

— NIBRS Project Staff Report 3 —

# **Cost Issues of Implementing the National Incident-Based Reporting System in Local Law Enforcement Agencies**

An interim staff report for the  
“National Incident-Based Reporting System  
Reporting in Major Law Enforcement Agencies” project

**May 1997**



**SEARCH**

*The National Consortium for Justice Information and Statistics*

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Prepared by Michael N. Beltramo  
Beltramo & Associates

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Information on the NIBRS project is available electronically through the NIBRS Home Page that SEARCH has developed at <http://www.nibrs.search.org>.

## Foreword

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This document, *Cost Issues of Implementing the National Incident-Based Reporting System in Local Law Enforcement Agencies*, is the third in a set of three staff reports produced by SEARCH, The National Consortium for Justice Information and Statistics, as part of the “National Incident-Based Reporting System (NIBRS) Reporting in Major Law Enforcement Agencies” project. SEARCH undertook the project under a grant awarded by the Bureau of Justice Statistics (BJS), U.S. Department of Justice, and under the joint direction of BJS and the Federal Bureau of Investigation. This set of reports serves as an interim staff report for the project.

This particular report examines the various cost factors associated with the implementation of NIBRS by local law enforcement agencies, and was prepared by Michael N. Beltramo, Beltramo & Associates.

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This project was designed to identify the most significant impediments to NIBRS participation in large local law enforcement agencies nationwide and to identify promising and cost-effective approaches to encouraging wider adoption of NIBRS. Together with BJS and the FBI, SEARCH convened a Steering Committee to provide guidance and direction throughout the project.

In this project, SEARCH:

- Surveyed each state agency responsible for collecting and reporting Uniform Crime Reporting (UCR) and incident-based reporting data — supplementing that data with information from BJS, the FBI and the Association of State UCR Programs — to help determine each state’s NIBRS implementation status. SEARCH used the surveys to produce detailed NIBRS State Profiles of all 50 states and the District of Columbia.
- Surveyed vendors to collect information about the capabilities of their IBR-compatible software systems. These surveys were used to produce NIBRS Vendor Profiles, which list detailed product information, such as support services, product features and references to current system users.

- Surveyed key technical staff in the 64 largest police and sheriffs’ departments in the nation (those serving jurisdictions of over 300,000 in population) to assess the technical capacity of those agencies to meet the national NIBRS standards.
- Convened five regional “Focus Group” meetings in October 1996, at which key policy representatives of the 64 large agencies discussed experiences and exchanged views regarding operational and policy impediments that, from their perspective, hinder NIBRS implementation. The UCR/NIBRS program manager from the agency’s respective state also attended each meeting, as did SEARCH staff, and BJS and FBI representatives. Steering Committee members helped facilitate each of the meetings, which were attended by representatives from a total of 28 states and the District of Columbia. The meetings were held in Sacramento, California; Austin, Texas; Philadelphia, Pennsylvania; Orlando, Florida; and Chicago, Illinois.
- Contracted with a cost analyst to create a defensible protocol of estimating the costs of NIBRS implementation in local agencies and states.

Staff summarized the results of the Focus Group meetings and drafted recommendations for presentation to the Steering Committee at an October 29, 1996, meeting in Phoenix, Arizona. The committee reviewed the findings and recommendations, suggested changes, and unanimously endorsed the revised recommendations.

The findings and recommendations were also presented to the UCR Subcommittee of the FBI’s Criminal Justice Information Services Advisory Policy Board (CJIS APB) at a meeting in Austin, Texas, on November 7, 1996. The Subcommittee suggested wording changes, ranked the recommendations in priority, and unanimously endorsed the recommendations with the suggested changes.

The findings and recommendations, together with the Subcommittee’s suggested changes, were then presented to the full CJIS APB at their meeting in San Diego, California, on December 12, 1996, where they were unanimously endorsed.

David J. Roberts  
Deputy Director  
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## I. NIBRS Objectives

In the late 1970s the law enforcement community called for a thorough study of the Uniform Crime Reporting (UCR) Program with the objective of revising the program to meet law enforcement's needs into the 21st century.<sup>1</sup> The National Incident-Based Reporting System (NIBRS) is the result of that study, and its purpose is to satisfy those needs. In order to ensure that it fulfills its purpose, NIBRS has adopted the following goals:

- To enhance the quantity, quality and timeliness of crime statistical data collected by the law enforcement community.
- To improve the methodology used for compiling, analyzing, auditing and publishing the collected crime data.

NIBRS data are to be generated as a by-product of state and local incident-based reporting (IBR) systems. This means that a state or local agency may build its IBR system to suit its individual needs, that is, it can have a different file structure than that used by the National UCR Program and can include additional data elements and data values. However, when it is time to report to the National NIBRS Program, the state or local agency should extract from its IBR system only the data required by NIBRS and record it onto magnetic tapes in NIBRS format for submission to the Federal Bureau of Investigation (FBI).

## II. NIBRS in Perspective

Although NIBRS will be a "new" national crime reporting system when it is fully implemented, local agencies are quite familiar with many of its primary features. Specifically:

- Almost all local agencies have IBR systems.
- Almost all local agencies now provide UCR data.
- NIBRS is an expansion of UCR data already reported.<sup>2</sup>
- Additional NIBRS data elements added to UCR are often fewer than those imposed by states.<sup>3</sup>

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<sup>1</sup> This report was prepared by Michael N. Beltramo, Beltramo and Associates, Los Angeles, under contract with SEARCH Group, Inc.

<sup>2</sup> Of the 53 data elements included in NIBRS, 19 are identical to those that agencies are now reporting under UCR, another 7 elements are very similar, about 4 elements involve numbers that could be machine-generated, and 4 elements are voluntary. Therefore, concerns about higher costs are centered around the 27 elements that are truly new and different. In particular, some of the existing elements have been greatly expanded regarding the number of victims they report (for example, from 1 to as many as 10), and the input data required are much more complex for others.

<sup>3</sup> In some cases, a few to more than 100 extra elements are added to the 53 NIBRS elements to meet local and state requirements. Since states generally act as a conduit for reporting data to the FBI, the local agencies must comply with their demands for data to have their NIBRS data reported nationally.

### III. The Cost of Implementing NIBRS

The implementation of NIBRS nationally has taken place more slowly than senior law enforcement authorities had intended when it was devised more than a decade ago. Currently, only nine states are certified to accept NIBRS data and process the data for the FBI. Only one agency serving a population of more than 300,000 is reporting NIBRS data to a state.

There are a variety of reasons that NIBRS implementation has been delayed. In some cases, state agencies are unable to process local data and transmit it to the FBI in an acceptable manner.<sup>4</sup> The cost of implementing NIBRS has been cited as a major impediment by local agencies which have been the focus of this effort. But neither detailed nor credible cost estimates exist. Furthermore, a sound approach for estimating the cost implications of converting from UCR to NIBRS has not been developed.

*Question:* How much will it cost to implement NIBRS?

*Answer:* It depends ... .

Understanding *what* determines the cost of implementing NIBRS is the key issue addressed during this phase of the study and is the primary focus of this report. However, it is important to put cost estimation in the proper context.

#### Which Costs and How to Estimate Them?

Estimating the cost of converting from UCR to NIBRS is particularly difficult. Most decision makers feel they have a firm grasp of the concept of cost, but unless they clearly identify costs associated with NIBRS, their estimates may be erroneous. Which costs are relevant to a decision to transition from UCR to NIBRS: *Future costs* only? *Life cycle costs* including *sunk costs*? Readily measurable *dollar costs*? *Marginal costs* of collecting NIBRS-specific data? Each of these measures could be useful for certain purposes.<sup>5</sup> However, measures of dollar costs alone miss key elements in a decision to convert to NIBRS from UCR: the benefit side of the equation and operational effects of not having sufficient and timely data. For example, excessively delayed reports may prevent investigators from spotting trends or from knowing about property found that could be matched to a victim. On the other hand, timely data can significantly improve the deployment of resources.

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<sup>4</sup> The FBI has made arrangements to receive data directly from large local agencies without a certified state program.

<sup>5</sup> *Life cycle costs* refer to the total costs incurred during the projected life of a system or subsystem. They include all research, development, test and evaluation, initial investment and operation and support costs. *Sunk costs* refer to all past expenditures and are generally not relevant to decision making as they reflect previous rather than current choices. *Marginal costs* are the extra costs incurred to produce an additional unit or output. In the NIBRS case, they may be thought of as the cost of reporting additional data elements.

The concept of *economic costs* considers *opportunity costs* which may be thought of as benefits lost or alternatives that could be attained from the same resources. There are two principal methods for assessing alternatives:

- Fixing effectiveness and selecting the alternative which achieves the same outcome at the least cost, or
- Fixing cost and selecting the alternative which provides the most benefits.

Both methods for performing cost/benefit analysis imply an *all else being equal* case. NIBRS does not fit into this mold because it is a relatively small component of a much larger information management system. And there are many other alternatives competing for scarce local resources. Furthermore, substantial benefits could accrue in the process of implementing NIBRS which would offset the cost, or the burden of reporting the additional data required could have a negative operational impact by reducing the available patrol time.<sup>6</sup> Thus, attention must be paid to its operational as well as its fiscal impacts.

## The Status of Local Agencies

Estimating the cost of NIBRS would be a relatively simple task if it were just a brand new task that was separate and apart from everything else going on at local agencies. Instead, it is relatively small part of an ongoing incident-based reporting effort at all agencies.

Local agencies fall into three general categories concerning their ability and methods they use to collect and report incident-based crime data. These are agencies that have:

1. Automated data collection and collect enough required data that they may easily become NIBRS-compliant;
2. Automated data collection that serves an agency's needs but not enough data are collected to become NIBRS-compliant without a substantial effort; or
3. Poor automation and insufficient data collection.

The various degrees of automation and their associated cost implications are summarized in Table 1 and discussed in Section IV based upon comments gleaned from state and local agency representatives attending the NIBRS Project Regional Focus Group Meetings. Neither the table nor the comments in Section IV are comprehensive, but they illustrate many crime reporting practices that exist across the country.

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<sup>6</sup> NIBRS could be implemented in the course of reengineering an agency's reporting system which could lead to savings such that overall reporting costs could be lower with NIBRS than they were prior to NIBRS. Or, if NIBRS were imposed over an existing system without further modifications, it could reduce the patrol time available by increasing officer time required to complete the incident-based report.

## IV. Data Input Methods

A wide variety of input methods exist for crime data reporting. Many, if not most, local agencies feel a need to upgrade their own methods to take advantage of technology to enhance their efficiency. However, there is not a model, “one size fits all,” approach that would be universally adopted even if resources were available. Much diversity exists regarding how to best gather and report crime data based upon management preferences, political pressures and local characteristics. For example, some agencies differentiate between “interviewing” and “taking a report.” They are concerned that computers would hinder interaction with victims.

Various crime data reporting methods identified at the Regional Focus Group meetings are noted below with comments as appropriate.

### No Officer Reporting

Reports are not filed by officers for some crimes at some agencies. For example, mail-in reports may be completed by the victim if there is no suspect (these would apply to crimes such as criminal mischief and lesser offenses where reports are prepared to help victims with insurance claims when that type of crime is not usually investigated). Another instance without officer involvement would be issuing summonses for crimes like simple assault or domestic violence. One agency handles burglary reports on a mail-in basis.

### Manual (Written) Reports

Manual, or written, reports include checklists and narratives. Some agencies have limited the number of free-text fields in their reports. In others, officers prepare narrative reports in the field, and coding is done in the records division. It was noted that the learning curve for check boxes is steep compared to narratives, but they eventually reduce time spent preparing the report.

Manual systems also require supervisor and clerical time to review and validate data. Some agencies have successfully limited review of narratives from 100 percent to a sample. In addition, they have decentralized their review processes by placing records people in each division to remove much of the clerical burden from supervisors.

There was much discussion about the time required to prepare reports at the Regional Focus Group meetings. One officer noted that crime reporting forms and procedures have changed many times during his 18 years of service, but it has always taken 20 minutes to prepare a report in the field.<sup>7</sup> He noted that change is always an issue but never a problem after the initial upheaval.

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<sup>7</sup> The time spent preparing reports can vary greatly among local agencies, depending upon the number of data elements they must include and the means employed for preparing the reports. Also, the workload between the field and the station may be divided very differently from agency to agency.

## Dictated Reports

Officers in many agencies initially file dictated reports that are later transcribed. Dictation is usually done by either phone or dictating machine. A hybrid method of dictation involves telephoning reports to a dictating machine for later transcription. Similar problems for both methods were cited by many users. In particular, significant backlogs of reports (often on the order of two weeks) exist and substantial time is required to contact the reporting officers to resolve discrepancies and validate reports. However, this backlog problem is not universal, as one agency has written reports (transcribed by clerks from digital dictating machines) into its system within two hours after they are filed.

Another problem noted is that dictated reports tend to be more verbose than written reports. Dictating machines were found to be inefficient because they require too much follow-up compared to resolving discrepancies immediately while the reporting officer is on the phone. Some agencies have implemented quality controls in their dictating procedures to resolve this problem.

One agency became NIBRS-compliant using the telephone for an on-line case report database. It noted that it added three clerks (from 10 to 13 total) and a coder because of the additional elements required by NIBRS.

## Automated Reports

Several agencies have employed laptop computers assigned to officers in squad cars to assist with crime reporting. Their approaches have differed somewhat but they have identified some important “lessons learned.”

Laptops are commonly assigned to individual officers at the beginning of a shift or to squad cars. By using “smart forms” for input screens, laptops enable much more information to be collected. For example, about six pages seems to be a reasonable limit for paper data entry forms but laptops have the equivalent of from 24 to over 100 pages of forms that are accessed by smart menus depending on the crime.<sup>8</sup> Officer reporting time with laptops has decreased substantially compared to paper forms.

At the end of their shifts, officers often take data on floppy disks to a substation and upload them to the central mainframe. Automated reports are more complete and into the system within 24 hours so there is no longer a backlog. In addition to the crime report forms, many other types of information may be loaded onto the laptops such: as city telephone list, city ordinance and traffic ordinance, general orders, state penal code, GEO street names and maps, and hazardous material list. Thus, the computers also serve as ready references.

Software and hardware vary substantially. Some agencies use off-the-shelf commercial software while others program theirs in-house using public domain database software to minimize costs. There is a difference of opinion and experience with the need to use hardened or semi-hardened units or commercial off-the-shelf units. Some agencies have

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<sup>8</sup> Some agencies also have detailed coding documents to assist officers in completing the crime reports. Thus, the amount of paper being shuffled by officers in the field can often exceed six pages.

very successfully incorporated commercial units into their operations but others are reluctant to try.

Although laptops are the primary means being considered for automating crime data reporting, others methods also exist. For example, one agency is considering a voice-to-text system but the technology is not yet mature and requires much editing.

## **Processing and Output**

The primary focus of the transition process has been data collection and reporting. But some agencies have noted that, although they are NIBRS-compliant in their data collection, they would have to incur large costs to upgrade mainframe or client/server hardware and software to be able to provide the state agency or FBI with data that are NIBRS-compliant. Other agencies noted that the lack of flexibility inherent in their mainframes makes them “data jail houses” and severely limits their ability to create ad hoc reports.

## V. Identifying Cost Drivers and Cost Elements

The cost implications of converting from UCR to NIBRS are largely dependent upon the degree of automation that exists within a local agency. (One large agency that successfully converted to NIBRS found that it was not achievable without laptops.) In general, the more automated an agency, the lower the cost of making the transition will be. This is chiefly because automation appears to significantly reduce officer time required for data inputs, as well as reducing clerical and supervisory time for transcribing, validating and reviewing them. However, there may be high initial costs associated with achieving automation.

The cost elements which may be affected depending upon whether NIBRS data are reported manually or using automated techniques is summarized in Table 2 and discussed in this section. Costs are broken into the three phases of a system's life cycle. These life cycle costs include:

- *Development costs* incurred for incorporating the NIBRS elements into an existing IBR system.
- *Investment costs* associated with the transition from UCR to NIBRS.
- *Operation and Support (O&S)* costs required to maintain the system.

Manual and dictated systems are compared with automated (that is, laptop) systems. The "+" or "-" signs shown in Table 2 indicate the assumed direction of the change. Although the magnitude of the added cost or savings is not shown in Table 2, it gives an indication of primary cost drivers.

### Development Costs

Developing costs for a NIBRS-compliant reporting system might be incurred for:

- Developing forms for data input in a manual system;
- Developing software for a laptop system;
- Upgrading software for mainframe computers to provide outputs for data collected by both manual and laptop systems;
- Defining and developing training requirements; and
- Testing the system.

Although the magnitude of these costs may vary according to an individual agency's circumstances, cost increases would be expected for all items regardless of whether the transition is made using a manual system or laptops. However, one trade-off would be form versus software development. Development costs could be avoided in either case if suitable off-the-shelf products were available commercially.

### Investment Costs

Since reporting the additional NIBRS data elements represents an increased workload compared to the status quo, it is reasonable to assume that more personnel would be required in at least some categories to achieve the transition. But automation has been shown to reduce the time required to complete reports and to eliminate or reduce certain

data entry and validation positions. Thus, it is assumed that more officers would be required for manual systems while more computer support personnel would be required for laptop systems.

Additional trainers would be required to implement NIBRS on either type of system. However, a significant training cost is getting officers to ask the right questions and, since smart forms do that, training costs may be reduced by laptops. Thus, automation through laptops may provide an avenue for training cost reduction. Estimates of additional training requirements vary greatly. One city with 13,000 officers estimated it would require 2.5 years to accomplish one day of training for each officer. Another city has a laptop system where the software program was written by a police officer, and officers developed, trained and set-up the pilot project. It accomplished required training in a few hours per officer in the field, and its system was fully deployed in a month.

The UCR-to-NIBRS transition could incur additional investment costs for computing whether a manual or an automated system existed. This is because many agencies would need to upgrade their mainframe computers to handle the additional load. (The reporting system in one large city is out of room. A byte-for-byte exchange is required: if new data elements are to be added, then existing elements must be eliminated. Thus, NIBRS is another justification for an upgrade that would be required anyway.) Nevertheless, the initial investment cost of laptops would be significant. They are estimated at between \$2,500 and \$4,000 each, depending upon their capabilities. A premium would be added if they were ruggedized.<sup>9</sup>

Software costs would be incurred for automated systems and forms costs for manual systems. Operational manuals might be required for both.

## **Operation and Support Costs**

Once a NIBRS system is implemented, there will be cost differences compared to UCR operations. Fewer police officers, data entry clerks and training personnel may be required for automated systems than comparable manual systems. Although an agency might be able to convert from a manual UCR reporting system to an automated NIBRS reporting system and lower its O&S costs, the cost of converting from a constant baseline would be greater in either case.

Perhaps the most significant issue facing a transition from UCR to NIBRS is the impact on patrol time. One large agency which files about 1,000 reports per day has estimated that its conversion to laptops has saved about 45 minutes per report or 800 police hours per day. Other agencies have also noted that they see potential time savings from converting to laptops. The data checking features incorporated into the software that prevents the filing of incomplete reports may also yield manpower savings. Furthermore, this feature allows supervisors reviewing the reports to focus more on the content of the reports and, thereby, results in a better product.

Fewer supplies would be used for automated systems; however, automated systems would accrue additional costs for hardware and software upgrades and computer support personnel. One agency supports 300 laptops with three dedicated staff. It implements

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<sup>9</sup> Since the laptops may serve multiple functions, the investment to acquire them would probably be allocated to many purposes besides NIBRS.

software changes about once a month. However, software changes may be to the operating system or other applications that are unrelated to incident-based crime reports. Thus, another cost allocation issue is raised.

The maintenance and replacement of damaged laptops is one area where added costs were anticipated but have not proven substantial because laptops were chosen where their manufacturers offered a three-year parts and labor warranty. This is a cost-effective choice because the computers are in use 24 hours per day, seven days a week. Since the useful life of a laptop is often considered to be about three years, almost all maintenance costs may be avoided.<sup>10</sup>

## **Other Cost Issues**

The primary cost issues discussed above for converting from UCR to NIBRS concerned the degree of automation existing within a local agency and the implications that has on cost elements within the various life cycle cost categories. However, there are other significant issues which have not yet been investigated by our study. They include the time value of money, alternative uses of scarce resources, and the relative costs and benefits of reporting particular data elements required by NIBRS.

The conversion to laptop computers requires a substantial initial investment. Although subsequent savings may be realistically anticipated, many agencies do not have the resources available to accomplish it. This is particularly true for some agencies affected by the “graying of the blue,” where they significantly increased staffing in the 1960s and 70s and are now incurring high recruitment and training costs as a result of retirements.

Another potentially legitimate concern for many agencies is that perceived benefits from collecting some NIBRS-peculiar data elements do not merit the effort required. Therefore, they are unwilling to participate in the conversion. Thus, it is necessary to collect data to measure the effort required to collect and report some of the NIBRS data elements which have apparently onerous resource demands and may thereby affect operations.

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<sup>10</sup> Actual life may depend upon an agency’s preference to keep pace with rapidly evolving technology and the repair costs incurred by out-of-warranty equipment.

## VI. Issues to be Resolved

The initial phase of this study has yielded some useful, general findings about the cost implications of NIBRS. They are:

1. Agencies with reporting systems that contain many NIBRS-compliant elements may not require a substantial effort to incorporate the additional data elements required.
2. Adding NIBRS data elements to a manual reporting system may significantly increase cost. Compensating benefits, if any, to local agencies must be identified.
3. Automation offers substantial benefits including: enhanced efficiency, extended patrol time availability, reduced overhead personnel, and more rapid availability of crime information. However, the initial investment costs may be substantial.
4. Combining NIBRS and automation efforts may greatly reduce life cycle costs in comparison with adding NIBRS elements to a manual incident-based reporting system.
5. State agencies may impose additional incident-based reporting costs on local agencies in the form of requirements for data that are greater than those of the FBI.

Thus, the cost of making the transition from UCR to NIBRS will vary greatly from agency to agency depending upon its current operational baseline. For example, it would be much less expensive to implement NIBRS within a highly automated agency that is already NIBRS-compliant for many data elements than for an agency with a largely manual system and few NIBRS-compliant data elements. Resolving these issues will be the primary focus of the next phase of the NIBRS cost analysis.

Although the magnitude of potential costs associated with NIBRS for a variety of baselines has not been estimated, it has become clear that the marginal costs associated with converting to NIBRS will ultimately depend upon the following factors:

1. *Which (additional) data are to be collected?*  
The quantity and individual complexities of data elements that must be incorporated into local crime reports to be compliant with NIBRS will determine the additional resources required for conversion to NIBRS. Therefore, an assessment must be made to determine the relative frequency and difficulty of collecting and reporting the information required in each NIBRS-specific data element.
2. *How are data collected?*  
The relative efficiency of the collection process (for example, written forms versus dictating versus direct computer input) will have an impact on recurring resource requirements.
3. *How are data processed?*  
Once crime data are collected, they must be validated and made available in electronic form. The resources required to accomplish this will have an important impact on cost.
4. *How are data reported?*  
The flexibility of the output system and its ability to accommodate format modifications and ad hoc reporting on the fly will determine the cost of complying with NIBRS for reporting crime.

Each step in a conventional data input process from the initial report prepared by an officer to a compliant electronic record (as noted in numbers 2, 3 and 4 above) must be identified together with its standard resource demands. For example, written, dictated and laptop-generated reports are expected to undergo different processes as they flow from the field to the state-level program and on to the FBI. It is anticipated that each step in each process will have different resource requirements regarding the personnel types employed and the effort expended.<sup>11</sup> The identification of this information will provide a basis for developing benchmarks which may be used for planning purposes. For example, the identification of standard processes may give local agencies insight into how to streamline their operations. Also, cost estimating relationships may be developed which should facilitate budget planning purposes.

*How is the system maintained and operated?*

The requirements of retaining an ongoing NIBRS capability must be considered. Nearly all systems must be maintained once they are fielded. This process for an IBR would involve ongoing personnel training and software (either paper forms or computer programs) modifications, and hardware replacement. These requirements would also vary according to process and required resources. Benchmarks would be developed for them similar to those discussed for data collection, processing and reporting.

Plans to resolve these issues provide guidelines for the cost analyses required in the next phase of this study. Although the processes employed to collect and report incident-based crime data are relatively standardized, the vast differences in the sizes of local agencies will affect the quantities of resources employed. Therefore, it would be necessary to estimate costs at a unit level (for example, officer, supervisor, laptop, data element, etc.).

There may be a step function associated with these units driven by other characteristics of an agency. For example, economies or diseconomies of scale could cause the costs of similar units to be greater or less depending upon the relative sizes of the agencies. Costs may also vary substantially among local agencies because of different salary and fringe benefit policies, for example. Thus, a useful cost estimating model must be able to estimate the transition cost for an agency of a given size for several alternative baselines.

The 10 local agencies that will be the focus of the next phase of this study should provide a representative cross-section of the data elements reported and means of collecting and processing them. Surveys completed by those agencies and subsequent follow-up interviews will determine which will be selected for more in-depth case studies. Findings from these studies will form the bases of the cost estimating relationships we will develop.

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<sup>11</sup> Many agencies will choose to maintain dual, redundant reporting systems (for example, manual written *and* laptop-generated reports) during a transition phase. This option will be reflected in our cost analysis.

## VII. Conclusions

The specific costs that a local agency will incur to make the transition from UCR to NIBRS are currently unknown and inestimable for a general case. However, the past phase of this study has identified the primary cost drivers for NIBRS. They are:

- The complexity of additional data to be collected,
- How data are collected, process and reported, and
- How the system is maintained and operated.

In addition, the extent to which the data collection and input processes are automated will have a major effect on the type, magnitude and time phasing of the costs incurred.

This understanding will guide the next phase of the cost analysis where case-specific cost estimating relationships (CERs) will be developed. These CERs will enable local agencies to understand their potential costs for converting to NIBRS. They will also allow them to reengineer their processes based upon benchmarks identified for a variety of input methods.

**Table 1: Crime Reporting Methods**

<b>INPUT METHOD</b>	<b>PERSONNEL INVOLVED (Besides Officer)</b>	<b>PROBLEMS/BENEFITS CITED</b>
<i>No Officer Reporting</i>		Summons for simple assault, domestic violence, DUI, etc. Mail-in if no suspect (e.g., criminal mischief and insurance).
<i>Dictated</i>		
Phone	Data entry clerks, quality control (QC) auditors, police supervisors.	Added travel time. Large number of data entry clerks. More verbose than written.
Dictating machine	Data entry clerks, QC auditors, police supervisors.	Require too much follow-up by data entry clerks and officers. Input backlogs are common.
<i>Manual (Written)</i>		
Checklist	Data entry clerks, QC auditors, police supervisors.	Steep learning curve, but time spent on narrative reduced. Lengthy input forms (~6-7 pages). Requirements often change, but time is constant. Input backlogs are common.
Narrative	Data entry clerks, QC auditors, police supervisors.	Complete audit is personnel-intensive; a sample review may reduce. Extensive editing may be required on mainframe. Input backlogs are common.
<i>Semi-automated</i>		
Scanner		Not common but being considered to reduce manual backlogs.
<i>Automated</i>		
Laptop	Police supervisors.	Significant patrol time savings. Validation can be done with a check digit. No report backlog. Equivalent of 100+ form pages and information such as statutes.
Voice to data	QC auditors, police supervisors.	Not proven technology. Only about 50-60% accuracy.

**Table 2: Life Cycle Costs and Savings from NIBRS Implementation**

	DICTATED or MANUAL SYSTEM	AUTOMATED SYSTEM
<b>Development Costs (Incorporate NIBRS elements to existing IBR system)</b>		
Incident report forms	+	
Software for laptops		+
Software for mainframe	+	+
Define/develop training requirements	+	+
Test system	+	+
<b>Investment Costs (Transition)</b>		
Program personnel		
<i>Police officers</i>	+	
<i>Trainers</i>	+	+
<i>Coders</i>	+	-
<i>Data entry clerks</i>	+	-
<i>QC auditors</i>	+	-
<i>Computer support</i>		+
Equipment		
<i>Laptops</i>		+
<i>Mainframe</i>	+	
Software		+
Manuals	+	
Forms	+	
<b>Operation and Support (Ongoing)</b>		
Patrol time (police officers)	+	-
Data entry	+	-
Personnel training	+	-
Computer support		+
Hardware and software		
<i>Upgrades</i>		+
<i>Maintenance</i>		+
Supplies	+	

