

FINAL REPORT

OCTOBER 2021

Improving Data Infrastructure to Reduce Firearms Violence

Chapter 3. Measuring Gun Violence Using Police Data

Susan Parker, MPP, MS | University of Michigan

Editors:

John K. Roman, PhD
NORC at the University of Chicago

Philip Cook, PhD
Duke University



Chapter 3. Measuring Gun Violence Using Police Data

Susan Parker, MPP, MS | University of Michigan

Introduction

Each year in the United States, over 110,000 people are the victims of gunshot injury and fatality. Most nonfatal victims are shot by another person in an interpersonal assault. Despite historically low firearm mortality rates over the last three decades, in 2020, more firearm homicides occurred than in any year since 1995, rising by 30 percent over the previous year's total.¹ Following the onset of a global pandemic that exacerbated social and economic inequalities, firearm violence in many cities is on track for record-breaking homicide rates in 2021 as well. In the first half of 2021, homicides rose an additional 16 percent.²

While reliable data systems exist for tracking homicides, no similarly valid and reliable data system exists for surveilling all forms of gun violence. Gun violence ranges from threats with a gun to violent assaults and shootings where a victim is wounded, sometimes fatally. Comprehensive information about nonfatal firearm injuries, including rates, location, victim characteristics and context, is unknown. Yet nonfatal firearm injuries occur more often than fatal firearm deaths. The gap in tracking gun violence has wide-ranging implications for gun violence prevention. Without nonfatal firearm injury data, it is not possible to determine if firearm lethality leads to additional firearm deaths and injuries. It is also impossible to assess if quality emergency medical response can prevent deaths. Lack of gun violence data harms national resource allocation, and law enforcement agencies on the front lines of responding to gun violence lack important measures of whether their efforts are effective.

Compounding the lack of insight into gun violence is the recent abrupt retirement of the nation's long-standing crime reporting system without strong adoption of its successor. The UCR SRS has for decades served as the measure of U.S. crime, in particular measuring violent crime committed with a firearm. While this system was not a perfect measure of crime incidence, for over 80 years policymakers, criminal justice leaders, and researchers relied on UCR SRS measures of violent crime committed with a firearm to measure gun crime and victimization. The new national standard for crime reporting, the NIBRS, addresses some UCR SRS inadequacies, but adoption among criminal justice agencies has been alarmingly low.³ Despite limited adoption of the NIBRS, in 2015 the FBI opted to retire the legacy UCR SRS program as of January 1, 2021.⁴ This decision is likely to hamstring the reliability and accuracy of crime trends in 2021 and in the years ahead. The unlikely best-case scenario is that one in four law enforcement agencies will be unable to report crime statistics to the new NIBRS system.⁵ The loss of comprehensive local crime data, combined with imprecise national level estimates of

violent crime, is an urgent barrier to addressing violent crime, much less gun violence and victimization.

Gun violence surveillance should provide accurate counts of injuries resulting from gun violence, both fatal and nonfatal, as well as measure threats and assaults committed with a gun where no injury occurs. The purpose of this report is to consider recommendations to establish accurate and reliable national gun violence surveillance on the local and national level using robust police data systems. Critical to this objective is addressing the low adoption among law enforcement agencies transitioning to reporting incident-based crime data.

Measuring Gun Violence in the U.S.

In the U.S., the majority of gun violence does not result in physical injury. It is measured in police records as assaults and robberies where the perpetrator is armed, and annually affects approximately 300,000 people.⁶ Over 50,000 victims annually are shot by another person in a criminal assault.⁷ Gunshot assault victims are most often young Black men aged 15-24. Their injuries are so severe that among those seeking emergency medical treatment, the majority result in inpatient hospitalization for additional care following the initial ED visit.⁷

The two principal data sources for gun violence surveillance purposes are ED records and police reports. Legal status, intent, and injury severity are important determinants of what kind of information is gathered about gun violence by which entity. Police investigation of interpersonal firearm violence determines whether a gun assault or other criminal violation occurred, and is recorded in police data. Police document the circumstances, victims, and other valuable details about gun violence in police data. While police document all gun violence known to them, other types of firearm injury intent are less comprehensive in police records. Because laws differ by state regarding the legal status of accidents involving guns, police do not document accidental shootings comparably in each state⁹. As such, unintentional and self-harm shootings are best captured in ED records. However, ED data do not always accurately differentiate between different types of intent (see Barber (2021) in this series for full detail), but such data are the most comprehensive source of all gunshot injury types. Finally, injury severity is also an important determinant of which data sources measure gun violence events. Gun assaults without injury requiring medical attention likely appear only in police data or may go undetected.

Law enforcement and hospital sources should have substantial overlap measuring nonfatal shootings, particularly for gunshot assault cases. The majority of states (45 states as of 2014) have enacted mandatory reporting laws which state that health providers treating gunshot wound injuries are required to report those injuries to law enforcement.^{8,9} These injuries would mandate reporting regardless of whether the injury was the result of an assault, an accident, or

⁹ For instance, states vary in their adoption of Child Access Prevention (CAP) laws which make negligent storage resulting in child firearm injury a criminal offense.

another cause. Among the five states that do not have a mandatory reporting law for all weapons injuries, three require reporting of all injuries that health providers treat stemming from “crimes” or “violently inflicted injuries.” In these laws, health providers were typically defined to include physicians, nurses, emergency medical technicians or other licensed medical professions. The expansive definition of health provider captures gun injuries seen not only in EDs but also in other, less commonly used health care settings, such as inpatient hospitals or urgent care clinics. Almost all states, therefore, mandate reporting of gunshot victims and coverage for assault is even more comprehensive. It is unknown, however, the extent to which health providers comply with reporting requirements.

Despite overlap in reporting gun violence, police reports and investigations capture unique, valuable information that is not tracked in ED settings. Police data record information about geographic location, circumstances, and perpetrators involved in gunshot injuries. ED data rely on coding standards set under the ICD diagnostic standards, which do not specify that the same detailed incident information is recorded. For instance, in a police investigation of a gunshot assault, police record whether the perpetrator is an intimate partner, a stranger, another relative, or even an acquaintance. The same gunshot assault treated in an ED would code a gunshot injury by assault, but ICD coding does not differentiate between an assaultive gunshot injury committed by a stranger or a close relative. ICD coding can record whether an incident may be associated with domestic or spousal abuse but in practice is often missing or underreported by the patient.^{10,11} Police data is well-suited to capture information about assaults where no medical attention is required or where knowledge of the perpetrator is important for determining the nature of the assault.

Table 1 documents police and ED data sources for surveilling nonfatal gunshot wounds by intent, victim relation to perpetrator, and how data are aggregated. It is clear that an accurate, universal surveillance system would include both police and ED data. Police data captures important information about gun crime that ED data does not. ED data more comprehensively captures certain types of gun victimizations, including accidental and self-harm gun injury, as well as gunshot wounds that may not come to police attention.

Table 1: Comparison of Police and ED Data for Measuring Gun Violence

	Police Data	ED Data
Intent type		
Assault	Yes	Yes*
Accident	Not comprehensively	Yes*
Self-harm	Not comprehensively	Yes*
Legal Intervention	Yes	Yes*
Gun violence sample		
Violent crime committed with a firearm; no discharge; no wounds	Yes	No
Violent crime committed with a firearm; discharge; no wounds	Yes	No
Violent crime committed with a firearm; discharge; gunshot wounds	Yes	Yes
Is data aggregated to federal database?	Not comprehensively; only violent crime with gun	Yes; ED data is available at national and regional levels
How timely is the release of data?	9-month lag in national reporting; historically; quarterly updates	At least 18-month lag in national, regional reporting
Strengths	Police data include information on threats with a gun as well as shootings. Police record perpetrator information, relationships among victims and offenders, and linkages between crimes. Police have the ability through investigation to classify types of assaults.	ED data are likely to capture a large swath of gunshot victims. ED data include accidental and self-harm nonfatal firearm injuries for a full census of gun injuries beyond assaults.
Flaws	Not all gun violence is recorded by police (i.e., self-harm and accidental intent types). Not all crimes may be reported to police, though more serious violent crime is likely to be. Police data does not currently comprehensively measure gun discharges and gunshot wounds.	ED data may not accurately classify intent. It overestimates accidents, underestimates assaults and often fails to capture information about domestic violence.

*ED coding of intent in the majority of sources such as the NEDS is not accurate for gunshot wounds. See Barber (2021) for full discussion.

Proportion of Gun Violence Reported to Police

Research on the proportion of gun violence reported to police is limited. A commonly used comparison relies on survey data from the NCVS, comparing survey reports of violent crimes committed with a firearm to those reported to police agencies. While the most recent 2018 NCVS estimate of violent crimes committed with a firearm reported to police is 62 percent, this comparison does not measure actual gunshot victims, nor does it likely include individuals at high risk of gunshot injury.¹² Importantly, the NCVS sample is not well-suited to measuring gunshot victimization.¹³ Another approach to estimating the incidence of gunshot reporting involves comparing gunshot detection systems to gunshots reported to police, which finds that 12 percent of gunshots detected are reported to police.¹⁴ Reluctance to report crime to police is another barrier to comprehensive crime reporting that is exacerbated by poor police-community relations, police shootings, and other forms of misconduct.^{15,16}

Police and ED Overlap in Assault Gunshot Victim Reporting

In addition to uncertainty in the overall proportion of gunshot victimization captured in police records, overlap between police and ED records is not well-understood. In part, these studies can demonstrate a false reporting gap between police and EDs, driven by two reporting issues in ED records. First, firearm injury identification through medical coding does not always catch the gunshot wound. Second, the medical records personnel who classify hospital data frequently code intentional firearm injuries as accidental (see Barber 2021). Using ICD-coded ED data as a basis for comparing to police data will undercount assaultive gunshot wounds. Studies that use names and other identifiers to match the overlap between police and ED data still show gaps between the two sources. In an Atlanta study of gun injuries, 9 percent of all firearm injuries, possibly accidental gunshot injuries, could not be matched with a police report.^{17, 10} Another study in Indianapolis carefully matches nonfatal gun assaults reported to police to ED records, finding substantial overlap between the two sources but that police records contain assaultive gunshot wounds that are unreported in ED records.¹⁸ Importantly, medical provider compliance with mandatory reporting of firearm wounds or assaults is not known.

Identifying Gun Violence in Police Data

While police records contain data useful for gun violence surveillance and standardize assaults or robberies with a firearm, reporting practices obscure incidence and victim counts. Since 1930, police agencies have reported crime data to the federal government through the FBI's UCR program in a format known as the SRS. The standards adopted over nine decades ago

¹⁰ Georgia mandatory reporting laws in place at the time of the study require medical providers to report assaults, not all firearm injuries, to police. Not reporting accidental firearm injuries to police may have lowered gun injuries known to police compared to other jurisdictions with mandatory reporting of all gun wounds, but compliance with these laws for firearm injuries is not well understood.

continue to shape how police agencies record and report crimes. At the time, agencies opted to count incidents in discrete crime categories, requiring that one crime type per incident be reported. For incidents where multiple crimes take place, agencies may undercount reported crime. An additional problem is that no category for nonfatal gunshot assaults exists in the SRS. For criminal nonfatal shootings, the best definition has been to count them as part of two much larger categories of crime: gun robbery or aggravated assault with a gun. In this classification, it is not possible to know how many people are wounded by a gunshot or are shot at and not wounded.

Despite no explicit UCR SRS standards, police agencies already do track important information about nonfatal gunshot victims, though it is not aggregated to a standard reporting format. Because this information is outside the scope of the SRS, agencies differ in how this information is gathered, stored, accessed, and prioritized. In a recent study of nonfatal firearm injury in four cities, each jurisdiction had a different method of storing and accessing nonfatal firearm injury victimization.¹⁹ For instance, the Baltimore Police Department created a new, separate crime category to track nonfatal firearm assault victims.²⁰ For other police agencies, gun violence and victim data is less accessible and may be stored in incident or investigation reports that require tallying nonfatal victims. Among the largest police agencies dealing with gun violence, nonfatal firearm injury data is for the most part accessible and recorded. Among the 40 largest police agencies in the U.S. that belong to the Major City Chiefs Association (MCCA), by 2018, over 70 percent reported nonfatal firearm events quarterly to MCCA summary data reports on violent crime.¹¹

In addition to a lack of clarity about definitions, agencies face barriers related to access to resources for tracking nonfatal shooting victims. Solutions have included amending their Records Management Systems (RMS) to include an applicable nonfatal shooting category, tasking staff to tally crime incident reports, or automating reporting solutions. Resources and therefore access to nonfatal shooting data may vary by agency prioritization of nonfatal shootings or of incidence within a jurisdiction. However, police agencies are charged with investigating firearm assaults to determine if a crime has been committed and in the course of this central function, record detailed information about gun assaults. Access to data on nonfatal shootings should not be misconstrued as missing information on nonfatal firearm victims in police data.

¹¹ Source: <https://majorcitieschiefs.com/resources/> and calculations of proportion of agencies reporting nonfatal shootings.

National Police Data Systems for Measuring Gun Violence

The FBI is the central coordinator of data on criminal offenses reported to police.²¹ The FBI gathers annual agency level police data on criminal offenses, clearances, and arrests. Currently, this national police data system is undergoing its most significant transition in nine decades. In 2016, the FBI accepted a recommendation from its Criminal Justice Information Services (CJIS) Advisory Policy Board (APB) to transition fully to a new reporting platform, known as the NIBRS, starting in 2021. NIBRS gathers substantially more detailed and complex data about individual crime incidents, in contrast to the decades of aggregated incident counts.

For many state and law enforcement agencies, the transition to NIBRS is both complicated and voluntary, making adoption a challenging process. Some states and law enforcement agencies have managed the transition process and achieved close to full incident-based reporting. Others have faced adoption challenges or may not prioritize replacing existing reporting methods. In either case, it is likely impossible for a third of police agencies to continue reporting their data to the FBI in 2021. This change urgently jeopardizes national and local understanding of crime at a critical time when rising violent crime and victimization demand accurate and reliable data.

Further, difficult and slow adoption of NIBRS is a barrier to tracking gun violence. In June 2021, the FBI CJIS APB proposed two substantial changes to enable NIBRS to track nonfatal firearm victims. First, the APB proposed adding an injury category for gunshot wound victims. Second, the APB proposed a new data element to capture whether a firearm was discharged, accidentally or intentionally, in the commission of a crime. If these changes to NIBRS are approved by the FBI director, they will be added to NIBRS data collection scheme. However, if states and agencies continue to struggle to report their data to NIBRS, the important changes enabling better surveillance of gun violence will be unsuccessful.

UCR SRS

Police data are compiled on the local, regional, state, and national levels through the FBI's UCR program. Since 1930, the UCR SRS has gathered data from law enforcement agencies to measure national, state, and local crime trends. The SRS gathers detailed data on crimes reported by law enforcement agencies, including violent crimes, rape, robbery, and aggravated assault as well as property crimes, in addition to police data on arrests and additional offenses. Originally conceived of as a paper-based system, the SRS by 2019 included over 18,000 law enforcement agencies nationwide who report their crime data and typically span upwards of 90 percent of the U.S. population.^{22,23}

While the SRS is the most long-standing source of crime data, the limitations of the SRS spurred the transition to incident-based crime reporting. The SRS gathers data on a more limited set of offenses than is customary for most police agencies.²⁴ For instance, it does not gather offense information about assault by intimidation, human trafficking, or kidnapping. Additionally, the SRS tabulates the most serious offenses associated with each reported crime,

a convention known as the “hierarchy rule.”²⁵ The hierarchy rule ranks crimes in order of which is most severe and classifies a crime only according to the most severe offense. In effect, the SRS does not record all crimes that might have been committed in a single incident. In the event of a robbery where an aggravated assault also occurs, only the robbery would be recorded as an event. The SRS can therefore mask information about offenses and victimization.

The SRS does not gather information sufficient to conduct accurate surveillance of gun violence. Rather than recording information about crime victims, the SRS records the type of weapon used in the commission of a crime. Because relatively few gun robberies and aggravated assaults with a gun result in gunshot wound injuries, the SRS measure is far from measuring gunshot wound victimization. The SRS does measure two types of violent crimes committed with a firearm, robbery, and assault. According to the SRS, 37 percent of robberies are committed with a firearm and 26 percent of assaults are committed with a firearm annually, a figure that numbers on average approximately 310,000 annually.

NIBRS

By the early 1980s, efforts were underway to create a national data collection system capable of recording detailed incident and arrest information. This system, known as the NIBRS, was intended to improve on the SRS. NIBRS records substantially more crime and offense types, gathering incident-level data on incident and arrest data on 52 offenses. It does not impose a hierarchy rule so each incident can be classified into ten criminal offenses per incident.

While NIBRS does not currently gather data on gunshot assault injury victims in a standardized manner, it does allow for more detail in recording information about crimes where a firearm is used than the prior SRS. NIBRS expands on the SRS to include additional crimes and allows for a firearm to be indicated in the commission of these crimes, including important offenses such as sexual assault and rape. However, NIBRS does not specify an injury type to record gunshot wound injury, so law enforcement agencies code gunshot wound injuries under a variety of injury types. Some agencies code “laceration” wounds, but others may specify injury types such as “other major injury.”

Table 2: Summary of Police Data Sources for Reporting Gun Violence

	UCR SRS	NIBRS
Sponsor	FBI	FBI
Data gathered by?	State UCR programs; individual law enforcement agencies	State UCR programs; individual law enforcement agencies
Data format accepted by the FBI?	No longer accepted by the FBI; however, many state and local agencies still use this format to track crime	Accepted by the FBI
Agency representativeness	Yes; upwards of 85 percent of law enforcement agencies report	No
Population representativeness	Approximately 90 percent	No
State / Local / Regional representativeness	Yes	No
Details on circumstances?	Limited	Yes
Data available to track crime trends in 2021 and beyond?	Unlikely. The FBI will generate the SRS tables in 2021 but they will be comprised of incomplete NIBRS-reported data	No
Identifies gun assaults?	Yes	Yes, but for a subset of agencies who report NIBRS data
Identifies nonfatal gunshot wound victims?	No	Not currently
Strengths	The SRS has been used since the 1930s to track crime trends and provides the most comprehensive repository of law enforcement agency data on robberies and aggravated assaults committed with a firearm.	NIBRS data is incident-based, providing detailed, linked information about crime. NIBRS does not classify crimes into a single event but allows for multiple classifications and accurate victim counts. Policy recommendations to change NIBRS to count gunshot wound victims are under consideration.
Flaws	The SRS uses the "Hierarchy Rule" to classify crime events to a single category, losing important detail about gun crime events. Additionally, incidents can result in multiple victims of gunshot wounds but in SRS constitute a single event. The SRS does not identify nonfatal firearm assault victims.	A large percentage of agencies have not adopted NIBRS, at least yet, and the FBI has not developed a method for estimating national or state crime rates from those agencies that do report. NIBRS currently does not identify gunshot wound victims.

In their current forms, neither the SRS nor NIBRS measure gunshot wounds reported to law enforcement. NIBRS allows a firearm to be associated with additional crimes such as kidnapping and simple assault. For NIBRS to improve on the SRS crime reporting, NIBRS should capture additional crimes committed with a firearm, for two reasons. First, because NIBRS captures additional crime types committed with a firearm, it expands firearm crime beyond aggravated assaults or robbery with a firearm. Further, NIBRS does not apply the hierarchy rule that the SRS employs, meaning it should not undercount aggravated assaults that occurred with a robbery.

Table 3 compares the estimates of crimes committed with a firearm between NIBRS and the SRS among six states whose population coverage in NIBRS is consistently at or above 98 percent. Agencies within each state that appear in both NIBRS and the SRS were then matched to compare crimes committed with a firearm between agencies reporting to both systems. Consistent with previous findings, NIBRS does not result in substantially more reported incidents. Robbery with a firearm is more comparable than aggravated assaults with a firearm between sources. The SRS rate of aggravated assaults committed with a firearm is higher than NIBRS.

Table 3: NIBRS vs. SRS Measures of Crimes Committed with a Firearm (2019)

	SRS		NIBRS	
	n	%	n	%
Nationwide				
Aggravated Assault with Firearm	201,617	26.0	-	-
Robbery with Firearm	89,768	34.8	-	-
Homicide with Firearm	10,258	73.6	-	-
State-level Comparison				
Aggravated Assault with Firearm				
Colorado	3676	31.8%	4338	25.3%
Kentucky	1714	34.0%	2118	29.2%
Michigan	8145	27.3%	9033	26.6%
South Carolina	7186	41.4%	8838	37.0%
Tennessee	10983	35.4%	14100	34.2%
Virginia	3229	31.5%	4356	27.5%
Robbery with Firearm				
Colorado	1315	38.6%	1337	38.0%
Kentucky	1008	46.7%	1037	45.0%
Michigan	2253	43.4%	2265	43.4%
South Carolina	1829	57.1%	1882	55.9%
Tennessee	3798	61.8%	3923	60.0%
Virginia	1771	50.3%	1807	49.2%

Sources: FBI Crime Data Explorer NIBRS 2019; Jacob Kaplan's UCR Data

NIBRS Gunshot Injury Policy Recommendations Under Consideration

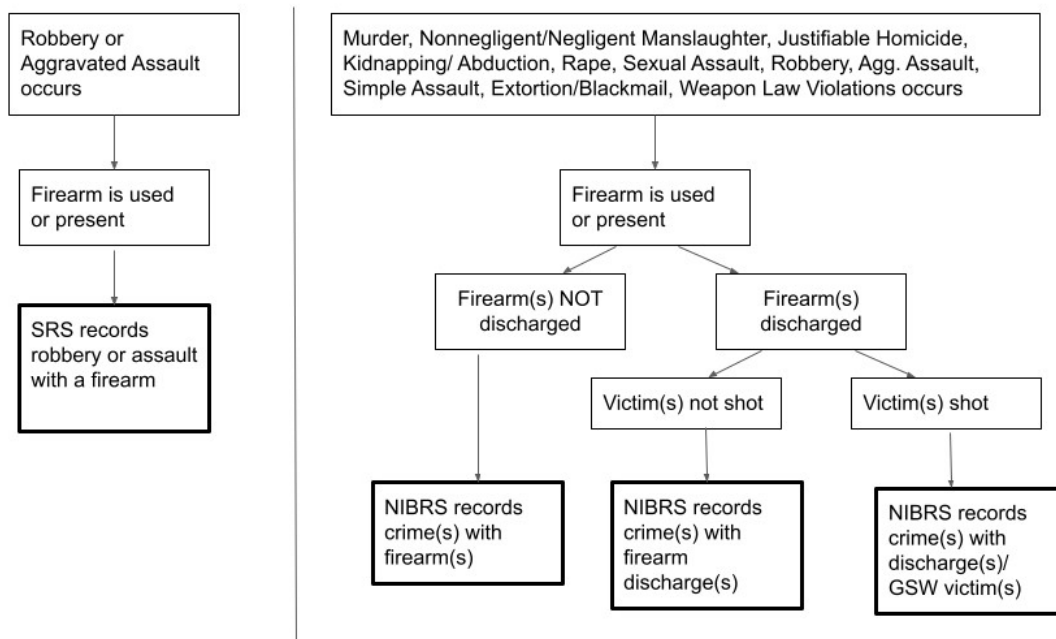
In June 2021, the FBI’s CJIS APB proposed several recommendations to improve federal crime data measuring nonfatal shootings. These recommendations are currently under FBI director consideration and address important NIBRS shortcomings in surveilling nonfatal firearm assault victims. A summary of the proposed changes to record gunshot wound incident information is in Table 4. These recommendations are a promising step toward using federal data sources to capture valuable police data about gun violence victims.

The first policy proposal is to add an injury category for “gunshot” wounds, clarifying the status of gunshot wound victims. This modification would allow for surveillance of gunshot victims reported to police. Second, the APB proposed the addition of a new data element within the NIBRS Offense Segment to track firearm discharges. Tracking firearm discharges allows for distinguishing between threatening with a firearm and actually firing the weapon. The proposed definition of firearm discharge is “the intentional, unintentional, accidental or negligent discharge of a firearm during the commission of a criminal incident.” If an agency records nonfatal gunshot events without a victim as a “shots fired” incident report according to agency protocol, the incident would be submitted for inclusion in NIBRS as a weapons law violation. Agency protocol may therefore make between-city comparisons difficult due to variation in agency reporting policy, but within agencies that do report “shots fired” events, it may be possible to distinguish between crimes when firearms are discharged and not. The differences in reporting firearms crimes in SRS and the NIBRS proposals are depicted in Figure 2, contrasting the event and data collection of recording firearm assaults and firearm assault victims.

Table 4: Summary of NIBRS Proposed Gunshot Wound Changes

Proposed Data Change	Detail	Element Type	Segment
Track gunshot wound injuries	Gunshot wounds inclusive of "incidents involving grazing or minor injuries received when the firearm was discharged" would be recorded as an injury code attributed to a crime incident.	Additional Category	Victim
Track firearm discharges	Track the "intentional, unintentional, accidental, or negligent discharge of a firearm during the commission of a criminal incident." Discharges may be recorded as "shots fired" to some agencies and will be recorded under "weapons law violations."	New Data Element	Offense

Figure 2: UCR SRS vs. proposed NIBRS firearm categories



While the proposal under consideration is an important step forward in tracking gun assault victims, two key problems remain. First, nonfatal shootings by police are not captured in NIBRS and therefore will not be tracked. The NIBRS perpetrator segment does not include an option for law enforcement to shoot in the line of duty. The resulting under-reporting may be substantial. Shootings by police claim approximately 1,000 lives each year, which comprise approximately 8 percent of homicides.²⁶ In 2015, the FBI created the National Use of Force Data Collection program, which should capture nonfatal police shootings from law enforcement agencies. Reporting is voluntary and agency reporting has been incredibly low. In the first quarter of 2021, only 89 agencies—less than 0.01 percent of law enforcement agencies—reported a use of force incident to the FBI.¹²

The second key barrier is the slow transition to NIBRS, documented in the next section.

Transitioning to NIBRS

The NIBRS transition is essential to accurate national, state, and local crime statistics, but implementation progress is likely well-below the near-nationwide SRS reporting coverage. The slow transition compounded by a lack of transparency about agency reporting levels is likely to render 2021 crime data incomplete and unusable. It is likely to irreversibly harm knowledge about crime trends in the U.S., possibly for the next several years. Without detailed, accurate,

¹² Source: FBI Crime Data Explorer, available: <https://crime-data-explorer.fr.cloud.gov/pages/downloads>

and reliable information about violent crime and homicides, communities undergoing spikes in serious violent crime and homicide could be left without information crucial to problem identification and targeting of resources.

NIBRS Adoption Essential to Reliable Crime Data and Gun Injury Surveillance

It is unclear how close to the robust nationwide reporting achieved under SRS that NIBRS will be for 2021, but much of the evidence is alarming. An April 2020 survey conducted by the FBI suggested that 75 percent of the nation’s law enforcement agencies were committed to transitioning to NIBRS by the January 1, 2021 deadline.⁵ This estimate was taken prior to the start of a global pandemic and is unlikely, given the challenges to law enforcement agencies in 2020. In a statement, the BJS noted that “while the FBI’s assessments suggested the majority of agencies will transition by the 2021 deadline, some agencies have been delayed by COVID-19 and other social issues affecting resources and daily operations.”⁵ The FBI has gathered “yearly evaluations” from agencies on their expected transition dates but states that “at this time, the FBI UCR Program cannot project how many agencies will report 2021 data or the population coverage that would be represented.”¹³ Table 5 documents yearly reporting in NIBRS compared to the SRS. Slightly over half of the nation’s law enforcement agencies submitted data to NIBRS in 2020 representing less than two-thirds of the nation’s population.

Table 5: NIBRS Reporting by Law Enforcement Agency, U.S. Population Coverage

Year	NIBRS Agency Coverage		NIBRS Population Coverage		SRS Population Coverage	
	n	%	%		%	
2015	6823	40.6	31.6		96.4	
2016	7083	41.9	33.2		96.3	
2017	7146	43.6	35.7		91.3	
2018	7777	51.1	46.7		82.2	
2019	8536	57.0	53.2		81.8	
2020	9947*	57.7*	57.5**		unknown	

Source: FBI Crime Data Explorer. Denominator of law enforcement agencies and agency population coverage defined as agencies denoted as both participating and active and publishable.

*Granular data on NIBRS participation for 2020 is unavailable at the time of publication but sourced from “UCR Participation 1960 - 2020”, available: https://s3-us-gov-west-1.amazonaws.com/cg-d4b776d0-d898-4153-90c8-8336f86bdfec/ucr_participation_1960_2020.csv

** Source: FBI response to inquiry about program coverage.

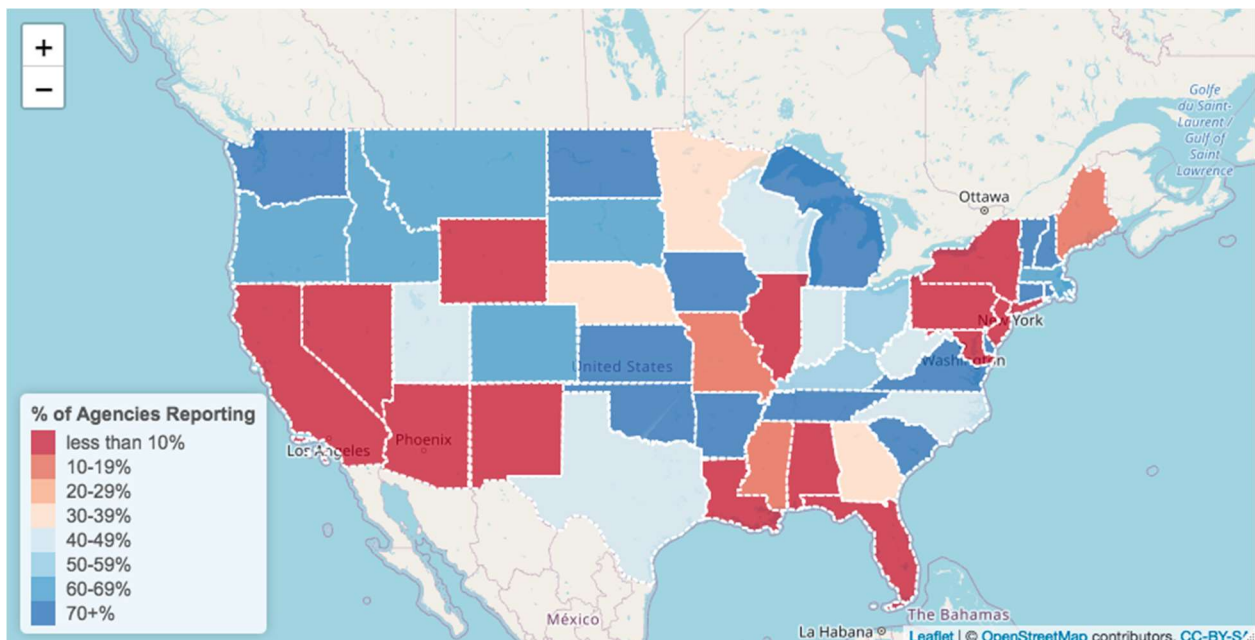
While some states and agencies are well within the timeline for NIBRS implementation, others will not meet the 2021 deadline for incident-based implementation. In some cases, the largest

¹³ Correspondence from FBI National Press Office

states in the nation will not report their data to the FBI in 2021, including most New York agencies, and all of Florida, California, Alaska, and New Mexico. With little to no reporting from New York, Florida, and California alone, the FBI’s 2021 crime data will be reduced by almost two thousand agencies or almost a quarter (24.1 percent) of the U.S. population. The substantial loss in reporting is likely to render 2021 crime statistics produced by the FBI unusable at the national level and at the state- and local level. While the FBI will not accept data in the SRS format, many states including New York, Florida, Illinois, and California will continue to produce summary reporting statistics to inform crime trends in their respective states.¹⁴

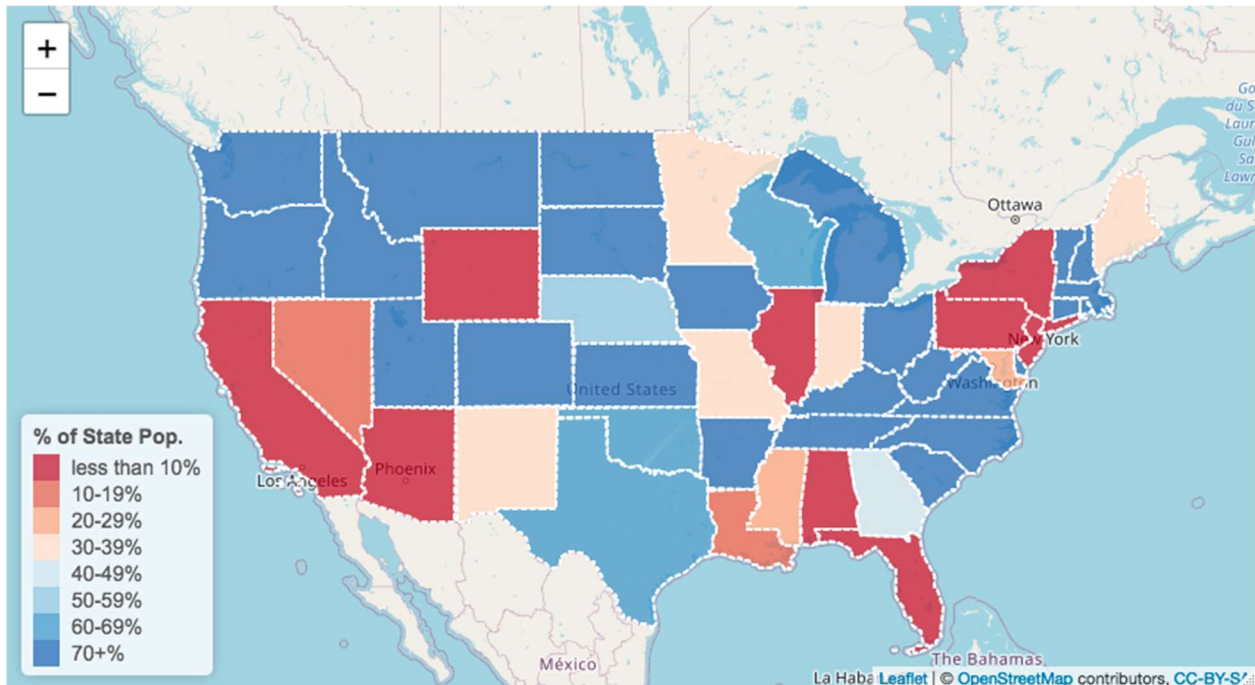
Figure 3 visualizes the percentage of agencies and state population that participating agencies reporting to NIBRS spanned in 2019. While FBI SRS data has been released for 2020, no update to NIBRS participation or data has been released at the agency level at the time of publication. For 2019, 13 states (in red) reported less than 10 percent of statewide law enforcement agency data in incident-based format. The median percentage of law enforcement agencies reporting to NIBRS is less than 50 percent, and the lowest quartile of states reporting incident-based data have less than 10% of agencies reporting to NIBRS. While median state population coverage is 77 percent, some of the largest states in the nation had less than ten percent population coverage, including California, New York, Florida, Pennsylvania, and Arizona.

Figure 3: 2019 Law Enforcement Agency NIBRS Reporting by State



¹⁴ Sources: Freedom of Information Act Requests to Illinois and California State UCR Programs; Phone calls and correspondence with New York and Florida State UCR programs.

Figure 4: 2019 Population NIBRS Reporting Coverage by State



NIBRS participation levels underline alarmingly low participation particularly in some cities and counties. Table 6 reports 2019 NIBRS coverage by city and county in terms of agency and population. In cities with populations over 1,000,000, only 18 percent reported NIBRS data which constitutes two of the 11 largest police agencies in the nation. Small city and municipality coverage spanned less than half in terms of agency participation and population coverage.

Table 6: 2019 NIBRS Agency Participation

Population group description	Total agencies	NIBRS reporting agencies	Percent of NIBRS reporting agencies	Percent of Population Covered by NIBRS reporting agencies
Cities 1,000,000 or over	11	2	18.2%	13.4%
Cities from 500,000 thru 999,999	27	18	66.7%	70.5%
Cities from 250,000 thru 499,999	52	21	40.4%	41.3%
Cities from 100,000 thru 249,999	233	102	43.8%	43%
Cities from 50,000 thru 99,999	508	218	42.9%	43%
Cities from 25,000 thru 49,999	943	433	45.9%	46.3%
Cities from 10,000 thru 24,999	1996	922	46.2%	46.4%
Cities from 2,500 thru 9,999	4317	1812	42.0%	42.7%
Cities under 2,500	9231	2467	26.7%	33.9%

Metropolitan Statistical Area (MSA) counties 100,000 or over	181	78	43.1%	37.2%
MSA counties from 25,000 thru 99,999	484	262	54.1%	54.4%
MSA counties from 10,000 thru 24,999	295	163	55.3%	54.3%
MSA counties under 10,000	1799	433	24.1%	60.4%
Non-MSA counties 100,000 or over	3	1	33.3%	51.2%
Non-MSA counties from 25,000 thru 99,999	289	162	56.1%	55.5%
Non-MSA counties from 10,000 thru 24,999	649	384	59.2%	59.5%
Non-MSA counties under 10,000	2974	992	33.4%	63%
MSA State Police	236	24	10.2%	not applicable
Non-MSA State Police	168	42	25.0%	not applicable

NIBRS adoption likely means federal crime statistics at the state and national levels are unusable due to the volume of agencies that do not participate and the significant swaths of the U.S. population that are not represented. Because the FBI intends to use NIBRS as the basis of the annual SRS, no national crime statistics are likely to be available. As NIBRS will be the basis of state-level estimates, many states in the nation unable to report to NIBRS will not be counted. States with low levels of NIBRS reporting are likely to have uncertain crime estimates.

Unsuccessful NIBRS adoption will further harm the important objective of gun violence surveillance by criminal justice agencies. Slow adoption of NIBRS means no national, state, or local crime data on crimes committed with a firearm in 2021, even with imperfect summary reporting. In the future, should the proposals to amend the NIBRS gun injury data collection be adopted by the FBI director, a lack of nationwide NIBRS participation means that gun injuries are not surveilled in any systematic and reliable fashion on the part of law enforcement agencies. With many agencies already able to track nonfatal shootings, the slow adoption misses valuable years of data. Even with robust NIBRS adoption and FBI adoption of nonfatal gun victims as an injury type, it is likely to be 2-4 years before gunshot victim data would be gathered.

The Importance of State Uniform Crime Reporting Programs in the NIBRS Transition

State UCR Programs play an essential role in reporting crime to the FBI and are deeply involved in facilitating the NIBRS transition. State UCR programs gather and submit crime data to the FBI on behalf of their state, streamlining FBI data collection tasks. Forty-three states mandate submitting crime data to the State UCR Program, and three states mandate cooperation.²⁷ Eighteen states mandate reporting to the national UCR program. The State UCR Programs provide technical assistance and support to local law enforcement agencies in reporting crime data meeting both state and federal guidelines for crime data reporting. State UCR programs

have been key to the NIBRS transition and are crucial for continued NIBRS adoption and implementation of future incident-based reporting changes such as tracking assault gunshot wound victims.

To support the NIBRS transition, state UCR Programs have performed a variety of functions to transition local law enforcement to reporting incident-based crime data. These functions have ranged from training, grantmaking, and technical support to consolidated bargaining with RMS to facilitate incident-based reporting. For most states, the NIBRS transition comes on top of state-level requirements for incident-based reporting. For instance, the Texas Incident-Based Reporting System gathers data on sexual assaults, drug seizures, and family violence.²⁸ The Michigan Incident Crime Reporting System gathers data on 104 criminal offenses, almost double the NIBRS list of offenses.²⁹ Many state UCR programs have adopted creative solutions to enable incident-based reporting in their respective states. To enable small agencies to adopt incident-based reporting, Wisconsin's UCR program adapted an existing police platform that agencies already use to record incident data.¹⁵ Kansas' UCR program has approached prominent RMS vendors within the state to streamline incident-based reporting RMS changes among local agencies sharing the same vendors.¹⁶

The National Crime Statistics Exchange (NCS-X) and National Crime Estimates

During the transition to NIBRS, the BJS and the FBI collaborated to support state and local law enforcement agencies transitioning to NIBRS in a variety of ways. A core focus has been the ongoing National Crime Exchange (NCS-X), an initiative to develop incident-based data by providing resources and technical support to state and local agencies to transition to NIBRS and ultimately provide incident-based data to the FBI.³⁰

The NCS-X team assists agencies by coordinating information across federal and local agencies as well as producing resources to support the expansion of NIBRS reporting. Perhaps key among these resources have been technological guidance for agencies seeking to use federal funds to support the transition of their RMS to NIBRS compliance. Funding has supported local agencies in addition to providing funding and assistance to state UCR programs.

One of the most important aspects of the NCS-X program is the creation of a targeted sample of law enforcement agencies chosen to create population crime estimates from NIBRS data. The sample consists of 400 law enforcement agencies, which include the 72 largest law enforcement agencies in the U.S., as well as other agencies selected to produce nationally representative crime estimates. The NCS-X 400-agency sample was given additional resources

¹⁵ Source: conversation with State UCR program director

¹⁶ Source: conversation with State UCR program director

in the form of technical support, guidance, and grants assistance to achieve incident-based reporting by 2021. However, by August 2021, only 52 percent of the 400 agencies were certified to submit data to NIBRS.³¹ Large agencies including Chicago, New York, and Los Angeles—the police agencies serving the largest metropolitan populations in the nation—are not able to submit to NIBRS. Other large police agencies unable to submit and in the NCS-X sample include Phoenix, Miami, Tucson, and St. Louis, among others. Table 7 below presents August 2021 NCS-X agency participation by NIBRS adoption status. In each population group, substantial proportions of agencies remain unable to submit incident-based data almost a year past the retirement of the SRS.

Table 7: NCS-X Sample by NIBRS Reporting Status (as of August 2021)

Population Group	Total Agencies	Agencies Reporting to NIBRS	
		n	%
All cities 250,000 or over	44	25	56.8%
Cities from 100,000 thru 249,999	36	16	44.4%
Cities from 50,000 thru 99,999	23	8	34.8%
Cities from 25,000 thru 49,999	38	22	57.9%
Cities from 10,000 thru 24,999	31	18	58.1%
Cities from 2,500 thru 9,999	57	31	54.4%
Cities under 2,500	63	32	50.8%
MSA Counties	77	42	54.5%
Non-MSA Counties	24	12	50.0%
State-level law enforcement	7	4	57.1%
Total	400	210	52.5%

The Urgent Need for Change in Federal Criminal Justice Data

Starting in 2021, police data gathered by the FBI will almost certainly not be usable for basic crime trends and information. The FBI will not be able to report critical crime information such as how many murders occurred nationally or how many robberies will have taken place in New York City in 2021. Any change to gunshot injury reporting is rendered meaningless with incredibly low rates of adoption. This mismanagement of federal crime data collection underlines the urgent need for change in federal police data collection, governance, and roles.

National Crime Statistics Should Be Handled by a Well-Resourced Statistical Agency

Federal statistical agencies are agencies within the federal government that disseminate statistical information for use by a variety of actors including governments, businesses, researchers, and the public. The federal government has 13 statistical agencies, including BJS. Federal statistical agencies “must provide objective, accurate, and timely information that is relevant to important public policy issues.”³² In the 2018 National Academy of Sciences (NAS) Report “Modernizing Crime Statistics,” a primary conclusion was that federal crime data should be managed and gathered by an agency, or agencies, that act in the spirit of a federal statistical agency. It is important to note that the FBI is not a federal statistical agency, nor does its crime data collection adhere to a federal statistical agency’s fundamental role. Starting in 2021, the FBI will not be able to provide accurate or timely information relevant to measuring crime.

The 2018 NAS report concludes that, legally, the BJS “has the proper scope and range already built into its legislation” to coordinate and provide governance of crime data collections. Scholars have determined that “moving the UCR program to the BJS is a necessary but not sufficient condition to upgrade the nation’s crime monitoring capabilities.”³³ The largest drawback for the BJS is that it is a federal statistical agency that has never been funded in line with the duties it is tasked to perform.²⁷

The Importance of Accurate and Timely Police Data

Police data gathered by the FBI has historically contained problematic inaccuracies. In part, organizational culture may play a role in determining the responsibility the agency takes in providing accurate data. A former FBI director outlined the UCR role as: “we collect, we announce, we pass on; we do not analyze.”³³ Lack of emphasis on data quality and analysis is unlikely to resolve important problems in crime data quality, particularly in the context of new challenges posed by the incomplete NIBRS sample. The FBI’s county-level UCR SRS files “cannot be used with any degree of confidence” and require external development of algorithms for estimating county-level crime counts due to the erratic nature of county-level crime reporting that the FBI publishes.³⁴ , FBI procedures to correct for these missing data problems do not take into account basic, important information such as seasonality or demographic composition.³⁵ The FBI does implement some basic procedures to correct for problems with crime data reporting, focusing on “reasonableness” of data submissions and logical consistency.³⁶ However, these data quality checks often are only for outliers and fail to measure actual data quality. For instance, agencies report the ability to enter “NULL” into data fields to bypass cumbersome data quality checks.²⁷ Agencies using NIBRS report an “all or nothing” process whereby NIBRS incidents may be rejected for minor data entry inconsistencies. It is therefore not surprising that research finds that the FBI’s UCR SRS data do not match both what other national sources report or what states themselves report to the FBI.^{37,38}

In addition to lack of data quality, supplying timely data is an additional barrier to informing crime policy. A 2008 National Academies of Science Workshop report considered the federal response to the 2005-2006 spikes in violent crime. Without timely knowledge of crime data, the Department of Justice dispatched “auditors” to examine local crime records across the nation due to lack of timely data. In comparison to other important federal data such as employment or housing, “the nation lacks timely information and comprehensive research on crime trends.”³⁹

NIBRS is a Flawed System That Should Be an Intermediary to a Better System

The NIBRS transition has been stagnant for many reasons. Primary among them is that NIBRS is a flawed data collection system whose usefulness is not always readily apparent to law enforcement agencies tasked with adopting it.

Another barrier to the transition to NIBRS is that switching to incident-based reporting by 2021 is essentially a mandate that came with little or no funding for many agencies. While NCS-X agencies received targeted funding, this funding came in the form of federal grants. Federal grants are onerous and generally mean larger agencies may be more able to apply for these dollars—and less likely to need them. In 2019, BJS made available \$21 million to support 29 agencies in adoption of NCS-X.⁴⁰ In contrast to the lack of funding for police agencies to switch crime reporting, over six years starting in 2010, hospitals received over \$30 billion in federal incentives to help acquire and use health information technology.⁴¹

Law enforcement agencies are willing and able to report crime data—high voluntary UCR SRS participation underlines agency ability and prioritization. The onerous and complicated NIBRS format may be only a medium-term solution to the problem of comprehensive, timely, and reliable national crime statistics. NIBRS data feature up to 99 victims and offenders each and have “intricately annoying victim-offender relationships between each possible pair.”²⁷ NIBRS data do not make for easy analysis. These core problems drive the 2018 NAP’s conclusion that NIBRS is an intermediate step to a modern crime incident reporting system that records crime attributes for more streamlined and simple data reporting.

Conclusion and Recommendations

Law enforcement agencies across the nation are crucial to capturing data on gun violence. Police data have immense value for research and analysis of gun violence including assaults with a gun and gunshot assaults. For this reason, police data provide unique insight into gun violence, which can include invaluable data on nonfatal shooting victims, community violence, police shootings, and domestic violence.

Any comprehensive surveillance system of gun violence and victims should include both police data and medical data. Medical reports are valuable because they include all types of injuries from guns, such as self-inflicted gunshot wounds and accidental shooting victims. However,

police data may be more accurate and comprehensive in cases of assault. Further, police data are invaluable for measuring gun violence that may not leave a physical wound but that does lasting harm and reduces public safety, in turn deeply affecting individuals and communities.

Priorities and Findings for Improving Police Data Surveillance of Gun Violence

Measuring Gun Violence in the U.S.

- *Finding 1: Research is needed into the comprehensiveness of and overlap between police and ED data measures of gun violence.*
- *Finding 2: Little research explores mandatory reporting law compliance for gunshot wounds among police and emergency departments.*
- *Finding 3: NIBRS data—and in particular, proposed NIBRS improvements in measuring gun discharges and gunshot wounds—are promising improvements in better measurement of gun violence in police data.*
- *Finding 4: Even with proposed NIBRS changes, police shootings (or legal intervention) will not be comprehensively captured as they are included only in the FBI Use of Force database with low levels of agency reporting.*

The NIBRS Transition Jeopardizes Police Data Use

- *Finding 5: Slow NIBRS adoption hampers timely and accurate police data measures of all crime incidents in the U.S.—not just of gun violence.*
- *Finding 6: State UCR programs are essential to timely, reliable, and accurate national police data collections.*
- *Finding 7: State UCR programs that are unable to report their data to the FBI in 2021 will continue to gather data statewide, which may provide a pathway to more comprehensive 2021 crime data.*

Recommendation 1: Fund the BJS to partner with state UCR Programs to gather and produce accurate 2021 crime estimates.

Recommendation 2: Launch systematic inquiry into low NIBRS adoption to inform future fixes.

The Urgent Need for Change in Police Data

- *Finding 8: Investments in data quality, accuracy, and sophistication are important components of improved police data measures of crime and gun violence.*
- *Finding 9: Prior research emphasizes that police data improvements noted in Finding 1 may be best made by a federal statistical agency such as BJS.*
- *Finding 10: A primary barrier to a larger BJS role in national police data is chronic federal underfunding.*
- *Finding 11: NIBRS improves measurement of gun violence, but slow adoption of its complexity indicates a need for developing more usable incident-based future reporting systems.*

Recommendation 3: Due to the increasing statistical complexity of generating crime estimates, the BJS should assume estimation oversight with appropriate levels of funding.

Recommendation 4: Fund state UCR Programs to scale up NIBRS participation and implement future improvements.

Recommendation 5: Start development of a simpler, streamlined incident reporting system.

1. Richard Rosenfeld, Ernesto Lopez. *Pandemic, Social Unrest, and Crime in U.S. Cities: November 2020 Update*. Council on Criminal Justice; 2020.
2. Richard Rosenfeld, Ernesto Lopez. *Pandemic, Social Unrest, and Crime in U.S. Cities: July 2021 Update*. Council on Criminal Justice; 2021.
3. Emily J. Hanson. *The National Incident-Based Reporting System (NIBRS): Benefits and Issues*. Congressional Research Service; 2021.
4. FBI Letter on NIBRS Transition. Federal Bureau of Investigation. Accessed August 5, 2021. <https://www.fbi.gov/file-repository/ucr/fbi-letter-on-nibrs-transition-071018.pdf/view>
5. FBI Crime Data Could Go Away For One In Four Police Agencies. Newsy. Accessed August 4, 2021. <https://www.newsy.com/stories/fbi-crime-data-could-go-away-for-one-in-four-police-agencies/>
6. Crime in the U.S. 2018. FBI. Accessed October 11, 2021. <https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018>
7. Fowler KA, Dahlberg LL, Haileyesus T, Annet J. Firearm injuries in the United States. *Prev Med*. 2015;79:5-14. doi:10.1016/j.ypmed.2015.06.002
8. Houry D, Sachs CJ, Feldhaus KM, Linden J. Violence-inflicted injuries: reporting laws in the fifty states. *Ann Emerg Med*. 2002;39(1):56-60. doi:10.1067/mem.2002.117759
9. *Mandatory Reporting of Non-Accidental Injury Statutes*. Victim Rights Law Center; 2014. <http://4e5ae7d17e.nxcli.net/wp-content/uploads/2021/01/Mandatory-Reporting-of-Non-Accidental-Injury-Statutes-by-State.pdf>
10. Calcia MA, Bedi S, Howard LM, Lempp H, Oram S. Healthcare experiences of perpetrators of domestic violence and abuse: a systematic review and meta-synthesis. *BMJ Open*. 2021;11(5):e043183. doi:10.1136/bmjopen-2020-043183
11. Olive P. Intimate partner violence and clinical coding: issues with the use of the International Classification of Disease (ICD-10) in England. *J Health Serv Res Policy*. 2018;23(4):212-221. doi:10.1177/1355819618781413
12. Criminal Victimization, 2018. Bureau of Justice Statistics. Accessed September 21, 2021. <https://bjs.ojp.gov/library/publications/criminal-victimization-2018>
13. Cook PJ. The case of the missing victims: Gunshot woundings in the National Crime Survey. *J Quant Criminol*. 1985;1(1):91-102. doi:10.1007/BF01065250
14. Carr J, Doleac JL. *The Geography, Incidence, and Underreporting of Gun Violence: New Evidence Using Shotspotter Data*. Social Science Research Network; 2016. Accessed November 5, 2018. <https://papers.ssrn.com/abstract=2770506>
15. Police Violence and Citizen Crime Reporting in the Black Community - Matthew Desmond, Andrew V. Papachristos, David S. Kirk, 2016. Accessed August 6, 2021. <https://journals.sagepub.com/doi/abs/10.1177/0003122416663494>
16. Kidd RF, Chayet EF. Why Do Victims Fail to Report? The Psychology of Criminal Victimization. *J Soc Issues*. 1984;40(1):39-50. doi:10.1111/j.1540-4560.1984.tb01081.x
17. Kellermann AL, Rivara FP, Lee RK, et al. Injuries Due to Firearms in Three Cities. *N Engl J Med*. 1996;335(19):1438-1444. doi:10.1056/NEJM199611073351906
18. Magee LA, Ranney ML, Fortenberry JD, Rosenman M, Gharbi S, Wiehe SE. Identifying nonfatal firearm assault incidents through linking police data and clinical records: Cohort study in Indianapolis, Indiana, 2007-2016. *Prev Med*. 2021;149:106605.

doi:10.1016/j.yjmed.2021.106605

19. Hipple NK, Huebner BM, Lentz TS, McGarrell EF, O'Brien M. The Case for Studying Criminal Nonfatal Shootings: Evidence from Four Midwest Cities. *Justice Eval J.* 2020;3(1):94-113. doi:10.1080/24751979.2019.1689152
20. Police, researchers: To address gun violence, U.S. needs to track the number of people shot - Baltimore Sun. Accessed August 6, 2021. <https://www.baltimoresun.com/news/investigations/bs-md-ci-shoot-to-kill-statistics-20161226-story.html>
21. National Academies of Sciences E. *Modernizing Crime Statistics: Report 1: Defining and Classifying Crime.*; 2016. Accessed January 9, 2017. <https://www.nap.edu/catalog/23492/modernizing-crime-statistics-report-1-defining-and-classifying-crime>
22. Crime in the U.S. 2019. FBI. Accessed October 10, 2021. <https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019>
23. Michael D. Maltz. *Analysis of Missingness in UCR Crime Data.* U.S. Department of Justice <https://www.ncjrs.gov/pdffiles1/nij/grants/215343.pdf>
24. *Benefits of NIBRS Participation.* U.S. Department of Justice - Federal Bureau of Investigation; 2017. https://ucr.fbi.gov/nibrs/2017/resource-pages/benefits-of-nibrs-participation_gen-res.pdf
25. SRS to NIBRS: The Path to Better UCR Data. Federal Bureau of Investigation. Accessed August 4, 2021. <https://www.fbi.gov/services/cjis/cjis-link/srs-to-nibrs-the-path-to-better-ucr-data>
26. Edwards F, Esposito MH, Lee H. Risk of Police-Involved Death by Race/Ethnicity and Place, United States, 2012–2018. *Am J Public Health.* 2018;108(9):1241-1248. doi:10.2105/AJPH.2018.304559
27. National Academies of Sciences, Engineering, and Medicine. *Modernizing Crime Statistics: Report 2: New Systems for Measuring Crime.* (Lauritsen JL, Cork DL, eds.). The National Academies Press; 2018. doi:10.17226/25035
28. NIBRS Technical Documentation | Department of Public Safety. Accessed August 5, 2021. <https://www.dps.texas.gov/section/crime-records-service/nibrs-technical-documentation>
29. *Counting Crime in Michigan.* Michigan State Police - Criminal Justice Information Center; 2018. https://www.michigan.gov/documents/msp/Counting_Crimes_Feb_2019_Website_655796_7.pdf
30. National Crime Statistics Exchange. Bureau of Justice Statistics. Accessed August 5, 2021. <https://bjs.ojp.gov/programs/national-crime-statistics-exchange>
31. NCS-X Sample Agencies as of August 4, 2021. https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/NCS-X_Sample_Agencies.pdf
32. *Principles and Practices for a Federal Statistical Agency: Seventh Edition.* doi:10.17226/25885
33. Rosenfeld R. Transfer the Uniform Crime Reporting Program from the FBI to the Bureau of Justice Statistics. *Criminol Public Policy.* 2007;6(4):825-833. doi:10.1111/j.1745-9133.2007.00473.x

34. Maltz MD, Targonski J. A note on the use of county-level UCR data. *J Quant Criminol.* 2002;18.
35. Maltz M. Can We Trust the FBI's Crime Estimation Procedures? *ASC Criminol.* Accessed October 11, 2021. https://www.academia.edu/39057721/Can_We_Trust_the_FBIs_Crime_Estimation_Procedures
36. Data Quality Guidelines. FBI. Accessed October 11, 2021. https://ucr.fbi.gov/data_quality_guidelines
37. Lauritsen JL, Rezey ML, Heimer K. When Choice of Data Matters: Analyses of U.S. Crime Trends, 1973–2012. *J Quant Criminol.* 2016;3(32):335-355. doi:10.1007/s10940-015-9277-2
38. Comer BP, Jorgensen C, Carter D. Reported Crime Frequencies: A Statistical Comparison of State Crime Reports and the UCR. *Am J Crim Justice.* Published online July 9, 2021. doi:10.1007/s12103-021-09623-y
39. National Research Council. *Understanding Crime Trends: Workshop Report.* (Goldberger AS, Rosenfeld R, eds.). The National Academies Press; 2008. doi:10.17226/12472
40. FY 2019 NCS-X Implementation Assistance Program: Support for Local Law Enforcement Agencies. Bureau of Justice Statistics. Accessed October 11, 2021. <https://bjs.ojp.gov/funding/opportunities/bjs-2019-15103>
41. Adler-Milstein J, Jha AK. HITECH Act Drove Large Gains in Hospital Electronic Health Record Adoption. *Health Aff (Millwood).* 2017;36(8):1416-1422. doi:10.1377/hlthaff.2016.1651