Improving Crime Data Project[1]

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ABSTRACT

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Statement of Purpose: The criminal justice system lags behind other public domains in developing valid, reliable, and timely indicators for policy planning and evaluation. Crime data are rarely compiled in standard formats suitable for multi-jurisdiction policy development or program evaluation without time consuming, repetitive, inefficient, and costly data collection and analysis efforts. The FBI's Uniform Crime Reporting (UCR) program has achieved nationwide coverage, but the data are not disseminated rapidly enough to address emerging crime problems and are made available in tabular formats that preclude analysis at the level of the individual crime incident. The nationwide implementation National Incident Based Reporting System (NIBRS), begun in the 1980s and originally intended to replace the UCR program, has stalled and currently covers well under half of the nation's police agencies and population.

Georgia State University and the University of Missouri at St. Louis proposed to develop a model for improved data collection techniques, standards, analysis, and dissemination methods across criminal justice jurisdictions in the United States. This model focuses on improved methods of data collection, coding, sharing, and analysis as well as on organizational and operational aspects of agency-based technology for compiling crime information. The model is intended to enable agencies to contribute data from different data bases into a singular platform that allows cross-agency data retrieval, sharing, and analysis in order to address crime problems as they emerge. The Improving Crime Data (ICD) project also undertook studies of existing crime data, including a yearly analysis of city homicide data, to demonstrate the influence of demographic and socioeconomic conditions on urban crime rates and, thereby, better reveal the effectiveness of local crime-control responses.

Methods: The ICD deployed local area coalitions of law enforcement agencies, national surveys of law enforcement officials, a national advisory board, and a series of mini-conferences to assess current uses of crime data, the extent of current data sharing and analysis efforts, and ways of improving those efforts. With continuous advice and feedback from our partner law enforcement agencies and advisory board, we developed and implemented a model for collecting, sharing, and analyzing common crime indicators across jurisdictions. At the same time, we conducted and disseminated studies of how comparative crime data can be used to assess local and common crime problems.

Results and Conclusions: The project demonstrated proof of concept for the unified crime data and analysis model but also encountered technical and organizational challenges along the way. The original partner agency which housed the model and took the lead in its implementation was unable to sustain its commitment to the project. We then transferred the data and analysis platform to one of our national partners, the National Consortium of Violence Research (NCOVR), and achieved some success in implementing the platform, but NCOVR ceased operation prior to the project's conclusion. The platform was finally moved to the Georgia Crime Information Center (GCIC) of the Georgia Bureau of Investigation. The GCIC compiles crime data from local law enforcement agencies in Georgia. ICD and GCIC staff built a new meta data model for a Georgia unified crime data platform with analysis capabilities implemented in the COGNOS program.

Despite these challenges and the resulting delays, the ICD was able to achieve its original aim of creating a unified crime data platform. Moreover, the ICD was able to go beyond the proof of concept – which it achieved earlier in the project – and actually implement a new practice for crime data reporting across jurisdictions.

In addition to establishing a unified data platform and enhancing corresponding analysis capabilities, the ICD also has endeavored to improve understanding of existing crime data. To that end, we developed a method and model for assessing the influence of socioeconomic conditions on city homicide rates and demonstrated the impact of these conditions on the rank ordering of cities according to their homicide rates. This effort has attracted considerable attention, and it is straightforward to extend the analysis to other crime types.

Our experience suggests that state criminal justice agencies or data clearinghouses currently constitute the best means of facilitating data sharing and analysis across local law enforcement agencies. Most local law enforcement agencies now submit crime information to state programs, such as the GCIC, which in turn compile and process the data for submission to the national UCR program. Local agencies have grown accustomed to this process and have worked out ways for the expeditious transfer of crime and related data to the coordinating state agency. State data clearing houses have, in turn, proved to be an efficient mechanism for compiling data from local agencies, imposing checks for data accuracy and integrity, and sending the data up the line to the national UCR program for additional data quality management and eventual dissemination.

The next step in this process is for the state coordinating agency to create mechanisms for the rapid and timely return of crime data *back to the local agency* so that it can be used for comparative analysis of crime problems across jurisdictions and the timely development of effective responses. Further, we recommend that the NIJ, in cooperation with the Bureau of

Justice Statistics and Bureau of Justice Assistance, establish an ongoing program to support more rapid implementation of NIBRS across the nation and the timely dissemination of NIBRS data for use by local law enforcement agencies in tracking, analyzing, and responding to emerging crime problems. NIBRS, not the UCR program, should become the primary source of crime data used by state and local agencies to monitor and respond to crime problems.

Finally, we recommend that NIJ ask applicants seeking support for program and policy evaluations to demonstrate both *current need*, as reflected in the actual crime rate, and *current performance*, as revealed by the estimated crime rate controlling for crime-producing conditions that criminal justice policy and practice do not influence. The difference between the actual and estimated measures provides valuable information not only about the impact of current policy but also to inform evaluation of new crime-control initiatives.

SUMMARY

Introduction

The criminal justice system lags behind other social service providers and the private sector in the development, timely dissemination, and use of reliable statistical indicators to monitor, predict, and prevent crime. Deficiencies in the nation's crime data infrastructure deny policy-makers the ability to make decisions based on sound and timely information. In contrast, health, education, business, and economics possess readily available data for forecasting and planning. Too often in criminal justice data are not compiled in standardized formats suitable for policy development or program evaluation without time-consuming, repetitive, and costly compilation and analysis efforts. In smaller agencies large amounts of data are still collected by hand and few agencies are able to routinely share comparable data across jurisdictions. Moreover, law enforcement data are generally devoid of other relevant attributes (such as census information) and are reported in tabular or aggregate formats that are not suitable for policy-relevant research. These problems indicate a demonstrable need for improvements in criminal justice data collection, analysis, and dissemination methods to facilitate better strategic choices and policy decisions.

Georgia State University and the University of Missouri-St. Louis, in conjunction with the Great Cities' Universities (GCU) coalition of urban public universities, proposed to develop a model for improved data compilation, analysis, and dissemination across criminal justice jurisdictions in the United States. The objective was to enable agencies to "talk" to each other so that, for example, what is defined as a gang-related assault or drug-related robbery in one jurisdiction is comparable to the same behavior in another jurisdiction. The project focused on improving crime data produced and used primarily by law enforcement agencies. But the proposed model also can be applied across levels *within* the justice system so that data can be more smoothly transferred between the various system components (law enforcement agencies, prosecutors, courts, corrections).

This project - *Improving Crime Data* (ICD) - was earmarked in legislation and housed in the National Institute of Justice. It is not a standard research project, but rather a demonstration project intended to devise and implement a model of crime data compilation and analysis that can be used by multiple agencies. The project team also provided technical assistance to participating agencies to facilitate implementation and use of the model. As important background, the project team conducted an assessment of the current state of major crime indicators (UCR, NIBRS). The major conclusion of that assessment is that the current indicators

do not provide timely or useful information for policy development or evaluation or for strategic initiatives by police managers. The UCR data lack sufficient detail and are badly out of date when disseminated. NIBRS is more promising, but nationwide implementation is a long way off. In response, we sought to assemble a coalition of law enforcement agencies and with their continuous input develop model crime indicators and information technology to access and analyze them that can be applied directly and immediately to crime issues in the areas in which the agencies are located.

The project succeeded in establishing basic "proof of concept" for the model crime indicators, a common data platform, and common analysis capabilities. But we had to address several challenges along the way, both technical and organizational, that highlight the fragility of interagency coalitions, the arduous task of sharing even basic data elements across agencies, and the ambivalence of many police managers regarding the utility of cross-jurisdictional data sharing for meeting pressing organizational objectives.

Background

The present state of statistical indicators that measure levels of and trends in differing types of crime is not well suited for continuous and up-to-date monitoring of crime across jurisdictions or for the evaluation of enforcement strategies and crime control policies. The FBI's Uniform Crime Report (UCR) data are available only in aggregate form and, even with recent improvements in dissemination, are released several months beyond the collection period (e.g., the complete 2008 UCR data were not released until September of 2009). Although publicly accessible, the type of analysis such data permit is limited to calculations based on gross crime or arrest rates, within limited jurisdiction size classes, and crime categories. Many local jurisdictions now post crime data in some form on their public websites, and a few agencies release crime data just a few days or weeks beyond the collection period. But the availability of these crime data remains sporadic, the data elements typically refer to only a few broadly defined crime categories, and the data released by different agencies often cover different time periods. As a result, policymakers and the general public may obtain useful information about crime in their jurisdiction but rarely can make systematic comparisons with other areas. Such comparisons are essential for determining whether crime problems are local in origin and scope or are common across jurisdictions – and, therefore, whether policy and strategic responses are best formulated on a multi-jurisdictional basis.

The rudimentary condition of the nation's crime data infrastructure poses substantial barriers to the development of data-driven policy reliant on accurate, timely, and conveniently accessible indicators. Current crime and criminal justice indicator development efforts continue to lag far

behind comparable developments in economic statistics that measure employment, income, consumption, and investment. Economic indicators are based on data that are continuous over small increments of time, are standardized, and are constantly refined. Ongoing analyses are possible without having, as in criminal justice, to resort each time to collecting new data or devising ad hoc, single-shot means of comparing results about multi-faceted aspects of crime and justice problems across jurisdictions (Rosenfeld 2006). The National Incident Based Reporting System (NIBRS) represents an important but still very limited step in the right direction, and the early momentum in incident-based reporting has been stalled in many jurisdictions.

If national, state, or local economic decision-making were based on the early-20th century models of information gathering, retrieval, and dissemination that continue to characterize criminal justice, economic planning and performance would suffer immeasurably. Criminal justice must begin to catch up so that long-term planning becomes a reality and can contribute to data-driven policy formulation, help target local and national interventions, and is continuously informed by monitoring, feedback, and evaluation systems. Any "catch-up" strategy itself must be long-term. In our view, the best place to begin is to improve statistical indicators of crime for use within and across local law enforcement agencies: the point of entry for all subsequent information systems within criminal justice.

Objectives

The ICD project had five major objectives:

(1) Review the current state of the nation's crime data infrastructure.

(2) Assemble a coalition of law enforcement partners in diverse locations and, with their continuous guidance and feedback, develop a model of crime data indicators and analysis capabilities that can be shared across jurisdictions.

(3) Provide technical assistance to local agencies in the implementation and use of the common data and analysis platform.

(4) Illustrate the uses of the common data and analysis platform with applications to cross-jurisdictional crime problems.

(5) Demonstrate how currently available crime data, when integrated with data on other characteristics of local areas, can be used to better understand the sources of crime problems and to identify appropriate policy and strategic responses.

Activities

The ICD initially partnered in Local Area Coalitions (LAC) with a dozen law enforcement agencies in Georgia and four agencies in Missouri. The ICD also established partnerships with national organizations, including the FBI, Justice Research and Statistics Association (JRSA), and the National Consortium on Violence Research (NCOVR). JRSA undertook a national survey of police chiefs and information technology specialists on the uses of crime data in local police agencies. NCOVR developed a pilot data server and provided technical assistance to the partner law enforcement agencies in its use. In addition, the ICD established an advisory board composed of academic and law enforcement experts to provide overall guidance to the project. The advisory board met annually throughout the life of the project.

The ICD's first effort was to assess the partner agencies' data collection, storage, and analysis capabilities. In several meetings, agencies shared their crime data structures and formats, and a model for a unified data platform was developed based on the commonality of the crime-related indicators across the agencies. The FBI played a key role by providing a standardized memorandum of understanding with partner agencies to secure data transfer to a common platform and it also participated actively in the design effort to correspond with its development of N-DEx, the Law Enforcement National Data Exchange.

The ICD then moved to the next step of building the unified data platform. Information technology specialists at NCOVR developed the platform using COGNOS software. Crime data elements were extracted and uploaded from the participating law enforcement agencies to the COGNOS platform and evaluated for completeness, internal consistency, and accuracy. The unified data platform permitted analysis of crime trends within a single agency and crime patterns across agencies. The ICD also utilized a text search engine (TEXIS) to enable searches through incident reports and investigative file narratives.

Based on this pilot experience with the unified data and analysis platform, the ICD purchased the COGNOS software and installed it on the Georgia Bureau of Investigation's Georgia Crime Information Center (GCIC) computer. It is expected that in early 2010 all known crime in Georgia during 2009 will be available for analysis by utilizing COGNOS.

At the same time these activities were occurring, the ICD also carried out several special projects with local law enforcement agencies and demonstrated how existing comparative crime data can be analyzed and presented in a manner that differs from, and we believe is more insightful than, the customary UCR releases and related media accounts. In yearly reports throughout the project period, ICD analyzed homicide data for large cities. The analysis entails adjusting each city's

homicide rate to take into account differences across the cities in socioeconomic factors that are related to homicide. The adjustment reflects the "expected" rate of homicide assuming no differences across the cities in the socioeconomic predictors. The resulting adjusted rates were then compared with the unadjusted rates. The analysis typically produced substantial changes in the ranking of many cities and provides dramatic evidence of the importance of socioeconomic conditions in influencing city homicide rates. The innovative analysis received national media attention.

Each of the project's collaborative and evaluation activities were thoroughly documented and are available on-line -- with access and data protections as appropriate. Click on Improving Crime Data (ICD) to view the project web site and access specific documents.

Results

As background for the creation of the multi-agency data-sharing platform, the project conducted a review of the UCR and NIBRS programs. The chief strength of the UCR program is its nationwide coverage of crimes reported to and recorded by the police, which allows for comparisons of crime rates across multiple levels of aggregation (e.g., states, metropolitan areas, and counties). But the UCR data are limited in important respects. The data are disseminated in tabular form and are limited to crimes reported to and recorded by the police. The National Crime Victimization Survey (NCVS), developed in the 1970s, includes criminal victimizations not reported to the police, and the NIBRS program, initiated in the 1980s, disseminates detailed information on crimes at the incident level. But nationwide implementation of NIBRS has stalled, with coverage currently restricted to well under half of the nation's law enforcement agencies and population.

ICD commissioned national surveys of police chiefs and information technology personnel to investigate the use of crime data by local law enforcement agencies and uncover some of the reasons for the slow growth of NIBRS. A major finding of these surveys is that law enforcement agencies find the implementation of NIBRS to be costly when weighed against other, more pressing, priorities. We also learned in our discussions with local agencies that the time delays between the collection and dissemination of the UCR data limit their perceived usefulness for addressing crime problems *as they emerge*. In addition, some agency officials questioned the value of comparative crime information for meeting their objectives. These perceptions helped to guide the development and implementation of a multi-agency data-sharing platform with capabilities for analyzing and reporting crime information.

The project attained its objective of creating the common data platform but encountered several technical and organizational challenges along the way. The lead agency where the platform was originally housed was unable to sustain its commitment to the project. We then contracted with NCOVR to assume responsibility for building and maintaining the platform, but NCOVR ceased operation prior to the project's conclusion. The platform was finally moved to the GCIC, which installed an updated version of COGNOS for analyzing UCR and related data routinely submitted by Georgia law enforcement agencies. These challenges led us to conclude that the most efficient way of facilitating the sharing and analysis of multi-jurisdictional crime data is to house the data and analysis platform in existing statewide agencies responsible for compiling crime data across all local jurisdictions.

In tandem with the development and implementation of a data-sharing and analysis platform, the ICD carried out several analyses of existing crime data. Chief among these efforts was an annual analysis of homicide data in large cities. Those analyses demonstrated the important influence of demographic and socioeconomic conditions, over which the police and other criminal justice actors have little control, on local crime rates. They revealed significant changes in the rank order of cities according to their homicide rates, once the rates have been adjusted for differences across the cities in their demographic and socioeconomic characteristics. The findings of these ongoing analyses have been covered extensively by local and national media outlets and, as noted below, suggest ways that NIJ might better target resources for evaluating the effectiveness of local crime-control initiatives.

Conclusions

We draw three main conclusions from the project results. First, it is possible to create common data bases and analysis capabilities among local law enforcement agencies. But the organizational coalitions required for this purpose are difficult to sustain over time. Our second major conclusion, then, is to locate the data repositories and analysis capabilities in state agencies already tasked with the responsibility for compiling and disseminating crime information from local law enforcement agencies. At present, in most states the crime data will be limited to the major crime and arrest indicators compiled by the UCR program, but eventually incident-level data should be made available for a much broader number of crimes. Most local police departments now submit their crime data to a state agency, which conducts initial checks for accuracy and completeness before sending the data on to the national UCR program. But the data generally are not disseminated until well after the collection period, which precludes comparative assessments of emerging crime problems across local jurisdictions. In addition, the data are rarely accompanied by analysis capabilities that would enable local agencies to conduct refined assessments of crime-control strategies. We recommend that state agencies with the

responsibility for compiling local crime data return the data to local agencies more rapidly, ideally, one to three months after the collection period. In addition, the state agency can provide a valuable service to local departments by making the data available in COGNOS or a related program that enables local agencies to conduct their own assessments of crime patterns and trends and report the results to relevant constituencies. In a word, the current relationship between local law enforcement agencies and their state criminal justice agencies should become much more *interactive*, permitting local officials to routinely extract and analyze comparative crime data.

Thirdly, we recommend that NIJ, perhaps in collaboration with BJS and the Bureau of Justice Assistance (BJA), mount a continuing program to improve the collection, sharing, and analysis of crime data. Part of this effort must be to hasten the spread of NIBRS across the nation. NIJ also should support evaluations of the tradeoff between increasing the timeliness of crime data dissemination and the accuracy of the resulting indicators. Finally, NIJ can better target evaluations of local crime-control initiatives by requiring applicants to demonstrate both the need for evaluation resources, indicated by local crime rates, and the performance of local law enforcement, indexed by adjustments to local crime rates that take into account the influence on those rates of demographic and socioeconomic conditions over which criminal justice authorities have little control. The ICD's yearly analysis of city homicide rates offers, as a first approximation, one promising way of revealing the extent to which criminal justice interventions can be expected to reduce crime, within the limits imposed by criminogenic conditions criminal justice institutions cannot alter.

FINAL TECHNICAL REPORT

I. Introduction

A: Statement of the Problem

The present state of criminal justice information and statistical indicators is not adequate for monitoring changes in crime levels and patterns on a timely basis, or for formulating and evaluating policy responses. Such data as are available on local and national levels are mostly in tabular form, usually at least a year old, and based on gross crime or arrest rates, within limited jurisdiction size classes and crime categories. Many police departments now post crime indicators on their public web sites on a quarterly and, in a few cases, weekly basis. But these indicators are generally quite gross and do not permit analyses of crime patterns within specific demographic groups (e.g., by age, sex, or race of victims and known offenders) or by salient features of crime incidents (e.g., weapon use, drug-, or gang-relatedness). Moreover, the sporadic "catch-as-catch-can" quality of the local data does not permit systematic and reliable comparisons across jurisdictions, which is essential for determining whether local crime problems are unique or common across jurisdictions within the same region or size class, or with similar demographic and socioeconomic characteristics. The National Incident Based Reporting System (NIBRS) represents an important but still very limited step in the right direction. The early momentum in incident-based reporting has stalled, and to date NIBRS fails to cover even half of the nation's population or police agencies.

The archaic condition of the nation's crime-monitoring infrastructure poses substantial barriers to the development of data-driven policy that relies on accurate, timely, and conveniently accessible indicators. Current crime and criminal justice indicator development efforts lag behind comparable developments in economic and business statistics. If national, state, or local economic decision-making were based on the early-20th century models of information gathering, retrieval, and dissemination that continue to characterize criminal justice, economic planning and performance would suffer immeasurably. Business and economic indicators increasingly are contained in formats that are continuous over small increments of time, are comprehensive, and are constantly refined. Ongoing analyses are possible without having, as in criminal justice, to resort each time to collecting new data or devising ad hoc, single-shot means of comparing results about multi-faceted aspects of crime and justice problems across jurisdictions (Rosenfeld, 2006).

Criminal justice must begin to catch up so that long-term planning becomes a reality and can contribute to data-driven policy formulation, help target local and national interventions, and is continuously informed by monitoring, feedback, and evaluation. Any "catch-up" strategy itself

must be long-term. In our view, the best place to begin is to improve statistical indicators of crime and related infrastructure within and across local law enforcement agencies – the point of entry for all subsequent information systems within criminal justice. This was the primary objective of NIBRS. If all or a large majority of the nation's law enforcement agencies participated in NIBRS and the dissemination of NIBRS data occurred on a more timely basis, much of the rationale for the current project would have been eliminated. Below we summarize the rationale for NIBRS, its design, implementation history, and future outlook as the leading incident-based crime records system for the U.S. (this summary is based on a more detailed report that ICD prepared on NIBRS).

B. Literature Citations and Review

The Nation's Crime Data Infrastructure: From UCR to NIBRS

The UCR began eighty years ago after the International Association of Chiefs of Police recognized a need for a national database of crime statistics that other industrialized countries had already developed (Major, 1992). After years of planning, in 1930 approximately 400 law enforcement agencies began reporting monthly aggregate crime data to the U.S. Attorney General, who in turn appointed the FBI as the national administrator and clearinghouse for these records.

The UCR has traditionally been viewed as the leading indicator of crime in the U.S. But the UCR program has long been criticized for providing a partial and distorted picture of crime. Chief among the criticisms is that the UCR data cover only crimes reported to and recorded by the police and therefore omit a so-called dark figure of crime. That criticism gave rise to the development in the early 1970s of the National Crime Survey, now called the National Crime Victimization Survey (NCVS). Because the NCVS derives crime information directly from nationally representative samples of victims age 12 and over, the data can be used to estimate the amount and types of crime that are missing from the UCR crime indicators. The UCR and NCVS are now recognized as largely complementary components of the nation's crime data infrastructure (Lynch and Addington, 2007). NIBRS was envisioned as the third leg of the stool.

In the late 1970s, the law enforcement community called for a review and overhaul of the UCR framework to better prepare the system for the needs of the 21st century (FBI; Hitt, 1998; Major, 1992; Sessions, 1989). This review ultimately produced NIBRS in the late 1980s. The major feature of NIBRS that distinguishes it from the UCR is that it is an incident-based rather than

summary-based crime reporting system. An incident-based reporting system simply means that data are compiled, recorded, and disseminated on each single occurrence of crime. A model for such a system had already been implemented in the mid-1970s in the form of the FBI's Supplementary Homicide Reports (SHR), which record data for each homicide incident on characteristics of victims and offenders (e.g., age, sex, race) as well as on the incident itself (e.g., weapon, circumstance, victim-offender relationship). NIBRS extended incident-based reporting to 46 crime types, known as "Group A" offenses, for which extensive information on victims, offenders, and incidents is compiled. In addition, arrest information is compiled for eleven additional "Group B" offense categories. NIBRS collects information on a much broader range of offenses than does the UCR and in much greater detail. In addition, NIBRS records information on all crimes committed in a single incident, and not simply the most serious crime based on the UCR "hierarchy rule." Finally, the summary UCR indicators may be extracted from the data compiled under NIBRS, making separate data collection strictly for the UCR redundant and eventually unnecessary. Thus NIBRS was intended to supplement the UCR only temporarily; ultimately, NIBRS was to replace the UCR.

A key feature of the design of NIBRS was that it was not to replace but build on the existing individualized record systems of local law enforcement agencies. In other words, agencies would not have to modify their information systems but simply adopt software to extract existing data elements that conformed to the NIBRS protocols (Hitt, 1998). Initial pilot testing of the system seemed promising.

More than 20 years have passed since the first NIBRS pilot program was implemented in South Carolina. As of 2007, NIBRS data covered about one-quarter of the US population. By any reasonable standard, this must be considered very slow progress in the nationwide implementation of incident-based crime recording and dissemination. The FBI acknowledges that NIBRS does not yet qualify as a national-level system of crime reporting: "Although participation grows steadily, data is still not pervasive enough to make broad generalizations about crime in the United States." The FBI seems to view the slow spread of NIBRS as understandable in light of the limited capabilities of local law enforcement agencies, commenting, "implementation of NIBRS has been commensurate with the resources, abilities, and limitations of the contributing law enforcement agencies." That may be so, but missing from this assessment is the possibility that many local police departments have been slow to adopt NIBRS because they do not view the system as directly responsive to their immediate information and operational needs, an issue we return to later in this report.

C. Project Rationale

The slow and uneven adoption of NIBRS was the primary catalyst for the current project. We sought to understand the technical and organizational obstacles that have impeded the spread of NIBRS, specifically, and improvements in uniform national incident-based reporting more generally. The keywords here are "uniform" and "national". Most police agencies collect incident-based crime data. But data protocols and retrieval, analysis, and dissemination systems are rarely comparable across jurisdictions, which prevents the different systems from "talking" to one another (e.g., compare incident characteristics and crime levels and trends). NIBRS was supposed to overcome this fundamental problem by bringing law enforcement agencies into a uniform national system of incident-based crime reporting. In sum, our first objective was to develop a better understanding of why NIBRS or a NIBRS-type crime reporting system has been slow to catch on.

To address this objective, we proposed to bring law enforcement agencies from multiple jurisdictions together, collectively assess their crime data needs and limitations, and then build common data protocols and entry, retrieval, and analysis capabilities. The immediate aim was to facilitate data sharing across jurisdictions so that common challenges could be addressed more effectively.

For example, assume that a jurisdiction is experiencing an increase in residential burglaries. An important task for law enforcement is to determine whether a similar increase is occurring in other jurisdictions, especially but not solely in nearby jurisdictions. Common problems often call for coordinated or common responses. On the other hand, it would be wasteful and inefficient to mount a collective response to crime problems that are specific to a single jurisdiction. Either way, *comparative* analyses of crime patterns are required to determine effective responses, and such assessments, in turn, require common data indicators and retrieval and analysis routines that can be shared across agencies.

We sought to facilitate cross-jurisdictional data sharing by developing a common crime data platform that would enable multiple law enforcement agencies to quickly access and analyze data from other jurisdictions. As with NIBRS the idea was not to supplant existing record management systems but to build an overarching system that would extract common data elements from the records of each participating agency and enable each of them to retrieve comparative data as needed to address unique or general crime problems – with minimal disruption to individual record management routines. Such a system, in our view, would enhance the capacity of local law enforcement agencies to mount and evaluate interventions; engage in long-term planning; respond more rapidly and effectively to information requests from public

officials, community groups, and researchers; better allocate human resources; and better utilize budget resources. Finally, documenting the challenges entailed in developing and implementing a common crime data platform across multiple law enforcement agencies should offer valuable "on the ground" insights into the impediments preventing more timely implementation of NIBRS and related systems based on local law enforcement data.

II. Methods

A. Assessing the Current State of Crime Data

The project employed several different strategies to ascertain the state of the art of crime data indicators, identify obstacles to data analysis and sharing, and assess agency needs for improved data and analysis and sharing capabilities. A key component of the initial effort was to document the sources of non-compliance with current requests to provide crime data to state and federal clearinghouses. The strategies included focus groups, national surveys, mini-conferences, local area coalitions, a project advisory board.

1. *Law Enforcement Focus Groups*

Under contract with ICD, in August 2003 the Justice Research and Statistics Association (JRSA) conducted focus groups consisting of representatives of local law enforcement. The purpose of these focus groups was to identify: (1) sources of non-compliance with or resistance to existing information systems, including the UCR, SHR, and NIBRS; (2) local data needs and desires; (3) the types and amount of technical assistance required to meet data needs; and (4) local and statewide data-sharing efforts and related "exemplary" efforts. The responses within these four issue areas, as well as others deemed important by the participants, became the basis for the items included in a national survey of law enforcement agencies.

As background for the focus group discussions, JRSA staff gathered information on local and statewide data-sharing efforts and on data-driven policy and policy indicators from journal and news articles, reviews of surveys conducted by the Association of State Uniform Crime Reporting Programs and the International Association of Chiefs of Police (IACP) and of "exemplary" efforts discussed at the Conference on Justice Information and Technology Integration Project, held jointly in 2003 by the National Governors Association and the Office of Justice Programs . They also solicited information on current operations from a select group of police officers, a crime analyst, an information network supervisor, and reviewed available

information from the Department of Justice, Police Executive Research Forum, IACP, and SEARCH.

JRSA staff held focus groups in three states - Pennsylvania, Illinois, and Oklahoma (see Table 1). The groups in Pennsylvania and Illinois consisted of representatives invited by the state Statistical Analysis Center and comprised a cross-section of each state's criminal justice data and policy communities. Two groups were held in Oklahoma. One included sheriffs and police chiefs participating in the state's ODIS (Offender Data Information System) program and the other included members of the state criminal justice analysis and policy communities.

Table 1. Focus Group Participants

Illinois
Chicago Police Department
Crime Analysts of Illinois Association
Hanover Park Police Department
Illinois Criminal Justice Information Authority
Illinois State Police
Integrated Justice Information System
Office of the Cook County State's Attorney
Sangamon County Sheriff's Department
Streamwood Police Department
Oklahoma
Beaver Sheriff's Office
Dewey Police Department
Duncan Police Department
Eufaula Police Department
Jackson Sheriff's Office
Lexington Police Department
Marlow Police Department
Oklahoma Criminal Justice Resource Center
Oklahoma Department of Corrections Research and Evaluation Unit
Oklahoma Sentencing Commission
Roger Mills Sheriff's Office
Wagoner Police Department

Pennsylvania

Berks County Adult Probation and Parole
Governor's Policy Office
JNET
Justice HUB
Lower Allen Township Police Department
Mercyhurst College Civic Institute
Pennsylvania Commission on Crime and Delinquency
Pennsylvania Sentencing Commission
Pennsylvania State Police
Philadelphia Police Department

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2. *National Surveys of Law Enforcement Agencies*

Under contract with ICD, JRSA used the material derived from the four focus groups to prepare two national surveys sent to local law enforcement officials and analysts. One survey was extensive and directed to agency crime analysts or others responsible for recording and reporting crime data. The other survey, less extensive, was directed to police chiefs or other agency heads and intended to solicit information on the use of data for policy purposes and decisions. JRSA prepared a written report to the ICD on the rationale, methods, and results of the survey. View the full report.

3. *National Survey on Data-Sharing Initiatives*

We also asked JRSA to conduct a national survey focusing specifically on data-sharing initiatives at the state and local levels. The survey was conducted in 2005 and 2006. Response rates to this survey were far lower than those for the survey of local law enforcement agencies. The full report on the data-sharing survey, including the survey instruments.

4. *Mini-Conferences*

The ICD held five "mini-conferences" during the project period that brought together law enforcement officials and information technology specialists from around the nation to discuss the uses of crime data by law enforcement agencies; technical and organizational obstacles preventing more efficient and effective data retrieval, inter-agency sharing of data, and data dissemination to policymakers and the public; and ICD's model of crime data enhancement and sharing. The first two of these mini-conferences, held in December 2003 and December 2004,

were devoted primarily to assessing the crime data needs and constraints of law enforcement agencies.

The first mini-conference, held on December 4-5, 2003, included 24 representatives from police agencies around the country. The agencies covered both large (e.g., Phoenix, AZ) and small jurisdictions (Doylestown, PA; Dover, NH). The meeting consisted of a series of roundtable discussions of issues related to crime data input, processing, output and sharing, and feedback. View the list of participants and minutes from the December 4-5, 2003 meeting. To access use the following information in lower case: User ID - icd-2005; Password - rosefried. A summary of results of the mini-conference is provided later in this report.

The second mini-conference, held on December 9-10, 2004, included 23 participants representing law enforcement agencies from across the country. Most of these agencies also participated in the previous mini-conference. Additional agencies represented at the 2004 meeting included the Atlanta, Houston, and Salt Lake City police departments. Computer systems and data analysts from Carnegie Mellon University and JRSA researchers also participated in the December, 2004, meeting. The meeting included presentations and feedback on local data management and sharing initiatives, preliminary results from the JRSA survey of law enforcement agencies, and a platform for inter-agency data sharing and analysis using the COGNOS program. The meeting concluded with offers of technical assistance to agencies seeking to enter and retrieve crime data. View the full list of participants and meeting minutes of the December 9-10, 2004, mini-conference. To access use the following information in lower case: User ID - icd-2005; Password - rosefried.

5. *Project Advisory Board*

The ICD project had a 9-member advisory board comprised of leading scholars and practitioners from universities and various law enforcement agencies. The board was consulted on various stages of the project, solicited for input and feedback, and regularly consulted on direction and progress. The board met once a year and consulted via conference call and e-mail. The majority of the board members attended all board meetings and was available for consultation as needed. The Advisory Board members are listed below:

Alfred Blumstein, J. Erik Johnson Professor of Urban Systems and Operations Research, Carnegie Mellon University, National Consortium on Violence Research (NCOVR)

Noah Fritz, Deputy Director, National Law Enforcement and Corrections Technology Center - Rocky Mountain; Director, Crime Mapping and Analysis Program

William Lueckenhoff, Supervisory Special Agent, Lead, Information Sharing Initiatives, Criminal Justice Information Services Division, Federal Bureau of Investigation

Stephen Mastrofski, Professor of Public and International Affairs, Director, Administration of Justice, George Mason University

Kenna Quinet, Chair, Criminal Justice, Law and Public Safety Faculty, School of Public and Environmental Affairs, Indiana University Purdue University

William V. Pelfrey, Professor, Department of Criminal Justice, Virginia Commonwealth University

Kurt Schmid, National Director, High Intensity Drug Trafficking Area (HIDTA)

Robert Stewart, Bobcat Training and Consulting, Inc. Formerly of the National Organization of Black Law Enforcement Executives (NOBLE)

Stan Stojkovic, Professor and Associate Dean, Helen Bader School of Social Welfare, University of Wisconsin - Milwaukee

For complete minutes and full transcripts of the ICD Advisory Board meetings, click on the meeting dates below. To access use the following information in lower case: User ID - icd-2005; Password - rosefried.

Advisory Board Meeting - July 17-18, 2003
Advisory Board Meeting - July 22-23, 2004
Advisory Board Meeting - July 28, 2005
Advisory Board Meeting - July 29, 2005
Advisory Board - Joint IT Meeting - July 29, 2005
Advisory Board Meeting - August 17, 2006
Advisory Board Meeting - August 18, 2006
Advisory Board Meeting - August 16, 2007

The ICD also collaborated with two national partners that made their resources available to the ICD during on-site visits at their facilities as well as presentations they made to the ICD Advisory Board. The supporting national partners were the Air Force Office of Special Investigations and the National Guard Bureau Counter Drug Office. With the expansion of ICD

it was also important to bring to the same table the data consumers (police chiefs and other command staff) and the data managers so as to assess agency needs, capabilities, and (gaps in) mode of communication. The ICD convened three national conferences for chiefs and information technology personnel in Atlanta in December 2003, December 2004 and July 2005. The chiefs and IT personnel also participated in the ICD Advisory Board meeting in August 2007. The conference reports can be accessed using the links below (ID = icd-2005; password = rosefried):

Chiefs and IT Personnel Conferences - December 4-5, 2003
Chiefs and IT Personnel Conferences - December 9-10, 2004
Chiefs and IT Personnel Conferences - July 28, 2005
Chiefs and IT Personnel Conferences - July 29, 2005
IT Personnel Conferences - July 29, 2005

6. *Local Area Coalitions (LAC)*

As an integral part of facilitating data collection and enhancing support for the project, a special coalition was formed in two key urban areas where the principal investigators are located, Atlanta and St. Louis. The coalitions included federal, state and local-level law enforcement representatives and members of various task forces, as well as agency heads, directors of crime-data clearing houses, and crime analysts. The coalition played a crucial role in all stages of the project, but particularly in developing a "buy-in" component for law enforcement agencies to participate in the initiative and in encouraging additional agencies to come on board for the wider ICD implementation. The members of the Georgia LAC included: The Atlanta Police Department; Cobb County Police Department; DeKalb County Police Department; East Point Police Department; Fayetteville Police Department; Forsyth County Sheriff's Office; Fulton County Police Department; Georgia Crime Information Center, Georgia Bureau of Investigation; Griffin Police Department; High Intensity Drug Trafficking Areas (HIDTA) - Atlanta; Marietta Police Department; and the Riverdale Police Department. Missouri LAC members included: High Intensity Drug Trafficking Areas (HIDTA) - Milwaukee; Regional Justice Information Services (REJIS); St. Louis Association of Community Organizations (SLACO); and St. Louis County Police Department.

LAC meetings took place approximately every three months between August, 2003 and October, 2004. Following each meeting the list of participants and minutes were circulated to all participants. This information is available by clicking on the respective meeting date below. To access use the following information in lower case: User ID - icd-2005; Password - rosefried.

Local Area Coalition meeting - August 22, 2003
Local Area Coalition meeting - September 26, 2003
Local Area Coalition meeting - November 7, 2003
Local Area Coalition meeting - January 23, 2004
Local Area Coalition meeting - April 30, 2004
Local Area Coalition meeting - October 29, 2004

7. *Project Website*

The ICD developed and continuously updated a website containing information about project participants, meeting minutes and transcripts, citations of news articles and scholarly publications on project studies, and all project reports. The URL is http://www.cjgsu.net/initiatives/ICD.htm. Access to some documents on the website requires a log-on ID and password. (Use the following information in lower case: User ID - icd-2005; Password - rosefried.)

B. Development and Implementation of Data Sharing Model

Based on the findings of the focus groups and the surveys, and input and feedback from the mini-conferences, the advisory board, and the LACs, a model of data enhancement and data sharing was developed. The model has two key components: first, an improved *data infrastructure* related to data definition, collection, coding, linking data records, and analysis; and second, an *organizational and operational design* that delineates for agencies the benefits of the enhanced technology and how to go about developing and implementing it. Both of these components are described in the Results section below.

The data sharing model was further refined in LAC meetings held in Atlanta and St. Louis. A plan was developed based on these discussions and the annual board meetings to enhance the organizational and technological elements necessary to improve data access and retrieval systems in local agencies, between those agencies and the jurisdictions they serve, and across jurisdictions. The ICD then added the following national partners: Dover Police Department, Dover, New Hampshire; Houston Police Department, Houston, Texas; Lake Charles Police Department, Lake Charles, Louisiana; Lexington Police Department, Lexington, Kentucky; North Charleston Police Department, North Charleston, South Carolina; Overland Park Police Department, Overland Park, Kansas; Salt Lake City Police Department, Salt Lake City, Utah; Waco Police Department, Waco, Texas. At the Advisory Board meeting in 2005 these national partners and other project participants described their current data systems and needs. The presentations are available on the ICD Presentations Page.

Access by using the following information in lower case: User ID - icd-2005; Password - rosefried.

The participating law enforcement agencies were not selected to be strictly representative of law enforcement agencies across the nation, but because they evidenced interest in the project and a willingness to share crime data with other agencies. Even so, as a group the agencies are both large and small, serve big cities and small towns, and are located in each region of the country.

C. Other Studies

Throughout the project period, ICD carried out several studies on existing crime data to examine the impact of socioeconomic conditions on city homicide rates, local crime trends, and the impact of interventions to reduce crime. The results of these efforts are summarized below.

III. Results

A. JRSA's National Surveys of Local Data Analysts and Police Chiefs

JRSA conducted national surveys on current data sharing and integration efforts to identify the needs and capacities for data usage in local law enforcement agencies. The surveys allowed respondents to provide the information at their convenience in a cost-effective manner. To determine what information should be gathered via the surveys, JRSA convened focus groups of criminal justice professionals in Illinois, Oklahoma, and Pennsylvania.

An abridged version of the rationale, methods, and results of the JRSA surveys follows. Access the full report of JRSA's surveys of data analysts and police chiefs.

1. *Introduction*

As policymakers and taxpayers demand program effectiveness and policy accountability, government agencies and practitioners have become concerned about the creation of statistical indicators of performance. Most efforts have been concentrated on linking, sharing, and integrating agency and departmental data systems, which promises to improve performance at both the micro and macro levels.

At the micro level, service providers become better able to work with clients, patients, offenders, or other users because they are better able to access all of the data necessary to understand needs and develop appropriate responses. At the macro level, policymakers are able to address broad-

scale problems more effectively because they have regularly reported indicators, either single measures or composite indices, that help them understand trends, new situations, and interconnections among variables and activities.

Practitioners in many policy areas, such as education, health care, the economy, and the environment, currently use indicators of performance. In those areas, effective indicators serve the same function as effective models in scientific study, i.e., they identify some or all of the key factors that should be known for hypothesizing and testing.

With few exceptions, criminal justice has not provided policymakers with similar indicators. At the micro level, much is being done within states and regions to share and integrate data to ensure that officers and officials have all of the information necessary to deal with people apprehended, arrested, or imprisoned. At the macro level, however, the indicator best known and most widely used by policymakers is the Federal Bureau of Investigation's (FBI) Uniform Crime Report (UCR).

The UCR has well-known problems due to uneven agency reporting, definition interpretation, and failure to count certain classes of offenses reliably. Because the UCR system relies on the willingness and ability of victims to report crimes, it is held hostage to the vagaries of individual reporting. Paradoxically, more effective agencies may even find themselves with victims more willing to report crimes and thus appear to have more crime than their counterparts. As a guide to understanding the how's, what's, and why's of offending and offenders, the UCR has proven limited as a policy indicator.

As a response to these limitations, the U.S. Department of Justice and its Bureau of Justice Statistics have for many years promoted the adoption of incident-based reporting (IBR) by law enforcement agencies. In particular, they have encouraged participation in the National Incident-Based Reporting System (NIBRS). This system requires far more extensive detail regarding the offense, offender, property involved, and victim than traditional reporting, which often includes only crime counts. With more detailed information compiled and recorded for statistical analysis, service providers and criminal justice policymakers will, in theory, have more realistic portraits of crime and its environments, which will enable them to develop the means to better address crime.

In practice, use of these systems is still incomplete. According to the FBI, only 26 states were certified to report NIBRS data in 2004, while 12 are currently in the testing phase. The Association of State Uniform Crime Reporting Programs (ASUCRP) in a survey of its members found that a majority of states have IBR systems with limited or cumbersome query capabilities.

Similarly, efforts at sharing and integrating data within and among criminal justice agencies are also incomplete at this point. In fact, the development of these systems for creating indicators or data-driven policy planning has yet to begin. For example, the 2003 Conference on Justice Information Technology Integration Project, held jointly by the National Governors Association (NGA) and the U.S. Office of Justice Programs (OJP), reviewed current types and amounts of technical assistance and local and statewide data sharing efforts. The project found a multitude of problems being faced by states, most notably current budgeting and financing. None of the information provided by NGA and OJP indicated that states or local agencies are actively pursuing the development of integrated data into specific policy-enhancing capacity.
A recent report by the U.S. Department of Justice's Office of Community Oriented Policing Services (COPS) and the Police Foundation, *Problem Analysis in Policing*, discusses how these problems affect data-driven policy for law enforcement, particularly problem analysis in policing. The report states that "problem analysis represents a method of providing police agencies with the capability to conduct in-depth, practical research." Problem analysis, according to the report, is not limited to crime analysis but is "action research in that it involves using formalized methods of study with a goal of arriving at practical solutions." The report asserts, however, that in practice, not all law enforcement agencies will have the capacity for such analysis. It is likely that smaller agencies may require the assistance of outside agencies.

This conclusion was affirmed by another COPS report, *Crime Analysis in America*, published in conjunction with the Police Foundation and the University of South Alabama. This national survey of U.S. law enforcement agencies studied crime analysts, their resources, and their uses. It divided responding agencies into those with at least 100 sworn personnel and those with fewer. The report found that the size of department did not predict crime analysis capabilities, but did find that larger agencies provided a wider range of analysis. The report also found that agencies with a specific crime analysis position provided more, and better, crime analysis.

2. *Survey Methods*

As a result of the focus groups conducted in Illinois, Oklahoma, and Pennsylvania, two surveys were developed, one for police chiefs and one for data analysts. In agencies without data analysts, any person filling that role was encouraged to complete the survey. The chief survey was one page, front and back, consisting of 15 questions and an open-ended recommendation section. The final analyst survey was longer, with two pages front and back containing 43 questions and an open-ended recommendation section (see JRSA report for copies of the surveys). The chiefs survey was designed with fewer questions to increase the likelihood of participation; as a result, the answers for some questions were restricted to fewer options than were given the analysts.

To encourage participation, two mailings were sent. The first round of surveys was mailed in January 2004; a second set of surveys was mailed to non-responding agencies in March 2004. In order to increase the probability that agencies would return the surveys, letters were included explaining the study. Self-addressed, pre-stamped envelopes were also included in the mailing and respondents were given the option of completing the survey online at the JRSA Web site.

The survey sample for this study was selected from the 2000 Law Enforcement Management and Administrative Statistics (LEMAS) survey. All police agencies serving populations of at least 25,000 were selected from the LEMAS database for inclusion. As a result, surveys were sent to 1,379 agencies.

Chiefs surveys were received from 779 agencies (56% of the sample) and data analyst surveys were received from 741 agencies (54% of the sample). Most of the responses were received via mail (75% of chiefs, 73% of analysts). For 10 agencies, multiple analyst and chief responses were received. These multiples were not duplicates, but rather differing responses from the same agency. This is not surprising for data analysts, as the second mailing may have been given to a different analyst in agencies with multiple analysts and both were returned. It is more difficult to explain the multiple chief responses, although it suggests that at least in some agencies, chiefs were not actually the individuals completing the surveys. The final total of chief surveys included in the analysis was 790, while 752 data analyst responses were included.

Response rates for both chiefs and analysts increased with size of population served. No surveys were received from Vermont, Delaware, and West Virginia; no analyst surveys were received from Maine. Since these states are small, however, only a few agencies fit the criteria for inclusion in our sample. In Vermont, for example, only one agency received the mailing.

Just under half of the participating agencies indicated that they are reporting NIBRS data to the FBI, which is higher than the national average of roughly 31%, according to SEARCH, the National Consortium for Justice Information and Statistics. Agencies reporting NIBRS data may be more technologically advanced than their counterparts, simply due to the requirements of the program. As a result, the findings of this survey may be slightly skewed and may not adequately represent agencies on the lower end of the technology spectrum.

3. *Survey Results*

Three types of analysis were completed. First, chief responses were reviewed and responses were compared by the size of population served by the participating agencies. Second, analyst responses were reviewed and responses were again compared by the size of population served.

Finally, chief and analyst responses were compared for similar questions. This final comparison also included a comparison of agencies by size of population served.

Four groups were used to compare agencies by size of population served: agencies serving populations of 250,000 or more; agencies serving between 100,000 and 249,999; between 50,000 and 99,999; and between 25,000 and 49,999. It was expected that results would trend across the groups; specifically, it was anticipated that agencies serving a larger population would have more access to data and use data more often than their counterparts serving smaller populations.

a. Chiefs' Survey Responses

The chief surveys focused on five main areas of interest: use of data, personnel response to data collection, the collection and reporting of incident-based data, sharing data, and the providing of statistics to the community and media.

Use of Data

Most of the responding chiefs indicated that criminal justice data, particularly calls for service, arrest, incident report, traffic stop, clearance rates, and hot spots data, are useful in managing their agencies. For most of the data types, responses followed the predicted trend, with the agencies serving the largest populations being more likely to report the use of data than the agencies serving smaller populations. Since it was assumed that the group of agencies serving the largest populations would be more likely to use most of the data categories, it was surprising to find that agencies serving populations between 100,000 and 249,999 were more likely to report the use of hot spots, police pursuit, and disposition data. Also unexpected, the agencies serving the smallest population were most likely to report the use of arrest data.

The agencies serving the largest populations were least likely to report the use of state crime publications. This is not surprising, as these publications are published on an annual basis and are often not available until a year after the data were collected. These agencies most likely produce their own internal publications tailored to their needs and using much more recent data. Agencies serving smaller populations, however, may not have the resources or staff to produce their own reports, and may be more interested in comparing their data with other similarly sized agencies in the state. In these cases, the state publications would be more useful.

Few chiefs reported the use of non-criminal justice data, nor was there any indication that these types of data would be useful if available. The exception to this was the use of Census data, with most chiefs reporting the use of Census data in their departments. This most likely reflects the

continued emphasis on mapping by law enforcement and the use of Census tract and population data.

Currently chiefs are using the data they collect for a variety of functions. The functions most often reported include using data to:

- assess department performance,
- make budget decisions,
- make deployment and tactical decisions,
- respond to inquiries, and
- compare with other jurisdictions.

In summary, most agencies are using data to improve performance and for planning. Agencies serving large populations are more likely to use data to help agency performance, while smaller agencies are more likely to use the data for planning programs or policies.

Personnel Response to Data Collection

Most of the chiefs felt that officers are supportive in their efforts to gather required information. Just under half of all chiefs, however, felt that officers would only be "somewhat thorough" if required to collect additional information.

Collection and Reporting of Incident-Based Data

Just under half of the chiefs report that their agencies are currently collecting and reporting data to the FBI's NIBRS. NIBRS, unlike the system for reporting summary data, requires the gathering of information relating to the characteristics of the offense, victim(s), offender(s), arrestee(s), and property included in a reported incident. Due to the increased requirements for reporting NIBRS data, agencies have been relatively slow in converting to incident-based reporting. In this study, agencies serving smaller populations were more likely to be reporting NIBRS data; 44% of agencies serving populations from 25,000 to 49,999 report NIBRS data, compared to 27% of agencies serving populations of 250,000 and more. Agencies serving larger populations are slightly more likely to have a plan to implement NIBRS in the next 3 years. Most agencies not currently reporting incident-based data, however, have no plan to do so.

When asked why agencies have no plan to implement NIBRS, agencies serving the largest populations were the least likely to report that NIBRS is not useful. Rather, financial matters seem to be the main reason agencies have not begun reporting incident based data; most blamed

the doubtful commitment of state and federal resources and the costs associated with changing systems.

Sharing Data

While most chiefs responding to this survey reported involvement with multiagency information sharing, agencies serving populations over 100,000 are much more likely to be involved than those agencies serving smaller populations. Although chiefs were not asked why they were not participating, it seems likely that agencies serving larger populations have greater crime problems and potentially more mobile offenders. With large populations moving between urban centers and suburbs, agencies need a system to keep track of people offending in multiple but contiguous areas.

Agencies currently involved in data sharing efforts find them valuable; between 65% and 75% of all groups of respondents reported that the effort was very valuable.

Providing Statistics to the Community and Media

Police chiefs face a constant demand for information from community leaders, the media, and the public. Almost 75% of chiefs report that community leaders request statistics at least once a month; 30% of these report requests at least once a week. Agencies serving larger populations receive more frequent requests, often at least three a week.

Only about half of the chiefs rate the media's understanding of data provided them as good. Chiefs of agencies serving the largest populations, 250,000 and more, rated the media's understanding poorer than did chiefs in the other three groups.

b. Analysts' Survey Responses

Like the chief surveys, the analyst surveys focused on five main areas of interest: use of data, agency structures and resources, data for strategies, data sharing and outside assistance, and incident-based data. Since the analyst survey was twice as long as the chief survey, analysts were able to provide much more detail about the use and analysis of data in their agencies.

Use of Data

Analysts use calls for service and incident report data most often in their jobs. Few analysts report the use of any non-criminal justice data, with the exception of Census data. There were

few differences among agencies in regard to the types of data used. One notable difference, however, was in the use of medical examiner data; agencies serving populations of 250,000 and more were more likely to use such data than agencies serving smaller populations.

The trends for the types of data used were as expected; agencies were more likely to use data as the size of the population they served increased. The largest difference among agencies was for the use of drug and/or gun seizure data, with agencies serving large populations being much more likely to have and use the data. Agencies serving populations over 100,000 would be more likely to use any additional data if made available than agencies serving populations under 100,000. This is most likely due to the size of the crime analysis units; agencies serving smaller populations may not be able to handle any additional analysis.

As expected, agencies serving larger populations are more likely to use the data for evaluating performance and for planning future initiatives. Analysts in all agencies agree that data are used more often for performance than for planning.

Agency Structures and Resources

Although most agencies serving populations over 100,000 report having a crime analysis unit, agencies serving under 50,000 are much less likely to have a separate unit. On average, crime analysis units tend to have only a single analyst. Agencies serving larger populations have more analysts; about 13% of agencies serving more than 250,000 people report having more than 10 analysts on staff.

Analysts across agencies are similar; most analysts have an undergraduate degree. Analysts in agencies serving 100,000 people or more are more likely to receive training for their jobs; only 70% of analysts in smaller agencies report receiving any analysis specific training. Most analysts receive training from outside agencies, but almost half report that their training is not up-to-date.

With the demand for increased information sharing and improvements in technology, it is not surprising that most of the agencies responding to this survey have automated records management systems (RMS). With over 80% reporting automated systems, the number seems higher than expected. The high number of automated agencies in our sample may actually reflect our selection method and a self-selected response set. In fact, agencies reporting NIBRS were more likely to respond to this survey. Since NIBRS requires the collection of a large number of incident characteristics and must be reported electronically, by default that means that most of these agencies are automated. Surprisingly, there was little difference among agencies serving the different population groups.

Despite the automation, many analysts would like to improve their ability to extract data from their record management systems, especially analysts in agencies serving populations under 100,000. Analysts would also like to see increased analysis capacity and improved data quality. When asked how analysts could improve their technical capacities, most in agencies serving 250,000 or more reported that they would increase the number of staff performing analysis functions. Analysts in agencies serving fewer than 250,000 instead reported that they would improve the software used for analysis and reporting.

Although the push toward technology has in essence led business to the Internet, it was surprising to find that almost 93% of the responding agencies reported having a Web site. It seems likely, however, that as city and county governments move to providing instant access to information to their citizens, law enforcement information, and therefore law enforcement agencies, are included on these community Web sites. These sites, however, may provide little more than contact information. In fact, fewer than half of the agencies serving populations under 100,000 provide crime statistics via the Web. Agencies serving populations of 250,000 or more are much more likely, with 83% of analysts in these agencies reporting that crime statistics are provided on an agency Web site.

Data for Strategies

Roughly half of the respondents report that their agency is able to track offenders over time. In most cases, this system tracks offender arrest history; jail, court, and probation/parole data are included in only about half of the agencies.

Over half of the analysts reported that information is regularly distributed in the agency, most often in memos and bulletins or upon request. Fewer than half of the analysts in agencies serving fewer than 50,000 provide the information in regular reports, compared with almost 80% of the analysts in agencies serving 250,000 or more.

Data Sharing and Outside Assistance

Analysts in agencies serving large populations are much more likely to use data systems that are integrated with systems of other departments or agencies; 76% of analysts in agencies serving populations over 250,000 use integrated systems, compared with 60% of agencies serving populations under 50,000. These systems tend to be maintained by the county, and in most cases these integrated systems allow agencies to share criminal incident and person information with other law enforcement agencies.

Just under half of the analysts report that their agency shares automated data with courts, and few share with corrections or probation offices. The likelihood of sharing data increases with increased population. Only half of the analysts, however, rate data sharing efforts as successful.

Few analysts seek analytic assistance from outside agencies, but most report that they would be receptive to assistance if offered. For most, maintaining confidentiality of the information would be the largest concern, followed by issues surrounding the maintenance of data integrity.

Incident-Based Data

Only 40% of the analysts report that their agency is collecting and reporting incident-based data, and most have no definite plan to implement a NIBRS-compatible system. Most blame their current records management systems and the need to update to support incident-based reporting, as well as the need to redesign collection processes and reporting forms.

c. Comparison of Chief and Analyst Survey Responses

Since the chief and analyst surveys were different lengths and were designed for different purposes, the wording differed slightly for several of the questions. Chiefs, for example, were asked about data useful in managing their agency, while analysts were simply asked what data are used in their agency. In total, 14 of the questions are similar enough in their content to compare responses. As a result of phrasing, however, responses can't always be compared without explanation. In the following sections, only agencies with both chiefs and analysts responding are included in the analysis. Multiple responses from single agencies are excluded.

Use of Data

Chiefs are more likely than analysts to report the use of some categories of criminal justice data. The differences between chiefs and analysts are most apparent in agencies serving populations between 100,000 and 249,999. In these agencies, chiefs and analysts differed by at least 5% in 10 of the possible 15 categories of data types. It is not surprising that chiefs would be more likely to report the use of cost data; for the other categories, however, it appears that either chiefs may be overestimating the use of data in their agencies, or analysts are underestimating.

Chiefs and analysts also differed in their perceptions of how the data are used. Analysts seemed to underestimate how data are used for making deployment decisions and for comparisons to other agencies; chiefs seemed to underestimate the number of inquiries for information received by the agency.

Chiefs and analysts tend to agree that data often affect performance and are used for planning. The only difference across agency size occurred for agencies serving populations between 50,000 and 99,999. In these agencies, chiefs were much more likely to report that data affect planning (91% of chiefs vs. 80% of analysts).

Personnel Response to Data Collection

There was little difference between chiefs and analysts in regard to the support received from officers in gathering data. Most agree that officers are supportive but would only be somewhat thorough if required to collect any additional information. The discrepancy between chiefs and analysts was most evident in agencies serving 100,000 people or more; in these agencies, chiefs indicated that they felt officers would be more thorough than analysts did.

Collection and Reporting of Incident-Based Data

Chiefs in agencies serving populations over 50,000 are more likely to indicate that their agencies are collecting and reporting NIBRS data. The difference may simply be an issue regarding familiarity with the term NIBRS; analysts may only know that they are collecting data for use in their agency and may not know that their data collection specifications define the data as NIBRS data. Analysts in agencies not currently reporting NIBRS, however, are more likely than chiefs to report plans to report NIBRS data in the next three years.

Sharing Data

Both chiefs and analysts were asked about sharing agency data, but the questions were worded slightly differently and can only be compared with caution. The wording on the chief survey specifically asked if the department is currently involved in sharing data, while analysts were asked whether the department is currently *or is planning on* participating in an information sharing project. As expected, the numbers are much higher for analysts, with 97% responding that their agencies are or will be sharing data, compared with 67% of chiefs responding that their departments are currently sharing data.

In the survey, chiefs were asked to rate the value of multiagency efforts to share data. A similar question was posed to the analysts, but instead asked whether analysts find data sharing efforts to be successful. In agencies that are currently sharing data with outside agencies, chiefs report the project to be more valuable than analysts do. This finding is consistent across agency size.

Providing Statistics to the Community and Media

Chiefs report more weekly requests for information from external sources than do analysts. It is possible that chiefs actually receive more requests for information, and these requests are not filtered down to the analysts. It is just as likely that either chiefs overestimate the number of requests received by an agency, or that analysts underestimate the number that are handled outside the crime analysis units.

In general, roughly only half of chiefs and analysts agree that the media have a good understanding of the information that the agency provides them. Chiefs of agencies serving populations between 100,000 and 250,000 rate the media slightly better than the other agency categories.

4. *Discussion*

Police departments across the country are indeed using criminal justice data. As expected, most agencies are using the data to help performance and for planning programs and policies. Using reports, memos, and bulletins, analysts are sharing data within their agencies. Information is also shared on a regular basis with community leaders, the media, and the public. Over half of the police agencies are involved in an information sharing project with outside agencies and report that such projects are valuable.

Although law enforcement agencies are sharing data, most are only sharing limited data with other law enforcement agencies. According to the survey results, agencies are not sharing data with local courts, corrections, or probation offices. Agencies may therefore not know when arrestees are currently active in their or in a surrounding jurisdiction's criminal justice system.

Agencies tend to be automated and to have a Web site. Most agencies serving populations of over 50,000 people have a crime analysis unit, which is generally staffed by at least one full-time analyst. Even though most analysts have an undergraduate degree and receive some kind of job-specific training, it is evident that more up-to-date training is needed, especially for agencies serving populations under 100,000.

While agencies find that their officers tend to be supportive in their data collection efforts, it is unclear whether officers would be thorough if required to collect additional information.
Just under half of the surveyed agencies are currently reporting NIBRS data to the state. Despite the fact that most of the agencies are automated, most of the agencies not currently reporting

have no plan to implement a NIBRS collection system. Most agencies cite cost as the most important factor that keeps them from reporting incident based data.

In summary, it seems clear that law enforcement agencies are using crime analysis tools to improve both their daily functions and for planning future initiatives. Although many departments do not use or have access to other criminal justice system data, it seems clear most departments would benefit from having readily available data in a format that would allow analysis without additional hardware. Access to such data may finally allow criminal justice and law enforcement agencies the tools to build statistical indicators that would enable them to better predict and better respond to crime.

B. JRSA's Survey on Information Sharing Systems

JRSA conducted a survey in 2005 and 2006 on state and local data-sharing initiatives. The survey methods and results are abridged below. See the full report on the data-sharing survey, including the survey instruments.

1. *Introduction*

Information sharing within and across agencies at the local, state, and federal levels is increasingly being emphasized. Criminal justice agencies are forming new relationships and are sharing information electronically at multiple levels. Going beyond the sharing of information among police departments, states are instituting systems that match multiple sources of data, combining law enforcement data, for example, with court and corrections data. With the introduction of Extensible Markup Language, or XML, the dream of being able to share data across systems has become a reality. Systems no longer need to employ the same field lengths and variable names; with XML, data from different systems can be matched and translated into the same format. The use of XML allows agencies to think about sharing information not only among existing systems within their state but across states as well.

One difficulty with the recent boom in the development of these systems, however, is that it can be hard to know what information is being shared and who is sharing it. In many cases, multiple systems are being developed to cover overlapping areas. It is crucial that state criminal justice agencies become aware of such situations in order to encourage local agencies to work together rather than develop separate systems. With a finite amount of money, extending systems already in existence may allow more agencies to participate in the exchange of information, increasing the utility of these systems for practitioners and researchers.

2. Survey Methods

The goal of this project was to document the information sharing initiatives currently existing or being developed in the states. To accomplish this, JRSA sent out two surveys. The first survey identified systems and contact information; the second survey gathered more detailed information about each system. The initial survey was distributed via email, while the second survey was posted online. Emails containing a link to the second survey were sent out (the survey could also be accessed from the JRSA Web site), and respondents were asked to complete a survey for each known system.

The first survey was sent via email to state Statistical Analysis Center (SAC) directors, Uniform Crime Reporting (UCR) program managers, law enforcement contacts, and to a law enforcement analyst listserv. This brief survey included an introduction to the project and a spreadsheet listing the known information sharing system initiatives. Respondents were asked to correct or complete entries in the spreadsheet and add systems where missing.

Emails containing a link to the second survey were sent to the contacts provided by the respondents of the initial survey. Emails were also sent to those in the first survey's sample who had a valid email address but who had not responded to the initial survey.

The initial survey was directly sent to 712 contacts. The direct contacts included 609 law enforcement analysts (it is not clear how many analysts received the survey because the listserv membership changes regularly), 52 SAC directors, 45 UCR program managers, and 6 contacts who are both SAC directors and UCR program managers. Of these 712 contacts, 211 had email addresses that were no longer functional. Of the remaining 501 contacts, only 56 responded to the initial survey.

For the second survey, a total of 683 emails with a link to the survey were sent; 612 of these were valid email addresses. Response was again small, with 88 contacts completing 124 surveys covering 35 states.

3. *Survey Results*

Survey respondents identified 266 information sharing systems either currently in place or in development. Respondents indicated phase of development for 162 of the systems; most of these are operational (102), while the rest are in planning (34) or development (25). When asked about the coverage of the systems, most respondents indicated that they participate in statewide systems (see Table 1).

Table 1. Coverage of Information Sharing Systems National	Region Across States	Region in State	Statewide	Countywide
21 (10%)	22 (11%)	18 (9%)	105 (50%)	42 (20%)

Respondents were also asked how the data in these systems are used; the most frequent uses reported were for tactical analysis and crime analysis (Table 2). Few reported either extensive or detailed use of mapping (click to view Table 3, page 7).

Table 2. Use of Data in Information Sharing Systems in Operational Systems Crime Analysis	Crime Mapping	Crime Reports	Tactical Analysis	Strategic Analysis	Other Use
36 (45%)	21 (26%)	24 (30%)	45 (56%)	33 (41%)	33 (41%)

4. *Discussion*

The goal of this research was to identify information sharing systems that are in place or are being planned. Some additional questions were included in the survey to help determine how the systems are being used and by whom. It should be noted, however, that respondents provided inconsistent amounts of information. Therefore, little information is available for many of the systems identified in this project.

Although the response rate was well below what was anticipated, 266 systems were identified in 35 states and Canada. Most of these systems are statewide initiatives and have the potential to be accessible to every law enforcement agency in the state. Several countywide and regional systems are also in existence.

It is clear from the surveys that these systems are valuable to participants and are used for a variety of functions. Relatively few respondents, however, use the information for mapping purposes.
While it is not immediately clear what kinds of agencies are participating in these systems, it can be assumed from the agencies listed (where available) that most of the systems include agencies outside of law enforcement. For the systems whose users were identified, 67 (35%) are accessible only to law enforcement, while 124 (65%) share information with other justice agencies. Courts are most often connected to these systems, followed by correctional agencies.

Most agencies responding to the survey reported only one available system. Only nine of the local agencies reported having two or more available systems, and most of these do not include local systems.

The surveys used for this project were kept short and collected only basic information in order to increase the response rate. The next step in investigating the use and utility of current information sharing projects is to select certain systems for a more in-depth review. This review should focus on the following questions:

- What lessons were learned during the planning and implementation stages?
- What (if any) memoranda of understanding (MOUs) were signed by participating agencies?
- What information is shared?
- What agency maintains the system and information?
- How effective is the system?
- What results have been achieved?
- What additional information would users like to see shared (or made available)?
- What additional functionality within the systems would users like?

C. Developing and Implementing the Data Sharing Model

1. *Concept*

The ICD project developed a model for the compilation, coding, refinement, intra- and inter-agency sharing, and broader dissemination of crime incident data. The model was based on the input of local agency executives and technical personnel, the local area coalitions (LACs), the project Advisory Board, and the mini-conferences. That input, in turn, was informed by the results of the focus groups and surveys undertaken during year 1. The model was intended to facilitate timely compliance with existing reporting requirements (UCR, SHR, NIBRS) and the creation, sharing, and dissemination of new crime indicators, as determined by local agency needs.

Because not all agencies have the same needs, and those of a single agency change over time, the first principle of the model is *flexibility* in extracting and coding information from crime incident reports so that different indicators can be created according to evolving needs. For example, assume that a single agency or local coalition determines that more comprehensive and timely information is required to evaluate drug-related violent crimes. Agency analysts would respond by extracting from incident reports information on the drug component of a specified class of

crimes (e.g., homicides, assaults, robberies) occurring at particular times and places. That information would be compiled in a set of drug-related violence indicators, transmitted to agency officials, and where appropriate, shared with other agencies in the jurisdiction and disseminated to wider constituencies.

The process described already occurs in one form or another in most large law enforcement agencies, as revealed in the JRSA surveys, but typically on an ad hoc basis, and the resulting indicators are rarely shared across agencies for coordinated planning and evaluation. Therefore, the second principle underlying the proposed model is *organizational routinization.* The extraction, coding, and sharing of refined crime indicators must become part of standard operating procedure for agency information specialists if those indicators are to be useful for ever-changing strategic and policy needs. In most instances, this did not require additional personnel, but it required training and assistance -- provided by the ICD project -- and it necessitated changes in operational and organizational procedure.

To effect the proposed changes in data infrastructure, changes are needed in both the operational and organizational basis of crime data production in law enforcement agencies. The key operational change is the development of a unified *data sharing platform* that permits the timely sharing of crime information within and across agencies. The purpose of the platform is to transform data inputs from crime incident reports into common crime indicators that can be accessed as needed by commanders and other personnel within and across agencies. This did not require wholesale changes in software and computing routines already in use and in which agencies may have made a considerable investment. It required moving from paper to computer-based crime information recording, and building a second-tier platform that translated data inputs generated from different programs into common and generally accessible outputs. The basic task of the project's information specialist, housed at NCOVR, was to develop this platform and train agency technical personnel in its use.

Following on the example given above, assume that several agencies in a local area wanted to share information on drug-related violent crimes. Under the proposed model, each agency has input the necessary data to the platform, which would convert the data elements into a common set of indicators, accessible by each of the relevant agencies. The platform becomes the basis for data analysis and reporting across the agencies. Such platforms are not unknown in local law enforcement; however they typically involve time-consuming conversions or entirely separate systems for inputting the data, and are limited primarily to individual case processing rather than aggregate data sharing and analysis.

The ICD offered to local agencies examples of promising designs in place elsewhere, the consulting services of advisory board members, and ongoing assistance in implementing and evaluating changes in existing practices.

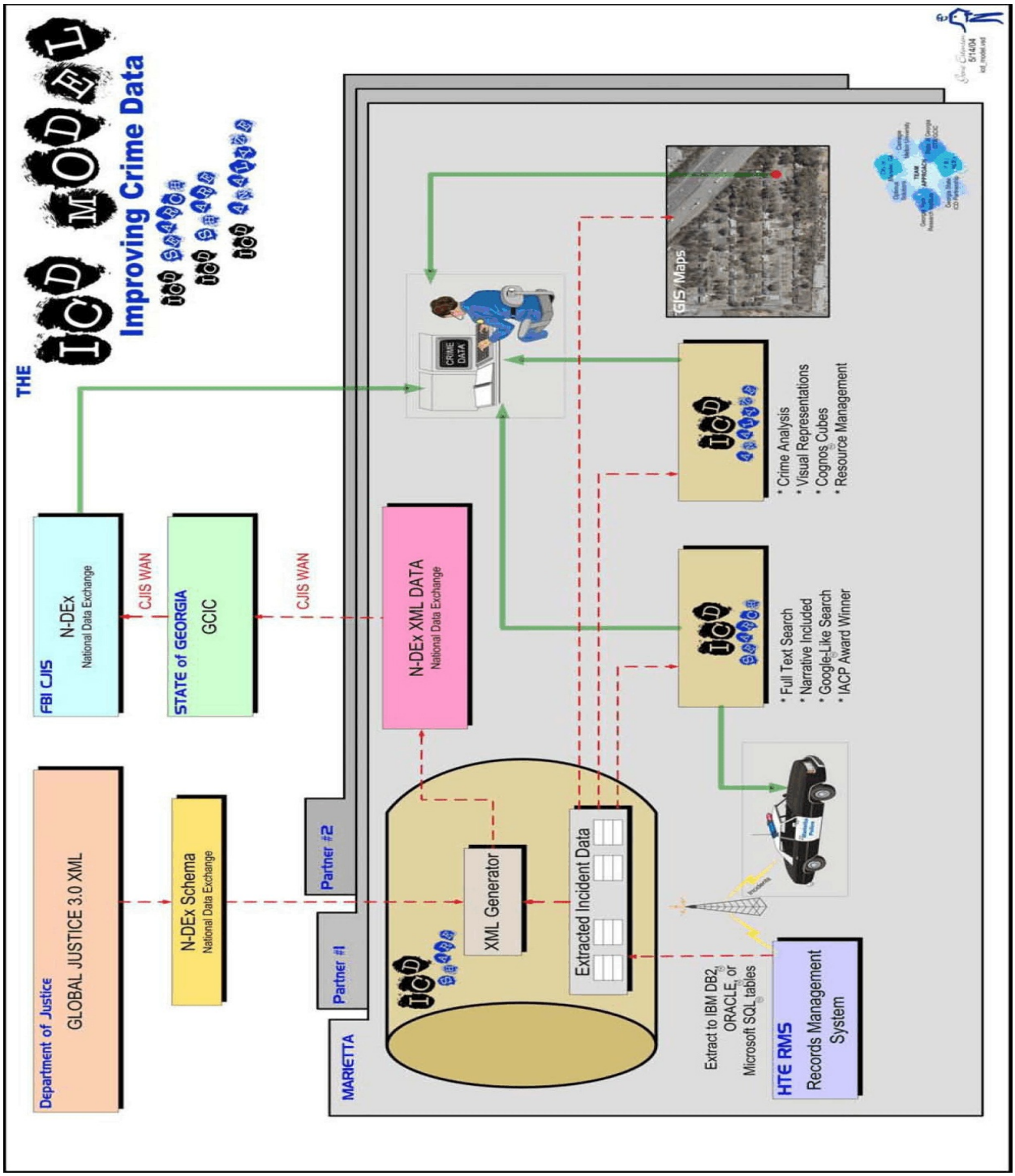
2. *Early Implementation Activities*

The Atlanta LAC developed an XML-based data-sharing platform to allow participating departments to search the combined data base of all partner departments. The task of creating this data-sharing platform was assigned to the City of Marietta. Based on an award ICD granted specifically to the City of Marietta for consulting services for this purpose, the following tasks were accomplished: (1) extracting City of Marietta crime incident data into an XML document; (2) transforming the extract document (XML) into a Justice 3.0 XML file; (3) indexing the text in the XML file; and (4) searching (Google-like) the information contained within the newly generated index file. Based on data elements submitted by the LAC partner agencies the city of Marietta was able to create a prototype of the platform (see chart on the next page).

The Regional Justice Information Services (REJIS), based in St. Louis with nationwide contracts, also provided consulting services to ICD during early implementation of the data sharing model. The services consisted of the creation of a website for public dissemination of crime information and programmer training in XML, SQL, and SVG to support further crime mapping and data exchange between dissimilar systems. In addition, the ICD provided consulting services to the Northwoods Police Department and the City of Lakeshire Police department, both located in St. Louis County, MO. The services consisted of compiling and entering crime and related data into the St. Louis County Police Department's crime data warehouse and analysis system. These activities occurred in tandem with the early implementation of data sharing in Atlanta led by Marietta, GA.

3. *Implementation Phase II: NCOVR*

As of January 1, 2005, the City of Marietta changed its computing priorities and was no longer able to uphold its prior commitment to the ICD project. ICD then moved on with developing its own interface software independently of the Marietta efforts. In August 2005, the ICD Project amended its subcontract with Carnegie Mellon University (CMU) to reflect their increased participatory role after the City of Marietta Police Department was no longer the lead agency on the project. The amendment to the subcontract allowed CMU to develop the software interface needed for multi-agency data sharing and to continue to provide the agencies participating in the project with technical assistance needed to submit and retrieve common data elements.


THE
Improving Crime Data
GIS / Maps
CRIME DATA
• Crime Analysis
• Visual Representations
• Cognos Cubes
• Resource Management
• Full Text Search
• Narrative Included
• Google-Like Search
• IACP Award Winner
FBI CJIS
N-DEx
National Data Exchange
CJIS WAN
STATE of GEORGIA
GCIC
CJIS WAN
N-DEx XML DATA
National Data Exchange
Department of Justice
GLOBAL JUSTICE 3.0 XML
N-DEx Schema
National Data Exchange
Partner #2
Partner #1
MARIETTA
XML Generator
Extracted Incident Data
Extract to IBM DB2, ORACLE, or Microsoft SQL tables
HTE RMS
Records Management System

The technical staff of the National Consortium on Violence Research (NCOVR), headquartered at CMU, prepared a prototype of NIBRS data in COGNOS software as a first-stage approximation of the data elements and formats to be used in the ICD data sharing system. COGNOS "data cubes" offer a powerful tool for accessing and analyzing multidimensional data. The NCOVR technical staff received data from three of the smaller ICD partners and developed information cubes based upon these data.

NCOVR technical staff also evaluated and selected software to use in the development of the ICD search engine. The decision was made to purchase TEXIS software from Thunderstone because of its integrated development environment and the flexibility it offers. Crime incident data from the Atlanta Police Department were used in the initial development of the search engine.

NCOVR staff also focused on the delivery, manipulation, and security of the ICD data. Towards this end, a secure medium was developed for transferring ICD data over the internet. The hardware and software were configured to make use of encryption to transfer user authentication credentials, as well as the data sent to the NCOVR FTP site. The implementation of this solution allowed NCOVR to begin working on automating the delivery and detection of regular data feeds. This was a major step in producing timely and updated data for use by the ICD partners.

Security of the data does not end with the delivery of the data, especially when partnering agencies are working from multiple locations. To help with the process, NCOVR set up the capability of working securely from a remote location. This allowed collaboration without compromising the security of the data. NCOVR also worked on producing a comprehensive security policy as it relates to the handling and viewing of ICD data, based on procedures set forth in the Oracle Database Security Guidelines.

The ICD developed a Memorandum of Understanding (MOU) modeled after the FBI's NDEx MOU document in order to formalize the relationship between the data producing agencies and the ICD to address issues and concerns regarding privacy, security, and integrity of crime data handled by the ICD project. Following extensive reviews by the Georgia State University legal affairs office and the partnering law enforcement agencies, agreements to participate in the project were received from the following agencies. (Click on the Atlanta Police Department to view a sample of a signed MOU):

Georgia

Atlanta Police Department
East Point Police Department
Forsyth County Sheriff's Office
Fulton County Police Department
Griffin Police Department
Marietta Police Department
Riverdale Police Department

Other States

Dover, NH Police Department
Houston, TX Police Department
Lake Charles, LA Police Department
Lexington, KY Police Department
North Charleston, SC Police Department
Overland Park, KS Police Department
Salt Lake City, UT Police Department
Waco, TX Police Department

Crime data from the partner agencies were submitted and loaded into the NCOVR COGNOS server. NCOVR developed special cubes to define the data by type of event and by agency. The following cubes were provided for all agencies providing data: arrest, offense, property, victim, and victim-offender relationship.

A number of problems were identified during the transfer and extraction of the data to NCOVR from the participating agencies. Common problems included the loading of incorrect data into a data field, incompatibility between the data fields used by the agency and those specified by NCOVR, and ORI numbers that could not be linked with specific cases. In addition, the data transmitted were sometimes incomplete or inconsistently formatted for all years. NCOVR staff devoted considerable time working with agency analysts to ensure that the data were verified before transmission, that summary counts were provided, and that the agency sent a complete and accurate code book with the data. Although time consuming, most of these problems were eventually resolved.

4. *Implementation Phase III: GCIC*

The unified data platform developed for ICD by NCOVR provided a proof of concept of loading crime data from different data bases unto a single unified crime data platform. That is, data from various agencies, with differing record management systems, could be unified into a single data platform and analyzed as if it constituted a single data base. However, in April, 2008, NCOVR ceased operations, making it necessary to move to a variation of the original NCOVR unified data platform. The ICD developed its own platform using the same basic COGNOS methodology but with updated software possessing additional and improved data analysis capabilities. To avoid the data transfer difficulties described above, an agreement was reached with the Georgia Crime Information Center (GCIC) at the Georgia Bureau of Investigation to install an updated COGNOS program (version 8.4) for use with crime data submitted to the GCIC from all Georgia law enforcement agencies.

Technical delays (explained in project progress reports) prevented the installation of the COGNOS software at the GCIC until January 2009. ICD also had to purchase a new server due to defects in the NCOVR server sent to the GCIC. Three week-long training sessions with ICD and GCIC staff were then held on the updated version of COGNOS installed at the GCIC.

The GCIC is the clearinghouse for UCR, Supplementary Homicide Reports (SHR), and related crime data compiled by Georgia law enforcement agencies. In 2008 659 law enforcement agencies submitted data to the GCIC. The COGNOS server at the GCIC holds 2008 UCR Return A crime data, supplemental UCR data, and data on law enforcement officers assaulted or killed. SHR data for 2002-2008 are also loaded on the server. The following are illustrations based on these data of the selected analysis and report capabilities of COGNOS.

Table 1 presents arson data from the supplemental UCR data for selected counties in the Atlanta metropolitan area in 2008. The data were assembled and the tables formatted through a series of sequential queries and commands in COGNOS. It would take a trained analyst 5-10 minutes to extract the data and create the table. Panel A of the table displays the number of arson incidents in the five selected counties by type of property. Panel B presents the estimated cost of the damage in these incidents.

Table 1. Arson in Selected Metro Atlanta Counties (2008)

A.

Arson - select counties in Georgia

		Structural							Mobile		All Other	Grand Total
		Single Occupancy Residential	Other Residential	Storage	Industrial/ Manufacturing	Other Commercial	Community/ Public	All Other	Motor Vehicles	Other Mobile Property	All Other: Crops, Timber, Fences, Signs, etc.	
County	Clayton	21	11	1	0	3	1	0	20	0	9	66
	Cobb	7	8	2	0	3	5	2	9	2	10	48
	DeKalb	80	38	3	0	22	2	1	68	1	9	224
	Fulton	91	42	0	3	6	9	9	38	0	13	211
	Gwinnett	23	10	0	0	6	10	4	43	1	19	116
Total		**222**	**109**	**6**	**3**	**40**	**27**	**16**	**178**	**4**	**60**	**665**

B.

		Estimated Value of Property Damage			
		Structural Total	Mobile Total	All Other Total	**Grand Total**
County	Clayton	$3,730,566.00	$591,120.00	$8,535.00	$4,330,221.00
	Cobb	$1,313,850.00	$53,100.00	$4,350.00	$1,371,300.00
	DeKalb	$9,194,196.00	$1,111,000.00	$2,505.00	$10,307,701.00
	Fulton	$5,133,351.00	$586,900.00	$25,275.00	$5,745,526.00
	Gwinnett	$1,155,282.00	$568,300.00	$6,585.00	$1,730,167.00
Total		**$20,527,245.00**	**$2,910,420.00**	**$47,250.00**	**$23,484,915.00**

Table 2 presents data on law enforcement officers assaulted in the city of Atlanta in 2008. The data are cross-classified by reporting agency and type of activity. A quick perusal of the table indicates that the large majority of these incidents were reported by the Atlanta Police Department and the modal risk to officers entails the handling, transporting, or custody of prisoners.

Table 2. Analysis of Law Enforcement Officers Assaulted by Activity Type (2008)

Officers Assaulted in the City of Atlanta by Type of Activity and Weapon

	Type of Activity											
	Responding to Disturbance Calls (family quarrels, person with firearm,etc.)	Burglaries in Progress or Pursuing Burglary Suspects	Robberies in Progress or Pursuing Robbery Suspects	Attempting Other Arrests	Civil Disorder (riot, mass disobedience, etc.)	Handling, Transporting, Custody of Prisoners	Investigating Suspicious Persons or Circumstances	Ambush - No Warning	Mentally Deranged	Traffic Pursuits and Stops	All Other Activities	**Assaults Total**
APD HARTSFIELD AIRPORT DIVISION	0	0	0	0	0	2	0	0	0	0	0	2
ATLANTA POLICE DEPARTMENT	23	1	2	26	0	122	35	3	9	33	71	325
EMORY UNIVERSITY DPS	0	0	0	0	0	0	1	0	0	0	0	1
FULTON CO. MARSHAL'S OFFICE	0	0	0	0	0	0	0	0	0	0	0	0
FULTON CO. SHERIFF'S OFFICE	0	0	0	0	0	0	0	0	0	0	0	0
GA. STATE UNIVERSITY DPS	0	0	0	2	0	0	1	0	0	0	0	3
GA. WORLD CONGRESS CENTER PD	0	0	0	0	0	0	0	0	0	0	0	0
MARTA POLICE DEPARTMENT	15	0	0	4	0	6	26	1	1	0	0	53
Total	**38**	**1**	**2**	**32**	**0**	**130**	**63**	**4**	**10**	**33**	**71**	**384**

Data can be displayed in a variety of formats in COGNOS, including lists, tables, crosstabs, charts, or a combination. It is also possible to import COGNOS output into an EXCEL file and save it in PDF format. These capabilities are illustrated with SHR data from five counties in the Atlanta metropolitan area.

Figure 1 displays a bar graph of homicide victims by sex in the five counties between 2002 and 2008. The figure reveals the greater victimization risk of males and the higher frequency of homicide in Fulton County. Figure 2 displays a similar graph of homicides in the five counties by race of victim. The GCIC plans to add to COGNOS census data on the demographic characteristics of jurisdiction populations to enable the creation of crime rates by age, sex, race, and ethnicity.

Finally, Table 3 presents homicide frequencies between 2002 and 2008 in five counties in the Atlanta metropolitan area. The figure combines graphic and tabular displays of the homicide data and could be used as part of a broader assessment of possible displacement of homicides from Fulton County to Clayton and DeKalb Counties, which exhibit homicide growth during the period.

Figure 1. Homicide Victims by Sex in Selected Atlanta Area Counties (2002-2008)

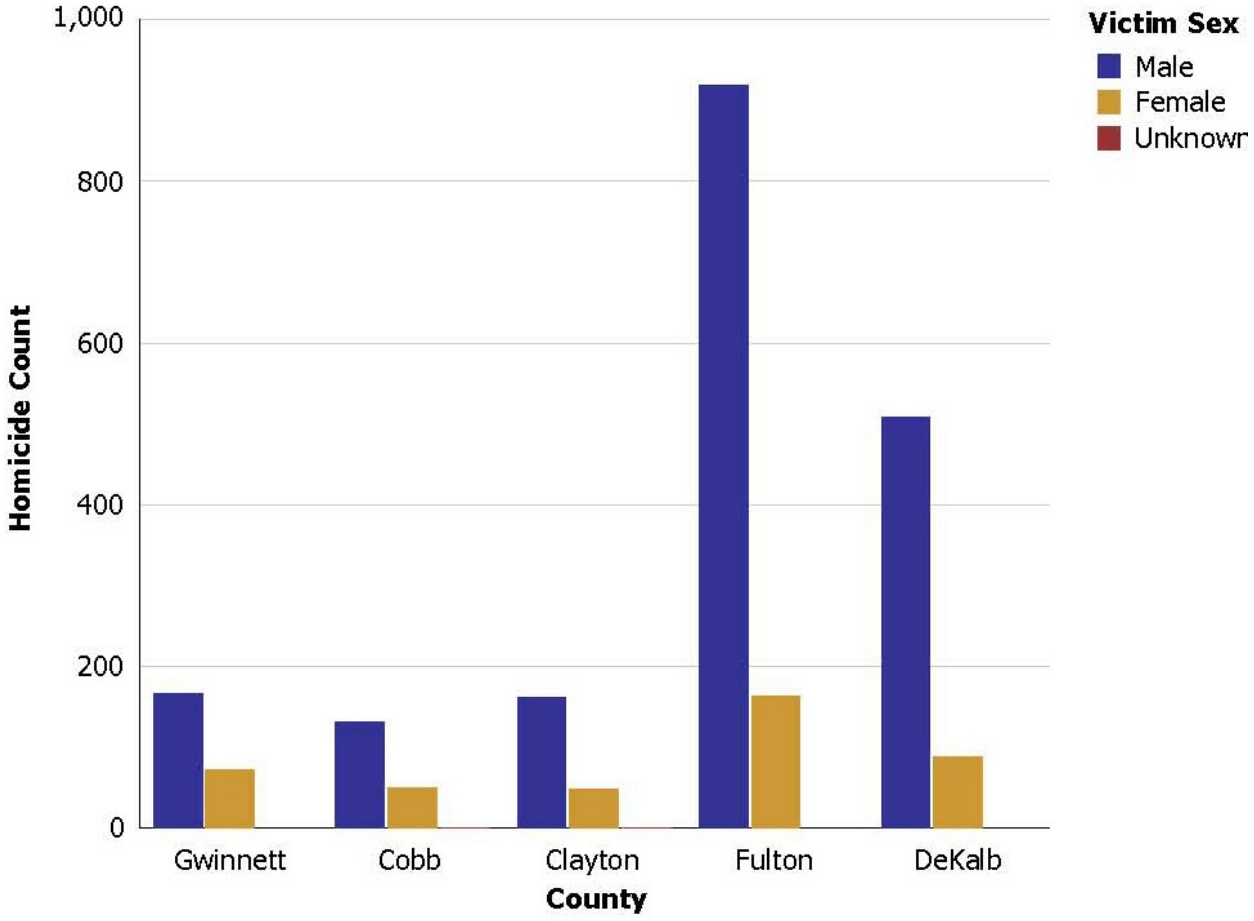


Figure 2. Homicide Victims by Race in Selected Atlanta Area Counties (2002-2008)

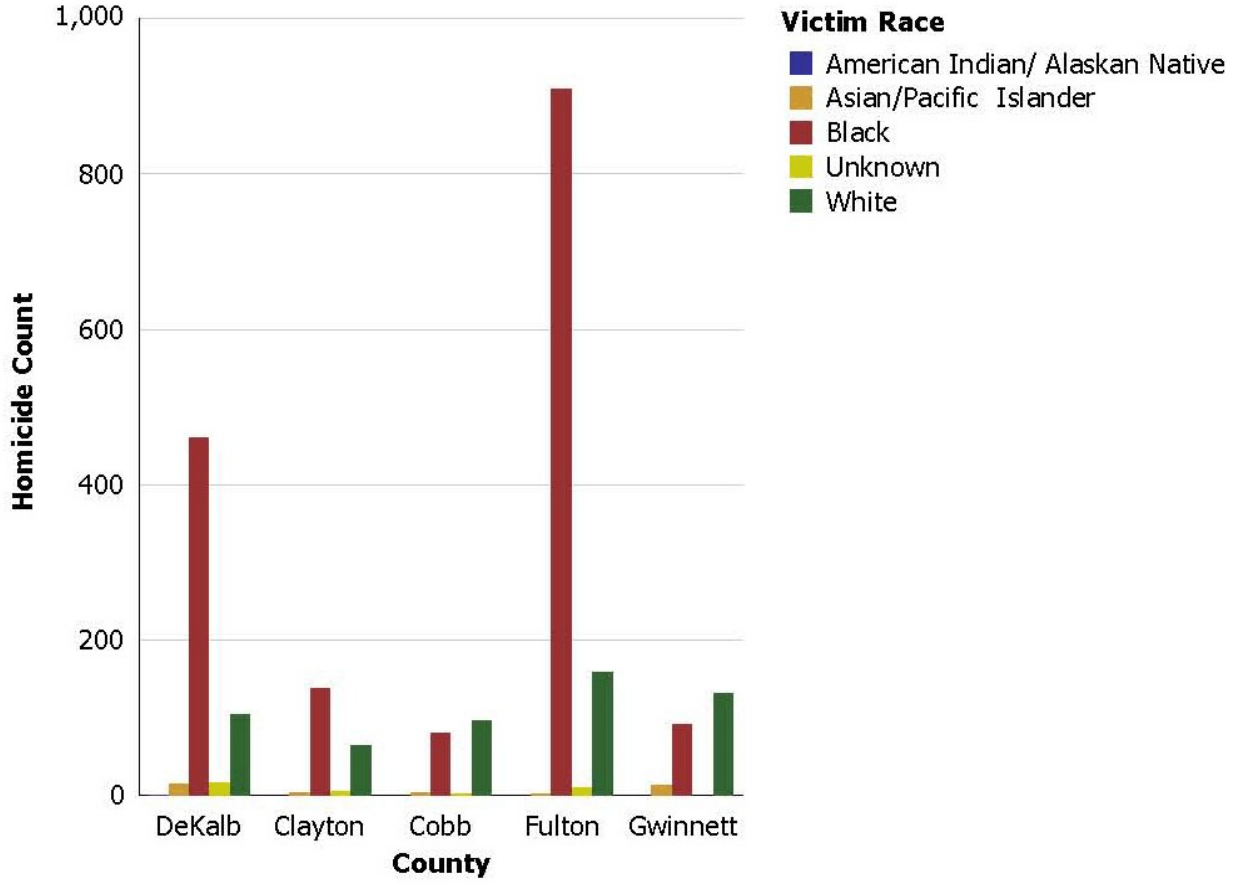


Table 3. Homicides in Five Atlanta Area Counties (2002-2008)

Homicide Count	2002	2003	2004	2005	2006	2007	2008	Total
Clayton	17	21	24	28	39	47	35	**211**
Cobb	23	35	19	34	22	21	30	**184**
DeKalb	51	87	52	77	97	116	118	**598**
Fulton	170	176	144	117	139	181	155	**1,082**
Gwinnett	23	39	29	31	37	44	35	**238**
Total	**284**	**358**	**268**	**287**	**334**	**409**	**373**	**2,313**

D. Other Studies

Throughout the project period, the ICD project undertook several studies of existing crime data, including an analysis requested by the St. Louis Metropolitan Police Department of crime trends in St. Louis, an examination of homicide trends across large U. S. cities, a precinct-level analysis of homicide and robbery trends in New York City, and an ongoing evaluation of city homicide rankings adjusted for differences in socioeconomic conditions.

1. *St. Louis Crime Trend Analysis* (Abridged; see complete report).

Like most U.S. cities, St. Louis has experienced a substantial drop in serious crimes since the early 1990s. However, not all crimes have decreased. Motor vehicle thefts have risen sharply in recent years, and rapes have dropped. These changes may be a function of changes in crime coding or classification procedures. In this report, we track the trends between 1995 and 2003 in four crime types: rape, motor vehicle theft, aggravated assault, and homicide. For three of the crime categories (rape, motor vehicle theft, and homicide) we then compare the number of recorded offenses for 2003 with estimates derived from a statistical model applied to data from the 95 U.S. cities with more than 175,000 residents. Our results indicate that St. Louis has a much smaller number of police-recorded rapes and a much larger number of motor vehicle thefts than would be expected for a city of its size and population characteristics. The number of homicides, by contrast, is somewhat lower than we would expect for a city of the size and characteristics of St. Louis, possibly due to recent law enforcement interventions to reduce violent crime.

Comparing St. Louis to Other Cities

Table 1 displays the number of rapes, motor vehicle thefts, aggravated assaults, and homicides recorded in St. Louis and three cities comparable to St. Louis in size and other population characteristics: Cincinnati, Kansas City, and Atlanta.

Table 1. Crime Counts in Cincinnati, Kansas City, Atlanta, and St. Louis, 2003

	Cincinnati	*Kansas City*	*Atlanta*	*St. Louis*
Rapes	307	308	281	81
Motor Vehicle Thefts	3449	5600	7235	11966
Aggravated Assaults	1081	3871	4360	3874
Homicides	71	82	149	74

The number of rapes recorded in St. Louis is well under half the number recorded in the three comparison cities in 2003. The number of recorded auto thefts in St. Louis is markedly higher than in the comparison cities. The number of aggravated assaults and homicides recorded in St. Louis, by contrast with rape and vehicle theft, does not differ greatly from the respective numbers in the comparison cities. The aggravated assault count in St. Louis is nearly identical to that in Kansas City and somewhat smaller than in Atlanta. Cincinnati has less than one-third the number

of aggravated assaults as Kansas City, Atlanta, and St. Louis. St. Louis, Cincinnati, and Kansas City record similar numbers of homicides; Atlanta had roughly twice as many as the other cities in 2003.

Expected Number of Crimes in St. Louis

We estimated the "expected" number of rapes, motor vehicles thefts, and homicides in St. Louis from statistical models that reliably predict differences across the 95 cities in these crime types. The "expected" number of crimes is the number St. Louis would have assuming it had the mean values on the covariates in the model. The estimates are only as good as the fit of the model to the data. Assaults differ substantially over time and across cities in the way they are classified by the police. Due to the resulting measurement error, we could not create a model with an acceptable level of fit to the aggravated assault data and have not produced expected aggravated assault counts for St. Louis.

Rape. The expected number of St. Louis rapes in 2003 was estimated from an equation that models rape as a linear function of six variables that reliably predict differences across cities in rape rates: the female labor force participation rate, the divorce rate, percent of families with children headed by a female, population density, population size, and percent of the population between the ages of 15 and 24. The equation is given below:

$$RAPE = a + b_1(FLAB) + b_2(DIV) + b_3(FFAM) + b_4(POPDEN) + b_5(POPSIZE) + b_6(AGE15\text{-}24), \text{ where} \quad \text{Eq. (1)}$$

RAPE = Rapes per 100,000 population (natural log);
FLAB = Percent of females 16 and over in civilian labor force;
DIV = Percent of persons 15 and over divorced;
FFAM = Percent of families with children under 18 headed by a female;
POPDEN = Persons per square mile (natural log);
POPSIZE = Population size (natural log); and
AGE15-24 = Percent of the population between 15 and 24.

Equation (1) was fit to data for the 95 US cities with 2000 populations greater than 175,000. The rape data are from the FBI's *Uniform Crime Reports*, and the data for the covariates are from the 2000 US Census. To produce reliable parameter estimates and avoid overfitting, the average 2000-2002 rape rates for the 95 cities were first regressed on the covariates using ordinary least squares. The 2003 rape rates were then regressed on the fitted values from this equation. The predicted 2003 St. Louis rape rate per 100,000 was obtained and converted to a count. We

achieved reasonably good model fit; over half of the variance in rape rates across the 95 cities is explained by the model. The prediction equation is given below:

$$RAPE_{00\text{-}02} = -.271+.020(FLAB) + .096(DIV) + .041(FFAM) - .130(POPDEN) + .139(POPSIZE) + .034(AGE15\text{-}24). \quad \text{Eq. (2)}$$
$$R^2 = .545 \; F = 17.545 \; p < .001$$

Regressing the 2003 rape rates for the 95 cities on the fitted values from Eq. (2) yields an expected St. Louis rape rate of 59 per 100,000. Converting the rate to a count produces an expected rape count of 201, or 120 more than the 81 rapes recorded by the police in 2003.

Motor Vehicle Theft. The number of auto thefts in St. Louis is much higher than would be expected based on characteristics generally related to auto theft in large US cities. We estimated the number of auto thefts in St. Louis in 2003 as a linear function of five variables that reliably predict auto theft rates across cities: the male unemployment rate, percentage of the population black, percentage of the population living in the same residence 5 or more years, population density, and the divorce rate. The equation is given below:

$$VTHEFT = a + b_1(UNEMP) + b_2(PCTBLK) + b_3(SAMRES) + b_4(POPDEN) + b_5(DIV), \text{ where} \quad \text{Eq. (3)}$$

VTHEFT = Motor vehicle thefts per 100,000 population (natural log);
UNEMP = Male unemployment rate;
PCTBLK = Percentage of the population black;
SAMRES = Percentage of population living in same residence 5 or more years;
POPDEN = Population density (natural log); and
DIV = Divorce rate

As before, the equation was fit to the 2000-2002 UCR and 2000 census data for the 95 largest US cities. The 2003 motor vehicle theft rates were then regressed on the fitted values from this equation. The predicted 2003 auto theft rate per 100,000 for St. Louis was obtained and then converted to a count. The prediction equation is given below:

$$VTHEFT_{00\text{-}02} = 3.330 + .0814(UNEMP) + .0077(PCTBLK) - .0305(SAMRES) + .304(POPDENS) + .131(DIV) \quad \text{Eq. (4)}$$
$$R^2 = .545, \; F = 21.308 \; (p < .001)$$

The statistical model provides reasonably good fit to the data, explaining over half of the variance in motor vehicle theft rates across the 95 cities. The model yields an expected auto-theft rate in St. Louis of 1,726 thefts per 100,000 population in 2003. The expected rate corresponds to 5,873 auto theft offenses, or about one-half of the 11,966 auto thefts recorded by the St. Louis police that year.

Homicide. We estimated the expected number of homicides in St. Louis from an equation consisting of four variables that reliably predict homicide rates across large US cities: an index of economic and social disadvantage, a measure of residential segregation by race, the percentage of the population living at the same residence 5 or more years, and the firearm suicide rate. The disadvantage index combines five highly intercorrelated variables: the poverty rate, male unemployment rate, % black, % female-headed families with children under 18, and median family income. The equation is given below:

$$HOMICIDE = a + b_1(DISADVAN) + b_2(SEG) + b_3(SAMRES) + b_4(GUNSUIC), \quad \text{Eq. (5)}$$

where

HOMICIDE = Homicides per 100,000 population (natural log);
DISADVAN = Factor score for social and economic disadvantage index consisting of poverty rate, male unemployment rate, % black, % female-headed families with children under 18, and median family income;
SEG = Index of dissimilarity of black and white residential patterns;
SAMRES = Percentage of population living at same residence 5 or more years; and
GUNSUIC = Firearm suicides per 100,000 population

We fit Eq. (5) to 2000-2002 UCR homicide data and 2000 census data for the 95 largest cities and achieved very good fit: The equation explains over two-thirds of the variance in homicide rates. The estimation results are given below:

$$HOMICIDE_{00\text{-}02} = 1.925 + .541(DISADVAN) + .018(SEG) - .022(SAMRES) + .065(GUNSUIC) \quad \text{Eq. (6)}$$

$R^2 = .780$ $F = 79.755$ $p < .001$

Regressing the 2003 homicide rates for the 95 cities on the fitted values from Eq. (6) yields an expected 2003 St. Louis homicide rate of 29.01 homicides per 100,000 population and an expected count of 99 homicides. The expected count is somewhat higher than the 74 homicides recorded by the police in 2003.

Conclusion

Our analysis of St. Louis rape, motor vehicle theft, aggravated assault, and homicide levels and trends produces mixed results. For two of the crime types, homicide and aggravated assaults, we find that St. Louis does not diverge markedly from expected patterns, although the results for aggravated assault must be viewed with caution given the variability across cities and over time in assault classification procedures. For rape and motor vehicle theft, on the other hand, St. Louis differs from other large cities in both the time trends for these offenses and their expected levels in 2003. The frequency of recorded rapes in St. Louis is much lower in recent years than expected based on rape rates elsewhere, controlling for several factors that predict rape rates in US cities. The pattern is the opposite for vehicle theft: St. Louis records substantially more vehicles thefts than expected.

The results for rape and motor vehicle theft raise the possibility that St. Louis differs from other cities in the rate at which these offenses are reported to the police or in the way they are classified by the police. It is also possible that St. Louis has experienced a sharp decline in rapes over the past few years and a large increase in vehicle thefts. The limits of the statistical models must be kept in mind when interpreting these results. Although the models explain over half the variance across the 95 largest cities in rape and vehicle theft rates, much of the variance in these crime types remains unexplained.

Further insight into the divergence of St. Louis from the experience in other cities can be gained from a detailed examination of classification and coding procedures applied to rape and motor vehicle theft.

2. *Comparing City Homicide Trends*

The ICD also undertook an extensive examination of city homicide rates to assess the effects of three widely publicized law enforcement interventions: Boston's Ceasefire, New York's Compstat, and Richmond's Project Exile. The study's main findings are: (1) New York City's homicide trend during the 1990s did not differ significantly from those of other large cities, controlling for well-established covariates of homicide. (2) Boston's youth firearm homicide rate declined over the period of the Ceasefire intervention, but given the low homicide counts in Boston, the decline is only marginally significant when compared with declines in other cities. (3) Richmond's firearm homicide rate declined significantly after 1997 when Project Exile was implemented, compared with homicide changes elsewhere. That result is consistent with a program effect, but other explanations cannot be ruled out. Final results were published in *Criminology and Public Policy* (Rosenfeld, Fornango, and Baumer 2005).

3. *New York City Crime Trend Analysis*

New York City experienced dramatic reductions in violent crime during the 1990's. New York police and other city officials have attributed New York's crime drop to the "Compstat" reforms initiated during the 1990s and accompanying changes in policing strategy, notably the use of aggressive order-maintenance policing strategies against low-level crimes and disorders. The rationale for New York's order-maintenance policing strategy rests on the well-known theory of "broken windows" policing, which posits that aggressive responses to minor offenses such as panhandling, open container violations, vagrancy, public urination, public marijuana use, and subway turnstile jumping deters more serious crimes by signaling to would-be offenders that the police no longer tolerate crime and public disorder. Misdemeanor and ordinance violation arrests rose sharply during the 1990s as violent crime rates fell, leading local officials to attribute the crime decline to the new enforcement strategy. However, little systematic evidence exists of the effectiveness of order-maintenance policing.

Applying hierarchical growth-curve models to precinct-level arrest and offense data spanning the decade of the 1990s, we found a modest impact of misdemeanor and ordinance-violation arrests on New York homicide and robbery trends, controlling for other determinants of violent crime. The results imply that order maintenance policing may have accounted for 5%-10% of New York's violent crime decline during the decade. The study also found that the sheer growth in the number of police in New York had a large effect on misdemeanor and ordinance-violation arrests, implying that the success of the order-maintenance policy rested on New York's capacity to substantially increase the size of its police force during the 1990s. Final results were published in *Criminology* (Rosenfeld, Fornango, and Rengifo, 2007).

4. *Adjusted City Homicide Rankings*

Another major activity that ICD undertook throughout the project period was an annual assessment of the impact on city crime rankings of differences across cities in population characteristics. Police and other public officials often complain about such rankings because city crime rates are affected by factors over which law enforcement or city administrations have little control (e.g., unemployment, poverty, population stability). The FBI also warns against comparing city crime rates without taking into account other differences related to crime. This effort, we believe, is especially important given the widespread attention to city crime rankings, such as those promulgated by Morgan Quitno Press, that offer no understanding of the factors that produce crime or the influence of local policy and practice on crime rates. To address such concerns, we devised a method for adjusting city homicide rates to control for some of the most important economic and social determinants of violent crime.

We estimated a baseline model, well-established in the criminological literature, to predict homicide rates across the cities and then generated the residuals from the model, which represent the variation in homicide rates not accounted for by the baseline variables. We then compared the original homicide ranking of cities with the adjusted ranking based on each city's residual value. The adjusted ranking represents a city's ranking when the baseline predictors are held constant. The adjusted scores and ranking offer a better basis for assessing the effects on homicide rates of local law enforcement policy and practice than do the original or "raw" rates, which are driven heavily by socioeconomic conditions over which the police have little control - although *other* city officials and agencies may be able to influence such conditions.

Several notable changes are observed between the original and adjusted rankings. The procedures used and results are described on the ICD web page. This project has attracted significant attention from police departments around the country and from the press with nearly two dozen articles that covered ICD adjusted homicide reports between 2004 and 2010, including coverage in major outlets such as the *Wall Street Journal* and *Los Angeles Times* (see all news articles).

IV. Conclusions

A. Discussion of Findings

The ICD project objective was – as its name suggests – to improve crime data. It aimed to develop a unified data platform capable of integrating crime data from different agencies using different data bases stored in different record management systems and doing so in a timely and accurate manner. The project utilized a comprehensive process to ascertain the current uses of crime data by relying on a review of incident-based crime reporting, a national advisory board of law enforcement and academic experts, local coalitions of law enforcement agencies, mini conferences of police chiefs and crime analysts, focus groups, and national surveys of police department leaders and data analysts. From the outset, our message to partner agencies was that the purpose of the project is to assess their crime data capabilities, identify needs and create a unified data platform that would enable the participating departments to analyze crime data from various data base sources and varying record management systems. We emphasized that the purpose of this effort is not merely "academic" in nature but to improve crime data so that upon the completion of the project the agencies could derive direct benefit from it through practical implementation once proof of concept was obtained.

The comprehensive use of multiple and diverse resources for this project turned out to be highly valuable. The participation of small and large agencies, urban and rural agencies, city and county police (and sheriff's) departments, jurisdictions in several states, and the national partners, the

sub-contractors, and entities such as the Air Force Office of Special Investigation ensured that broad and knowledgeable input and feedback were received at all stages of the project. An active advisory board composed of research scholars and practitioners helped to prevent the project from steering away from its original objectives, even as circumstances dictated changes in the means for achieving those objectives. Finally, it should be noted that the Georgia, Missouri, and other state and local agency partners were enthusiastic participants. They willingly volunteered staff time and effort to comply with the project's needs, beyond what was expected based on the assistance provided through project resources.

The project encountered two critical organizational and technical challenges that resulted in unexpected delays and strategic modifications. One was local and occurred early on. The other occurred well into the project and affected all participating agencies. We take the time to summarize both and the ways we sought to cope with them, because they serve to highlight an important general theme regarding the difficulties of creating and sustaining multi-agency data-sharing partnerships.

*Marietta challenge***.** The City of Marietta, Georgia, was among the very first to join the ICD project. Bobby Moody, Marietta's former police chief, was president of the IACP, devoted to improving the quality and sharing of crime data, and committed his department to the ICD project from the very start. That enthusiasm was also found in the Management Information Systems (MIS) department of the city. Crime data for the city is stored in and retrieved by the MIS department and not the police. The department director made his facility, top of the line equipment, and staff available to the ICD.

At the outset of the ICD project and for a period of well over a year the enthusiasm of the police department and the MIS department was translated into significant tangible support. All Georgia Local Area Coalition meetings were jointly hosted by the Marietta police and MIS departments. The MIS director dedicated a server for the ICD project to store the crime data from the participating Georgia law enforcement agencies and helped to create the unified data platform. The police department provided technical expertise and assistance to other partner agencies in inputting and retrieving data from the server.

In January of 2005, the Marietta MIS director informed the ICD that the city of Marietta had changed its computing priorities and would be unable to uphold its commitment to the project. Given this unexpected turn of events, the ICD then continued with developing its own interface software independently of the Marietta efforts. This delayed the progress of the project, but it also offered a valuable lesson regarding the fragility of multi-agency partnerships, discussed below.

*NCOVR challenge***.** The unified data platform was taken over and developed by one of ICD's sub-contractors, the National Consortium of Violence Research (NCOVR) at Carnegie Mellon University. The key reason for using NCOVR as a subcontractor was its expertise in managing and analyzing large data bases from various sources. NCOVR staff developed the unified data platform for the ICD by assessing the data bases and record management systems of the partner agencies and then developing a set of common data elements. An intensive information technology effort went into the process of extracting the data from the agencies' data bases, transferring the data to NCOVR, loading the data onto the server, and evaluating the data for accuracy and completeness. NCOVR then built "cubes" (using COGNOS software version 7.3) and presented preliminary results at ICD board meetings.

NCOVR ceased operation in April of 2008. ICD received a timely warning of the pending shutdown along with NCOVR's commitment to ship the COGNOS/data server to Georgia. However, the server arrived six months after the shutdown and upon examination it was determined to be damaged and not fit for use. The ICD had to acquire a new server that was placed at the Georgia Bureau of Investigation (GBI) Georgia Crime Information Center (GCIC). The ICD purchased an updated version of COGNOS (8.4), which was installed on the server at GCIC. The installation took place at the end of January, 2009, after which ICD and GCIC staff underwent three separate intensive training sessions provided by IBM to acquire proficiency in using COGNOS.

ICD and GCIC staff built a new meta data model for a Georgia unified crime data platform. It includes all UCR crimes reported by Georgia agencies for the year 2008 and homicide data for the years 2002-2008. ICD and GCIC are in the process of loading data for additional years to allow trend analyses of crime in Georgia. Therefore, the capacity is there and now the GCIC is able to employ it in its service.

Despite these organizational and technological challenges, the ICD was able to achieve its original aim of creating a unified crime data platform. Moreover, the ICD was able to go beyond the proof of concept – which it achieved earlier in the project – and actually implement a new practice for crime data reporting across jurisdictions.

In addition to establishing a unified data platform and enhancing corresponding analysis capabilities, the ICD also has endeavored to improve understanding of existing crime data. To that end, we developed a method and model for assessing the influence of socioeconomic conditions on city homicide rates and demonstrated the impact of these conditions on the rank ordering of cities according to their homicide rates. This effort has attracted considerable attention, and it is straightforward to extend the analysis to other crime types.

B. Implications for Policy and Practice

Several valuable lessons emerged from the ICD project with relevance to law enforcement policy and practice. The modern law enforcement agency requires accurate and timely information on crime for effective management, response to public concerns about emerging crime problems, and evaluation of current responses to those problems. The days when a local law enforcement agency could rely simply on crime information about its own jurisdiction, without knowledge of comparable patterns in other jurisdictions, are over. The best information is *comparative*. For example, consider an agency that is experiencing an increase in residential burglaries in its jurisdiction. For effective response, the agency must know whether similar increases are occurring across other jurisdictions or whether the burglary uptick is a purely local problem. A local problem calls for a local response; a common problem, usually if not always, calls for a coordinated response across agencies. To be effective, coordinated responses require information sharing across agencies. Too often, information sharing is inhibited by disparate information systems, data formats, and retrieval procedures. We have proposed that establishing and maintaining a common data platform across agencies facilitates data sharing and expedites coordinated enforcement strategies. We have found that establishing a common data platform is possible and feasible. But it is not easy.

For understandable reasons, and with the exception of investigating individual cases, information sharing is not a top priority of local law enforcement agencies. More immediately pressing issues often relegate the development of common data elements, a common electronic platform, and common input and retrieval methods to secondary importance and ad hoc solutions. Consider the comments of a police chief at our second mini-conference, early in the project period:

> I'm trying to figure out what kind of product is going to be put together that's going to convince people that they need to be involved. I'm not sure why Marietta is going to be concerned with crime trends in Salt Lake City, or why Waco is going to be interested in what's going on in Atlanta necessarily. Unless we can find something in that data that says, this is the trend. This is something -- this helps explain what's happening in your community, locally, but was brought together from all these other pieces.

Another participant echoed this concern: “How do you convince department that it's to their benefit to do this when there's a lot of comparison data in there?”

Significantly, both of these police officials went on to become core project participants, but their skepticism regarding the value of comparative crime data is commonly shared among local

police officials. Largely for this reason, we believed that the local area coalitions could facilitate an interest in data sharing across agencies. Local area coalitions are important and sometimes effective, but they are fragile and typically short lived, subject to changes in the priorities of the participating agencies, as we saw in the case of Marietta. The best way forward, based on our experience, is to coordinate inter-agency information sharing at the state level. Most local law enforcement agencies now submit crime information to state agencies, such as the GBI, which in turn compile and process the data for submission to the national UCR program. Local agencies have grown accustomed to this process and have worked out ways for the expeditious transfer of crime and related data to the coordinating state agency. State data clearing houses have, in turn, proved to be an efficient mechanism for compiling data from local agencies, imposing checks for data accuracy and integrity, and sending the data up the line to the national UCR program for additional data quality management and eventual dissemination.

The next step in this process is for the state coordinating agency to create mechanisms for the rapid and timely return of crime data *back to the local agency* so that it can be used for comparative assessment of crime problems across jurisdictions and the development of effective responses to crime problems *as they emerge*. As the JRSA surveys of local law enforcement managers and planners reveal, too often local agencies see little use in the UCR crime data for fashioning enforcement strategies because the data are simply out of date. This has led to the widespread view of the UCR program as a data archive suited primarily for academic research purposes and unhelpful for addressing current crime problems. We have demonstrated the feasibility of establishing a statewide data platform, with considerable analytical capabilities, that enables local agencies to retrieve and analyze data for their jurisdiction and others in the state. The project ended before we could assess how rapidly a local agency could retrieve data needed for crime analysis. But there appear to be few technical impediments to the rapid dissemination of local crime data from the state coordinating agency. In principle, if the data are input on a monthly basis, the data should be retrievable within the following month.

The principles of regular data input to a common platform with analytical capabilities and timely data retrieval for use in addressing emerging crime problems do not stop at the state level. Crime problems do not respect state boundaries; nor should crime information. The logical next step in improving the use of crime data in law enforcement policy and practice is to establish a nationwide data platform with state coordinating agencies as the primary data providers. The framework for such a platform already exists in the submission of local crime data to state agencies, which in turn send it on to the national UCR program. But at present this system is not adequate for local law enforcement planning and response because (a) the data are not returned to local agencies in a timely manner and (b) the data are returned in summary form which does not allow for incident-level analysis. The NIBRS program compiles incident-level data but

nationwide implementation has been slow and NIBRS provides no analytical capabilities. Like the UCR program, NIBRS is essentially a data archiving system that does not meet the strategic needs of local or state law enforcement agencies. We recommend that the NIJ, in cooperation with the Bureau of Justice Statistics and Bureau of Justice Assistance, establish an ongoing program to support the more rapid implementation of NIBRS across the nation and the timely dissemination of NIBRS data for use by local law enforcement agencies in tracking, analyzing, and responding to emerging crime problems. Our experience with COGNOS recommends the use of this program for use by state and local agencies. But other programs may also be suitable. The point is to provide law enforcement agencies with the timely comparative data and analytical tools they need to proactively assess and address crime problems before it is too late to respond effectively.

C. Implications for Further Research

Two main directions for future research emerge from the ICD project. The first involves systematic investigation of methods to hasten the timely dissemination of comparative crime data for use in crime analysis, planning, and evaluation by local law enforcement agencies. The second builds on the ICD homicide adjustment analysis by identifying factors in local jurisdictions that generate crime rates that diverge from the "expected" rates based on local crime-producing conditions.

As noted above, a major impediment to the use of UCR and NIBRS data by local law enforcement agencies for planning and analysis is the time lag between data collection and dissemination. Currently, local agencies must wait more than nine months after the collection period for the national UCR to disseminate annual data that can be used for comparative assessment of crime problems across jurisdictions. Agencies must wait even longer for monthly data, which for many purposes are more useful. For example, comparative data for January 2008 were not published until mid-September of 2009. Dissemination of SHR and NIBRS data takes longer still. Such lengthy time delays are no longer justifiable on technical grounds. Most law enforcement agencies – and all large agencies – input, compile, store, and output data in electronic form. Data retrieval and checking for completeness and accuracy by the state and national UCR programs also occur electronically. We see no reason why the national UCR program could not disseminate quarterly crime data one month after the collection period, with the eventual goal of disseminating monthly data one or two months after collection. Without minimizing the difficulties of ensuring data integrity and accuracy at each link of the chain, the dissemination of basic crime data (counts and rates in major crime categories) can occur much more rapidly than it currently does.

How much more rapidly? With what loss in accuracy or increase in necessary resources? These are key research issues that we recommend the NIJ give high priority in its research portfolio. Future research should also build on the ICD homicide modeling strategy in several ways. The model can be applied to other crime types and population aggregates (e.g., states, counties, metro areas). The model specification can be refined to improve fit and incorporate other indicators, such as the level of gang activity in the area based on data from the National Youth Gang Survey. The model should be estimated from longitudinal as well as cross-sectional data in order to account for time trends in crime rates.

These elaborations are all fairly straightforward. More challenging but very important for policy evaluation is to investigate the factors that generate divergence between the expected crime rate (the model estimate) and the actual crime rate in an area. The expected crime rate is the rate assuming average levels of crime-producing conditions (e.g., poverty, unemployment, family disruption) in the area; the actual crime rate reflects the area's current levels of crime-producing conditions. Therefore, the difference between the expected and actual crime rate reflects not only the effects on crime of conditions over which law enforcement and other criminal justice agencies have little control (e.g., the unemployment rate), but also helps to isolate the effects of factors amenable to change by local crime control policies, such as the size of law enforcement agencies, enforcement strategies, and community supervision practices and support services for probationers and parolees.

NIJ typically asks applicants seeking funding to evaluate the effectiveness of criminal justice policy and interventions to document the level of crime in the affected area(s). This is important for gauging the need for assistance, but it is not sufficient for determining crime conditions that are *amenable to change by criminal justice policy*. That requires an estimate of variation in crime rates that is unaffected by conditions criminal justice policy cannot alter. A good analogy is the way evaluations of "school effects" on student test scores are now routinely conducted. The variation in student performance that is attributable to school effects (e.g., student-teacher ratios, teacher training, curriculum, instructional techniques) is identified by controlling for conditions over which the schools have little control (e.g., student poverty rates). Educational policies are then evaluated according to their effects on that component of the variation in test scores – the residual variation that remains after the effects of exogenous factors are removed – that the schools can actually influence.

Criminal justice policy evaluation should proceed in much the same way. We recommend that NIJ ask applicants seeking support for program and policy evaluations to demonstrate both *current need*, as measured by the actual crime rate or related indicator, and *current performance*, the estimated crime rate controlling for crime-producing conditions that criminal justice policy

and practice do not influence. The difference between the actual and estimated measures provides valuable information not only about the impact of current policy but also the probable impact of proposed changes.

V. References

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VI. Dissemination of Project Results

The results of the project were disseminated in two ways: (1) through the project infrastructure itself and (2) through research presentations and publications, and media reports. Results of the focus groups and surveys were discussed in meetings of the local area coalitions and advisory board. Those discussions, in turn, generated ideas and directions for the project's data-sharing initiative(s). The data-sharing effort was discussed at meetings with NIJ and BJS staff. Results of the city homicide analysis were disseminated in research articles (e.g., Rosenfeld, 2006) and nearly two dozen press reports. The results of the analysis of St. Louis crime trends were shared with the local police department. Findings from these and other assessments of crime data also were presented at scientific meetings throughout the project period. The scholarly outlets for project results are listed below. References for the newspaper articles and opinion pieces based on the city homicide analysis are available on the ICD Articles Page.

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VII. Letters of Support

Letters of support from the Georgia Bureau of Investigation, a key project partner, are reproduced below.

GEORGIA BUREAU OF INVESTIGATION
3121 Panthersville Road
P.O. Box 370808
Decatur, Georgia 30037-0808
Telephone: (404) 244-2501
Fax: (404) 270-8352

Vernon M. Keenan
Director

November 30, 2007

Dr. Robert R. Friedmann, Director
Department of Criminal Justice
Georgia State University
P.O. Box 4018
Atlanta, Georgia 30302-4018

Dear Dr. Friedmann:

The Georgia Bureau of Investigation (GBI), on behalf of all law enforcement agencies in Georgia, is interested in establishing a centralized web based capability that can be accessed by local law enforcement agencies for the purpose of data population and data analysis. The COGNOS product that you have used and proven over the past five years for the ICD Project appears to be a mechanism by which the GBI could provide such capabilities.

Please accept this letter as stated interest by the GBI in securing funding to facilitate the purchase of the COGNOS product for installation at GBI headquarters.

Sincerely,

Vernon M. Keenan
Director

VMK:mar

cc: DD Paul Heppner

Division of Forensic Sciences
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Decatur, Georgia 30037-0808

Investigative Division
P.O. Box 370808
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Georgia Crime Information Center
P.O. Box 370748
Decatur, Georgia 30037-0748

GEORGIA BUREAU OF INVESTIGATION
3121 Panthersville Road
P.O. Box 370808
Decatur, Georgia 30037-0808

Vernon M. Keenan
Director

November 24, 2008

Dr. Robert R. Friedmann
Director, ICD Project
Department of Criminal Justice
College of Health and Human Sciences
Georgia State University
P. O. Box 4018
Atlanta, GA 30302-4018

Dear Dr. Friedmann:

The GBI has been expecting the NCOVR data server since April. The server will be beneficial - not to say essential - to the GBI for a number of reasons.

- It will allow the GBI to complete the COGNOS software download and installation process. In fact, without the data server the GBI will not have space for the COGNOS software.
- The server houses the ICD crime data that the GBI can use as part of the training process; as well as complete the analysis of the remaining ICD crime data on the server.
- This in-house / on-site capability will allow the Georgia Crime Information Center (GCIC) to transition from the experimental process of the ICD project to the actual field implementation and provide on-going crime analysis at a centralized state level, thus also benefiting other Georgia law enforcement agencies.
- The server will also allow the GCIC to house additional data submitted by law enforcement agencies in the future, and it will also enable access to crime data for local law enforcement agencies.

The GBI is looking forward to cooperate with the ICD on this and future crime data analysis projects.

Sincerely,

Dan Kirk
Assistant Director

DK:mj

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GEORGIA BUREAU OF INVESTIGATION
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Vernon M. Keenan
Director

September 9, 2009

Dr. Robert R. Friedmann
Director, ICD Project
Department of Criminal Justice
College of Health and Human Sciences
Georgia State University
P. O. Box 4018
Atlanta, GA 30302-4018

Dear Dr. Friedmann:

Since the inception of the Improving Crime Data (ICD) project in 2003 the Georgia Bureau of Investigation (GBI) has been an enthusiastic partner and supporter. I understand the ICD project is coming to a close and I wanted to express the GBI''s appreciation for the Dell server and the Cognos business intelligence software that the ICD project has purchased and made available on site to the GBI.

Following the installation of the server and software in early 2009 and after several training sessions, the GBI piloted the software in tandem with the ICD project with the modeling of Georgia Uniform Crime Reporting (UCR) data. GBI understands and appreciates the capabilities of data analysis and presentation that Cognos offers. A data analysis tool such as Cognos can provide efficiencies at a time when the agency is stretched by budget cuts and personnel shortage.

Beyond the analysis on the UCR data (both for statistical and investigative purposes), Cognos can also be utilized to create statutorily mandated annual data reports and provide access to additional web-based reports for law enforcement agencies and the public. GBI has identified future data analysis possibilities using Cognos for Computerized Criminal History (CCH) information for statistical and research purposes. Other possible business uses include tracking criminal history update requests, Use of Force investigations and compiling information from investigative division cases, the medical examiner's office and UCR to track information on Georgia law enforcement officers killed or injured. Administratively, Cognos might also be used for various in-house tracking purposes such as personnel reports, budget tracking, calls for service, and crime lab management.

We are excited about the pending capability to report UCR crime data for the entire state in a timely manner and hope to see the 2009 crime data for the entire state reported in early 2010. Regrettably, GBI does not have funds to dedicate to a data administrator

position dedicated to Cognos and we look forward to the capabilities that you and the ICD can continue to offer the GBI even after the formal completion of the ICD project. We look forward to cooperating with you on this important project and believe it provides a great service to the GBI, the criminal justice system and the people of Georgia. We at the GBI are delighted to see that you decided on this implementation approach as you moved from an experimental proof of concept to a valuable operational service and we look forward to a continued partnership.

Sincerely,

Vernon M. Keenan
Director

VMK:djh