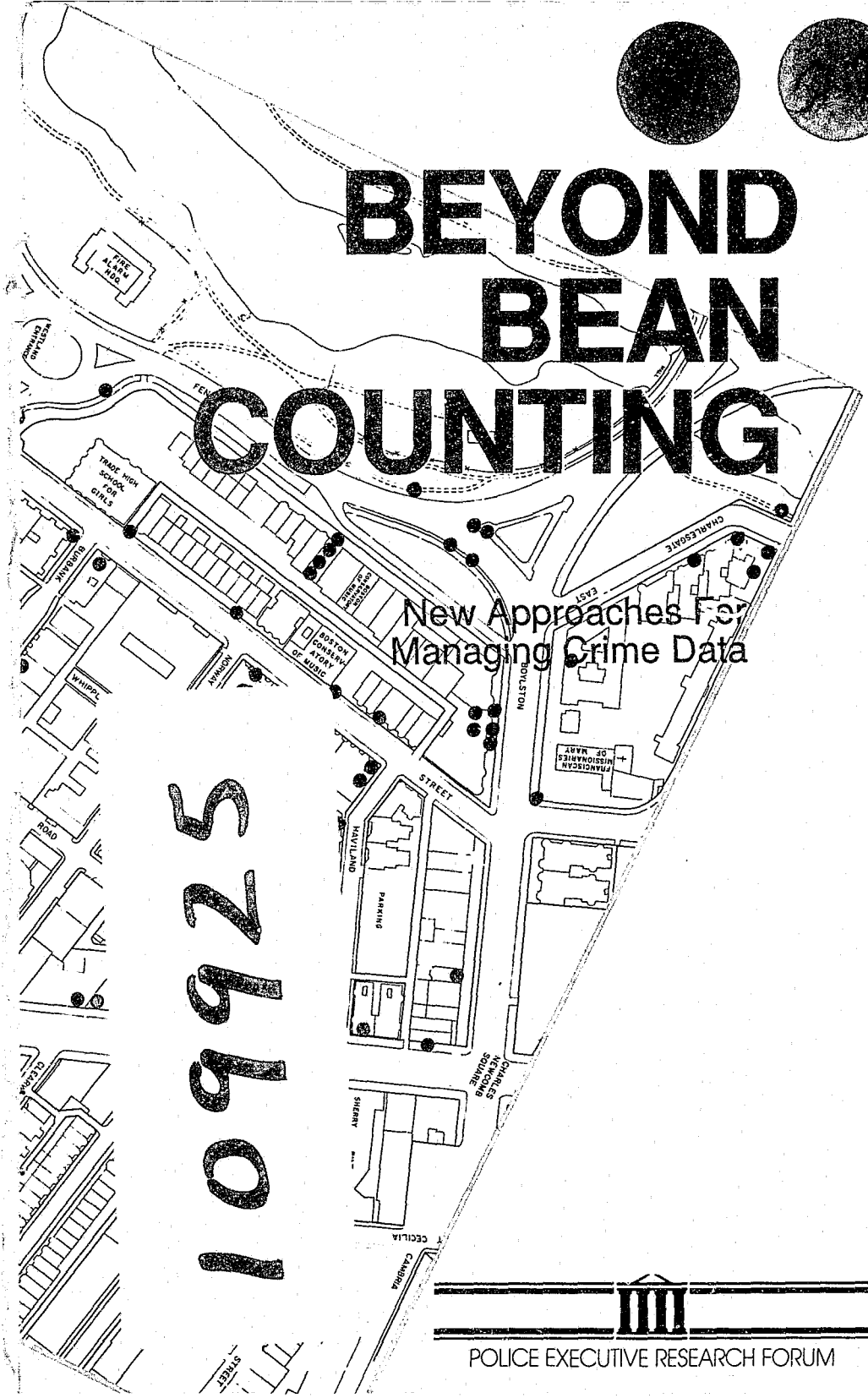
BEYOND BEAN COUNTING

New Approaches For Managing Crime Data



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POLICE EXECUTIVE RESEARCH FORUM

INCIDENT-BASED CRIME REPORTING SYSTEMS

BENEFITS

Better information for police managers

- Identify high-risk victims, problem areas.
- Forecast crime trends more accurately.
- Make crime analysis more efficient, routine.
- Provide basis for criminal justice tracking system.
- Provide better performance measures.

Better information for the public

- Easier for the public to understand.
- Gives people a more accurate idea of the risks they face.
- Helps citizens prevent crime.

More efficient

- More accurate.
- Better data security.
- Improved access to data for managers.
- Eliminates duplication of reporting systems.
- Incorporates many changes sought by law enforcement.

COSTS

Capital costs

- Computer
- Programs

Personnel costs

- Revision of incident reports.
- Training and learning time.
- Increased data entry and user programming time.

Maintenance and expansion costs

IMPLICATIONS

With careful procurement, benefits to public greatly exceed costs.

Best system:

- Easy to use.
- Flexible.
- Easy to expand.
- Consistent with revised UCR guidelines.

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New Approaches for Managing Crime Data

William Spelman

with an Foreword by

Steven R. Schlesinger
Bureau of Justice Statistics

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ACQUISITIONS

FOREWORD

In 1968, I took myself and my possessions across the country in order to continue my graduate school education. My Chevy Nova and I took five days to make the trip from New York to Los Angeles; from coast to coast, we burned about 150 gallons of gasoline.

Although I had a fine time, I wouldn't do it today; it was the kind of long, grueling trip only a young person could love. But if cars had evolved in the same way as computers have over the last twenty years, I might change my mind: I could make the trip in real style, buying a 1988 Rolls Royce Corniche for only $29.95; Federal laws permitting, I could travel at 14 times the speed of sound, completing the trek in fifteen minutes; since my car would only need one cup of gasoline, I wouldn't need to stop along the way. In fact, if cars were this cheap, fast, and fuel-efficient, I could commute to work from Los Angeles—or Hong Kong.

It's easy to see how such a revolution in transportation could change our lives in dramatic ways. Until recently, however, the effects of the computer revolution have been much less dramatic. This is particularly true in local law enforcement: since the biggest departments began using IBM 360's twenty years ago, police computers mostly have been confined to processing the same old data in the same old ways—albeit more cheaply, quickly, and efficiently than before.

Over the last few years, some police agencies, often with the help of computer software companies, have begun to develop new uses for the information their officers are constantly collecting. Differential police response systems, investigative case management systems, victim and crime analysis—all were greatly enhanced by the development of cheap, fast, efficient computers. At the Bureau of Justice Statistics, our particular interest over the past five years has been in developing one of the most important of these recordkeeping systems—the national Uniform Crime Reporting (UCR) program. Originally conceived by the International Association of Chiefs of Police in 1927, and since 1930 administered by the Federal Bureau of Investigation, the UCR has remained the foundation of Federal crime statistics for over half a century.

The UCR was a state-of-the-art system in the 1930's, but advances in knowledge and in technology have rendered it obsolete. In response to demands for a more useful crime reporting system from police executives, researchers, legislators, and the public, BJS and the FBI began to redesign the Uniform Crime Reporting program

in 1982. The result, becomes operational in 1988, incorporates many of the recommendations of the law enforcement community:

- Additional information on victims will be collected, including victim-offender relationship, the seriousness and nature of physical injuries, victims' age, race, and sex, and so on;
- All reported offenses are covered, not just the current Part I offenses;
- Information on suspects will be collected, allowing—for the first time—a link between criminal history records and crime records.

Most important, the UCR program will move from an aggregate-based system to an incident-based system. That is, participating police departments will report some information on each incident, rather than just the total number of incidents in each crime category. This will make possible an immensely flexible system, which state and local law enforcement officials can use to direct their operations more effectively than ever before.

But don't take my word for it. In this monograph, you can read the words of police chief executives, mid-level managers, and line officers who have already made use of incident-based crime reporting systems like the new UCR. You'll find that these systems give local law enforcement constant opportunities to develop new and better ways to serve the public. Because incident-based reporting systems are so flexible, we can expect these innovations to continue. And you'll find that, yes, the new UCR will be more expensive than the current system—but departments that have adopted systems like the new UCR have found that the benefits far outweigh the costs.

To minimize both the financial costs and the inconvenience to local law enforcement, the redesigned UCR program will be implemented in stages. It will be the better part of a decade before the new system is universally implemented. But as the law enforcement officials cited here make clear, incident-based reporting systems like the new UCR not only help police solve their problems today—they ensure a growth path for the future.

Steven R. Schlesinger
Director
Bureau of Justice Statistics

PREFACE

I remember attending a meeting of the American Association for Professional Law Enforcement in St. Louis, Missouri in 1972. A key item on the agenda was the Uniform Crime Reports (UCR) program. At the time, I was setting up a crime analysis unit for the Kansas City Police Department, and we used the UCR as the basis for our crime classification system. So I had an intense interest in learning how other agencies used the UCR to make strategic and tactical decisions.

Surprisingly, almost none of them did. We discussed the problems caused by the hierarchy rule—offenses are classified only on the basis of their most serious part, sometimes masking the true nature of the incident. We discussed problems of consistency—whether purse snatching should be coded as a larceny or a robbery, for instance. Some even proposed that the UCR program be terminated and replaced with state systems based on state laws.

I argued then, as I do now, that doing away with the UCR would be a mistake. Instead, we should improve the system so that it will give us the information we need to make informed strategic and tactical decisions. The debate on the UCR continues today.

Beyond Bean Counting is the Forum's contribution to this debate. It examines the incident-based reporting system proposed in the revised UCR program, and shows how progressive police departments have already used this system to begin to solve the difficulties I struggled with as an officer in 1972 and as a police manager later. As police professionals, we simply do not know enough about crime to do our job the way it should be done. We need to know more about victims, not only to improve our methods of helping them, but also to develop programs that minimize victimization without creating unrealistic levels of fear. We need to know what motivates offenders to commit crimes where and when they commit them. We need to know why a few, crime-prone locations account for so many crimes.

The most logical and cost-effective way to develop a better understanding and better crime control methods is for police agencies to collect and analyze data on crimes in their jurisdictions. Thus systems like the new UCR are the crucial first step toward more effective law enforcement. It is folly to continue to invest in the current system when the alternative provides so much greater opportunity to improve our response to crime.

This philosophy—that research is too important for police agencies to leave entirely to researchers—underlies the Forum's involvement with problem-oriented policing, and the Forum's recent publication of **Using Research**, a research handbook for police managers. It is what the Forum is all about, and it is what I think police work should be all about. **Beyond Bean Counting** is also an example of the commitment of the Forum and its membership to the principle of leadership through debate. I urge you to take the time to read it and reflect on the importance of its message.

Darrel W. Stephens
Executive Director

Officer Jim Jackson had seen it all before. The public felt threatened, and wanted the police to take action. The police chief was receiving phone calls from irate citizens. The managers of a retirement complex were applying none-too-discreet pressure to politicians and city bureaucrats. They wanted help for elderly residents of the complex, who were being mugged and harassed. The police knew they had to act decisively. And act they did, but not by throwing more patrol officers and detectives at the problem. Instead, they used their heads—and the computer.

Jackson met with tenants of the retirement complex to discuss the problem. "The residents told us where in the area they had to walk," Jackson said. "It turned out there were a lot of run-down houses between their apartment building and the local supermarket, local churches, and the downtown department stores. Transients and drug users hung around there. So we went to our crime reporting system, and confirmed that a lot of old people had been robbed along those streets. There were arson reports for some of the buildings on these streets, and some arrests for drug dealing. But the elderly complex itself was almost crime-free." A quick inspection revealed that the city had condemned many of the run-down houses; the beat officer reported that most of the others had been vacant for months.

Armed with this information, the apartment managers petitioned the city zoning board to enforce the regulations and tear the buildings down. They convinced the board that the abandoned houses were nuisances, and suggested that the city could be held liable for the harm done to victims. The houses came down, the transients scattered, and the problem disappeared. "It's the crime data that did it," said Jackson.

The problem could happen anywhere, but the solution could only happen in a city like Jacksonville, Florida—where new approaches to managing crime data are giving the police the information they need to solve problems. With the help of fast and flexible data-management techniques, police are using crime data to provide better information to the public, solve recurring crime problems, and manage their resources more effectively.

Crime statistics have helped police manage their operations for decades. As early as 1909, Chief August Vollmer

of Berkeley, California, recognized the importance of collecting and analyzing information to help manage police operations. The first police executive to establish a modern records-management system, Vollmer also pioneered the use of crime records for short- and long-term planning. The spot maps, method of operation (M.O.) files, and known offender files first seen in Berkeley 80 years ago are standard systems in virtually all American police departments today.

But with increasing urbanization and rising crime rates, the original methods of Vollmer's era have grown antiquated. In 1909, a detective could keep his M.O. files in a shoebox; now, the Berkeley M.O. files, like the rest of the department's crime records, are stored on the disks of a Micro-VAX 2 minicomputer. Lt. Phil Doran, with the Berkeley Police Department's Detective Division, feels there is no other way to keep the information straight. "We get maybe one homicide a month, and about 60 rapes a year. At that volume, it's easy for a detective to keep the M.O.'s and known offenders in his head. But we get about 3,000 burglaries a year, and about 1,000 auto thefts. For these crimes, it's really tough to keep track of who's doing what to whom and how."

Departments such as Berkeley and Jacksonville rely on incident-based or unit-based recordkeeping systems: information on

each criminal incident is recorded in the computer. Typically, data are entered into the computer directly from the incident report (and sometimes supplemental reports, arrest reports, and other forms). This allows a crime analyst, patrol officer, or detective to use the computer to identify crime patterns. Fast, simple computer routines are used to search for crimes with particular characteristics; sort crimes by location, time of day, M.O., and similar elements; or produce tables, graphs, and, in the most advanced systems, maps.

In contrast, the alternative approach to recordkeeping—a summary-based system, like the familiar Uniform Crime Reporting program—can only provide totals for a limited number of characteristics. A summary-based department can still conduct searches, sorts, and the like—but it must do them by hand.

Recognizing the limited utility of summary-based systems, the FBI began redesigning its national Uniform Crime Reporting (UCR) program in 1982. Although some details still need to be worked out, the basic elements of the new program have been set. Now all departments will be asked to report some information about each reported crime; larger departments will report detailed information on victims, arrestees, and the circumstances surrounding each crime.

The revised UCR program will be implemented over the next five to ten years, to give police agencies time to adjust to the new program. Establishing a computerized, incident-based system will obviously cost money—and for big departments that report many crimes, it will cost big money. Computerized data bases will have to be revised and computer programs will have to be rewritten; incident reports and data coding schemes may need to be changed; police officers and sergeants may need training to fill out the new reports. Are the benefits of the revised UCR program really worth the cost?

Sergeant Tom Herrel, crime analyst for the St. Petersburg, Florida, Police Department, thinks so. For him, as for many police officers charged with reporting their agency's UCR statistics, the best argument in favor of the new UCR is the old UCR. Said Herrel, "The [old] UCR is of no use to us whatsoever. It differs so greatly from state statutes that we can't use it for any of our crime analysis." For example, UCR defines sex crimes differently from Florida laws, by excluding male rape and rape by an instrument. Vehicle break-ins are larcenies for UCR purposes, but burglaries according to Florida statutes. "So we have two systems, one of which doesn't do

us any good," Herrel notes. "We'd love to use a better UCR—especially if we wouldn't need to keep up parallel systems."

Bill Bieck, operations analyst for the Houston, Texas Police, agrees. "Instead of asking 'What are the costs of the new UCR?' it makes more sense to ask, 'What are the costs of the old UCR?' We can't use the present UCR data for anything; we're already maintaining incident information on the computer because we need it for crime analysis, so it wouldn't cost us much to crank it out in a new format. But the costs of maintaining the UCR system are just dead weight."

Some police managers believe the new UCR program will correct many of these problems, because it incorporates many changes sought by the law enforcement community. A continuing source of frustration for many managers is the hierarchy rule, which requires police to report each incident only in terms of the most serious offense associated with the incident. So a burglary/rape is reported only as a rape; a residential burglary in which the offenders encountered someone at home is reported as a robbery. Usually, the hierarchy rule causes no problems, but it sometimes masks the true nature of an incident.

Chuck Alsobrook, a planner with the Jacksonville Police, explains: "Sex crimes are really a problem. The UCR rape definition is limited to female victims only. That means we can't report homosexual rape, or even rape in jail. When females are forced to perform oral or anal sex, we've got to list it as a Part II, not a Part I." As a result, a crime just as serious as rape is placed in the same category as pornography and voyeurism.

The hierarchy rule—like the rest of the UCR program—has remained virtually unchanged for over a half century. It may not have changed with the times, but the UCR has given three generations of police officers a common language to describe their crime problems. As Darrel Stephens, executive director of Police Executive Research Forum, puts it, "We don't always recognize how much the UCR has helped us establish a common terminology. When I'm at a conference and another chief starts talking about his burglary problem, I know he's talking about breakins to houses and businesses, not garages and cars. Those things may qualify as 'burglaries' in his state, but he won't call them burglaries since he knows it will confuse everyone else. He doesn't even think of them as burglaries, but as 'burglaries of autos' or 'burglaries of garages.'"

The language may be common, but it lacks nouns and verbs. One word has to represent several, very different things. Like South

Longer, more detailed forms have been required by law in some states. In 1985, for example, the Florida legislature mandated that all local law enforcement agencies adopt a uniform incident report. The aim was to reduce data entry costs and increase data quality for a planned, statewide crime information system. A few large police agencies had recently finished automating their own report forms, however, and their resistance eventually persuaded the legislature to lift the requirement. Still, after two years of committee meetings and countless drafts, about half of the police agencies in the state are ready to adopt the new report form. "About 150 agencies have committed to adopting this year, and I anticipate that at least another 50 will adopt it next year," said Jean Itzin of the Florida Department of Law Enforcement. "They looked at the standard forms, and decided that the forms would do everything they wanted their crime reports to do." Like the new UCR program, the Florida requirements respond to demands from the law enforcement community for better operational information: for the first time, officers throughout the state will be collecting extensive information on victims, suspect M.O.'s, vehicles, documents, and other property taken, and the seriousness of each incident. "If all the agencies in an area have adopted the standard, they can start to develop ways of sharing crime information and conducting regional crime analysis," added Itzin.

"There are a lot of hidden advantages to computerization," maintains Fort Collins, Colorado, Lieutenant Pat Kelly. "When we computerized our whole operation, we found advantages we never even thought about." Kelly cited the following:

Improved accuracy. "We still get errors, but we can define fields to help us do quality control. And reports contain no mathematical errors."

Files are always available. "Computer files don't walk out of the building. They're never misfiled. They never fall behind file cabinets or get lost on people's desks."

Reduced space."When you computerize, you reduce the square footage of the records department by an enormous amount."

Improved security. "Under the old, paper system we needed to control access to the records department. Otherwise, we'd worry that people would walk off with the files, or remove something from

them by mistake. Now the whole database is on terminals or microfilm—the officers can't change or delete anything."

Improved access. "It used to be that records closed at 1630 hours. The department doesn't. But the computer's up all night, and microfilmed records of old cases are available in the patrol and detective squad rooms. So anyone can get pretty much whatever they want."

By computerizing files, Fort Collins surmounted the problems that plagued the old, paper system. But the biggest advantage the computer offers is its ability to do what paper records simply cannot do. Kelly explains: "One of our officers came into my office a couple of weeks ago, complaining that a 'criminal associates' search took 45 minutes. He didn't have time to wait that long! So we figured out how long it would have taken under the old, paper system. It turned out that it would have taken 350 man-hours, and would never have been done. The officer went away happy. . . What computers do extremely well is cross-index, and that's one thing that humans do extremely poorly."

Sergeant Larry Abney, a crime analyst for the Dallas Police Department, thinks the computer can stimulate officers to think more clearly and thoroughly. "With a computerized file, the only real constraints on what can be done are with the officer's imagination," Abney notes. "Without computer assistance, the officer has to remember too many things at once; with the computer, he can start off simple, then get more complicated as he thinks of new ideas."

The automation of police recordkeeping systems parallels automation in the private sector, and for the same reasons. Dr. Jerry Mechling emphasizes this in his course on management information systems at Harvard's John F. Kennedy School of Government. "We can divide the history of business computing into three eras. The first era focused on 'traditional' applications, such as payroll. The goal was to reduce the number of clerks and become more efficient; the dominant technology was the big, mainframe computer. Personal computers ushered in the second era: word processing and spreadsheet models gave faster and better results than the typewriter and the adding machine—but it's still the same, old work."

Mechling believes that business is now entering a third era, where strategic applications will transform the kind of work people do. He notes: "Look at fingerprint identification. Before automated fingerprint systems came along, you never ran cold searches. Now,

it's a routine way to confirm a suspect's identity, generate a list of suspects from latent prints, or clear unsolved cases once you've got a suspect in custody. Results like that can be of strategic importance to the police."

And where does automated offense reporting fit in? "Depends on what you do with it," said Mechling. "If you're just producing [old] UCR statistics, it's strictly Era I. But with the data available in that data base, you could really transform the officer's job and get some strategic use out of it."

BENEFITS	BENEFICIARIES: INDIVIDUAL	FUNCTIONAL UNIT	ORGANIZATION
EFFICIENCY	II. MICRO TASK MECHANIZATION	I. TRADITIONAL PROCESS AUTOMATION	III. STRATEGIC BOUNDARY EXTENSION
EFFECTIVENESS	WORK IMPROVEMENT	FUNCTIONAL ENHANCEMENT	SERVICE ENHANCEMENT
TRANSFORMATION	III. CHANGE-ORIENTED ROLE EXPANSION	FUNCTIONAL REDEFINITION	PRODUCT INNOVATION

The revolution in records management already has helped foster an innovative strategic use, the development of "problem-oriented policing." Crime data, especially when linked to other databases, can help police identify recurring crime and disorder problems—hot spots that sap police resources year in and year out. Once these recurring problems are identified, crime analysis can help police determine why the problems persist, and what can be done to solve them.

For example, an incident-based reporting system can be used to pinpoint neighborhoods in which crime is increasing. This alerts managers that more study is needed to find out why. According to Kimberly Glenn, commander of the San Diego Police Department's Crime Analysis Unit, this can be a routine procedure. She explained, "Over time, we establish an expectation for how many crimes will be committed in each car beat. Then we get a monthly printout of crimes by beat, flagging those beats where suppressible crime levels are far above normal. We also give patrol supervisors information on what their officers are doing, including calls answered, field interrogations, and arrests. So a supervisor might say, 'My

burglaries are up, but my FI's aren't up.' And he can redirect patrol activities to handle the problem."

Many patrol supervisors seek further help from San Diego's crime analysis unit to get a more complete picture of emerging crime trends. Upon request, crime analysts conduct detailed Area Crime Evaluations (known as ACE reports), including victim and suspect profiles, M.O.'s, and spot maps. This, too, has become a routine procedure; 20 ACE reports are completed each month. Glenn's unit then works with patrol officers and supervisors to develop a plan of action for reducing crime levels. Similar procedures have been implemented in San Jose, California, St. Petersburg, Florida, and other agencies.

Victim analysis is an important tactic in the emerging strategy of problem-oriented policing. Jim Jackson of Jacksonville notes, "We're moving more and more into using victim information. We do a victim profile when we think there's a special problem or pattern—age, sex, race, the usual stuff." Jackson's analysis, while thorough, is hampered by a computer system that makes it difficult to collect these data. "We have to pull this out manually, and it's hard work," he said.

Dallas' Sgt. Abney also uses victim information, but the Dallas computer system makes his work easier than Jim Jackson's. "Whenever we find a crime pattern, or a crime cluster, the first thing we do is get a victim profile. What does the typical target look like? And we look at what's being taken," Abney explains. He tells of a recent problem involving theft of cigarettes from convenience stores. "We got a printout of the stores that were hit over and over again, and checked them out. All of them stacked their cigarettes in an open case, where they were easy to steal," Abney said. After officers convinced some store owners to keep their cigarettes behind the counter, the number of thefts dropped.

In addition, the victim pattern eventually led to identification of the offender. "This guy was stealing cartons, dozens of them at a time. So we sent around a BOLO [be on the lookout]—if you see a case of cigarettes in a car, be aware you might have a repeat felon on your hands. Sure enough, one of our patrol officers stopped a car on a traffic violation; he saw several cases of cigarettes, and had probable cause to bring him in. That was the guy," said Abney.

Analyzing and solving problems requires more information than most police departments usually collect and use. In essence, each local problem requires a hand-tailored response, identified by analyzing information collected specifically for that problem. Much

analyzing information collected specifically for that problem. Much of this information is "soft," obtained from interviews with victims, witnesses, and suspects. Nevertheless, the computer remains the starting point for most analyses.

Police departments are beginning to develop systems to provide regular support for problem identification and analysis. The most ambitious system has been developed by Northeastern University, with the assistance of the Boston Police Department. Researchers at Northeastern, under the direction of Dr. Glenn Pierce, examined three million crime calls (and calls about potential crimes) over a five-year period. Pierce explains: "Most police departments already go to the trouble of recording the date, time, and address of each call or crime. Once you know that, then you're in a position to identify or forecast which locations are most at risk of a future call, and at what times and days." Pierce has broken down the Boston findings by neighborhood, block, and even by street address. "This would be a great method for identifying recurring crime problems," he points out. "The data help to identify and describe the problem; then the police could collect more information and figure out how to solve it."

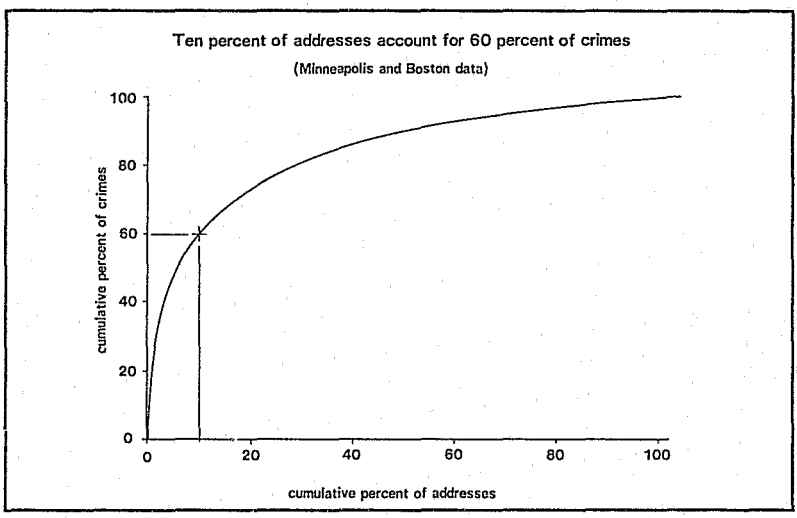
Pierce's analysis relies heavily on statistical regularities. Crime rates for neighborhoods, block faces, and even addresses tend to remain constant, so the likelihood of recurrence can be easily predicted. For example, when 10 crimes have been committed in a neighborhood in the previous month, there is a 50 percent chance that another will be committed within three days, and a 90 percent chance that another will be committed within ten days. The advantages for such standard police activities as stakeouts are clear: In the absence of informant tips about a specific crime, the police manager can assess how long an operation must continue before it is likely to result in an arrest.

The Houston Police took the Northeastern University approach for combating one recurring category of crime. "The local Hispanic community was concerned with violence in and around cantinas in their neighborhoods," said Houston's Bill Bieck. "We counted the number of cantinas in the city, and found that there were 451. Then we analyzed crime data over a 15-month period, and found that 15 of these cantinas generated 5 or more violent crimes. Three percent of the cantinas were responsible for almost 40 percent of the violence."

The Houston Police responded to this finding with a novel strategy: two patrol officers were detailed to specialize in liquor con-

trol. The officers, dubbed the "bar cars" by other patrol officers, received extensive training from the Texas Alcoholic Beverage Control Board, and began looking for violations in the most violent cantinas. They closed down some bars, and persuaded others to clean up their act. A full evaluation is still in progress, but the preliminary results are encouraging. "Based on a quick-and-dirty look at the numbers, the violence has quieted down dramatically," said University of Houston Professor George Antunes. "The 'bar cars' have had quite an effect."

The repeat calls approach was taken one step further in Minneapolis, Minnesota. As in Boston and Houston, the Minneapolis Police found that more than half of the crimes were committed at only five percent of the addresses in the city. In response, Chief Tony Bouza formed a five-officer unit to solve crime problems at the most crime-ridden addresses. The unit, called RECAP (REpeat Call Address Policing), aims to eliminate 4,000 or more calls for service to these locations within a year.



An even more sophisticated analysis system is being developed by the Illinois Criminal Justice Information Authority (ICJIA), the state's criminal justice planning agency. Following the lead of August Vollmer, ICJIA staff recognized that maps and graphs were keys to intelligent tactical use of information on crime concentrations. But with an enormous volume of crimes, the traditional spot map takes too long to put together by hand. In its classic

report on crime analysis, researchers with the International Association of Chiefs of Police concluded that, "In a high crime volume environment...the traditional approach results in significant time delay between crime problem identification and the implementation of possible solution strategies." Some crime patterns change quickly, and a three- to five-day lag can render even the best strategy ineffective.

To reduce this time lag, ICJIA developed a computer program that generates maps and graphs from the police crime database. After prompting the user with a short series of questions, the computer produces a map of the area in question, with the location and type of crimes committed for virtually any length of time pinpointed on the map. "This geographic coding scheme is pretty expensive right now," explains ICJIA researcher Rebecca Block. "A participating police department will need to spend $8,000 or so to get the coordinates for each address in the city. But that's really the only big expense." Because the program is tied into the department's incident reporting system, spot maps can be produced (and reproduced) literally seconds after a crime has been logged into the computer.

Problem-solving may be an important innovation, but the stock in trade of most police agencies remains routine patrol and detective work. Answering calls for service and following up crimes still consumes the bulk of the agency's resources, and will do so for the foreseeable future. But as budgets continue to tighten, allocating these resources efficiently will become more and more important. And efficient allocation requires information.

The Dallas Police Department sees its incident-based reporting system as an invaluable tool in allocating resources. "We use the UCR code to get started," said Larry Abney. "But we've found that the UCR categories include a lot of crimes that can't realistically be prevented through patrolling. So I break out those crimes that can be." This includes robberies committed in a business or public street, and rapes committed on the street; residential and business burglaries; thefts of autos and bicycles; and burglaries from automobiles. Abney then wrote a program to list the frequency of each preventable offense by sector; it includes information on time of day, day of week, and patrol beat. Every quarter the patrol sergeants receive the printout for their sector (more often if they ask for it). "We ask the sergeants to pick the biggest crime problem in their sector, and assign some officers to solve it. They aren't required to do this, of course, but a lot of them like to," said Abney. "We see the

UCR codes as a reasonable starting point; but if we stopped there, we'd get noplace." Dallas uses the same, detailed information to assign officers to beats and shifts, and to configure beats.

Quarterly printouts and beat configuration studies are helpful for strategic purposes, but incident-based systems can also help in day-to-day operations. The computer can be used to retrieve incident characteristics that form crime patterns, rather than using legal categories (which rarely reveal patterns). "You can't really direct your patrol officers on the basis of the UCR crime types," maintains Sgt. Abney. "You need more specific information to establish a crime pattern. But when you've got the specific information, you'd be surprised how we can predict what's going to happen. One of our analysts found a church burglary problem in his area. The thieves were taking stereo equipment. That's pretty clear: they're going to keep hitting churches, and they won't go back to churches they've already hit. He did a little background investigation, and found one church that had all the right characteristics, but hadn't been hit, yet. The analyst convinced the precinct captain to stake the church out for three nights. We caught the burglars on the second night."

Dallas is by no means alone in using incident-based systems to direct tactical operations. The police in New Castle County, Delaware, and San Jose, California, use their incident-based files to assist in deploying patrol officers. Stakeouts, surveillance, and directed preventive patrol are all developed on the basis of crime analysis information taken from the automated files.

Automated records systems are particularly useful for directing crime prevention activities. Many departments analyze M.O. and geographic location to identify residences and businesses that are particularly vulnerable to burglary, and to investigate why they are vulnerable.

Neither the analysis nor the solution need be highly complex. When a rapist ravaged the Riverside section of Jacksonville, Florida, residents—many of whom had lived there for decades—were scared to death. "People talked about moving," remembers Jim Jackson. The crime prevention unit analyzed the pattern of rapes, and found they all happened as the result of burglaries. Then they looked at the burglaries, and noticed a common M.O. "Three-fourths of the time, the burglar was getting in through an unlocked door. We weren't talking about a sophisticated burglar here. We found that people in the neighborhood could reduce their risks through

very simple means." Eventually, the rapist was caught; in the meantime, the residents were more prudent, less fearful, and safer.

Detailed crime data can also help in allocating detective resources. Because incident-based systems capture the seriousness of crimes—that is, the amount of harm done to victims—they allow detective managers to focus their detectives' efforts on the worst cases, not simply those easiest to solve. "We've got twenty detectives in our burglary squad, and fifteen in robbery," said Chuck Alsobrook of Jacksonville. "If all we were trying to do was maximize clearance rates, we'd probably put more people in burglary. But it's more important to clear a robbery than a burglary." Most departments make judgments like this already, but when explicit seriousness data are readily available, police make more informed judgments.

Automated reporting systems have already proved helpful for case assignments. In San Diego, the crime analysis unit identifies rough crime patterns based on geography, time of day, and M.O. Then detective supervisors assign all cases with similar patterns to the same detective, under the assumption that one offender or group of offenders may be responsible for all the crimes forming the pattern. If the detective can pool the leads from all cases in the group, it gives him or her much more to work with.

Although information is the essence of successful detective work, detectives do not often rely on department records. Berkeley's Phil Doran believes that "it's not because the information's not there. It's mostly tradition and experience, the usual difficulties in getting people to change. Detectives still operate like they've always operated—they prefer to rely on personal experience and their reading of the cases."

But police managers have found that this attitude changes once detectives realize what department records can do for them. Al Andrews, superintendent of police in Peoria, Illinois, remembers a case which turned a lot of detectives' heads, when virtually every one of Peoria's computerized data bases proved helpful. "We interrupted a robbery in-progress a few years ago," Andrews explained. "We caught one of the two robbers, but the other one got away. The robber we caught wouldn't tell us anything, so there's no lead there. We got the license plate for the getaway car, but it turned out to belong to a man who claimed his wife had been kidnaped while she was out at the laundromat. So now we have a kidnaping and a robbery, and *still* no leads. Then one of the detectives got onto the computer to look at the arrest and F.I. [field interrogation] files; he listed all of-

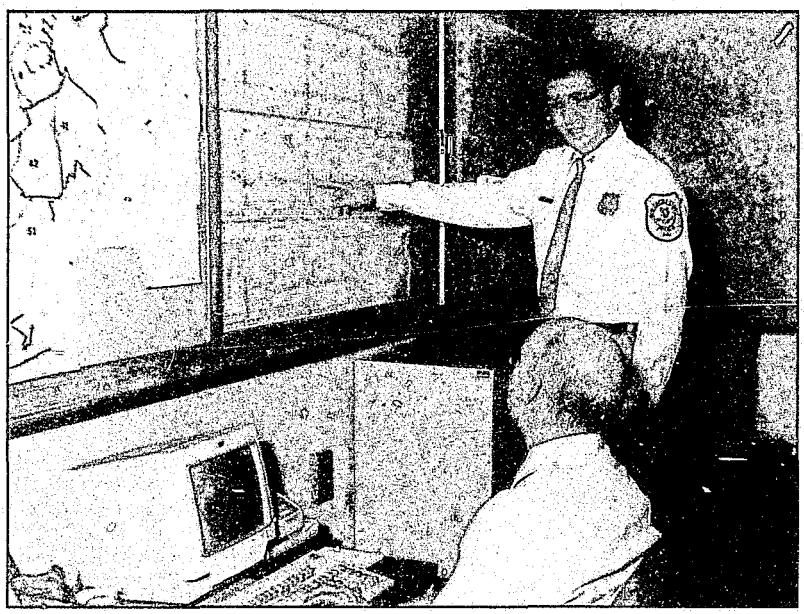
fender names that had ever been associated with the robber we caught. Then he listed all the offender names that had ever been associated with them. He did the same thing with their vehicles. When he was done, we had a tentative ID on the suspect, and a list of six vehicles he might be driving. A few hours later we caught the suspect we'd identified, driving one of the vehicles on the list." Andrews adds, with satisfaction, "He pled guilty and got a long prison term. This case is a classic in my department."

Virtually all departments collect information like this. But in most places, it is inaccessible—scattered throughout a dozen file cabinets in the records division, or in private files maintained by investigators. "There's all kinds of management information floating around a police department, all kinds of crime information," said Colonel John McCarnan, chief of the New Castle County, Delaware, Police Department. "But there's a big gap in the middle, between all the different people who store and keep the information, and the people who can use it. If all the information were in a central location—a single automated unit—managers could get speedy access to data in manageable form." New Castle County uses its incident-based offense reporting system as a master file, linking together the other management data bases it maintains. Although the startup costs to a fully integrated system like this are high, McCarnan believes that the maintenance costs are lower. Like Fort Collins' Pat Kelly, John McCarnan has found that computerization leads to less duplication of effort and requires fewer data entry clerks.

Any detective manager must deal somehow with the problem of clearance rates. In theory, clearance rates are the ideal tool for measuring the effectiveness of a detective squad: they are easy to understand and calculate, and the link between effort and result is obvious. Unfortunately, every department seems to calculate clearance rates differently, making comparisons almost impossible. Gil Kerlikowske, former chief of detectives for the St. Petersburg (Florida) Police, and now police chief of Port St. Lucie, Florida, would make these comparisons if he could. "If we were sure that Tampa were doing a better job, we'd send some people to Tampa and see what they're doing better than we are," said Kerlikowske. "They may be working different cases, or doing more intelligence. That'd be a great justification for getting more detectives, or fancier equipment. But there's no way to make those comparisons valid and reliable. I look at a few departments, but I see some odd fluctuations from year to year. We know we can't compare the clearance rates, so we don't bother."

Could a new set of definitions make clearance rates more reliable and comparable? It appears so. In Delaware, the state monitors submissions to its incident-based reporting system carefully, ensuring uniformity in defining clearances, arrests, and similar terms. Here, police administrators believe they can make such comparisons. "I keep a chart on my wall, comparing our clearance rates to those of Newark, Wilmington, and the State troopers," says New Castle County's McCarnan. "Usually we do as well as or better than the others. But when we don't, I try to find out why. I usually can, by relying on reports from our case management system." Reports of arrest rates by crime type—broken down by type of victim, availability of witnesses, and other variables—tell McCarnan whether the slippage is a short-term fluctuation or a problem that needs correcting.

Undoubtedly the biggest benefit automated records offer for investigations is that they can help managers go beyond clearance rates, by forming the basis for a comprehensive case tracking system. "Clearance rates are a start," acknowledges Kerlikowske, "but I'd rather evaluate my people on a basis like 'cases resulting in conviction,' or 'years of incarceration.' Arrests and clearances don't deter or incapacitate criminals—convictions and prison terms do."



Some departments are starting to develop such comprehensive systems for the most vital cases—those involving the most frequent and dangerous criminals. In San Antonio, Texas, the police and the district attorney keep track of pre-arrest investigation, post-arrest investigation, and progress through the courts for all cases involving repeat offenders. "This helps us to know how fast a case is proceeding, when it's coming up for trial, how soon we have to finish any case enhancement actions," said Captain Jimmy Kopeck, commander of San Antonio's repeat offender unit. "We also know when an offender's going to have to go out and get some more money to pay his bail bondsman—it's good to know when someone we've just arrested is back on the street."

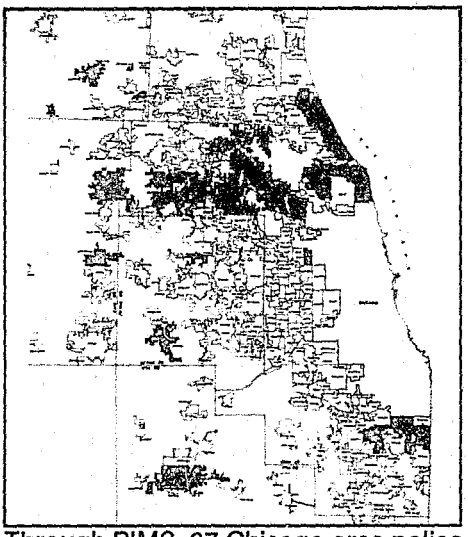
The next step, says Kopeck, is to get corrections records on the computer. "We could make our officers aware when they can expect to see a repeat offender on the street again. The guys we're dealing with—as soon as they get out, they're going to hit the ground running. They don't quit." San Antonio is working to make such information as probation and parole conditions, the names of probation and parole officers, and current addresses available to officers on the street, not just members of the repeat offender unit.

But vertical tracking up and down the criminal justice system for a single case may prove less important than horizontal tracking—searching throughout all the law enforcement agencies that serve a metropolitan area. When Gil Kerlikowske was chief of detectives in St. Petersburg, Florida, the lack of a regional tracking system was a continuing problem. "If we picked up someone who'd been arrested in Tampa three times for burglary, we'd never know. We'd have to call Tampa and ask them to search their computer system, and it was just too big a hassle for every burglar we arrested. But if we had a regional tracking system, then we would pull it out for every arrest. I can really see the potential for a repeat offender project, for example."

There is mounting evidence that Kerlikowske is right. Researchers have shown that frequent offenders are particularly mobile, and experience confirms that some are savvy enough to use the reluctance or inability of different departments to share information. Baltimore County, Maryland officers like to tell the story of one offender who realized that the County's Repeat Offender Unit had him on their target list. Lieutenant Bill Faul explains: "This guy knew that he was what we call a 'threshold offender'—the next time he was picked up on a felony charge, we could charge him under 643(b) [Maryland's repeat offender law]. That means he'd get a 25-year

mandatory sentence—if the prosecutor made a career criminal motion. He must have known from prison scuttlebutt that Baltimore County would make sure the motion was filed, because he was careful only to commit crimes inside Baltimore city. One day he got careless, and committed an armed robbery just inside the county line. When we picked him up, he did everything he could think of to try and get us to transfer the charge over to the city—he lied about his name, confessed to crimes in the city, promised to give us lots of information, you name it. We didn't buy it, finally found out who he really was, and now he's doing 25 years."

Police agencies that participate in a regional system swear by them. Thirty-seven agencies subscribe to the Police Information Management System (PIMS), a database package marketed by the Illinois Criminal Justice Information Authority. Through the system, these agencies share information on arrests made and property taken. PIMS systems analyst Terrance Gough describes how they can help: "Here's a common problem. Say Evanston arrests a guy for a sex offense. The other 36 towns on our system are notified that this guy has been arrested. They can get his name, alias, physical description, known associates, the car he drives—and use that to clear more cases and bring more charges against the guy. Or say a detective in Arlington Heights is looking for a white burglar in his thirties who drives a Chevrolet. They can go into PIMS, request a



Through PIMS, 37 Chicago-area police agencies share crime information.

search—in plain English—and get a list of all those who've been arrested in any of the PIMS departments who fit the description. These are tremendous investigative aids."

But don't departments have to surrender autonomy to participate in such an integrated system? "Autonomy is an important issue," allows Gough. "It depends on the agency. PIMS doesn't require any agency to change for the sake of change, and it usually doesn't require big changes in policies and procedures. But they do have to collect the information that is required by the PIMS programs; as long as they can get the basic data off the crime report, how they get it is completely up to them."

"The public needs details, too," said Peoria Police Superintendent Al Andrews. There is a growing belief among police practitioners and criminologists that the public is as important in controlling crime as the police. And if better crime information can help the police in making management decisions, then it can also help citizens make their own decisions about crime control. The more information available to the public, the better their decisions will be. Superintendent Andrews explains:

> I've got a problem with some businessmen in the South Side. They've looked at the UCR figures for their area, and think they've got a terrible crime problem. But the whole thing is driven by small-time larcenies—mostly shoplifting. The UCR theft totals are meaningless! What I did was get thefts broken down by seriousness: how much was taken, whether the theft was from inside or outside a building, the Sellin-Wolfgang index. That's something they can use.

The key, for the public as well as for the police, seems to be *use*. Just as the current UCR breakdowns are of little use for internal police management, so they offer little to citizens interested in reducing their risks. Andrews maintains, "We need to redefine the terms everyone uses to think about crime. And this won't take very long, once the news media start to use it."

One problem is that the current terms, the UCR totals, are easily misunderstood by the average citizen. "Look at pursesnatching," says Westchester County, New York, Deputy Police Commissioner Tom Sweeney. "If the victim doesn't resist and the crook takes the purse, most departments would call it a 'contact larceny,' a 'proper-

ty crime.' If the victim resists, it's a 'strongarm robbery,' or 'violent crime.' Essentially the same incident, but you're sending two very different messages to the public. Does that make any sense?"

Another reason for confusion may be that most police departments give little thought to what they want citizens to do in response to a crime problem. By managing their crime data more carefully, Andrews believes that police can identify opportunities for the public to contribute.

One important opportunity is public tips on crimes soon after they are committed. The Dallas Police use a "flagged offense system" to identify and quickly publicize crimes where public assistance can be helpful. When the police dispatcher enters information about a call into the computer-aided dispatch system, he or she can "flag" it. Information about flagged crimes is radioed to a local all-news radio station and to private security agencies in the Dallas area. Security guards and private citizens are advised to look out for vehicles with particular license numbers, suspicious persons wearing distinctive clothing, and other potential leads. Although the system has only operated for a few months, it already has been credited with solving several crimes.

To help citizens better organize longer-term responses to crime problems, some departments have begun providing detailed local crime statistics to neighborhood groups. Dorinda Howe, a community leader in Orlando, Florida, uses crime data to encourage the groups she works with to stay active. "It's in the nature of the beast for crime watch groups to get a little lax as time goes on. Crime is just not uppermost in most people's minds, unless there is a major problem. So our leaders are really begging for this information."

Raw data is helpful, but Howe maintains that analysis makes it still more useful. Her group, Citizens for Neighborhood Watch (CNW), acts as a planning and research bureau for local crime watch groups. Working from her desk in the Orlando Police Department's offices, Howe receives and analyzes daily reported crime printouts and puts the results onto the CNW telephone chain. Howe said, "We surveyed our neighborhood watch leaders and asked them what they wanted from the police. Overwhelmingly, the response was: 'What's happening right now? What do we have to be looking for?' It just makes sense—I can't demand information from the community if I don't give them information." When current data are available, neighborhood watch groups have more to talk about, more reason for meeting frequently. And Howe has found that the meetings are action-oriented, focusing on a specific problem that must be solved.

James Garofalo, Professor of Criminal Justice at the State University of New York in Albany, confirms Howe's view: "Neighborhood watches don't typically do much with raw crime data. It's too complicated, it doesn't speak to their concerns. They need it synthesized." Garofalo recently completed a nationwide study of neighborhood watch groups, and found crime analysis for neighborhood groups to be an emerging trend.

The type of synthesis that CNW does can only be done with an automated records system. Crimes must be sorted by neighborhood; detailed, crime-by-crime information must be culled out on M.O., the number of offenders involved, the time and day of week, and so on.

"This goes both ways," maintains New Castle County Chief McCarnan. "People want to get involved when there's a problem in their community, so we can use the crime data to help get them mobilized. But we can also use it to prevent people from getting alarmed by problems that don't exist. Five burglaries in a neighborhood can sound like fifty, after the information has passed hands several times; when we provide accurate information, people calm down."

This is particularly important, since recent research suggests that police efforts to encourage communities to protect themselves sometimes can do more harm than good. Dennis Rosenbaum,

Professor at the University of Illinois, recently completed a detailed study of Neighborhood Watch programs in Chicago. In his evaluation, Rosenbaum concluded that, "contrary to expectation, fear of personal crime increased significantly in three of the four target neighborhoods. My best interpretation of these effects is that they were due to neighborhoodwide meetings for which organizers sometimes exploited the 'worsening crime problem' as a tactic to achieve a higher turnout. The exemplary Seattle program, although showing a reduction in burglary, was also associated with a marginally significant increase in fear of crime... We cannot assume that well-intended efforts to share information about crime prevention will have unconditional positive effects."

The Police Foundation, in its recent study of fear of crime, reached similar conclusions. In Houston, Texas and Newark, New Jersey, the police distributed a newsletter for each of a dozen target neighborhoods. The newsletter discussed neighborhood crime patterns, and suggested actions citizens could take to reduce risks to them and their neighbors. Unexpectedly, fear of crime neither increased nor decreased. But citizens who read the newsletters took a more realistic view of their risks of victimization, and what they could do to reduce them. In sum, it appears that more information may reduce fear or increase it, but that it almost always increases prudence.

These findings confirm the prevailing philosophy among crime prevention specialists—play fair and let the public make up its own mind. As Jacksonville's Jim Jackson puts it, "We don't try to go out and scare people. We don't do any of that 'crime clock' stuff. We carry the crime statistics into the neighborhood meeting—and if their incidence rate is low, we tell 'em." Why? "Well, if the rate is high, they'll be motivated to start a crime watch. If the rate is low, then it depends on the neighborhood. Middle-class and upper-class neighborhoods want to keep it low, and they'll work for that. But lower and working class neighborhoods seem to figure, 'If it's low, let's not bother. We've got better things to worry about.' And I figure they probably do."

Automation is not without problems, and automated criminal records are no exception. The Fort Collins, Colorado, Police Department recently automated virtually all of its records, and Lieutenant Pat Kelly considers himself an expert on the pitfalls.

"The first problem is unrealistic expectations," Kelly warns. "The crime analysis unit will make predictions it can't back up. Computer professionals will promise things that can't be done. People will think they can get all sorts of information that's never put in in the first place—they won't realize that if it's not captured, it can't be output." These problems are exacerbated if the department moves too quickly to automate. "We should learn to schedule the small stuff first, and save the big stuff for later. Now, we're buying cheap, generic personal computers. But when we first started, we bought name brands, because we needed someone to take care of us. We needed a knowledgeable base to build upon," Kelly said.

Even after the system starts to produce results, he notes, officers continue to get impatient: "People's concept of time changes. Everyone gets used to getting what they want immediately, and sometimes that's just not possible."

According to an old hacker's adage, "Before we computerized, we just made mistakes. Now, we make blunders." Kelly says he now gets the joke. "Your opportunities for error are reduced. But when you do make an error, it's much bigger. You have to count on getting the bugs out of things before you rely on them."

And apparently the bugs never can be entirely eliminated from some systems. In Fort Collins, Kelly recalls, "We had three reports that dealt with burglaries one year. All the information came out of the computer, but the programs were run at different times after the end of the year. One report said there were 890 burglaries, one said there were 891, a third reported 893. What happened was that we were continually updating the system, and citizens sometimes delay until March or April before reporting a crime that happened in December. So managers who had gotten one number for twenty years were suddenly getting different numbers as the year progressed. This discrepancy bothers some people, but really—what difference does it make? We pick one number, say it's official, and leave it at that."

The problem is not confined to minor errors. Even with the best database programs, programming takes time, and sometimes bugs are hard to catch. Ironically, many police executives believe accomodating current mainframe programs to the revised UCR guidelines will be a massive job. For example, the Illinois CJIA estimated that 1,000 hours of programming would be needed to adapt their PIMS program to the new reporting requirements. "That's rewriting, restructuring, debugging, and testing time," said ICJIA's Terry Gough. "And that's only on our end. Our departments will have

to revise their incident report forms, train their officers, data entry would have to change. . . And we're going in automated—manual departments will take longer."

Finally, departments need to get used to the idea that computer systems are more like police dogs than, say, handcuffs. "Computers require care and feeding," maintained Kelly. "There are all sorts of hidden costs associated with computerization. When you install a system, you should count on spending one and one-half times the purchase price on maintenance, software, and additions over the next five years."

On the other hand, for the first time all departments will share the same problems. They will demand solutions, and this will encourage the computer software industry to develop programs to meet their needs.

This has already begun. Some companies are now marketing ready-to-run management information systems that work on IBM PCs and other popular small computers. Although installation takes longer than for smaller, simpler programs such as Lotus 1-2-3 or dBase III, the prepackaged systems still are much cheaper and easier to install than custom-made programs. And as demand for prepackaged systems increases, the competition will get stiffer—and the programs will become both cheaper and easier to use.

Owen Dall, resident computer expert at the Criminal Justice Statistics Association, confirms this view: "There's an astonishing number of programs out there. But they're expensive, and I think that's preventing a lot of departments from going in right now. I have a friend who's making a good living just by advising a few small departments in New England as to what's cost-effective. Whoever can cut the costs will run away with the market." Will someone cut costs as the market grows? "That's what's always happened before," Dall said.

Police departments can cut their costs by sharing with others the responsibility for expenses they have always borne independently. For example, most departments train their own officers to fill out crime reports. This makes sense if each department in a metropolitan area uses a different report form; but if several departments use the same form, it makes sense for them to share some academy and in-service training costs. Although regional crime analysis training is available in many parts of the country, the training is limited by the fact that crime-reporting formats and computer programs very greatly from department to department. As a result, most practical training takes place on the job. With common formats

and programs, this could change. Further, Illinois' PIMS is a massive program, but small departments can afford to use it—and, indeed, improve it—because programming costs are shared among the 37 participating agencies.

On balance, incident-based reporting systems—and the new standard represented by the revised UCR in particular—seem to be worth the time, trouble, and money needed to implement them. Those departments that have adopted them report that the benefits of better management information and enhanced public cooperation, and the potential for better cooperation between criminal justice agencies, outweigh the costs.

New Castle County's Chief McCarnan sums up the prevailing opinion: "Once you start to automate your records, you recognize that there are all sorts of things you didn't know you needed. The more you've got, the more you want. Luckily, the more you've got, the easier it is to expand your processing capability." Has it been cost-effective? "It's almost a necessity," McCarnan insisted. "It's certainly been cost-effective in my department."

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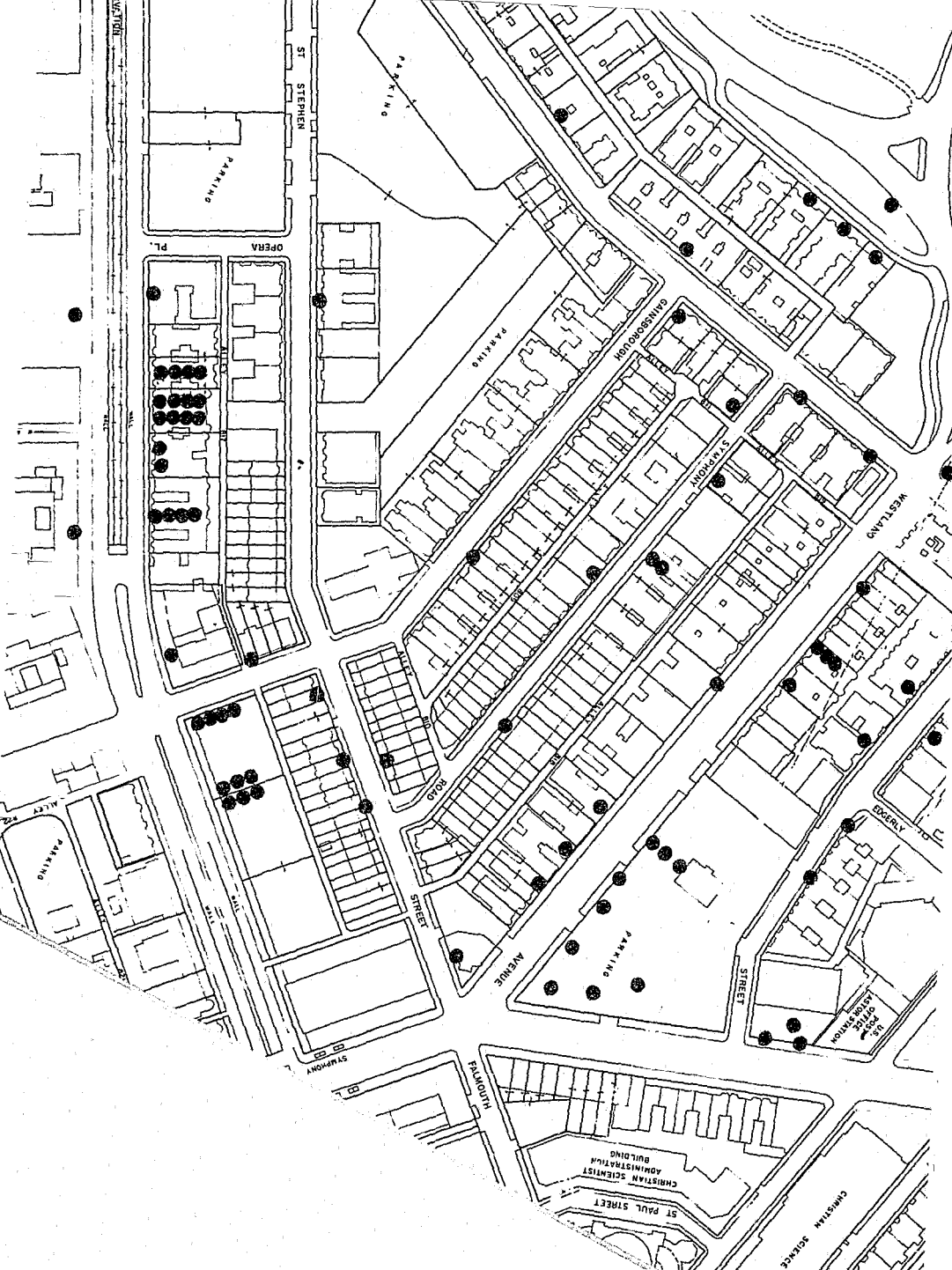

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