The Future of Crime Data

The Case for the National Incident-Based Reporting System (NIBRS) as a Primary Data Source for Policy Evaluation and Crime Analysis

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Research Summary

In this article, we describe the nation's move to a crime-reporting system that is exclusively incident based. Such a change presents challenges for the "crime-reporting pipeline" and for researchers in managing and analyzing these more intricate data. We highlight the shortcomings of the dominant system, the Uniform Crime Reporting Program's Summary Reporting System (SRS), and argue that the advantages of the National Incident-Based Reporting System (NIBRS) qualify it to replace the SRS as one of the nation's primary sources for tracking and measuring crime. NIBRS is also discussed in light of the National Crime Victimization Survey (NCVS), a source that complements a system that relies on law-enforcement–generated crime data.

Policy Implications

The timing is right for a nationwide move toward NIBRS. The shift from aggregate crime counts to details on each crime incident has broad implications for justice policy. Use of a national incident-based collection of crimes known to the police provides (a) a set of descriptive indicators of crime in the United States that are currently lacking,

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(b) benchmarking for progress and change, and (c) more purposeful comparisons across place and time. The shift also serves to professionalize the policing industry further and provides transparency on crime and how police respond to it. The greater understanding of the crime problem will allow our programs, policies, and resource allocations to be more deliberate and responsive.

A movement is under way in the United States to reform what we know about crime from the perspective of law enforcement agencies. Outside the world of criminal justice practitioners and researchers, a common perception is that a rich set of crime data is at the fingertips of analysts and policy makers. This perception may be accurate for some law enforcement agencies—those that have both the most capable records management systems (RMS) and the staff to analyze the more detailed incident data in them. Nevertheless, the stark reality is that at a national level, and within many states, those detailed data do not exist; our national system is reliant on aggregated summary statistics that provide little more than high-level counts of traditional offense categories.

The Summary Reporting System (SRS) of the FBI's Uniform Crime Reporting (UCR) Program has been entrenched as the primary indicator of the prevalence and nature of crime since the 1930s when it was first initiated by the International Association of Chiefs of Police (IACP). The IACP's goal at the inception of the data collection was to establish a national system for collecting information on crime in a uniform, standardized way across numerous law enforcement agencies; during that first year, aggregate counts of crime were collected from approximately 400 law enforcement agencies across the country (Poggio, Kennedy, Chaiken, and Carlson, 1985). Also during that first year, Congress enacted Title 28, Section 534, of the U.S. Code authorizing the Attorney General of the United States to gather crime information [Federal Bureau of Investigation (FBI), 2017]; the Attorney General in turn tasked the FBI with serving as the collection agent for those data. The FBI's UCR Program has steadily increased participation of U.S. law enforcement agencies since 1930 and more recently from an estimated 18,439 in 2015. In 2015, law enforcement agencies reporting data to the UCR Program represented more than 314 million U.S. residents, or approximately 99% of the total population (FBI, Criminal Justice Information Services Division, 2016):

> In January 1930, 400 cities representing 20 million inhabitants in 43 states began participating in the UCR Program. Congress enacted Title 28, Section 534, of the United States Code authorizing the Attorney General to gather crime information that same year. The Attorney General, in turn, designated the FBI to serve as the national clearinghouse for the crime data collected. (FBI, 2017: para. 3 of "Historical background of UCR")

Relying for so long on the collection of aggregate crime data has left the nation and many states unable to generate information about the characteristics of crime incidents reported to the police; victims; offenders; or the outcomes of criminal incidents, including whether an incident resulted in arrest. Our current national reporting system cannot produce data on fundamental types of crimes, including firearm violence, domestic violence, crimes committed by gangs, and crimes against children. Such limitations should be magnified at a time when we have an increased amount of attention and concern associated with heightened serious violence, especially in large cities. We do not know the national rate at which such offenses occur, and we cannot examine the manner and extent to which crimes reported to police are changing within and across jurisdictions. These gaps also hamper our understanding of the efficient and effective allocation of police resources and the implementation of criminal justice programs and policies.

Furthermore, the findings from past research have highlighted the serious underreporting that affects crimes that come to the attention of law enforcement (Langton, Berzofsky, Krebs, and Smiley-McDonald, 2012). Low crime reporting is often driven by a lack of confidence in the police and can be a sign of strained community–police relations. By improving the quality and integrity of police-generated data, while continuing to improve victimization data at national and subnational levels (through the changes discussed by Langton, Planty, and Lynch, 2017, in this issue), we can create a truly comprehensive system that tracks and details the occurrence of crime and the response to crime, as well as fills in the gaps on what is known about the dark figure of crime. Importantly, the nation's two primary sources of crime data (crimes reported to police and household victimization surveys) must be used to identify where system-level changes should be focused including policies designed to increase victim engagement and reporting.

The next 5 years are expected to bring dramatic changes in the quantity and quality of data available to measure crime reported to the police across the United States and in local jurisdictions, including in large cities, midsized cities, and small towns and rural areas. After 85 years with a national summary reporting system that assembled data on aggregate counts of crime, with limited attention to issues of detail, coverage, and accuracy within and across place, federal agencies are now implementing programs to expand greatly incident-based data on crimes known to law enforcement (Roberts and Wormeli, 2014). The nation's victimization data are also being dramatically revised and improved in a variety of ways, including the development of methods to collect subnational data for states and larger cities; improve estimates for rape and sexual assault, fraud, stalking, and other difficult-to-measure crimes; and further explore ways to measure repeat victimization and the victim–offender overlap (see, for example, Beals, DeLiema, and Deevy, 2015; Krebs et al., 2016; Langton et al., 2017, this issue; Planty, 2012). In addition, the National Academy of Sciences has provided a taxonomy for modernizing the nation's crime statistics and for conceptualizing crime and its measurement in a broader and more complete way (Lauritsen and Cork, 2016). These changes are already under way, yet have received limited attention from

criminological researchers despite the material impact they will have on our ability to use these data routinely to assess crime policies and practices.

One objective of this article is to provide information on the state of crime reporting in the United States, with a special emphasis on the present and future of law enforcement's incident-based crime data. We describe the limitations of the current dominant mode of crime measurement, the UCR SRS, as well as the benefits and challenges of the UCR's more detailed crime data collection program, the National Incident-Based Reporting System (NIBRS). We also describe a major initiative to expand incident-based reporting, the National Crime Statistics Exchange (NCS-X), and describe where the nation is headed in crime data reporting and analysis. The FBI wants to establish NIBRS as the crime data reporting standard for all U.S. law enforcement agencies, including the nation's largest departments—a goal that could have major implications for criminological research and policy evaluation.

The national transition to NIBRS introduces opportunities for law enforcement officials, mayors, governors, advocacy groups, citizens, researchers, and policy analysts. The research and academic community must be prepared for these changes from both a conceptual and a logistical standpoint. The influx of data on crime incidents will allow us to address much-needed topics but will also foster other challenges related to managing and analyzing large and complex data files. Thus, this article is intended as a call to action for the criminal justice community to prepare for one of the most significant changes in crime measurement in U.S. history.

The State of Crime Data in the United States

During the past century, the United States has experienced unprecedented advances in technology that have had impacts on law enforcement agencies, courts and corrections, and criminal justice policy. For instance, the rise of computers and the implementation of communication technology during the past several decades have drastically changed police work and have allowed for the development of countless technologies that have improved the efficiency and capabilities of American law enforcement (Ioimo and Aronson, 2004; Roth, Koper, White, and Langston, 2000). Nevertheless, although technological capabilities have continued to flourish, crime reporting in the United States has remained static and unchanged.

To put all these challenges in perspective, the United States currently relies on a crime-reporting infrastructure that was conceived at a time when the most advanced police technologies available were the teletypewriter, the two-way radio, and the automobile. The outdated condition of U.S. crime reporting has contributed to "substantial barriers to the development of data-driven policy reliant on accurate, timely, and conveniently accessible indicators" (Friedmann, Rosenfeld, and Borissova, 2012: 8). Critically, the limited crime data that are currently available starkly contrast with other types of social indicator data that are readily available, such as employment data and information on business

conducted in the private sector (Rosenfeld, 2002, 2006). For example, unemployment and housing market statistics are reported monthly, supporting regular monitoring and analysis of the data and informing ongoing evaluations of the state of the U.S. economy. Given the importance of tracking and analyzing changes in crime, and of regularly evaluating policing strategies and crime prevention programs, we should expect nothing less in terms of our national capabilities and resources dedicated to crime statistics.

Agencies participating in the UCR SRS are asked to provide monthly summary counts of offenses known to police and reports on persons arrested for ten Part I offenses known to law enforcement: murder, rape, robbery, aggravated assault, human trafficking–commercial sex acts, human trafficking–involuntary servitude, burglary, motor vehicle theft, larceny-theft, and arson (FBI, Criminal Justice Information Services Division, 2013). The SRS applies the hierarchy rule to incidents that include multiple offenses, such that only the most serious offense in a single incident is reported. Because the SRS data are provided in the aggregate, limited additional information is provided about each specific incident. National UCR statistics based on a full year of data submissions to the SRS are published by the FBI once a year, and the most recent statistics lag nearly a year, sometimes more, behind real time. Thus, the usability of the SRS data is limited by the restriction of providing data on only one offense, not collecting information on the nature or circumstances of the offenses, not being able to reclassify or regroup offenses by other characteristics, and lacking timeliness to support high-quality monitoring of emerging crime trends nationwide.

In 1982, the Bureau of Justice Statistics (BJS) and the FBI convened a study aimed at examining the potential for an enhanced, more detailed national collection for crime data reported to police (Poggio et al., 1985). The "Blueprint for the Future of the Uniform Crime Reporting Program" (or "Blueprint" report as it would later come to be known) sought to determine the potential for a system that expanded the coverage of offense types and provided unit-level detail on the nature and context of criminal incidents. The goal of the system was also to fill a need for increased flexibility in analytical capabilities and to address concerns regarding the reliability of UCR SRS data. Based on the recommendations from this study, a new system was established within the UCR Program, an incident-based crime data collection that came to be known as NIBRS.

Whereas the UCR SRS collects summary data from law enforcement agencies in the form of aggregate counts of crime by offense type, NIBRS collects detailed data about the crimes themselves, the offenders and victims involved, and the outcomes of the crime investigations at the *incident* level. NIBRS obtains offense and arrest information on 46 different offense classifications and collects incident-level data on up to 53 other contextual elements of the crime incident, whereas Part I of the SRS includes only eight crime types and collects limited additional information to contextualize those eight offenses. Similar to the UCR SRS data, incident data reported to NIBRS can be aggregated to examine crime counts and rates at the agency, city, county, or state levels. Nevertheless, because more detailed information is collected via NIBRS, those incident data can also be analyzed

based on the characteristics of crime incidents, such as victim–offender relationship, victim or suspect characteristics, weapon use, location of the crime, incident characteristics, or arrest/clearance outcome. Users of NIBRS are afforded much greater analytic flexibility to examine levels and trends in specific crime types—for example, intimate partner violence, assaults involving a firearm, violence against young children, or fraud perpetrated against older persons—within and across jurisdictions, and within and across states, that cannot be examined by using data from the UCR SRS.

NIBRS provides a level of detail and context that we simply do not have currently at a national level, including data on the victim, offender, incident, and police response (see also Roberts and Wormeli, 2014). As compared with merely counting crime (crime counts), the move to NIBRS can provide context and detail on the nature of crime and how it is changing. NIBRS also has the ability to aggregate to different levels as compared with the SRS, providing much greater flexibility in the aggregation of data from the incident, to the agency, county, state, region, and national levels; also, subsets of crimes can be examined, for example, domestic assaults or firearm violence across and within these dimensions. Another clear advantage of NIBRS over the SRS is the quality of the data generated. The NIBRS system builds in a series of edit checks that review the completeness and accuracy of the data reported. The best option for producing higher quality data in crime reporting is to build in quality control measures from the original point of entry, which is most often the patrol officer entering in the original incident details into the RMS. Such a practice can also contribute to state and local agencies understanding the value of quality data for themselves and see first-hand why complete and reliable data is beneficial not only for research and policy decisions but also for local operations and strategy development. An additional strength of NIBRS is standardization—a uniform and consistent means for benchmarking and comparing trends in crimes reported to police across jurisdictions. This advantage will increase awareness and understanding of crime, its causes and correlates, and what can be done about it. Having a detailed and standardized system in place for measuring crimes reported to the police can, in turn, serve as the foundation for elevating what we know (and do not know) about criminal justice policy and practice.

Both the summary and the incident-based data reported by federal authorities are admittedly generated much more slowly than is needed to be used as a regular evaluation metric for policy and practice. Nevertheless, the modernization of the nation's crime data systems has also led the FBI to improve its capacity for processing the national incident-based data and for making it available to state and local agencies. For example, the FBI is finalizing a Crime Data Explorer online tool that jurisdictions and the public can access to view incident data for their agencies and other areas of the country. The FBI is also moving toward a process where the monthly NIBRS data submitted by agencies (most often via their state UCR programs) can be accessed and analyzed in a much shorter period than in the past.

The need for more timely incident-level data for jurisdictions across the country is illustrated with recent efforts by the Major Cities Chiefs Association (MCCA). The MCCA, whose members include the leaders of the nation's largest police agencies, was faced with recent surges in serious violent crime in some large cities but was unable to report data on systematic changes occurring among its large city members. As a result, the MCCA relied on a survey administered to its membership to understand better the emerging changes within and across the largest cities in serious crime. The MCCA should be applauded for its efforts to analyze crime trends across cities; however, resorting to a survey to capture this crucial information is not a ringing endorsement for the state of our nation's crime data collection system. But these circumstances can also help us envision what ultimately is required in a system to benefit not only leaders in law enforcement but also policy makers—a system that is timely, detailed, geographically specific, standardized, and reliable. Perhaps most importantly, the FBI's top leader recently recognized the crime data dilemma in the contemporary United States. During the 2015 IACP annual conference, former FBI Director James B. Comey noted:

> We face a data shortage on the violent crime front. We can't tell you at a national level how many shootings there were in any particular city last weekend, when parts of private industry can tell you how many people saw the movie "The Martian" last weekend. How can we address a rise in violent crime without good information? And without information, every single conversation in this country about policing and reform and justice is uninformed and that is a very bad place to be. (Comey, 2015, para. 60)

Despite the aforementioned limitations, the SRS of the UCR Program has shown remarkable resilience in the face of the evolving needs of modern-day policy makers and police executives. It remains the ubiquitous basis for assessing the performance of law enforcement agencies; the levels and changes over time in crime at the national, state, and local levels; and the state of public safety in communities. For better or worse, many police leaders have referred to the UCR summary statistical data as their "score card" in the form of city-level crime rates and city rankings based on the index crimes. Moreover, the UCR has influenced the development of criminal justice policy, with data from the SRS being used extensively by criminologists to study long-term trends in crime, the correlates of crime, and variation in crime patterns among state and local jurisdictions. As argued by Maxfield (1999), one factor that contributed to and sustained the widespread use of the UCR summary crime data is that social scientists and the public have grown accustomed to using aggregate data in other disciplines, such as economics, political science, and social demography, as well as in other forms of information dissemination and analysis. The media and policy makers are also comfortable with working with and interpreting data that reflect summary counts. Yet aggregate data on crime lag behind in terms of timeliness and therefore are less useful in recognizing and responding to emerging or developing crime problems or in providing a basic

understanding for the causes and correlates of crime. Although the UCR SRS remains a key social indicator, demand for a more robust crime data system commenced decades ago and resulted in the development of data collections that are focused on the crime phenomenon differently than the SRS.

Moving to a National Incident-Based Reporting System

NIBRS offers numerous additional benefits over SRS. For instance, summary crime data cannot be used to answer important questions about the complexity of criminal incidents because those data do not contain incident-level details and include information about only the most serious offense in an incident because of the hierarchy rule. NIBRS, however, captures information that can be used to study the circumstances of incidents that involve single or multiple offenses because NIBRS collects information on each offense within a criminal incident, regardless of offense severity. This data source offers a unique opportunity to fill a gap in our collective knowledge about crime co-occurrence, which is an important point considering that an estimated 1 in every 10 crime incidents involves more than one offense. Another benefit of NIBRS is the system's ability to capture data on an expanded range of offenses, including new and emerging crime types of concern such as human trafficking, identity theft, and intimidation/stalking.

The limitations of NIBRS coverage, the expansion of which has been stymied by the presence of two crime-reporting standards, have reduced the utility of the data to policy makers and researchers, in particular, because the data currently submitted to the system come predominantly from medium and smaller law enforcement agencies in more suburban and rural jurisdictions and represent just 29% of the U.S. resident population. Hence, the data cannot be reliably adjusted to produce national-level estimates or estimates for many of the largest jurisdictions in the nation. Therefore, we remain limited in our ability to understand the nature and prevalence of crime when using the more detailed data available through NIBRS. Although the local-level data in the system can be used to analyze crime patterns in a particular jurisdiction, the coverage limitations still impede our ability to make informed comparisons or to analyze crime problems across jurisdictions. We therefore are unequipped to understand why certain jurisdictions exhibit various types of crime problems, to know whether those problems are unique to that jurisdiction, and to determine how those issues can be addressed or perhaps prevented altogether.

Why, then, if NIBRS is such an improvement over summary reporting, is NIBRS participation among law enforcement agencies lagging? Why have just 16 states been successful in obtaining NIBRS-compliant data from all their law enforcement agencies? Why do entire state UCR programs still not have the capacity to accept any incident-based data from their local law enforcement agencies? Furthermore, why have the country's largest law enforcement agencies repeatedly declined the opportunity to participate?

The barriers to transitioning to NIBRS among state and local law enforcement agencies, including the largest agencies, have been diverse in their cultural, practical, and technical

roots. The concerns expressed by agencies in terms of barriers to participation from two decades ago are still highly relevant today. Thus, the federal government has undertaken significant efforts to engage the law enforcement community in developing solutions to the perceived barriers to participation.

For example, one significant barrier to NIBRS participation has been the lack of funding and support for the transition. In the late 1990s, BJS contracted with SEARCH, the National Consortium for Justice Information and Statistics, to work with state and local agencies to provide technical assistance toward implementing NIBRS. The costs associated with converting to NIBRS were the most common concern reported by agencies (Roberts, 1997). As an example, agencies without an RMS, or with an RMS that was not able to report the required NIBRS data elements, would have to either purchase a new RMS or pay for the modifications required. Another concern documented by SEARCH was that completing the additional data fields required for reporting NIBRS-compliant data would be an additional burden on officers, which would also increase costs and constrain resources. Other barriers stemmed from the rigidness of the requirements for NIBRS and concerns that the federal government was not fully committed to developing and expanding NIBRS as the national crime-reporting system. Agencies have also expressed reluctance to make the NIBRS transition because they find their current system of crime reporting to be reliable and are resistant to what they perceive as complex or unnecessary change.

Another barrier has been the fact that police agencies are evaluated in large part by changes in their index crime rates (which are often defined as the most serious crimes or Part I crimes). Some police agencies are concerned that the transition to incident-based reporting will give the appearance that an agency's crime rate has increased, because NIBRS does not impose the hierarchy rule and also captures data on a wider range of criminal offenses than the SRS (James and Council, 2008; Watson, 2000). Despite these concerns, the findings from empirical research suggest that the shift from SRS to NIBRS has only a small effect on crime statistics (FBI, Criminal Justice Information Services Division, 2012; Rantala and Edwards, 2000). In an examination of 1,131 agencies that had reported to NIBRS for a full year and that contained nonzero populations between 1991 and 1996, Rantala and Edwards (2000) found the average differences between SRS and NIBRS estimates for violent crime, property crime, and crime overall to be approximately 2% or less. Similarly, the FBI used data from 1991 to 2011 to compare estimates of crime generated from SRS with those generated from NIBRS. Only marginal differences were found in the volume of rape, robbery, aggravated assault, and burglary, with NIBRS estimates less than 1% higher than SRS estimates, and only small differences were found for motor vehicle theft and larceny, with NIBRS estimates approximately 3% higher than SRS estimates. The fact that differences between the two sources are small reflects the tendency for criminal incidents to involve only a single offense, such that overall estimates by crime type are mostly unaffected by the capacity of NIBRS to collect data on multiple offenses per incident. A

third barrier has been the unknown or underdefined value and benefits to agencies of NIBRS participation. In many ways, this state of affairs was a result of the lack of demonstrated utility of these data (at local, state, and national levels) and the timeliness with which these data are released. Recent efforts, including those led by BJS and the FBI, have been aimed at documenting clearly the benefits of state and local agency participation in NIBRS (see following paragraphs).

Recognizing the value that NIBRS offers, in the fall of 2012, BJS launched a NIBRS expansion program called the National Crime Statistics Exchange (NCS-X). NCS-X is intended to expand NIBRS participation in a sample-based way, targeting the conversion of 400 additional agencies—including all the nation's largest law enforcement agencies—to NIBRS to generate nationally representative estimates of crime reported to the police through the use of detailed incident-based data. The NCS-X effort grew into a partnership between BJS and the FBI to provide funding support to state UCR programs and to local agencies and will serve as a model for other agencies in transitioning to NIBRS. Equally important to supporting agencies in converting to NIBRS are efforts within the NCS-X project to undertake a comprehensive examination of data quality and coverage in the data system and to document the utility of incident-based data in analyzing crime problems. Although the ideal scenario is for the complete census of law enforcement agencies in the United States to report NIBRS data, the NCS-X sample-based approach is considered to be the initial step in the process, as data from the sample can be used to generate national crime estimates, and the products generated and lessons learned from NIBRS expansion effort in the 400 agencies can be leveraged for the broader NIBRS transition among other law enforcement agencies.

As a critical step in addressing federal commitment to NIBRS transition, in late 2015, the FBI endorsed the recommendation from key stakeholders in the law enforcement community (IACP, 2015) that the UCR SRS be retired within 5 years of the date of enactment of the recommendation (January 1, 2021) and that police agencies, including federal agencies, should move exclusively to incident-based reporting through NIBRS. In many ways, the timing of the FBI's decision to retire the UCR SRS in 5 years was prescient. We live in an age when access to detailed data is assumed, and the lack of information on issues related to crime, policing, and criminal justice policy has become the subject of nationwide focus, given the demand for greater transparency from and accountability of the police and the need for more timely crime and police performance metrics.

The time is right to establish NIBRS as the crime-reporting standard for the nation for several compelling reasons. First, police executives across the country have indicated a desire for a more comprehensive way to communicate information to their stakeholders about crime and the context of crime in their communities. In 2012, BJS, in coordination with the FBI, convened the Crime Indicators Working Group (CIWG), comprising law enforcement leaders from agencies and organizations throughout the country, who took on

the task of developing a new framework for crime indicators that more accurately reflects the nature of crime and public safety issues in local communities. Estimates of a large proportion of the indicators included in the framework developed by the CIWG can be generated through the use of data from NIBRS. A main tenet of the CIWG framework is the ability to apply a comparative perspective to the indicators, which is another strength of NIBRS.

Second, most police RMS in use across the country are now more capable than ever of collecting the required data elements for NIBRS compliance and reporting (Roberts and Wormeli, 2014). When NIBRS was first implemented in the early 1990s, many RMS were still being implemented based on the UCR SRS requirements, which made participation in NIBRS nearly impossible. In addition, the overall information technology capabilities and infrastructure within law enforcement agencies had not progressed to the point of being able to provide full support to an incident-based reporting system. For example, within a NIBRS framework, ideally the data entry for a crime incident is done by a patrol officer using a mobile data terminal running a field-based reporting program with the NIBRS data edits built into a workflow to facilitate data entry. This level of technology simply did not exist in many departments when NIBRS was initiated. Information gathered by the NCS-X Initiative indicates that approximately 85% of the 400 agencies included in the NCS-X sample already collect data on key aspects of the NIBRS standard, including all offenses within an incident and demographics on all victims and offenders, in an automated RMS. As NIBRS and incident-based reporting have become more common since the early 1990s, companies that provide commercial off-the-shelf (COTS) RMS have incorporated these features into their products such that even an agency not currently participating in NIBRS may already have a NIBRS-capable RMS. Almost 80% of the 400 agencies in the NCS-X sample now have a COTS RMS, which is likely to be at least NIBRS compatible if not NIBRS compliant.

In addition to the capability of police RMS to report the necessary data, state-level, crime-reporting systems are more flexible than ever—and more capable of collecting and analyzing detailed incident-level data. Although the number of service providers offering COTS statewide data repositories for incident-based data is not large, several of those companies are offering comprehensive solutions that encompass not just the data repository but also data analytics; dashboard options for viewing and working with data; role-based access to the systems to facilitate use of the data by contributing agencies; and additional modules that allow states to meet mandated reporting requirements, such as collecting data on officer-involved shootings. Additionally, many states have chosen to build incident-based data repositories customized to their specific needs, so there is a substantial knowledge base across the nation regarding setting up an incident-based reporting program.

Third, agencies at all levels of government are embracing the release of more comprehensive data, commonly referred to as the Open Data Movement, as a way to be more

transparent with and accountable to the public. Through NIBRS, law enforcement agencies have a unique opportunity to provide standardized, higher quality data that the public can use to compare crime information within and across jurisdictions. NIBRS also fits well with the open data movement that calls for agencies to publish their data for direct access by stakeholders. Local agency data provided through open data portals are being used more and more frequently to support data-driven and evidence-based policing initiatives and to evaluate the efficacy and impact of crime prevention measures. One drawback of using open data sources for crime incident information is the general lack of comparability of the data across local agencies. NIBRS data, with their standardized structure and common definitions for crime types and classifications, have the potential to be useful for these purposes on a much broader scale—across a wide range of crime problems and both within and across jurisdictions—while greatly reducing concerns about the comparability of the data across sites.

How NIBRS Complements the NCVS

The nation's other primary data collection on crime, which complements the UCR, is BJS's National Crime Victimization Survey (NCVS). The NCVS is an incident-based, self-report survey data collection first implemented in 1973 to serve as a counterpart to the UCR's aggregate statistics. Its aim is to address several of the limitations of the UCR, including providing data on crimes that are not reported to law enforcement. The NCVS is used to survey residents in households throughout the United States about their experiences with property and violent crime during the previous 6 months. From those survey responses, BJS produces annual estimates of the numbers and rates of criminal victimization. Additionally, BJS fields periodic supplements on school crime and safety, stalking, identity theft, and the public's contact with the police. The NCVS was specifically designed to provide data on the prevalence, characteristics, and severity of victimization in the United States, in part to fulfill the need to examine the nature and context of crime in greater detail, which could not previously be done at the national level. Similarly to the UCR, the NCVS has been going through a series of enhancements to meet the needs of contemporary policy makers and state and local jurisdictions. These substantive and methodological enhancements, and their relevance to criminal justice policy and research, are discussed in more detail by Lynch (2017).

The NCVS is aimed at examining crime from the perspectives of victims. As such, perhaps its greatest strength is the ability to use the survey to delve into the so-called dark figure of unreported crime (Poggio et al., 1985; Skogan, 1974). This is especially important for certain types of crime, such as sexual assault and domestic violence, that are most likely to be underreported to the police but also for other types of crimes (Langton et al., 2012). The NCVS is removed from the biases that can accompany administrative data. Furthermore, the survey questions are standardized across place and time, whereas police data are influenced by local laws, patrol officers' interpretations of and responses to victim and witness reports,

and the various stages associated with how the offense and incident information are recorded and classified (see Kitsuse and Cicoucel, 1963). The recent enhancement to the NCVS, in which nonvictims will be asked about their perceptions of the police and of concerns with fear and safety in their communities, also offers numerous areas for research and integration in the future.

Given these strengths, victimization surveys are not without their limitations. By design, the NCVS does not include crimes committed against children younger than 12 years of age, homeless or institutionalized populations, or residents on military bases; nor does it include commercial crimes. Furthermore, as in any survey, respondents are asked to recall events—and in this case, details of often highly sensitive incidents—over a certain period of time. Respondents may not always report, or report accurately, either because they have lapses in memory or they just choose not to reveal an incident. Responses are also prone to biases introduced from question wording, nonresponse, and the interview setting (Groves and Cork, 2008).

It is increasingly clear that a well-designed, well-funded national victimization survey is essential as a complementary source for measuring and understanding crime and its impact on victims. Nevertheless, we must also acknowledge where the NCVS and NIBRS systems differ (see also Maxfield, 1999). First is that NIBRS data can be used at multiple levels of disaggregation to measure crime incidents reported to the police. NIBRS data originate at the incident level and can be aggregated up to specific agencies, counties, regions, states, and so on. Although considerable progress has been made with the NCVS to develop subnational estimates for states and large cities, the collection will always be a survey that is subject to sampling and measurement error. The ongoing constraints the NCVS faces require both a significant budget to support a large sample size and the willingness of victims to report the details of their experiences openly and accurately. For data to resonate with law enforcement agencies and policy makers, we must have a national data system that has the flexibility to monitor, test, and examine how crime—including criminal offending and victimization—vary across time and place. The most obvious reason for why this is necessary is that the nature of crime varies across jurisdictions, even ones in proximity to each other. Although NIBRS is still not a true national reporting system in terms of its coverage (a point discussed at length in subsequent sections), it does allow us to calculate victimization and offending rates for crimes reported to police for local areas and to analyze how crime and its correlates vary across time and place. Furthermore, NIBRS offers improved understanding of key issues pertaining to the victimization and offending patterns of nonresidents. As an example, places such as New Orleans and Las Vegas have significant numbers of nonresident tourists in their cities on any given day. This transient population can create challenges for police departments when both victims and offenders often live outside of the jurisdiction. Other places, such as Los Angeles; San Francisco; Washington, DC; and New York City, not only are tourist destinations but also have high numbers of nonresident commuters in the city limits during the workweek. NIBRS can determine whether

a victim was a "resident" of the reporting jurisdiction, adding tremendous opportunities for understanding the risk to victims, the challenges the different types of jurisdictions face in responding to certain types of crime, and the best strategies for addressing the challenges.

As stated earlier, the NCVS is a household-based survey and therefore is oriented toward measuring victimization of people who reside in those places, including in certain group quarters such as dormitories, boarding houses, and related living arrangements. By design, it excludes the homeless, prison or jail inmates, or individuals that are more transient and cannot clearly be linked to a given household or group dwelling. In addition, crimes against business or commercial establishments are not included in the NCVS frame. NIBRS offers several types of important contributions to fill these voids. The first is to collect detailed data on crimes against businesses and commercial entities as well as on crimes against religious organizations—for example, arson, vandalism, robbery, or burglary committed against these types of places.

The second NIBRS contribution includes the category of crimes against society or the public—so-called victimless crimes. Drug-related offenses, prostitution, and weapon law violations are examples of crimes that are not collected in the NCVS but that are crucial to monitor and analyze within and across places for a variety of reasons. The response to these crimes absorbs heavy resources from law enforcement and from our courts and corrections systems, and these crimes do have public safety implications in both neighborhood cohesion and crime prevention strategies (including the illegal possession of firearms). We must be careful to understand that NIBRS cannot determine the true prevalence of these crimes and can only tell us how often law enforcement agencies report them (which is most often through arrest)—and any reporting is clearly affected by policing resources and priorities in how these crimes are handled. Yet, despite these limitations, it remains vital to ensure that we have a national system that allows us the capability of collecting details on these types of offenses, looking at co-offending patterns, and evaluating strategies designed to reduce or prevent their occurrence.

There are also areas where NIBRS and the NCVS provide us with important complementary capabilities. One is in linking the police response to crime, including the ability to systematically track outcomes for particular types of crime incidents handled by the police in terms of the likelihood of arrest and crimes "cleared" by arrest or by exceptional means (which together are most often used to calculate a jurisdiction's crime clearance rate). Linking the police response to crime at both national and local levels is crucial to our evaluation and development of criminal justice policies. For one, we can determine how certain types of legislative policies (e.g., mandatory arrest policies for domestic violence) are followed within and across places (see Strom, Warner, Tichavsky, and Zahn, 2014). The NCVS also allows us to capture arrest outcomes and has been used to demonstrate that police notification and victim services are more important in reducing repeat domestic violence than the deterrent effect of arrest (Xie and Lynch, 2016). The detail provided in both

NIBRS and the NCVS can also assist us in determining whether different subgroups are more or less likely to be arrested given certain types of factors. As an example, are same-sex couples arrested at similar or different levels by the police after domestic violence incidents? In the area of domestic violence and sexual assault, there is a tremendous need to explore further the nature of the crimes themselves as well as the law enforcement response. For example, systematically examining the rate as which reported sexual assaults are determined to be "unfounded" by law enforcement, which essentially can tell us how often an assault offense was reported to police but some type of police review determined that no crime had taken place. Unfortunately, in some instances, these types of areas have been found to represent an alarming area of "justice denied" for victims (Strom and Hickman, 2010). Looking ahead, while we are only at the beginning stages of developing true data-driven policies and strategies to address policy gaps, the data in NIBRS and the NCVS can help us accelerate along this much-needed path.

Implications: NIBRS and Criminal Justice Policy Development and Evaluation

The retirement of the UCR SRS in 2021 will have serious implications for the way research is done in the fields of criminology and criminal justice. Currently, criminologists rely heavily on SRS data to study crime trends over time, to discover or validate predictors and correlates of crime, and to test macro-level theoretical explanations for crime. Thus far, and despite the rich amount of data available through NIBRS, incident-based reporting has had a less meaningful impact on criminological research. For a crude comparison, searching for a list of citations related to the uses of NIBRS and SRS data series in the Inter-University Consortium for Political and Social Research and in the National Archive of Criminal Justice Data returns just 345 citations for NIBRS and nearly 2,000 for Summary UCR.

Although no official survey of criminology and criminal justice researchers has been conducted, we can speculate about some barriers that discourage use of NIBRS data sets to study crime or criminal behavior. One primary reason may be that using NIBRS data to study crime is considerably more complicated than using Summary UCR data. Whereas aggregate counts of crime can be analyzed easily using the SRS data files, researchers have two data series related to NIBRS at their disposal. The FBI publishes the "base" NIBRS data series, a complicated series of 13 data sets that can be used individually or linked together for more complex analyses, including 3 batch header segments; an administrative segment; offense, property, offender, and victim segments; and 5 segments related to arrests or clearances. BJS sponsors the creation of the NIBRS "extract" files, which are made available through the National Archive of Criminal Justice Data. The NIBRS extract files merge data from across the multiple segments of the "base" NIBRS files into one flat, rectangular data file, and the extract files are offered to users at the incident, victim, offender, and arrestee levels.

In addition to file structure, the two data series differ with regard to the amount of information that is available for each criminal incident; the extract files provide a truncated

number of offenses associated with each incident, whereas the base files do not.[1] Researchers intending to use NIBRS data must not only learn to navigate the various segments and work to understand how to merge different files together accurately, but they must also have the technical capacity to store and analyze large data sets that range from 3.9 MBs to 3,388 MBs. Moreover, some research questions may require scholars to merge NIBRS files with other data sources, such as data from U.S. Census Bureau collections, the Law Enforcement Management and Administrative Statistics survey series, or the Census of State and Local Law Enforcement Agencies, each of which will present other unique challenges to data users (e.g., nonsensical or duplicate originating agency numbers [or ORI] that cannot be matched appropriately with other data sets). Finally, because NIBRS is incident-level data, it is the responsibility of researchers to aggregate data to local, state, or national levels to approximate information that was once provided by the summary counts of the UCR Program. The implications of these challenges are that researchers must be prepared to manage the considerable learning curve associated with the analysis of NIBRS data. For example, steps must be taken to create the most efficient means possible for preparing, managing, and analyzing NIBRS data. Furthermore, methodological advances are needed to define the most appropriate analytical approaches for analyzing NIBRS data longitudinally and for integrating NIBRS and SRS data during the transition period, which will occur during the next 5 years. Additionally, with so much detail at hand, researchers must become proficient in understanding what types of incident-based data are critical to their analysis. For instance, they will need to make decisions on whether to create subclassifications of certain types of crimes on the basis of seriousness or about how to categorize multioffense incidents or multivictim or multioffender crimes. Nevertheless, although the shift to NIBRS data may be difficult in the beginning, it will undoubtedly pay dividends for criminology and its ability to inform public policy, public safety, and the criminal justice system. For one, NIBRS will allow the field to establish more appropriate metrics for offenses that currently have an insufficient knowledge base, including fatal and nonfatal gunshot incidents, domestic violence, crimes against women, sexual assault, and police arrest and clearance rates. With information from the victim segments, researchers will be able to describe victimization patterns for specific populations, including vulnerable populations such as children or older persons. NIBRS also enables assessment of hate crimes; examination of intimate partner violence (including in same-sex partnerships); and study of racial and gender divides in criminal victimization, offending, and arrest. In addition, the national transition to NIBRS can serve as the foundation for the move to an attribute-based crime classification system, a move supported by the National Academy of Sciences panel that was convened to review and provide recommendations on modernizing crime

1. The extract files contain data on up to three different offenses per incident and on up to three different victims per incident. The base files still contain complete counts of the number of offenses per incident and of the number of victims involved by incident.

statistics including police-generated data, victimization data, and data from other sources (see Lauritsen and Cork, 2016).

In addition to their strengths for measuring level and change in reported crime by offense and incident characteristics, NIBRS data can be used to evaluate the effectiveness of various crime prevention strategies, law enforcement intervention programs, and related policies. Moreover, regular feedback loops can inform modifications to those programs so that they better achieve the intended outcomes. For instance, NIBRS data can be used in a time-series format to study policing strategies designed to reduce crime, the effectiveness of mandatory arrest policies on reported domestic assault incidents, or policies implemented to prevent violence against the police (including fatal and nonfatal assaults). The impact of legal changes in national or state drug laws on crime and safety, such as the legalization of marijuana in states such as Washington and Colorado, are also well suited for a NIBRS-based approach.

It is clear that the increased availability of incident-based data will provide significant opportunities for researchers; the challenge of using those data responsibly, however, will require the development of methodological guidance and support from both the FBI and BJS. For instance, users of NIBRS data need resources that allow them to crosswalk the incident-level data to the summary-based crime categories using the same methodology applied by the FBI so that series continuity can be maintained. Information must also be provided about the quality of the data at various levels of aggregation. These concerns go far beyond examination of simple item-missing data; they extend to examination of patterns of missingness by reporting unit over time, within state, by offense type, and by clearance status. In-depth analysis of these issues is necessary to understand bias in the data because much of the item-missing data are not missing at random. For example, the findings from previous research have identified a correlation between missing offender data and the age of the victim (Smith, 2012); in addition, researchers have speculated that clearance status is associated with the level of item-missing at the incident level, although definitive peer-reviewed research has not been published on this issue. In a forthcoming BJS report in which crime in the Bakken oil-producing region in Montana and North Dakota was examined, it is found that failing to control for missing reported-incident data within counties skews the crime rate up, inflating the magnitude of the crime problem in the region.

Discussion

The national shift to NIBRS is a much-needed development with the potential to have a major impact on criminal justice research and policy evaluation. An ambitious plan involving the migration of thousands of agencies to incident-based reporting is sure to have its challenges, though, including potential technical, political, and organizational hurdles. Despite the tests that lie ahead, some who have been heavily involved in crime reporting at the state and national levels feel that we have finally passed a critical point in terms of

widespread acceptance for NIBRS. Confidence is higher today than ever before that the national move to NIBRS will happen. Furthermore, the federal government has provided the leadership, funding, and technical resources to start the transition, beginning with state programs and the nation's largest law enforcement agencies. Former FBI Director Comey's speech at the 2015 IACP conference and the joint declaration by all the nation's major law enforcement associations to support NIBRS are unprecedented, as are the transitions already under way by entire states and by some of the nation's large agencies, including those in Chicago; Los Angeles; Dallas; Washington, DC; and others. As a result of these collective efforts, we are gaining momentum toward achieving the goals of a national incident reporting system—goals that were formulated nearly four decades ago.

Although the shift to NIBRS will provide a wealth of data and data-based capabilities in terms of crime analysis and criminological research, it is important that we not be satisfied once this goal finally becomes a reality. The Philadelphia Police Department's former deputy commissioner, Nola Joyce, remarked in 2015 that, although using NIBRS is a worthy goal, we should not be satisfied with a 20th-century crime-reporting system in the 21st century. Rather, we must continually look to improve on the timeliness, quality, and level of detail captured in our national crime-reporting system, as well as on the degree and sophistication by which these data can be integrated with other data sources and applied to varying operational purposes and research-based applications. As mentioned, the MCCA has been challenged to explain how and why some of the nation's largest cities were experiencing sharp increases in violent crime while others were having declines or stable crime rates. Crime analysts and criminological researches should be able to assess in near real time the types of changes taking place and to use that assessment to develop and test informed hypotheses to explain the changes. Such an ability may require greater flexibility in how researchers can access incident-based data files on demand and in how agencies can run queries at various levels of aggregation to contrast specific forms of crime in their jurisdiction with those in other, similar jurisdictions. Furthermore, metrics that rely on more nuanced and specific crime information, such as nonfatal shootings or robberies that involved a weapon, serious injury, or both, must become the typical way in which we disaggregate and assess the crime problem at the local level, not only in our nation's largest cities but also in medium-sized and small jurisdictions.

Another reasonable goal is bidirectional data sharing within our crime data collection structure. No longer should state and local agencies be asked to submit data up to higher levels of government without reciprocity—that is, the ability to analyze crime quickly and easily in both their jurisdictions and in surrounding areas. In addition, we must allow for geocoding capabilities within the national crime data infrastructure so that neighborhoods can be assessed and used as benchmarks for other comparable communities. Sometimes these comparable neighborhoods may be in other cities. For instance, in referring to the recent increases in violent crime in cities such as Chicago, are particular communities or

areas in Chicago experiencing similar increases in certain forms of crime that neighborhoods in other large cities are also seeing? Such analysis will require the inclusion of geographic data in NIBRS standards, a goal that is certainly achievable given the sophistication of geocoding and geographic analysis. Privacy must also be considered when determining the adoption of a standardized approach toward geocoding, although agencies have already made great strides in these areas.

The movement to establish NIBRS as the nation's crime-reporting standard is under way. Although a concerted effort will be needed before we have full implementation across all U.S. law enforcement agencies, the criminological research community should be compelled to prepare now for this seismic shift in how crime data will be reported and analyzed. The move toward NIBRS will result in abundant opportunities for more novel ways to analyze crime, including at multiple levels of aggregation. Nevertheless, the volume of data and the complexities of incident-based data cannot be understated. Only through increased and continual use of NIBRS data can researchers, practitioners, and policy makers more fully identify the best practices for processing and analyzing the information, as well as identify the strengths and weaknesses of the data and their potential impact on criminological research.

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