majority of departments (64 percent) used final call type based on officer assessment. The data type least frequently used for analysis was text narrative.

Exhibit 5-3: Incident Data from CAD Systems



Call Management

As noted earlier, this survey also included questions on call management alternatives to support community policing. This is important in the strategic dimension in Cordner's community policing framework, in that using such alternatives can free up patrol officer time for pro-active work. A more complete analysis of the results on call management is contained in a separate report (ILJ, 2002a). Highlights of those findings include the following:

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- 59 percent of respondents use call stacking/delayed response to handle certain types of calls.
- Besides responding to the scene, the most frequently used call response alternative was the use of a telephone report unit (TRU). Overall, 56 percent of respondents had a TRU, with TRUs used in 88 percent of large, 70 percent of medium-sized, and 33 percent of small departments.
- Appointments are a call handling alternative for 42 percent of respondents, but this alternative is used by only 18 percent of large departments, compared to 39 percent of medium-sized and 50 percent of small departments.
- Mail-in reports are an option at 23 percent of police agencies, with no significant difference by size of jurisdiction.
- Only 6 percent of respondents (23 agencies) used Internet reporting.
- Only 3 percent of respondents (11 departments) have 3-1-1 systems; however 93 percent of large departments report that they have discussed this possibility.
- Nearly half of respondents (49 percent) said they had discussed using various call handling alternatives that were not currently in place.

Community Policing Measures

In line with the discussion in Chapter 4, several survey questions asked about the extent to which departments are using various community policing measures in the following areas: problem solving, resource allocation, support for specialized initiatives, community involvement, and community satisfaction. Respondents were asked to indicate whether their agencies were currently using each measure, planned to do so, or had no plans to do so. Since the questions did not specifically ask whether the CAD system generated the data for the various measures, it is likely that some data was obtained from other sources. A sixth, open-ended question invited respondents to elaborate on any additional performance measures they use for community policing.

Problem Solving Measures

Exhibit 5-4 shows the percent of departments currently using each of nine measures for problem solving. Nearly 92 percent of departments report identifying top problem locations and 84.2 percent analyze call frequency by type of call. Almost two-thirds of agencies analyze hot spots (66 percent), repeat callers (65.5 percent), and premise history (61.1 percent). More than half (58 percent) said they attempt to predict emerging problem locations or areas. Almost half

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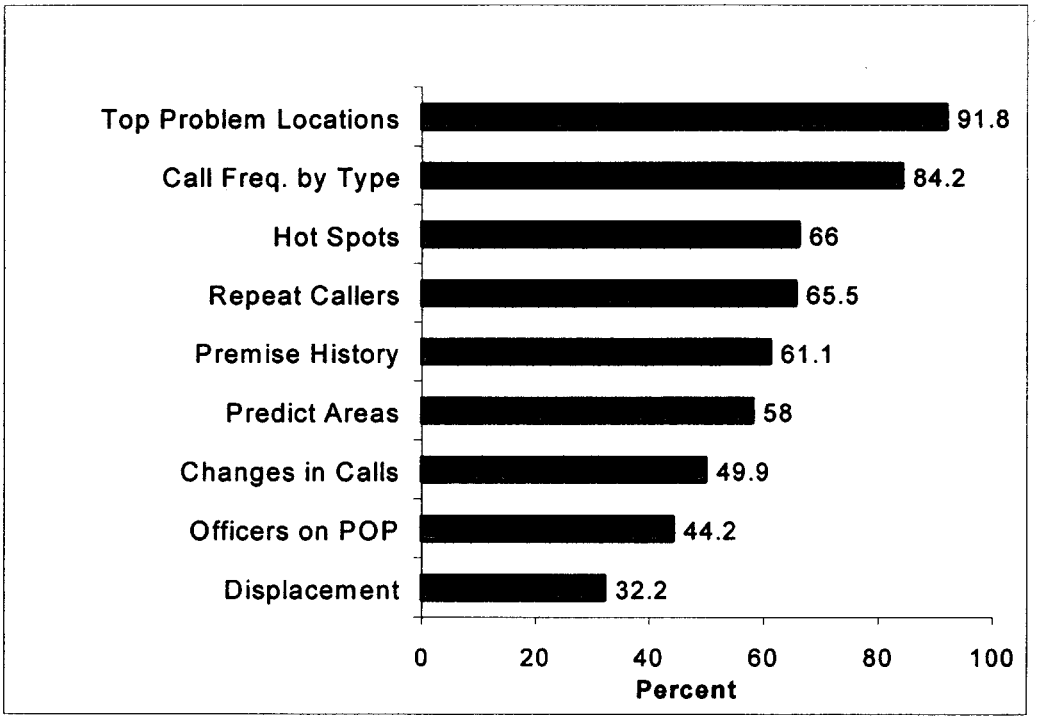
(49.9 percent) use information on changes in calls for service to assess problem solving efforts. Only about one-third of departments overall, but 40 percent of departments in medium-sized and large jurisdictions, analyze displacement with respect to problem solving. Finally, 44 percent determine which officers are performing problem solving work. There were 50 departments (12 percent of respondents) reporting use of all nine measures for problem solving.

Exhibit 5-4: Problem Solving Measures



Most departments that are not currently using a particular problem solving measure say they plan to do so, although a significant number (40 percent) do not plan to assess displacement. In addition, about one-fourth of agencies have no plans to determine which officers are performing problem solving work (26 percent) or assess problem solving efforts through changes in calls for service (22 percent). The percent of departments indicating they *do not* plan to use the other measures listed are as follows: top problem locations, 1 percent; call frequency by type, 3 percent; predicting problem areas, 10 percent; hot spot analysis, 12 percent; premise history, 12 percent; and repeat callers, 18 percent.

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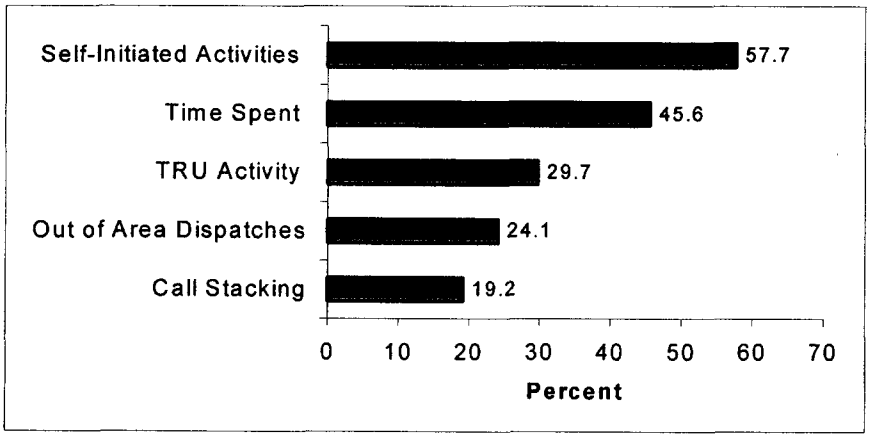
Resource Allocation Measures

Exhibit 5-5 on the following page shows that while a majority of departments (57.7 percent) assess officers' self-initiated activities, less than half analyze time spent at a location or on a problem. Less than one-third (29.7 percent) analyze TRU activity, and about one-fourth (24.1 percent) review out of area dispatches. Finally, only 19.2 percent analyze call stacking activity. Only 5 percent of respondents (19 agencies, most of which were medium-sized or large) use all five resource allocation measures listed.

Size of jurisdiction was not related to use of the self-initiated activities and time spent measures; however, large and medium-sized agencies were much more likely to analyze TRU activity. About 78 percent of large and 44 percent of medium-sized agencies analyze TRU activity, compared to 25 percent of small agencies. Large and medium-sized agencies were also somewhat more likely to analyze out of area dispatches and call stacking activity than were small agencies.

Unlike the findings on problem solving measures, slightly over half of the agencies that were not currently measuring TRU activity, out of beat dispatches, and call stacking had no plans to use these measures in the future. Most agencies not currently evaluating self-initiated activities and time spent, however, were planning to use those measures. Only 15 percent said they did not plan to analyze self-initiated activities, and 20 percent had no plans to analyze time spent at a location or on a problem.

Exhibit 5-5: Resource Allocation Measures



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Another question asked about two measures that might be used in holding managers accountable for community policing activities: number and types of calls (e.g., in the geographic area for which a manager is responsible), and complaint calls. Almost two-thirds of departments (65.3 percent) said they captured and analyzed complaint calls; another 20 percent said they plan to do so; and 15 percent said they do not plan to do this. Similarly, 60 percent of departments said they use number and types of calls for management accountability purposes, 23 percent said they plan to do so, and 17 percent have no plans for this. Responses did not vary significantly by size of jurisdiction.

Support for Special Initiatives

This question was also related to problem solving, but with the needs of specialized units, programs, or projects in mind (e.g., gang units, drug units). Respondents were asked about (1) reporting/analyzing calls by problem types and (2) reporting/analyzing calls by problem locations. About three-fourths of respondents reported that they currently do both, and about 17 percent said they intend to do both types of analysis in the future. About 87 percent of large and 84 percent of medium-sized agencies, compared to 62 percent of small, report that they analyze calls by problem type. Similarly, 89 percent of large and 82 percent of medium-sized agencies, report analyzing information by problem location; only 71 percent of small agencies do so.

Community Involvement and Satisfaction Measures

Five measures related to community involvement and citizen satisfaction were listed in the questionnaire: providing referrals to non-police agencies; doing victim follow-up; capturing community meeting times and locations; conducting citizen satisfaction surveys; and analyzing measures of fear.

As reflected in Exhibit 5-6, the vast majority of agencies (93 percent) report making referrals to other agencies, with only 3 percent of the remaining 7 percent indicating they have no plans to do so. About 89 percent of agencies either do some type of victim follow-up (76 percent) or plan to do so (13 percent). Approximately 82 percent of departments either capture information on community meetings (66 percent) or plan to do so (16 percent). Similarly, 80 percent of agencies are interested in using surveys to measure citizen satisfaction. Although only 57 percent report using such surveys, another 23 percent say they plan to use them.

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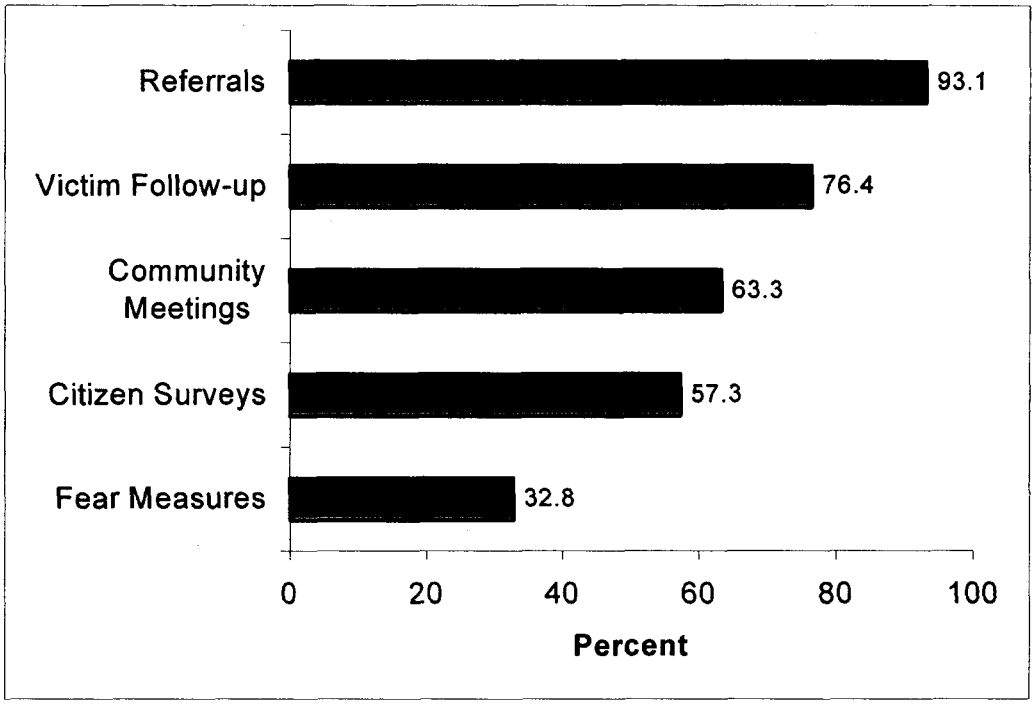
Finally, only one-third of departments report that they currently use measures of fear (the survey did not capture the type of measures used). While 29 percent said they were planning to measure fear, 39 percent said they had no plans to do so. The following exhibit shows the percent of departments currently using the five measures listed in the questionnaire.

Exhibit 5-6: Citizen Involvement and Satisfaction Measures



Other Survey Results

One survey question asked whether records were kept in the CAD system of citizen calls received by the communications center where no official response was made by the police (for example, the call was transferred to another agency). Of the 405 departments responding to this question, fewer than one-third (30 percent) said their CAD systems kept such records.

A large majority of respondents (84 percent) reported using call types that are specific to community policing. There was no significant difference in responses based on size of jurisdiction.

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The survey also asked whether the department analyzes CAD data for community policing at a centralized unit, a decentralized unit, or both. The majority of departments (63 percent) said this was done at a centralized unit; 30 percent said they used both centralized and decentralized units, and 7 percent reported using only a decentralized unit for this analysis.

Finally, an open-ended question encouraged respondents to note any additional measures used for community policing. The main finding is that several departments develop reports from CAD data on quality-of-life issues. These include, for example, reports on nuisance calls, traffic problems, abandoned automobiles, and graffiti.

Implications of Survey Results

We were encouraged to find that, overall, the proposed CAD-supported community policing measures included in the survey appeared realistic to departments representing a broader range of community policing approaches in small, medium-sized, and large departments. We found that a majority of departments either used the proposed measures or had plans to do so. However, there were a number of areas where CAD data were underused. These are discussed in the sections that follow.

Access to CAD Data

One problem was *access to the data that CAD captures*. In about half of the surveyed departments, CAD systems capture considerable data that is not easily retrieved. Only 54 percent of departments can design their own queries and reports in CAD, and fewer (46 percent) said they can export CAD data to other programs for analysis. In other words, nearly half of departments rely on "canned" CAD reports.

Location Data

Responses to the question on use of *location data for CFS analysis* reflect a nationwide trend (also apparent in other recent community policing surveys) of adopting a geographic focus in patrol. A large majority of departments analyze call for service data by street address (88.3 percent), and three-fourths analyze CAD data by beat or reporting area and by event location. On the other hand, in some departments, the analysis lacks precision. About 45 percent of departments do not analyze by apartment or suite number, and less than one-third (31 percent) routinely use all six types of location data listed in the questionnaire.

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Data on Type of Call

The survey found considerable use of CAD data on incidents, with more than one-fourth of departments routinely analyzing all nine types of incident data listed in the questionnaire. Of particular interest is the extent to which departments use data on final call type based on officer assessment. In the District of Columbia, this was not done at the time of our study. Our survey results indicate the MPDC is in the minority on this matter, with 64 percent of respondents indicating that they do use final call type in their analyses. Even so, this leaves 36 percent of departments nationwide that are operating with a less than accurate picture of actual call types.

Referrals to Other Agencies

Of particular interest for problem solving–particularly with respect to identifying quality of life issues–are citizen calls to the dispatch center that are handled by referring them to other agencies (e.g., mental health, public works). However, most agencies lack the capacity to analyze these calls through CAD, with only 30 percent reporting that their CAD systems keep records of such calls. Similarly, the study sites did not analyze referral calls; however, the District was in the process of acquiring a 3-1-1 line that could provide a means for assessing quality of life concerns. Only ten departments responding to the survey had 3-1-1 systems, although about half of large agencies had at least discussed the possibility. The District was also refining a form to track officer requests to other agencies (e.g., to fix street lights, potholes, etc.).

Decentralized Crime Analysis

Crime analysis is still a centralized function for most departments, although 37 percent have decentralized crime analysis units (with 30 percent using both centralized and decentralized units and 7 percent using only decentralized units). San Diego apparently is among the minority of agencies that specifically assign geographic (as well as functional) responsibilities to its crime analysts.

Problem Solving Activities

In contrast to the 77 percent of departments involved in geographic deployment, only 55 percent of departments report they have adopted problem solving techniques to a great or moderate extent (however, another 32 percent report using such techniques to a limited extent). Similarly, 48 percent of departments report they have developed information systems to support

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problem solving to at least a moderate extent. This is slightly higher than the ILJ and ODS (1999) findings on this question from an earlier survey in which 43.4 percent of departments (n=337) said they had developed information systems to support problem solving.

Despite a somewhat limited emphasis on problem solving *techniques*, departments place considerable emphasis on problem identification, with nearly all departments (92 percent) identifying top problem locations (through CAD data and other means); 84.2 percent analyzing call frequency by type of call; and about two-thirds analyzing hot spots and repeat callers.

Less common is the use of various CAD-supported measures to assess problem solving success. In line with the findings on information systems for problem solving, only half of respondents (49.9 percent) use data on changes in calls for service to assess problem solving efforts. There is still considerable potential for departments to use this measure; only 22 percent say they have no plans to do so. Other problem solving measures used by less than half of respondents are

- Displacement (used in one-third of departments, with 40 percent having no plans to assess displacement)
- Determining which officers work on problem solving (44 percent of departments currently do this; one-fourth (26 percent) have no plans to do so.

Resource Allocation Measures

Nearly three-fourths of respondents (73 percent) report using at least four data elements–unit designation, time dispatched, time arrived, and time completed–to calculate response times for primary units, with a smaller percentage (61 percent) conducting the same analysis for assist units. Responding quickly to true emergencies is a goal under any policing model; however, for this study we were more interested in how departments used and analyzed strategies for handling non-emergency calls (in turn freeing up officer time, potentially for problem solving and other pro-active community work).

We found that less than one-third of departments (29.7 percent) analyze TRU activity, although this is done in most large departments (78 percent). Moreover, we were surprised to see that only 24 percent of departments currently analyze out of beat or out of area dispatches, which can reduce officer time for pro-active work (as well as increase response times).

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Analysis of officer-initiated activities is more extensive, however, with 57.7 percent of departments assessing self-initiated activities and most others planning to do so. Unfortunately, we could not tell from this survey the extent to which departments use CAD codes for problem solving, community meetings, and similar activities associated with community policing. Two-thirds of departments (66 percent) currently capture information on community meetings, but not necessarily via the CAD system.

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Chapter 6

Enhancements for CAD Support of Community Policing

This chapter reviews several important areas in which CAD support for community policing can be enhanced. Technical solutions are discussed, as well as policies and procedures needed to support the suggested changes. Because not every problem has an easy technical solution, the chapter also touches on the assessment process involved in acquiring new CAD systems. Finally, the chapter offers conclusions with respect to CAD, community policing, and organizational culture.

Improving the Use of CAD Data

Based on our case studies, national survey, and other research for this project, it is clear that existing CAD systems–although designed to support a traditional, professional model of policing–do in fact provide useful data for measuring new objectives under community policing. We found that a majority of departments either used the CAD-supported community policing measures we proposed in the survey or they had plans to do so. This was true regardless of department size or the particular version of community policing implemented in the department. Compared to 15 years ago, CAD systems are much more than an efficient means of dispatching police cars to handle calls. For example, 83 percent of police departments regularly analyze call for service data by type of call, and more than 75 percent are able to support geographic deployment objectives by obtaining data at the beat or service area level.

However, as discussed in previous chapters, there are a number of areas where CAD data was either underused in measuring community policing, or if used, was not as reliable as it should have been. Each subsection that follows reviews a key problem area encountered and the importance of addressing the problem to produce more useful data for measuring community policing. In each area we also discuss (1) technical improvements people can make toward resolving the problem and (2) policies and procedures needed to support the technical improvements.

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Need for More Precise Data in CAD Systems

Results from our national survey show that about 36 percent of surveyed departments do not conduct analysis of the final call type that reflects an officer's assessment from the scene. The final call type may differ from the initial classification of the call based on information from the caller. Unless CAD data analysis includes the final call type, it will not accurately reflect the nature of crime-related calls and other problems that are phoned into the communications center. As noted earlier, this was a concern being addressed in the MPDC, which had acquired the technical capabilities to capture the data but had not yet developed and enforced procedures for officers to report it.

The need for more accurate or precise location data (e.g., apartment/suite number, address of incident versus caller address) represents a long-standing problem with respect to analyzing hot spots. An example from San Diego illustrates this issue well. Despite the data available on calls for service, there were still some holes in the CAD database at the time of our analysis. For example, whenever a report is taken, a CAD event record must be created in order to issue a report number. For a crime report that originates via a 9-1-1 call, the caller's address is used as the incident address in the CAD system. However, many residents make crime reports at district stations. When these incidents are created in the CAD system, the station's address is often listed as the location of the call. This means the police substations show up as some of the most frequent locations of crime and other activity within the city. Similarly, a CAD system may capture information on repeat calls at 610 Vine Street, a large apartment complex. This data is somewhat useful, but it does not tell whether the problems are occurring at many apartment units, a few, or only one.

Another problem is that a CAD system may not capture all citizen calls. In an era of expanded communications capabilities, police officers in some cities carry pagers or cellular phones, allowing citizens to contact them directly. Alternatively, some departments have established neighborhood police mini-stations where officers can be contacted directly by telephone or walk-in. Finally, although only a small percentage of departments surveyed provide a means for citizens to file reports or complaints over the Internet, this practice can be expected to increase. Because all of these "calls" bypass CAD systems, the utility of measures derived from CAD data may be reduced.

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Our national survey and the results from our study sites indicate that most agencies do not capture information on referrals to other city agencies. Only 30 percent of surveyed departments have CAD systems that keep records of calls handled by other than a police response. If the department's aim is to identify general problems in a community, this data is needed as part of the identification process.

Addressing the first issue—the need for data on actual call type—is generally more of a policy issue than a technical one. As noted above, in at least one-third of departments nationwide, policies and procedures may be needed to make it routine practice for officers to report the actual nature of a call for service once they have completed their "run." Depending on a department's CAD capabilities, officers may do this by phoning the information in to the dispatcher, or they may be able to enter final call type via mobile digital computers in the field. A minimum of training would be required to teach officers how to do this. A more significant issue is to increase supervisors' understanding of why final call type data is important. In many departments, it should be possible to identify officers/units that do not provide this information. In turn, supervisors can be held accountable for ensuring that this is done.

Similarly, new procedures would be needed to capture officer activity on calls and other requests for police service (e.g., walk-in requests) that CAD does not capture. To the extent that these tend to be requests of a non-emergency nature, the need to capture this information may be less obvious than the need to report final call type. However, the data can be significant for avoiding undercounts of calls/requests to police; and it can be valuable for problem solving (e.g., identifying quality of life problems and fear-related issues that can be addressed before they become more serious).

Finally, departments need to assess the value of data on referrals for identifying community problems. Most departments do not capture this data; they only record details about calls that result in a police action. As one supervisor commented, "What we don't dispatch, we don't count." If a caller complains about an abandoned house and is referred to the housing department, there is no official record of the event. Such calls represent an opportunity to understand issues of public concern, to know which members of the neighborhood are involved, and to understand how the department is handling the total demand for service.

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In fact, many departments have no official policy on making referrals and provide only informal training on doing this, although the vast majority report that they do make referrals. In the spirit of building partnerships with the public one call at a time, we would suggest that departments formalize the referral process. With respect to objectives for identifying problems, we would encourage departments to develop procedures to routinely analyze referral calls. At a minimum, they might begin by analyzing a sample of such calls and assessing the value of this information for problem solving. Creating several new classifications for calls not receiving an "official" police response could increase the value of the data.

Police can also look outside the department to the primary agencies that are receiving the referrals. Do those agencies log the source of the referral? What can a statistical breakdown of other agencies' intake records tell police about emerging problems? Even when identifiers are stripped from such data, other agencies may be reluctant to share it. Cooperation will depend on the extent to which the department has been able to develop partnerships with those agencies, as well as the agencies' understanding of why the police are interested in the data (e.g., to identify trends, focus resources on emerging problems, inform crime prevention efforts).

Need to Refine Call Classification Schemes

Another data problem with CAD systems is that many police departments use code classifications systems designed under a professional policing model. Those call classification schemes need to be significantly changed to reflect the data needs under community policing. As an example, the classification schemes in many departments reflect the city's ordinances and state laws. These schemes focus on the types of criminal offenses that might occur to the detriment of capturing data on quality-of-life and other issues of interest to community policing. A significant overhaul of the classification schemes may be needed in this regard.

The usual approach for measuring fear of crime is through surveys of citizens either by telephone or in person. Another potential approach is with CAD data, if the classification scheme for calls has the correct categories. Under these conditions, CAD data can provide measures on calls about suspicious persons, suspicious automobiles, gangs, and other problems related to citizens' fear. Similarly, a spate of calls related to graffiti, for example, may signal an emerging gang problem.

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Although not examined extensively in this project, there is also a need to achieve greater precision in classifying calls related to certain major crimes (distinguishing domestic assault from other types of assault, for example).

In terms of day-to-day practice, the suggestion for developing new call classifications is likely to meet with resistance. There is undoubtedly a point of no return, where a call taker's need to keep up with incoming calls conflicts with analysts' desires to see greater specificity in categorizing call types and sub types. On the other hand, some changes might greatly improve data accuracy without placing undue demands on busy call takers. Departments should have a process for regularly reviewing call classifications to ensure they are meeting current needs for information to support problem solving. As discussed later, developing new call types for self-initiated activities (including problem solving work, community meetings, etc.) can go a long way toward determining time spent on pro-active, community-oriented work, although this too has historically met with resistance in both field operations and communications.

Need for Greater Application of CAD Data for Problem Solving

Interviews with officers at the study sites revealed that with respect to identifying problems, CAD data tends to be most used for confirming the existence of problems that officers have already identified through other means (beat meetings, personal observations in a specific area, conversations with business managers, experience with repeat calls to the same address, intuition). This is a good use of the data. However, the officers' comments suggest departments are missing opportunities for more pro-active use of CAD data.

As discussed in previous chapters, CAD data is beneficial in the identification and analysis of problems that could be addressed by police departments and communities. After responding in some way to the problems, CAD data can be used again to measure the effects of the approaches. In a sense, this issue represents the bottom line when it comes to current use of CAD data for problem solving. Only half of departments in our survey (49.9 percent) currently use data on changes in calls for service to assess problem solving efforts (although another 28 percent say they plan to do so). Fewer than half use CAD data to analyze displacement–another potential measure of problem solving effectiveness.

Greater use of CAD data to measure effectiveness can be encouraged–at least in part–by improving the accuracy and relevance of the data and by providing officers with decentralized

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access to user friendly applications that import selected CAD data. A second part of the solution relates to management's emphasis (or lack thereof) on measuring problem solving effectiveness in general. As discussed later, this in turn relates to issues of training, leadership, accountability, and organizational culture.

Need for Data on Officer Time Devoted to Problem Solving

Fewer than half of departments use CAD data to determine those officers who work on problem solving activities. There are other ways of determining who is involved, but CAD systems offer great potential, particularly for capturing officer time spent on problem solving work, community meetings, and other activities directly related to a department's particular community policing objectives. CAD systems already use codes to capture self-initiated activities of patrol officers and other personnel (detectives, supervisors, canine unit, etc.). The list of self-initiated activities can be expanded to include problem solving and other activities related to pro-active work in the community.

Many departments have already taken steps in this direction with establishment of codes, for example, for community meetings, area canvasses, school visits, and related community policing activities. To our knowledge, however, no police department has established codes and procedures to capture officer time on specific problem solving efforts.

Implementing new codes for self-initiated activities is probably more a matter of will, policy, and management emphasis than technical capability. Call takers may see it as simply another way to make their jobs more complicated, particularly if they have not been in the loop earlier on with respect to planning for problem solving and community policing. Officers may resist for the same reason or because they fear the results may reflect negatively on their performance evaluations. There may be legitimate reasons (no time between calls, for example) for why officers do not "call in" more problem solving activities or community meetings, but these reasons will not be apparent simply by looking at the "time spent on community policing" data.

Departments that want to capture this information will need to be prepared to sell officers on the need, explain how the data will be used, and follow up to ensure compliance. A number of officers and supervisors during our case studies advocated for assessing problem solving work done by teams rather than scrutinizing time spent by individual officers. Similarly, some

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advocated for team awards and other types of recognition for work well done in lieu of or in addition to individual recognition.

Need for Improved Access to CAD Data

CAD data is generally difficult to retrieve. Moreover, only about half of the departments we surveyed export CAD data to other programs for analysis. The example that follows from San Diego explains in some detail why accessing CAD data is complicated process.

During our study, CAD data in San Diego could be accessed from three different sources. The CAD application itself provides a limited on-line search capability and a few standard reports. By using the on-line search function, CAD users can find incidents that match certain criteria. The search uses the CAD database, and thus the most current call for service information is available; but it is ineffective as an analytical tool for several reasons. First, the CAD application does not include any advanced searching, sorting, or analytical functions. Basically the on-line search is limited to finding one or more incidents that match specific search criteria. The records returned by the search can only be sorted chronologically. This limits the usefulness of the application, since many users are browsing a large number of records looking for specific information. Second, since CAD is optimized for call taking and dispatching, on-line searches and reports can take a long time to complete. Third, users who wish to search the CAD database must know the codes and terminology used by the CAD system. Outside of the Communications Center, these codes and terms are not well known.

For analytical users, the system developer at the SDPD also supplies an off-line incident database and reporting tool. The CAD Management Information System (MIS) contains a subset of the fields in the original CAD record. Using a reporting application (Trifox), analytical users can perform more sophisticated searches and statistical analyses on CAD data. Unfortunately the MIS application also has drawbacks. Writing Trifox queries requires special training in SQL query language that currently only a few SDPD programmers possess. The MIS system is also very slow. As a result, most Trifox queries, even preformatted reports, are run off-line. Also, since the MIS application uses the CAD files, the user must once again be familiar with CAD terms and codes. Finally, the MIS does not contain all the CAD data fields. For example, the MIS database does not contain event locations. Because average users have difficulty getting the

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information they want from the MIS application and because searches and reports are not interactive, the MIS module is most often used to run statistical reports on a by-request basis.

To assist mainstream users, the department created a third database. Built with Microsoft Access, it contains the same information as the MIS module but the user application can be operated with little or no computer training. The program can be accessed by most personnel over the department's wide area network and is most often used by field personnel and crime analysts for simple incident queries. Although the system provides some capabilities that the other systems do not, such as repeat calls by service area, the application lacks any statistical or analytical capabilities. Due to the number of event records generated, the program also tends to be slow.

Despite the fragmentation and the difficulty of accessing of CAD data, neighborhood officers routinely use CAD data to identify and research neighborhood problems. As noted earlier, crime analysts are responsible for specific geographic areas as well as specific functions. According to the crime analysts we spoke with, analytical requests using CAD data are received from field officers daily. Depending on the nature of the request, the analyst will typically use the Access database to answer the question. Less frequently, field officers use the Access application directly.

Officers are extremely limited in their ability to obtain CAD data either directly or through CAD MIS applications. Training in programming might be possible for a few officers but would not solve the problem. A better option would be to export selected data to a more user friendly application. Exporting CAD data to a Geographic Information System (GIS) is an increasingly popular option for crime and problem analysis; the challenge is to enable officers to create their own useful maps without having to wait for a crime analyst to process their requests.

Vendors who develop CAD software are the key to improved access to CAD data. Any analyst who has worked with CAD data knows that the underlying structure of the system is necessarily complicated. CAD vendors have the difficult task of tracking a wide variety of activities in a real-time environment. Their emphasis is on data structures and an underlying programming code that operates efficiently in a real-time environment. In the past, vendors have been far less concerned about uses of their data after the incident has been completed.

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There are several ways in which vendors can be enticed to make their systems more accessible to users. In today's marketplace, the movement is toward "open architectures" which provide buyers with detailed information on the data structures of systems. Police departments should demand these open architectures as part of a procurement process for a new CAD system. Of course, if the CAD system is already in place, then this option cannot be exercised. In this circumstance, a police department still has options. One is that they contract directly with the vendor to provide modules for more detailed data from the CAD system that would be useful in the department's efforts on community policing. This approach is admittedly expensive. An alternative is to garner support from the vendor's User Group, which is comprised of representatives from all police departments that have acquired their CAD software. Indeed, one vendor includes an exercise at its annual User Group conference in which users have the opportunity to assign points to proposed system modifications. The modifications with the most points become candidates for changes in the CAD system. These changes are covered primarily through annual maintenance fees from clients. An advantage to the vendor is that these enhancements may assist them in acquiring business with other agencies.

Assuming that improvements can be made to data access, police departments still have their work cut out for them in three areas: (1) training, (2) access to computer terminals, and (3) a greater emphasis by management on data analysis. Using a database or a GIS application may be simple compared to accessing CAD either directly or through an MIS module; however, even where data analysis for problem solving is emphasized, officers may not take advantage of the computer training that is available and may not be encouraged to do so by their supervisors.

Required in-service training should be provided on any system that supervisors and officers are expected to use. However, more is needed than exercises on how to operate the technology or where to click on the screens. Managers and supervisors as well as officers need to be shown the value of the CAD data for their work. Examples of real crime-related problems and resource allocation issues from the department should be used. A number of officers interviewed for this study also cited a need for training in interpreting CAD data and then using it to inform their action plans. In addition, recruits at the academy or in field training should be familiarized with resources available in the department for accessing CAD data. Again, they need to see how that data may assist them in identifying problems and assessing the success of problem solving efforts.

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Officers may also be limited by their access to computers. Loading the relevant software onto more machines may be possible. But even where computers are available, supervisors typically encourage officers to spend as much time as possible on the street. Officers who have laptops in the field can often access CAD data, but only through the CAD system itself (where they are confronted with strange codes and limited analysis capabilities). Many supervisors do not realize how CAD data can help them analyze problems and manage their team's resources. If they do not see these benefits themselves, providing free time and computer access for officers will not be a priority.

Finally, as indicated in the survey for this project, in most departments (at least 63 percent), requests for CAD data from officers, supervisors, and managers currently must go to a centralized crime analysis unit. Until officers have easier access to CAD data themselves, out of date or irrelevant reports–which, historically, have been frequent complaints from field operations–may remain a deterrent to the use of CAD and other crime analysis data. Actions departments can consider include (1) streamlining the process and number of approvals needed to request customized crime analysis reports, (2) assigning existing crime analysts specific geographic responsibility, whether they remain located at a central office or work at a substation, and (3) surveying officers and supervisors about the types of data they consider valuable and providing that data routinely, perhaps in lieu of other regular reports that are not well used.

Need for Linkages to Other Systems

While CAD systems contain a wealth of information to support community policing, linkages to other information systems could enhance their utility ever further. For example, most CAD systems are used to assign a complaint number to crimes and traffic accidents. Reports on these serious incidents usually are entered into separate databases for use by the department in analyzing the characteristics of these events. However, it is rare that linkages are established between these systems and the CAD data. Such linkages would greatly improve the accuracy of the analysis, especially on the location of the event and the parties involved in the incidents.

The technical obstacles for making these linkages are not significant. The complaint number is usually the key between them. With most database applications, it is fairly simple to merge records together using the common complaint number as a key.

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Need for Additional Analysis to Support Resource Allocation Decisions

In the past, a primary reason for analyzing CAD data has been a need to calculate and monitor response times. This need continues, and nearly three-fourths of our survey respondents (73 percent) report that they analyze time dispatched, time arrived, and time completed with respect to the activity of primary responding units; only 61 percent do this for assist units.

Under community policing, many departments are using calls for service (and other) data to determine new beat boundaries or patrol service areas to support geographic deployment. However, there are several areas where CAD data appear to be under-used with respect to resource allocation. For example, fewer than one-third of the departments currently analyze out of area dispatches or TRU activities, both of which can have an effect on officer time for problem solving and other pro-active work.

Departments should not underestimate the difficulty of creating uninterrupted blocks of time during a patrol shift for problem solving. Calls for service are often assigned too intermittently to allow for an officer spending 30-60 minutes on problem solving activities without being interrupted. Connors and Webster (2001) found that the most successful problem solving examples involved officers or others (civilian analyst, civilian community service officer) who were relieved of call for service duty.

Most agencies are familiar with service standards for emergency response and other traditional policing services. Examples of service standards include these: police will respond to true emergencies in less than 4 minutes; every beat will have an officer assigned 24 hours a day; no more than 35 percent of an officer's time will be spent answering dispatched calls. But far fewer departments (and communities) have come up with similar standards for new services under community policing.

The result is that there may be high public expectations for community policing without a full exploration of the staffing implications. Not only must departments assess how officer time can be freed up through appropriate call handling alternatives, they must also involve the community in clarifying how officers should be spending that free time. In the District, one priority is to achieve a higher level of police visibility in certain neighborhoods; in Aurora, it is important that officers maintain a strong presence in the schools. These are just examples. In these and most communities, the wish list is long and resources are limited. CAD data is critical

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for assessing how staff are currently deployed, as well as for measuring the success of new strategies that are implemented.

Accountability meetings such has those associated with Compstat in New York City also come to mind in discussions of management accountability. Interest in such meetings has grown around the country, although most departments do not seek to create an antagonistic meeting environment. The TOPS sessions in the MPDC are one example of how such accountability meetings may be modified. At the beginning of our study, we found that the Compstat meetings in New York City included reviews of data on reported crime and arrests as measures of police success, but not data on calls for service. Obviously, only a small portion of calls to the police results in crime reports and even fewer in arrests. We recommend that community policing departments also include data on calls for service to inform meetings like these since it provides a more complete picture of the issues that concern citizens enough to call the police.

Planning for Information Technology Acquisition

Departments that are serious about community policing and that are also in a position to acquire a new CAD system face challenges that did not exist in the professional policing era. New analytical capabilities will be needed, either within the CAD system itself, through better linkages to RMS and GIS systems, or both. In addition, decentralized access to data via desktop computers in police stations and mobile digital computers must be considered. In today's tight budget times, the need for strategic planning in acquiring information technology is even more important than in the past.

A separate study by ILJ (ILJ, 2002b) discusses how police departments can use a systematic, four-phase acquisition process–assessment and decisionmaking, procurement, implementation, and impact assessment–to help them meet their information needs and avoid costly mistakes. The assessment phase is particularly relevant for this project. It emphasizes, among other things, the need to consider both primary and secondary users.

For example, call takers and dispatchers may be the primary CAD system users, while patrol officers and crime analysts may be secondary users. If these secondary users do not provide input into the acquisition process, call handling functions may work well but analysis capabilities may be limited. Similarly, specialists such as gang unit officers or detectives may

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find that the system does not capture the data they need. One way to obtain input is to convene a committee that represents key groups in the department. Alternatively, surveys or focus groups can involve people of many ranks and positions, including department and city/county technical support staff who may be assigned to create modifications, and other law enforcement agencies that might share the system.

Despite departments' efforts to bring officers of all ranks and functions "on board" with community policing, our research on this project as well as the Information Technology Acquisition study found little conscious effort to align communications practices with field operations needs. For example,

- In one department, various communications supervisors could recall no way in which problem solving strategies had changed communications practices.
- Dispatchers readily admitted, and field officers complained about, the routine practice of assigning all calls as soon as possible.[19] Dispatchers cited pressure from communications supervisors to clear calls as quickly as possible. However, field operations, not communications, had the authority to set hold times for different priority calls.

During our interviews, we probed the alignment issue further. We asked communications supervisors and dispatchers if they were included in patrol district strategy meetings, if they were advised of local patrol priorities, or if they were asked to provide special assistance to problem solving projects in any way. Generally, the answer was "No." There appeared to be no routine efforts to involve the communications staff at any level in problem solving projects or the department's overall community policing strategies.

The lack of communication and cooperation between the divisions creates other problems as well. Dispatchers have no way of knowing when an officer is staying on a call unnecessarily and when they are actually being productive. Although the field sergeants should be monitoring their officers, dispatchers generally have calls waiting for assignment, which can lead to conflicts between the sergeants and the dispatchers.

We were not able to determine the reasons for the lack of interaction during this study. However, we suspect that in many departments, field operations does not understand what

[19] One field supervisor we spoke to referred to Communications as a "nano-second, number-crunching organization".

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communications is capable of adding to community policing, and communications does not care because they have no specific community policing or problem solving responsibilities.

In acquiring new CAD systems to support community policing or in modifying existing systems and processes, departments need to consider whether a similar lack of communication or coordination occurs and take steps to get over this type of impasse.

The final aspect of the assessment and decisionmaking phase should be a plan for performance measurement. Although it is a vital step, it is often overlooked. Most agencies in the Information Technology Acquisition study avoided the issue of performance measurement until their projects were finished. In the context of information technology acquisition, performance measurement is used to show before-and-after changes in order to prove the benefit of a new technology with respect to efficiency (e.g., in processing calls), effectiveness (e.g., in identifying crime patterns to help officers solve problems), and its enabling quality (i.e., it allows people to do something they could not do before). Performance measurement can help convince policy makers to support future technology acquisitions, assist in managing department resources, and promote the new system's use within the rank and file.

CAD, Community Policing, and Organizational Culture

Improving the Framework of Community Policing Dimensions

The Cordner framework served the researchers well for describing community policing implementation at each study site and for making comparisons across the sites. It was flexible enough to account for considerable variations in how community policing was conceptualized and practiced.

We did find a few of the elements difficult to assess through the case study process. For example, by positive interaction, Cordner meant spending extra time at the scene when responding to calls, where possible, to gather information or attend to victims' needs. CAD data showed time spent on calls but does not indicate whether interactions are positive in that sense. However, departments have used citizen surveys, victim call-backs, analysis of complaints, and even surveys of arrestees to shed light on the subject.

The extent to which managers encourage risk taking and creativity was also difficult to determine. People have different perceptions of risk, and there was no definitive way to measure

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the nature of the risks taken, although an employee survey could provide information on the organizational climate with respect to this issue. Selective discipline (distinguishing between employee violations of core values v. infractions of relatively minor technical rules) was another concept we could not examine in any detail. Examples of rules no longer on the books were found (e.g., the old SDPD penalty of two days suspension for failure to fasten helmet straps). Beyond that, we did not speculate about changes in disciplinary practices resulting from community policing.

Citizen input was also hard to measure, especially in terms of how much effort citizens expend on problem solving and to what end, or the extent to which citizens influence department policies. What we looked at primarily was citizen output–for example, numbers of volunteers, volunteer hours, types of volunteer efforts–and at citizens' roles in identifying problems. However, it is clear that volunteers in departments like San Diego and Aurora, as well as CSOs in San Diego, do indeed perform functions (e.g., responding to minor calls, assisting domestic violence victims) that sworn officers must handle in many other departments.

Finally, Cordner's article contains one statement that we would not want to see misinterpreted or taken out of context: that the organizational dimension (which includes performance measurement and information technology) is not part of community policing *per se*. These aspects of community policing generally operate behind the scenes, but they are indeed critical to sustaining community policing from one police administration to the next.

Promising Areas for Future Research

The survey conducted for this project included nine potential CAD-supported measures for problem solving. Fifty departments (12 percent of respondents) reported that they used all nine measures. Taking a closer look at these departments' use of CAD (and other) data for problem solving, and with what results, could reveal concrete examples of how departments can benefit from taking a more analytical approach to problem solving and other essential components of community policing.

With respect to decentralized access to CAD (and other) data, we believe evaluations of new systems such as IRMA in the District would be of particular value to practitioners. If data are not easy for officers to obtain, the chances of their using it to support problem solving are slim.

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In this project, we have suggested that departments can benefit from analyzing calls for service that did not receive an official police response (e.g., were referred by call takers to other agencies or resolved by communications center personnel). The value of these data for identifying emerging problems or measuring fear, however, has not been fully explored. A closer examination of the value of these data, perhaps combined with data from 3-1-1 systems or other agencies' intake records, could move this concept from the realm of theory to that of practice or reveal whether significant obstacles exist that might prevent this approach.

Changes in Organizational Culture

When organizational culture and community policing are discussed in the same breath, the emphasis is often on creating an organizational environment where problem solving, crime prevention, and partnership building are widely accepted as real police work.

Related to this–and just as difficult to achieve–is a change toward an organizational culture where research and data analysis are valued. Under the professional model of policing, departments came to value CAD data for monitoring response times to emergencies. Over the years and as more precise community policing objectives were adopted, many departments have become more analytical, using CAD data by type of call and reporting area to aid in making resource allocation decisions, identifying crime-related problems, and in at least half of departments, making efforts to measure the success of problem solving strategies.

More than 15 years ago, we had conversations with personnel in a large suburban department about the notion of crime analysts evolving into problem analysts. In the ensuing years, this notion has taken hold in a significant number of departments. More recently, as part of this study, one lieutenant imagined that in the future, police stations would become "problem solving centers." This may not be a current reality for most departments, but many are taking steps in this direction, for example, by involving citizens in beat-level meetings to identify and resolve issues of concern. These efforts can only be bolstered as officers continue to gain easier access to CAD and other data, and as these data become more precise and timely.

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