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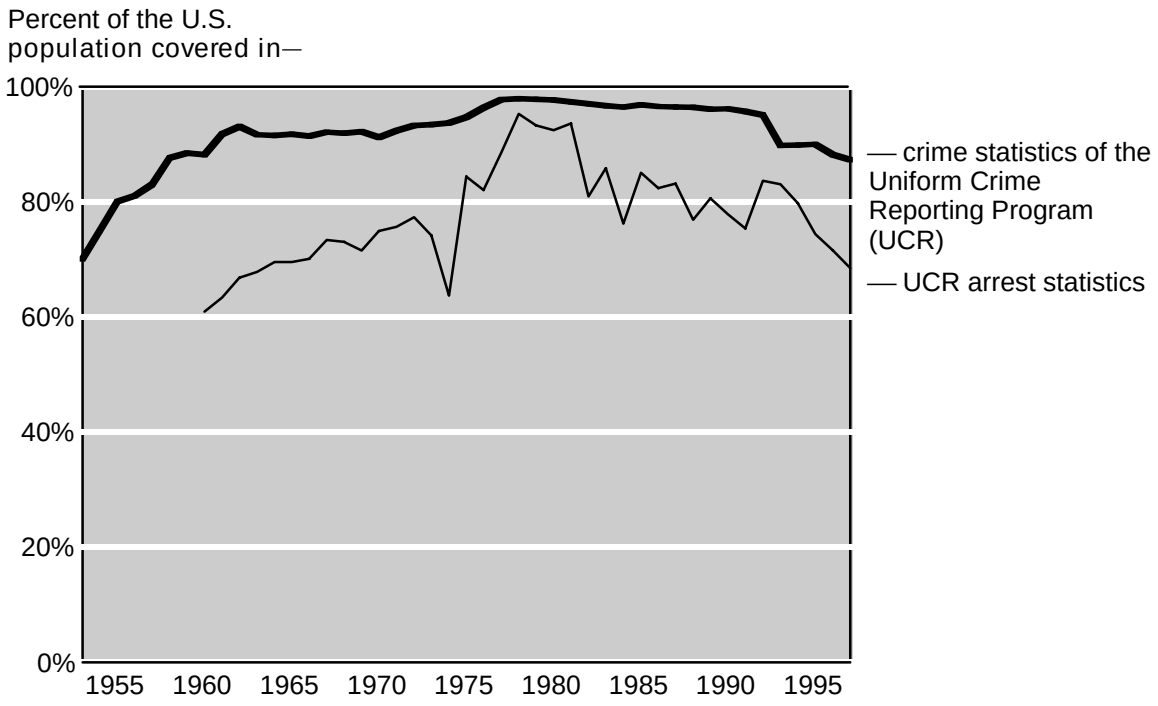
Bridging Gaps in Police Crime Data

A Discussion Paper from the BJS Fellows Program



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A Discussion Paper from the BJS Fellows Program

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and
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This paper is based on a Workshop on Uniform Crime Reporting Imputation, sponsored by the
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Bureau of Justice Statistics

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The points of view or opinions expressed in this document are those of the author and do not necessarily represent the official position or policies of the U.S. Department of Justice.

BJS Discussion Papers promote the exchange of information, analysis, and ideas on issues related to justice statistics and to the operations of the justice system.

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Acknowledgments

I began work on this project because, although I had been using the UCR for many years, I had never understood all of its intricacies — and felt somewhat embarrassed to ask simple questions about why certain procedures were used, because *obviously* everyone else knew. It turned out, however, that most people seemed to be as much in the dark as I was, perhaps about different aspects of the UCR, and during this project we began to share our knowledge, each of us having an understanding of different aspects of the data collection and analysis process. This report is, then, more a collaboration than a single-authored effort, a kind of "open source" presentation of our collective knowledge. [Although the knowledge is collective, the interpretation of that knowledge is my own.]

The information contained herein is based on a 2-day meeting held over 2 years ago; analyses of UCR data conducted since then; and conversations, letters, faxes, and e-mails between me and a number of colleagues. In particular, I wish to acknowledge the comments and advice of the following:

- From BJS – Jan Chaiken, Larry Greenfeld, Tom Hester, Charles Kindermann, Pat Langan, Sue Lindgren, Don Manson, Marilyn Marbrook, Mona Rantala, Steve Smith, Paul White, and Marianne Zawitz

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This report was written while I was a Visiting Fellow at the Bureau of Justice Statistics and completed while I was on sabbatical from the University of Illinois at Chicago. While I greatly appreciate the help I received from BJS, FBI, and State officials, they should not be held responsible for any errors in this report, and the opinions, conclusions, and recommendations expressed herein are my own and should not be construed as the policy of any of these organizations.

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Summary

Crime in the United States (CIUS), published annually by the FBI, is a compilation of the Uniform Crime Reports (UCR) provided by over 18,000 policing jurisdictions. It represents one of the two primary sources of data about crime in the United States, the National Crime Victimization Survey (NCVS) being the other. While the NCVS is a very reliable indicator of *national* trends in crime, it is based on a survey of under 50,000 households and thus cannot provide *local* information on crime, which is provided by the UCR and CIUS. [For a thorough understanding of the differences between the two statistical series, see Biderman and Lynch's (1991) *Understanding Crime Incidence Statistics: Why the UCR Diverges from the NCS.* The NCS, or National Crime Survey, was the predecessor to the NCVS. A briefer explanation can be found in *The Nation's Two Crime Measures*, found at **http://www.ojp.usdoj.gov/bjs/abstract/ntmc.htm** and included annually in CIUS.]

Not only does CIUS provide local information about crime incidence, it also compiles arrest data from these jurisdictions; these data permit us to form a picture of who is committing crime (or at least, who is *arrested* for committing crime).

The quality of the data provided to the FBI, however, is uneven. Reporting to the FBI remains for many jurisdictions a voluntary activity; although many States now mandate that agencies report crime and arrest data to them (which they then forward to the FBI), even in those States local agencies do not always comply. Moreover, despite the efforts of the FBI to maintain their quality, there are many gaps in the data that make their use questionable. While this has had limited impact in the past, the fact that the UCR data have, for the first time, been used to allocate Federal funds brings issues about data quality to center stage.

In addition, the FBI is moving to implement an improved crime and arrest reporting system, the National Incident-Based Reporting System (NIBRS), to augment the summary UCR data published in CIUS. It is hoped that the study of deficiencies in UCR data will be of use in planning for the full implementation of NIBRS.

This report describes the history of the UCR system and the data problems that it deals with in reporting crime, arrest and homicide. It describes the procedures used by the FBI to fill in gaps in the data when they exist and makes suggestions about how they might be improved.

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I. Introduction

The Uniform Crime Reporting Program (**UCR**)[1] of the Federal Bureau of Investigation (**FBI**) has been collecting crime and arrest data from police departments throughout the United States since 1930. The data are published in the annual report, *Crime in the United States* (**CIUS**), and represent one of the more widely used sources of longitudinal data in the social sciences. The UCR is based on monthly summary reports of crimes known to the police and arrests made by the police, that are provided to the FBI by over 17,000 of the more than 18,000 police agencies in the United States and its territories.[2]

The FBI office that deals with the UCR is the Program Support Section (**PSS**), a section of the Criminal Justice Information Services (**CJIS**) Division. Five of the eight units within PSS are concerned with various aspects of CIUS:

- The Statistical Unit collects, checks, and manages the data coming in from the police agencies.
- The Communications Unit is involved in publications and data dissemination.
- The Education and Training Services Unit trains local agencies in UCR data collection procedures.
- The Crime Analysis Research and Development Unit analyzes data and develops specifications for new methods of presenting the data.
- The CJIS Audit Unit performs quality assurance reviews to maintain the quality of the UCR.

The UCR includes a Crime Index, a count of certain specific crimes occurring over the past year in each jurisdiction. These are called "Index crimes," and, listed in order of their presumptive seriousness, are murder and nonnegligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft.

Arson was added to the Crime Index in 1979 although it is not as likely as the other Index crimes to be reported to the police, because arsons are often categorized as "fires of suspicious origin." Except for arson, these particular crimes were chosen because they were frequent, generally serious in nature, and most likely to be reported to the police; victims, their relatives, and/or bystanders who witness the incident are likely to know that incidents of those types are criminal in nature and are likely to report them.

Although the UCR has some limitations (indeed, the aim of this report is to address some of them), even these limitations provide important information. For example, incomplete citizen reporting to the police of certain types of crimes has been used as an indicator of a number of police-related factors: how the relationship between offender and victim affects citizen reporting of crime; the extent to which citizens trust the police; and the effect of police policies and problems on reporting behavior. Yet the public is generally unaware that the UCR system is essentially a *voluntary* system; there is no federal legislation that requires states or local jurisdictions to report their crime data to the FBI.

The voluntary nature of the UCR, of course, affects the accuracy and completeness of the data. Although the FBI devotes a great deal of attention to the quality of the data it publishes in CIUS, it cannot mandate agencies to provide data on time (or at all). As a consequence, the FBI must deal with problems of missing or late data, and has developed a mechanism to account for these gaps: it *imputes* (or estimates) data where gaps exist, which limits the accuracy of the estimated crime statistics published in CIUS.

[1]The first mention of an acronym in this report is printed in **bold.** Also see *Glossary,* page 72.

[2]Police agencies also report on other topics to the FBI, including hate crimes, personnel statistics, and law enforcement officers killed and assaulted. These topics are not covered in this report.

Why We Need to Look at the UCR

Despite these problems with the data, adjustments for missing data have not been of major consequence in the past, since the primary purpose of the data was to present national and State trends — and estimates were adequate for this purpose. Researchers, police administrators, and some journalists are aware of the limitations of the UCR, but it mattered little to others outside the field. However, in the recent past four changes were made in the environment in which the UCR data are being employed:

- UCR data are being used to allocate Federal funds.
- The data are now instantly accessible on the Internet.
- Because of the greater accessibility of the data, researchers are increasingly analyzing UCR statistics at sub-national levels, but the results of their analyses may be suspect because of the way missing data are handled.
- A new reporting system (the National Incident-Based Reporting System or NIBRS) now being implemented to augment the summary UCR data will increase the amount of data collected on each crime and arrest.

Thus, the collection, analysis, and publication of crime data are now occurring in a new environment, due to changes in legislation, changes in the ease of access by citizens and researchers to the data, and changes in crime reporting. This means that the FBI's imputation procedures, which were adequate for handling many of the weaknesses in the current data collection system, may have to be revised.

Toward this end, a Workshop on UCR Imputation Procedures was held in Washington, DC, April 24-25, 1997, and attended by key personnel from the FBI and the Bureau of Justice Statistics (**BJS**), as well as by researchers familiar with UCR data and their problems. The list of attendees is given in Appendix A. Just prior to the workshop the FBI had moved the Program Support Section to Clarksburg, West Virginia. The move resulted in a turnover of personnel and equipment. The workshop thus came at an opportune time for the FBI, which recognizes the need to update the procedures it has been using for over 40 years — when the UCR had its last major revision (FBI, 1958).

The workshop provided an opportunity for statisticians and researchers from both of these Federal agencies and from the user community to discuss ways of improving UCR data collection and estimation procedures. The goal of the workshop was to recommend new ways to ensure that the American public is provided with the best possible police-collected information related to crime and criminality, and to move toward that end in the most expeditious and feasible way possible. This report is based on the findings and discussions from that workshop.

Issues relating to standard UCR data (i.e., crime counts, arrests) were not the only topics addressed at the workshop. Attention was also devoted to the Supplementary Homicide Reports (**SHR**), forms filled out by police departments that provide a more detailed description of each homicide than just the raw statistics of number of homicides. The workshop explored how these data could be made more useful, and this report discusses those findings as well.

Issues related to Federal crime data are not included in this report. Thus, the accuracy or completeness of the statistics of crimes committed on Indian reservations, military installations, and national parks are for the most part excluded.

This report also includes information gathered from State criminal justice agency personnel and data analyses subsequent to the workshop.

The voluntary nature of the UCR system means that there is a high degree of State-to-State variation in UCR reporting. Specifically, some States mandate reporting and require reports to be channeled through (and checked by) State agencies before being transmitted to the FBI, while in other States individual jurisdictions report directly to the FBI. Although the FBI institutes quality control checks on the data it receives, the lack of uniform reporting standards and procedures results in a lack of uniformity in the Uniform Crime Reports.[3]

The Information-Gathering Process

Some of the material included herein is based on informal conversations with FBI and BJS personnel and State officials who use or collect the data, and some of their statements about the UCR (or my interpretations of what they meant) may be in error. Although I have tried to verify all statements, some errors may have slipped through. Should a reader find mistakes in this report, please notify me (**mikem@uic.edu**), and corrections will be added to an errata sheet that will be posted on the BJS website.

It seems that every decade or so I look into the intricacies of crime data (Maltz, [1972] 1999; 1984: 141) and find the following caution about official statistics from Josiah Stamp (1929: 258) applicable:

> The individual source of the statistics may easily be the weakest link. Harold Cox tells a story of his life as a young man in India. He quoted some statistics to a Judge, an Englishman, and a very good fellow. His friend said, "Cox, when you are a bit older, you will not quote Indian statistics with that assurance. The Government are very keen on amassing statistics – they collect them, add them, raise them to the nth power, take the cube root and prepare wonderful diagrams. But what you must never forget is that every one of these figures comes in the first place from the *chowty dar* [village watchman], who just puts down what he damn pleases."

While strides have been made in improving the coverage and accuracy of police-reported crime data (in India as well as in this country), there is still need for a great deal of improvement. My hope is that this report helps to realize this goal.

Report Organization

The organization of this report is as follows: The next section gives a brief summary of how the coverage of the UCR has increased over the past few decades, both in terms of population covered and State collection efforts. Section III describes the reasons for incomplete crime data and Section IV problems with arrest data. Section V documents the steps necessary to verify and publish CIUS. The imputation procedures used by the FBI to account for these gaps are described in Section VI, and the problems with these imputation procedures in Section VII. Some suggested changes in the imputation procedures are described in Section VIII. Issues related to the SHR data are addressed in Section IX. Conclusions and recommendations are found in Section X.

Five appendixes are included: Appendix A lists the attendees at the BJS/FBI workshop. Appendix B is a compendium of crime-related data available on the Internet from State agencies. Appendix C lists some of the characteristics of State UCR collection programs. The crime reporting history of each State is charted in Appendix D. Appendix E, written by Sue Lindgren of BJS, describes the procedures used to account for missing data in calculating the Local Law Enforcement Block Grant funding for each jurisdiction.

[3]The lack of uniformity is due primarily to variation in completeness of State reporting, not to variation in what is reported. The PSS Education and Training Services Unit works with individual police agencies to ensure uniformity in reporting practices.

II. UCR History and Coverage

The International Association of Chiefs of Police (**IACP**) created the UCR in January 1930. It was created in large part to forestall newspapers from manufacturing “crime waves” out of thin air (IACP, 1929; Maltz, 1977). A national system of crime reporting, it was felt, would put the inevitable (and unpredictable) swings of crime incidence in a single jurisdiction into a proper context, reducing the media pressure put on any particular jurisdiction or police chief. This pressure has led to police departments “cooking the books” and reducing the amount of crime they *recorded* instead of the amount of crime reported to them.

At the request of the IACP, the FBI assumed stewardship of the UCR in 1930, soon after it started. Police departments that provided crime (and other) data sent the data directly to the FBI, which compiled the data and published periodic reports.

[A note on terminology: the FBI identifies all police and other agencies that report crime data with an **ORI** (for **OR**Iginating Agency **I**dentifier) number. In this report I use the terms "ORI," "reporting agency," "police department," and "jurisdiction" interchangeably.]

Initially there was not enough coverage of the entire United States to permit estimation of the crime rate for the Nation as a whole. From 1930 through 1957 the FBI published the data in tables according to size of the reporting jurisdiction and did not aggregate the data to the national level. In 1958, based on a review of the UCR by a consultant committee (FBI, 1958), it was felt that there was enough coverage to begin to estimate annual crime rates for the Nation as a whole, which the FBI began to do with the publication of the 1958 report.

State-Level Reporting

In the late 1960’s a few States that had been compiling their own statistics arranged with the FBI to act as the data collection point for all ORIs within the State, and began to send the entire State’s data directly to the FBI, in an effort to make the process more manageable for the FBI. Other States also began to compile their crime statistics; under the Law Enforcement Assistance Administration (**LEAA**), funds were made available to the States to establish statewide programs as part of State criminal justice Statistical Analysis Centers (**SAC**s). The SACs were developed in an effort to build analytic capability in States, so that they could deal with their crime problems by themselves. The FBI then developed requirements for State UCR collection programs; currently, 44 States have met these requirements and send all of their agencies' data to the FBI.[4] See figure 1, which shows how the program developed over the past four decades.

Although some of the SACs disappeared or were scaled down after Federal funding declined, States have continued to compile their own crime data. Most States and territories have set up State-level UCR programs — some under SACs, some under the State police, and some in other agencies — and now publish annual crime reports, and the FBI continues to compile and publish the data for the Nation as a whole. Appendix B provides a (partial) listing of the availability of State on-line publication of crime data.

Comparing Crime Data

The annual publication of CIUS is still an occasion for the media to compare a jurisdiction’s crime rates with those of other jurisdictions and with its past experience, so media pressure has not been entirely dispelled. But nowadays reporters and the public are more sophisticated and recognize that the police have only a limited ability to affect many types of crime. This has eased the pressure on police administrators“ to keep the crime rate down” by reporting less crime than had occurred, although the pressure to falsify crime data still persists,

[4]The decrease in the early 1980’s was due to the loss of LEAA funding.

from Philadelphia to New York City to Atlanta to Boca Raton.[5]

Other problems with the data are due to inadequate systems and procedures. But as local jurisdictions automate their crime record systems we should be able to see improvements in crime data accuracy. New software products for police records management include provisions for automated reporting of UCR and NIBRS data in the correct formats. And the accuracy of crime data seems to have been improving. As figure 2 shows, the UCR estimates of violent crime *recorded by the police* have been drawing closer to (and following the same general pattern of) estimates of violent victimizations that *victims say they reported to the police* (the two middle lines).[6]

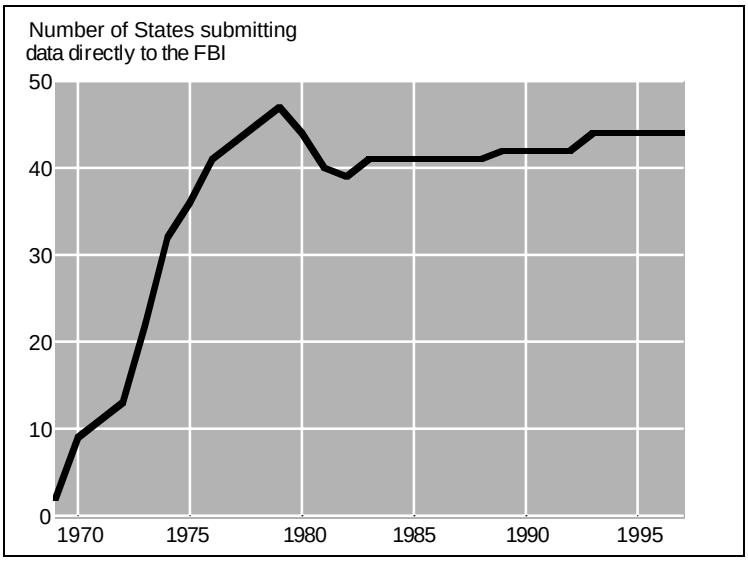


Figure 1. Number of States Submitting UCR Data Directly to the FBI
Source: CIUS, 1969-97, and States responding by letter, e-mail, and telephone

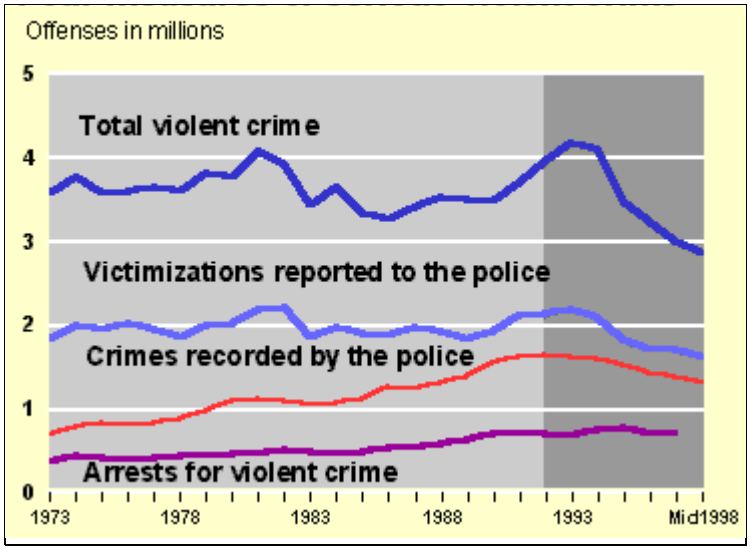


Figure 2. Four Measures of Serious Violent Crime
Source: **http://www.ojp.usdoj.gov/bjs/glance/cv2.htm**

Coverage Gaps and Imputation

However, in recent years more and more of the crime statistics reported by the police have not been based on crime counts but on imputed crime counts. Figure 3 shows how the percentage of the population covered by the UCR has changed over time; as can

[5]See *The Philadelphia Inquirer*, November 1, 1998, "How To Cut City's Crime Rate: Don't Report It;" *The New York Times*, August 3, 1998, "As Crime Falls, Pressure Rises To Alter Data;" *The Atlanta Journal-Constitution*, May 21, 1998, "Manipulation of Crime Figures Alleged;" and *The Miami Herald*, May 3, 1998, "Sugarcoating? Officer Faked Boca Crime Stats."

[6]The *victimization data* are from the National Crime Victimization Survey (**NCVS**), which began in 1972. In it a random sample of U.S. households is chosen, and household members age 12 and over are asked about their victimization experiences. The *crime data* are from CIUS, modified to be made comparable to the victimization data; that is, for robbery it means that all commercial robberies are excluded, as are rapes, robberies and aggravated assaults whose victims were under 12 years old. That the two sources of data are now converging means that the crimes that citizens say they have reported to the police are being recorded more completely by the police in their statistics. For a more complete description of the characteristics of the two crime measures, see *The Nation's Two Crime Measures* (BJS/FBI, 1995, **http://www.ojp.usdoj.gov/bjs/pub/pdf/ntmc.pdf** and in recent issues of CIUS).

be seen, a long period of improvement in coverage has been followed in recent years by a reduction in coverage. This rather considerable decline in population coverage in the 1990's is due in part to problems at the *State level*, in converting their crime reporting systems to comply with NIBRS requirements. As problems are dealt with, the coverage should return to above 95%.

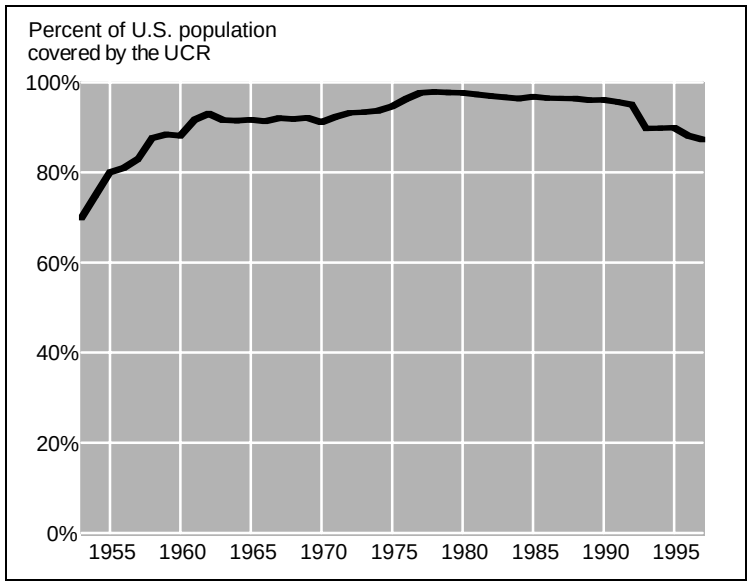


Figure 3. Percent of the U.S. Population Covered by the UCR
Source: *CIUS, 1953-97*

The missing coverage is not uniform over space and time. Most jurisdictions provide largely accurate crime reports every month while others do not, for reasons described later in the report. Since 1969 more and more States have passed legislation mandating the submission of crime data by local jurisdictions to state agencies, but very few incur penalties if they do not comply with such requirements. See Appendix C for a listing of the characteristics of State UCR reporting procedures.

Appendix D (page 47) shows the extent to which the 50 States have provided crime reports to the UCR since 1958, the year that national and State crime rates were first published. As can be seen from the patterns, some States have historically been able to provide close to 100 percent UCR coverage (and therefore low imputation rates). This response is true of about 20 States.

The infusion of LEAA funding in the 1970's apparently permitted an additional 12 States to improve their UCR reporting systems. All experienced a reduction in the percent of crime imputed in the 1970's and continue to have low percentages of imputed crime. Some States, however, have experienced substantial problems in UCR reporting:

- Complete data for Illinois, for example, have not been included in the UCR since 1985, initially because the Illinois statutory definition of sexual assault is inconsistent with the UCR definition of rape,[7] and since 1992 because the Illinois UCR submissions did not adhere to the UCR's "hierarchy rule" (see page 14).

- A number of States have had problems in implementing NIBRS, reflected in recent major increases in the percentage of imputed UCR data or in the complete absence of data.

- In still other States, there has been a recent gradual growth in the percent imputed, reflecting a gradual withdrawal of local jurisdictions from the UCR reporting program.

These reporting omissions (i.e., data that are missing or are reported too late to meet the publication deadline of CIUS) have generally been considered to be of little consequence, because most do not account

[7]"Until 1984, 'rape' was defined as the carnal knowledge of a female, forcibly and against her will. On July 1, 1984, Illinois' sexual assault laws became gender neutral and the old concept of rape was broadened to include many types of sexual assault. This index crime now includes all sexual assaults, completed and attempted, aggravated and non-aggravated." (Illinois Criminal Justice Information Authority, 1987, p. 5.)

for a significant percentage of overall crime — as can be seen in figure 3, despite the reporting gaps depicted in Appendix D, the UCR still represents 87 percent of the U.S. population. Moreover, the FBI has developed procedures to accommodate such omissions. These procedures in essence "fill in the gaps" by *imputing* data when the data are either missing or not furnished to the FBI until after its publication deadline. Such imputations permit the FBI to make national, regional, and State estimates of crime data despite the missing data, and thus keep the annual publication of CIUS on schedule with relatively comparable data from year to year.

But researchers have been using county-level data to study crime characteristics, without realizing that some counties' crime statistics are based on a substantial amount of imputed data.[8] The county-level data set is compiled from the raw jurisdictional data provided by the FBI to the National Archive of Criminal Justice Data (NACJD), which uses its own county-level imputation procedures (described in Section IV.).

NACJD is maintained by the University of Michigan's Inter-university Consortium for Political and Social Research (ICPSR). Funded by BJS, NACJD obtains the FBI's archived raw crime and arrest data sets to archive them on their own website in a form suitable for research use. NACJD has agency-level data files from 1966-96 and data files aggregated at the county level for 1977 through 1996. Imputation procedures used by NACJD in aggregating data to the county level are described in Section IV.

As mentioned earlier, in some cases the data for a whole State have been problematic. In particular, over the past decade some or all of the data from Delaware (1995), Florida (1988, 1996), Illinois (1985-97), Iowa (1991), Kansas (1993-97) Kentucky (1988, 1996-97), Michigan (1993), Minnesota (1993), Montana (1994-97), New Hampshire (1997), Pennsylvania (1995), and Vermont (1997) have not been included by the FBI for tabulation in CIUS, as seen in figure 4 on page 8. In other words, to develop national estimates of crime, data for States have been imputed in whole or in part. Imputation to such an extent may no longer be appropriate or desirable, especially now that UCR crime data are legislatively required to be used in formulas for allocating certain Federal funds.

The UCR and Funding Decisions

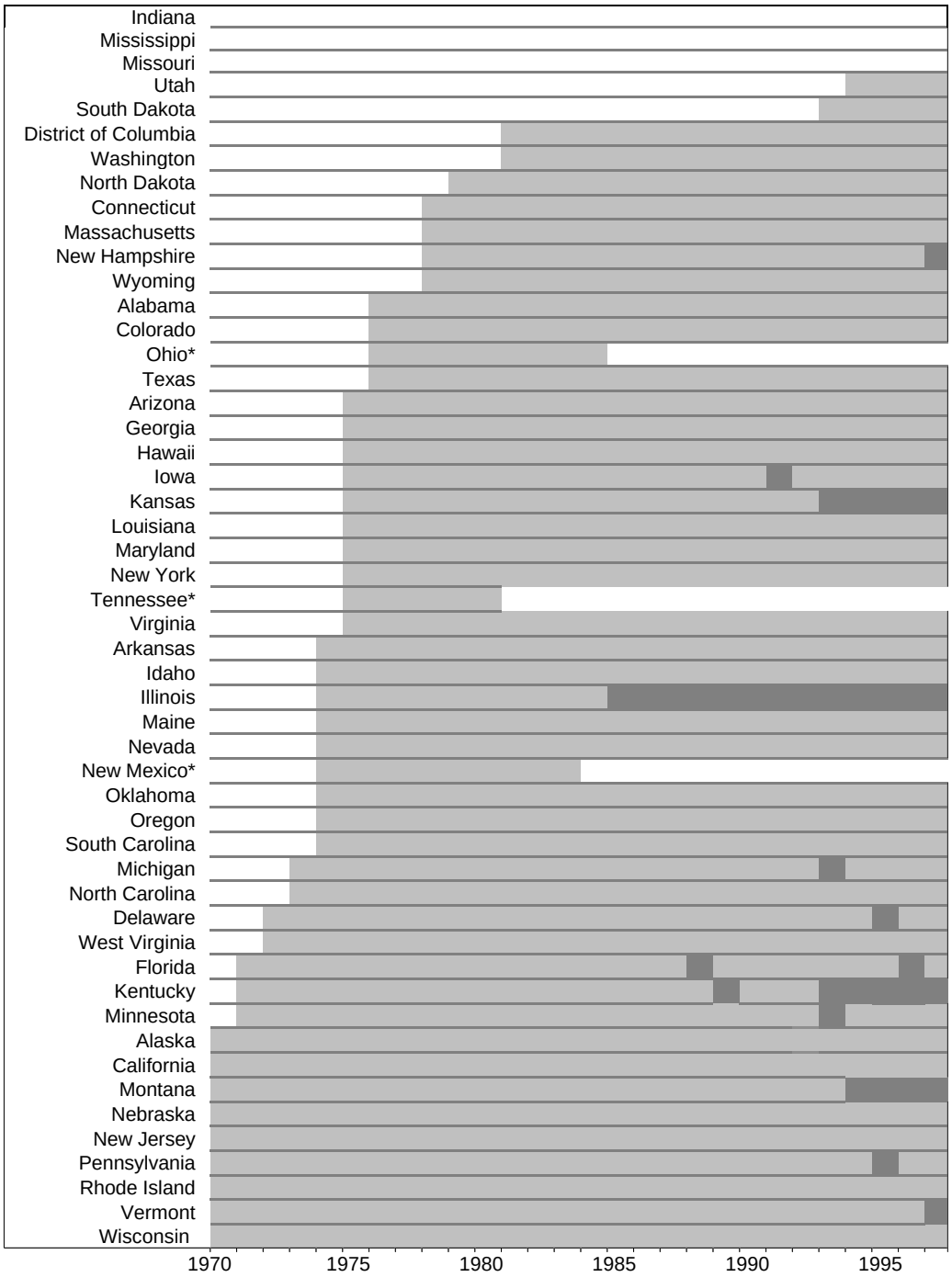
In 1994, in reauthorizing the Omnibus Crime Control and Safe Streets Act of 1968, the U.S. Congress appropriated additional anticrime funding for jurisdictions under the Local Law Enforcement Block Grant Program. The amount of funds received by a jurisdiction was to be based on the number of violent crimes they had experienced in the 3 most recent years (1992-94). According to the statute, the UCR was to be the source of the crime data.

This marked the first time that funding decisions were to be made on the basis of the data in the UCR, and caused a number of other agencies within the US Department of Justice (**DOJ**) to deal directly with the shortcomings of this data set. The Bureau of Justice Assistance (**BJA**) was charged with the task of allocating the funds; BJA called on BJS, with its statistical expertise and knowledge of the UCR's characteristics, to develop the allocation formula according to the law's provisions. [Appendix E gives the background for the development of this formula.]

BJS used the actual raw crime data as reported by each police agency to the FBI, rather than the imputed data, in the allocation formula. But in reviewing the raw UCR data, BJS immediately recognized their limitations: Of the 18,413 police agencies that reported to the FBI in 1992-94, 3,516 (19%) did not provide crime data for *any* month during the

[8]Neither estimated city nor county data are disseminated outside the FBI. They are used solely to arrive at State and national estimates.

Correction: Alaska is shown to be reporting UCR data since 1970. The State contact for Alaska is Kathleen Mather, 907-269-5701.



States reporting UCR data to the FBI

States that had problems with some or all of the submitted data

*These 3 States ceased submitting State-level data in the 1980's.

Figure 4. State-Level Reporting of UCR Data to the FBI

Sources: *CIUS, 1969-96,* and responses from State officials by letter, email, and telephone.

Table 1. Reporting Behavior of 18,413 Police Agencies, 1992-94

	Police agencies	
Reporting frequency	Number	Percent
Total	18, 413	100%
Full reporting (36 months)	11,700	64%
Partial reporting (1-35 months)	3,197	17
No reports	3,516	19
Special agency	2,650	14
Regular agency	**866**	**5**

36-month period used in the formula and another 3,197 (17%) reported between 1 and 35 months (table 1). Although most gaps in the data were found to be relatively inconsequential, this was not true across the board. Of the 3,516 non-reporting agencies, all but 866 either were within jurisdictions that had other agencies report for them or were State agencies or special police agencies (such as transit police, fish-and-game police, or park police) that probably were not eligible for a formula award.[9]

However, the remaining 866 agencies that provided no crime data for the 36-month period included some major jurisdictions: the primary police agencies in 3 cities and counties with populations over 100,000; 17 cities with populations between 50,000 and 100,000; and almost 200 cities with populations over 10,000. Note that *fully 5 percent of the regular police agencies provided no reports for 3 full years.* A subsequent analysis found that 15 percent of the regular agencies did not provide any data for 1992, and reporting behavior worsened in succeeding years (reanalysis by S. Lindgren, May 27, 1999).

In less populous States, even cities with populations of 10,000 received awards. Thus, the lack of complete reporting had financial consequences for a significant number of jurisdictions. The legislation does make provision for determining funding if UCR data are not available, but it may also serve as a spur for ORIs to improve their reporting practices.

The UCR and Electronic Access

Another recent change in the crime data environment is the greater degree of public access to crime data. They have always been available to the public on paper, in the annual CIUS publications. For the most part, analyzing the data in the past usually meant entering data from the paper version of CIUS into one's own computer.[10] As discussed earlier, for many years they have been made available (primarily to researchers) in electronic form (e.g., magnetic tape), but they are now also accessible to the general public from various websites.

The FBI, BJS, and NACJD now have regularly updated websites that provide access to UCR data, so it can be anticipated that more people will be encountering the inconsistencies in the data. Each site contains crime data, but in different forms and formats:

- The FBI site is **http://www.fbi.gov**; it contains the UCR data as published in CIUS, beginning in 1995.

- The BJS site is **http://www.ojp.usdoj/bjs** In the section *Crime and Justice Electronic Data Abstracts* (**CJEDA**), it provides UCR crime data by State from 1960 to 1997, UCR crime and arrest data for the 90 largest counties for 1990-96, and 1985-97 homicide data for cities with populations over 100,000.

- The NACJD site is **http://www.icpsr.umich.edu/nacjd/ucr.html**; it contains downloadable arrest and offense data at the agency level from 1966 to 1996 and at the county level from 1977 to 1996.

[9]But by not reporting crimes that occurred within the jurisdiction, they may have affected the statistics of agencies that *were* eligible for an award, and thus the crime figures reported to the FBI for that jurisdiction may be lower than had actually occurred. In some States an agency reporting as few as five violent crimes in the 3-year period qualified for a grant of over $10,000.

[10]When I started as a Visiting Fellow at BJS in early 1995, BJS statisticians were still doing this on a regular basis.

The State estimates provided by the FBI (and found on the BJS website) are based on the FBI's imputation and estimation procedures and are not directly comparable to NACJD's county-level data. Now that any person *in the world* with a computer and modem can download the data and do comparisons, it would be helpful to resolve the data inconsistencies as much as possible and to provide explanations for the inconsistencies when resolution is not possible.[11]

Use of Sub-National UCR Data

The ready availability of UCR data at the subnational level has resulted in researchers using these data to answer policy questions. Unfortunately, the data may not be up to the task. To understand why this is so, a brief account of the history of their collection, aggregation, and initial uses would be beneficial.

Prior to 1958, UCR data were collected from individual jurisdictions and aggregated to give, for each crime type in the crime index: urban and rural crime rates and year-to-year changes; crime counts by size of city (for reporting cities) and year-to-year changes; crime counts by State for reporting cities in each State, and year-to-year changes; and crime counts in cities by size of city, and year-to-year changes. State-level data were based on only those cities that reported to the FBI, and State-level crime rates were calculated by dividing the crime counts for these cities by their aggregate population.

State-level data. Despite the known deficiencies in the data, the UCR State-level homicide data for the years 1930, 1940, 1950, 1960, and 1970 were used by Ehrlich (1975) to estimate that every execution deters eight homicides, a finding that the U.S. Supreme Court cited (Maltz, 1996, p. 36). Critics pointed out some of the analytic problems, but it was assumed that State-level homicide data would be more accurate than data concerning other crimes.

However, the State-level homicide rates for 1930, 1940, and 1950 were doubtless based on jurisdictions covering less than 70 percent of the Nation. (See figure 3.) The variation in coverage from State to State was probably considerable. Although I have not examined the data from this era, it seems likely that much of the reporting was from urban agencies. Thus, a State that was 75 percent rural and 25 percent urban, but in which the urban agencies were much more diligent than rural agencies in reporting UCR data, would have its homicide rate based primarily on the homicide experience of its urban areas rather than on the experience of the State as a whole.

County-level data. In 1983 BJS published *Report to the Nation on Crime and Justice* (Zawitz, 1983), a snapshot of the state of crime and justice at that time. It featured a choropleth map of the county-by-county violent crime rate in the United States in 1980 (figure 5).[12] To produce this map, BJS

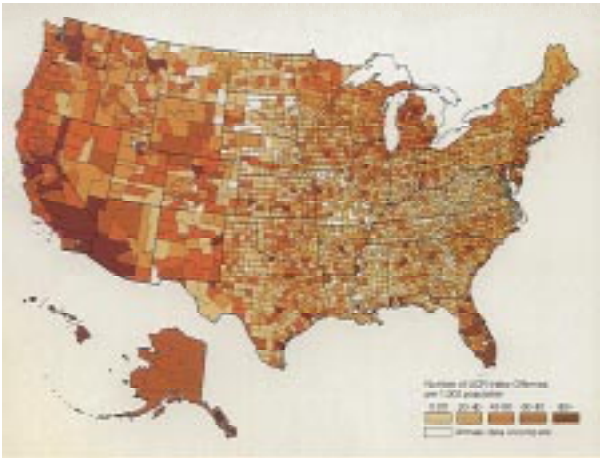


Figure 5. County-Level UCR Violent Crime Rates, 1980
Source: Zawitz, 1983

[11]Many of the downloadable data sets currently contain explanations for some inconsistencies (see, for example, the data set at **http://www.ojp.usdoj.gov/bjs/dtdata.htm#crime**), but the explanations are not complete.

[12]A choropleth map of crime displays levels of crime with different shadings or colors.

tasked NACJD with estimating the crime rate of each county. This was done by aggregating the crime count for all the jurisdictions in the county and dividing by the aggregated population for those jurisdictions.

Some counties reported no data; they are represented in white in the figure. ORIs that did not report at least 6 months of data to the FBI were also excluded; those that did report 6 months or more, but provided less than 12 months, had their data imputed. The imputation procedure simply multiplied the violent crime rate by 12/N, where N was the number of months reported. This implicitly assumes that the crime rate for non-reporting months is the same as for the reporting months.

Moreover, if some agencies in a county did not report, or reported less than 6 months of data, their data and their population were excluded from the crime rate calculations. This implicitly assumes that the crime rate for nonreporting ORIs is the same as for the reporting ORIs in the county, which is probably a stretch.

It should be noted that the imputation procedure was developed as an *ad hoc* procedure to make the 1980 data reasonably comparable from county to county so as to provide a snapshot, and not as a final means of dealing with missing data.

However, this report was received so favorably that BJS decided to update it. In 1988 it released the second edition of *Report to the Nation on Crime and Justice* (Zawitz, 1988a), based on UCR data from 1984. (See figure 6.) NACJD used the same imputation procedure to fill in the missing data.[13]

Because of favorable reception of the reports and the data on which they were based, BJS decided to make county-level data sets routinely available through NACJD. The deficiencies or consequences of using the *ad hoc* imputation procedure were not considered, because up to that time the county-level data had only been used for cross-sectional comparisons and not for more rigorous analytic purposes.

Since then, however, these data have been used for other purposes. For example, a recent study used the data to conclude that right-to-carry laws reduce crime (Lott, 1998). This finding was contested on methodological grounds (Black and Nagin, 1998), but not from the standpoint of the data quality. It turns out that smaller counties are more likely than the larger counties to have a significant fraction of their data imputed (C. Dunn, at the 1997 workshop); the fact that smaller counties are more rural may have a decided effect on this analysis.

One data documentation feature that NACJD now uses (until an improved imputation procedure is implemented) is a "coverage factor" in the county-level data set. This feature (described in Section VI) at least warns the analyst that the data are limited in coverage.

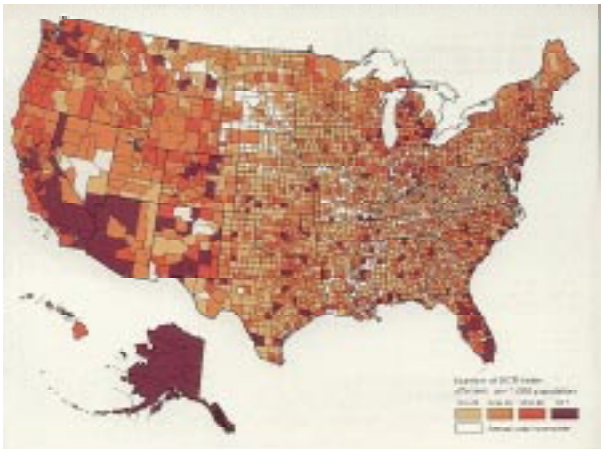


Figure 6. County-Level UCR Violent Crime Rates, 1984
Source: Zawitz, 1988a

[13]The procedure is described in Zawitz (1988b), p. 8.

The UCR and NIBRS

A fourth change in the crime data picture concerns the way crime data are to be reported to the FBI. Over 10 years ago a study commissioned by the FBI and BJS provided a "blueprint" for changing the way crime data were to be reported to the FBI (Poggio et al., 1985). The recommended changes have been adapted and incorporated in a set of new procedures that comprise NIBRS; NIBRS has already been implemented in a number of states and is expanding to cover the entire United States.

The change in data collection is considerable. Under the UCR program an agency provides a monthly *summary* report of crime, called Return A (figure 7); each line of the report refers to *a single type of crime*; it contains a *count* of the number of crimes of that type that had occurred in that month. Under NIBRS *each incident is to be reported in detail*, with a number of records devoted to describing the characteristics of each crime. For a single incident, information is recorded for each included offense (type, weapons, location, motivation method of entry, etc.); victim, offender, and arrestee; type of property; and so on. See figure 8 (from Akiyama and Nolan, 1999a). NIBRS will provide a great deal of detail about the nature of criminal activity: for example, one will be able to determine to what extent aggravated assaults were committed by family members or strangers, or what fraction of burglaries occurred in apartments or in private homes, by time of day, and in other ways. This will give both the police and the public with detailed information on the risk of crime to enable them to develop more useful policies and tactics.

RETURN A - MONTHLY RETURN OF OFFENSES KNOWN TO THE POLICE

This report is authorized by law Title 28, Section 534, U. S. Code. While you are not required to respond, your cooperation in forwarding this report by seventh day after the close of the month to Uniform Crime Reports, Federal Bureau of Investigation, Washington, D. C. 20535, will assist in compiling comprehensive, accurate national crime figures on a timely basis.

D065(Rev. 7-28-87)
Form Approved
OMB No. 1110-0001

1 CLASSIFICATION OF OFFENSES		2 OFFENSES REPORTED OR KNOWN TO POLICE (INCLUDE "UNFOUNDED" AND ATTEMPTS)	3 UNFOUNDED, I.E., FALSE OR BASELESS COMPLAINTS	4 NUMBER OF ACTUAL OFFENSES (COLUMN 2 MINUS COLUMN 3) (INCLUDE ATTEMPTS)	5 TOTAL OFFENSES CLEARED BY ARREST OR EXCEPTIONAL MEANS (INCLUDES COL. 6)	6 NUMBER OF CLEARANCES INVOLVING ONLY PERSONS UNDER 18 YEARS OF AGE
1. CRIMINAL HOMICIDE a. MURDER AND NONNEGLIGENT HOMICIDE (score attempts as aggravated assault) If homicide reported, submit Supplementary Homicide Report						
b. MANSLAUGHTER BY NEGLIGENCE						
2. FORCIBLE RAPE TOTAL						
a. Rape by Force						
b. Attempts to commit Forcible Rape						
3. ROBBERY TOTAL						
a. Firearm						
p. Knife or Cutting Instrument						
c. Other Dangerous Weapon						
d. Strong-Arm (Hands, Fists, Feet, Etc.)						
4. ASSAULT TOTAL						
a. Firearm						
b. Knife or Cutting Instrument						
c. Other Dangerous Weapon						
d. Hands, Fists, Feet, Etc. - Aggravated injury						
a. Other Assaults s Simple. Not Aggravated						
5. BURGLARY TOTAL						
a. Forcible Entry						
b. Unlawful Entry - No Force						
c. Attempted Forcible Entry						
6. LARCENY-THEFT TOTAL						
(Except Motor Vehicle Theft)						
7. MOTOR VEHICLE THEFT TOTAL						
a. Autos						
b. Trucks and Buses						
c. Other Vehicles						
GRAND TOTAL						

CHECKING ANY OF THE APPROPRIATE BLOCKS BELOW WILL ELIMINATE YOUR NEED TO SUBMIT REPORTS WHEN THE VALUES ARE ZERO. THIS WILL ALSO AID THE NATIONAL PROGRAM IN ITS QUALITY CONTROL EFFORTS.

DO NOT USE THIS SPACE	
	INITIALS
RECORDED	
EDITED	
ENTERED	
ADJUSTED	
CORES	

☐ NO SUPPLEMENTARY HOMICIDE REPORT SUBMITTED SINCE NO MURDERS, JUSTIFIABLE HOMICIDES, OR MANSLAUGHTERS BY NEGLIGENCE OCCURRED IN THIS JURISDICTION DURING THE MONTH.

☐ NO SUPPLEMENT TO RETURN A REPORT SINCE NO CRIME OFFENSES OR RECOVERY OF PROPERTY REPORTED DURING THE MONTH.

☐ NO LAW ENFORCEMENT OFFICERS KILLED OR ASSAULTED REPORT SINCE NONE OF THE OFFICERS WERE ASSAULTED OR KILLED DURING THE MONTH.

☐ NO AGE, SEX, AND RACE OF PERSON. ARRESTED UNDER I8 YEARS OF AGE REPORT SINCE NO ARRESTS OF PERSONS WITHIN THIS AGE GROUP.

☐ NO AGE, SEX, AND RACE OF PERSONS ARRESTED 18 YEARS OF AGE AND OVER REPORT SINCE NO ARRESTS OF PERSONS WITHIN THIS AGE GROUP.

☐ NO MONTHLY RETURN OF ARSON OFFENSES KNOWN TO LAW ENFORCEMENT REPORT SINCE NO ARSONS OCCURRED.

Month and Year of Report

Agency Identifier

Population

Date

Prepared By

Title

Agency and State

Chief, Commissioner, Sheriff, or Superintendent

Figure 7. Replica of the FBI's *UCR Return A*

One of the problems with current UCR reporting that should be ameliorated by NIBRS is caused by a characteristic of the UCR system known as the *hierarchy rule*. The hierarchy rule for reporting crimes was instituted by the FBI in the 1930's, to ensure that there would be no double-counting of crimes. A criminal event that includes two different crime categories is thus counted only once, and only in the most serious crime category. For example, if a convenience store robbery results in the death of the store clerk, this would be classified as a homicide rather than a robbery — because homicide is a more serious crime than robbery. Yet this expedient, important in the pre-computer age, masks the nature of what happened. It would certainly be better to recognize both characteristics of the incident, if only to be able to provide an estimate of risk, in the form of the fraction of incidents that start out as robberies but result in homicide (see, e.g., Maltz, 1976b).

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Even with NIBRS implemented, summary data will doubtless be aggregated and compiled for each agency, and data for some agencies may continue to be missing, delinquent, or in error. In other words, there will still be a need for imputation procedures after NIBRS is implemented nationwide. In fact, missing data may become a *greater* problem under NIBRS, because of the huge increase in categories and the complexity of definitions. This may make it more difficult to assume that the counting rules and definitions are being applied uniformly.

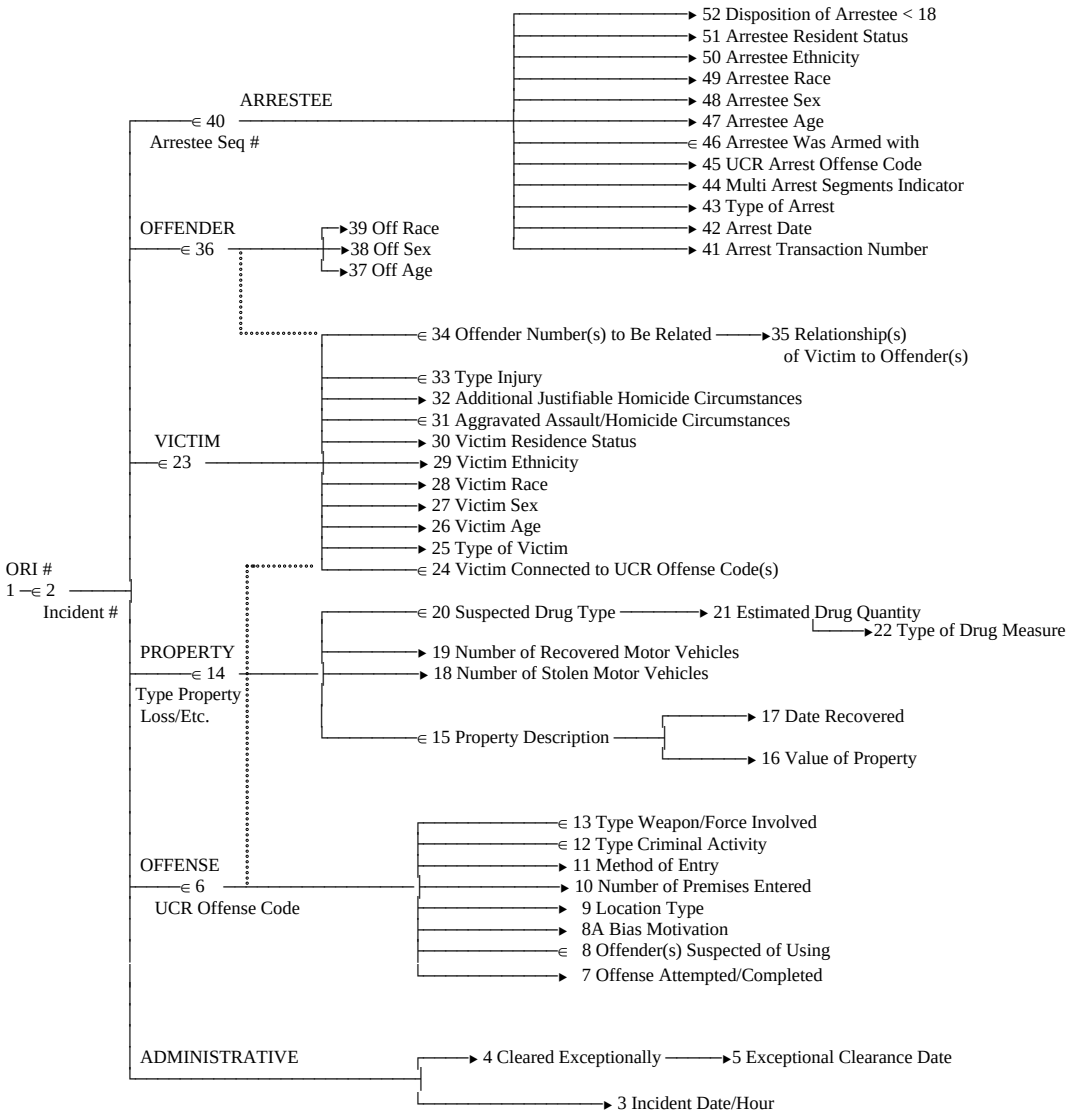


Figure 8. The Structure of NIBRS Data Elements
Source: Akiyama and Nolan, 1999a

III. Incomplete Crime Data

Two separate streams of crime data are sent to the FBI's Uniform Crime Reporting Section: one from individual police agencies, the other from State UCR collection programs. Although 36 States now have statutes mandating the reporting of crime and other criminal justice information, not all police departments submit this information to their State agency designated to collect the data, or they may submit it too late for entry in CIUS.

Occasionally some of the data may appear to be in error — too high or too low, based on the jurisdiction's past crime experience. This section describes the procedures used by the FBI to correct errors in reporting and, when reporting gaps occur, to impute data as necessary. It also discusses when and how UCR data files are updated.

Error Checking

Potential errors in the data are checked in different ways, depending on how the UCR reports were sent to the FBI and depending on the size of the jurisdiction. If the data are first collected by the State agency, that agency itself may undertake follow-up procedures to verify the data. When the errors are glaring, they can be found by simply inspecting the data or by using simple graphical techniques. One State agency refers to such errors as "tent poles" and "craters" — excessively high or low figures compared to the surrounding data (R. Christ, personal communication). Such errors often come from transposing numbers in returns submitted manually. Small errors, however, will probably not be caught in this manner.

If the State does not have auditing procedures, or if the data are sent directly to the FBI, staff members in the FBI's UCR Section may note the omission or anomaly and request the State agency to follow up. In cases in which the data are sent directly to the FBI, the FBI may follow up with the police agency by mail. If, however, the agency has a population of over 100,000, personnel from the UCR Section call the agency directly to verify the data (D. Kording, at the 1997 workshop).

When errors are found in the data, they are corrected, and the corrected counts are included in the statistics. Depending on when the errors were discovered and corrected, they may not be incorporated in CIUS (if the corrections occur after the FBI's publication deadline), but they may be included in the public-use data set archived at NACJD (J. Lynch, at the 1997 workshop). This means that someone trying to determine the extent of crime in a jurisdiction will encounter unexplained differences between CIUS statistics and the data archived by NACJD.

Reasons for Incomplete Reporting

Aside from these errors in reporting, police agencies may not provide complete (or any) reports to the FBI. The agencies may be delinquent or incomplete in their reporting of crime for a number of reasons:

- Some agencies experienced natural disasters that prevented them from getting their data in on time (or in some instances, at all).
- As has been the case with other public agencies, budgetary restrictions on the police have meant that some agencies have had to cut back on services. Although crime reporting is considered an essential function because it provides information about community safety to the public, some agencies that are especially strapped may forgo these routine clerical activities so as to ensure that sufficient resources exist for patrolling the streets.
- Retirements, promotions, and other personnel changes may mean that the person experienced in the preparation of UCR crime and arrest data is replaced by someone —
  — who has little experience in its preparation (and consequently makes numerous errors)
  — who is not given sufficient training
  — who gives the task a low priority
  — or who doesn't prepare the data in a timely manner.

- With respect to training, some jurisdictions may rely completely on handbooks on UCR reporting produced by the Program Support Section, and there may be ambiguities in the reports that require more complete descriptions than are included in the handbooks.

- Phasing in a new reporting system or computerization of the old system may cause delays or gaps in the crime reporting process. This may be especially true as agencies convert to NIBRS. (See Appendix C.)

- Small agencies with little crime to report may feel it unnecessary to fill out reports that are filled almost entirely with zeros. [In fact, in some cases small agencies file reports for only 1 month; they want to ensure that their agencies' employee statistics are included in CIUS, and reporting their data for 1 month will accomplish this.]

- A State may have offense definitions that are incompatible with UCR definitions, leading to data being submitted but not accepted.

Thus, there are a number of reasons that crime reports may be incomplete, late, or in error. The extent to which this is a problem in an individual State can be seen in Appendix D (page 47), which shows the UCR reporting behavior of each State over the past 40 years. Note that the impact of LEAA funding of State statistical systems in the 1970's is apparent in these graphs, as is (in some States) the impact of its termination.

Note also that while some States have a history of consistently good reporting, other States have a history of consistently poor reporting, and yet others have exhibited highly erratic reporting behavior. In particular:

- The data for six States were excluded from the 1997 UCR, with the data from one of those States not having been included since 1993.

- Six States have consistently poor reporting, missing reports on the crime experienced by more than 20% of their population.

Some of the recent erratic reporting by States is attributable to their conversion to NIBRS. In particular, some States and agencies that have begun the NIBRS conversion process are working with software that currently does not have the ability to produce UCR reports. Over the long term we can expect that many of these reporting problems will disappear or at least diminish. Many smaller agencies that are currently automating are purchasing computer software that provides near-automatic reporting (including audit checks) of these data. However, in the near term we can expect these problems to continue, for standards for such software do not currently exist. (See Appendix C.)

IV. Incomplete Arrest Data

As with offense data, there are major gaps in arrest data. To some extent the problems with arrest data are greater because of three factors:

- The percent of arrests reported by police is substantially lower than the percentage of crimes reported.
- By publishing the characteristics of arrestees, there is an implicit assumption that they also characterize those who commit similar crimes but are not arrested.
- Whereas crimes reported to the police are generally considered to be (and have been shown to be) similar to crimes *not* reported to the police, arrests reported by the police are as much a reflection of police priorities as they are of criminal activity.

Agencies are less diligent in reporting arrest data than crime data. The FBI attempts to ensure completeness of arrest data by rejecting an agency's adult arrest data if it does not also send in juvenile arrest data, nor is arrestee race information accepted without age and sex information (V. Major, at the 1997 workshop). This means, however, that information on arrests is considerably less complete than information on crimes.

Moreover, the arrest data published in CIUS are biased even in comparison to the arrest data eventually reported to the FBI.[14] For example, Snyder compared the 1980 CIUS arrest data with the final counts of arrests, after all of the late-reporting ORIs submitted their data (H. Snyder, personal communication, 1999). He found that juvenile arrests (as a percentage of all arrests) were overrepresented in the published statistics. He attributed this to the fact that large urban agencies, with higher percentages of juvenile arrestees, generally reported early (in time for publication) and the late reporters tended to be less urban agencies, with lower percentages of juvenile arrestees. So, not only are the arrest data published in CIUS not a representative sample of all arrests, they are not a representative sample of arrest data eventually reported to the FBI.

Figure 9 shows how 1997 arrest reporting varies by State. As can be seen, 4 States and Washington, DC, did not provide acceptable arrest data, and more than half of the population was not represented in an additional 12 States.

Figure 10 shows the extent nationally to which arrest data have been reported to the FBI for the past four decades. The percentages are consistently lower than those for crime data (cover figure), but their time trend shows the same declining pattern. As with the decline in crime reporting, it is probably attributable for the most part to the difficulties in shifting to NIBRS.

Note that compared to the reporting of crime data, there is a greater degree of annual variation in the reporting of arrest data. Year-to-year differences of close to ten percent in the reporting population are not uncommon. This variation is due in part to the changes in reporting standards for arrests.

For example the large "notch" in arrest reporting in 1974 was probably due to the changeover from annual to monthly arrest reporting, which took some time for agencies to systematize (V. Major, personal communication, May 20 and August 23, 1999). In prior years only agencies that reported arrests every month (i.e., were "12-months complete") were included in the arrest tallies; starting in 1974, when monthly arrest data began to be collected, arrest data were aggregated for all agencies with 6 months or more of arrest data. This changed again after 1981; from 1982 on, the FBI reverted to reporting aggregate arrests for only those agencies that provided 12 months of arrest data. The effect of this change can be seen in the 1981-82 drop in the population represented in arrest reports.

[14]The FBI accepts data that it receives after its publication deadline date and includes them in data files sent to NACJD, so the data files include reports not included in CIUS.

Corrections: This figure is based on FBI data, which include arrests only from agencies that submit arrest data for all 12 months (see p. 18). In some States — for example, Georgia — the State UCR agency has records of more arrests than are shown in the figure. Connecticut had 100% coverage, originally shown to be 85%.

This lack of completeness and consistency (and, more importantly, lack of representativeness) of the reporting of arrest data can have major consequences because of implicit assumptions made by some individuals in "analyzing" the arrest data. For example, Snyder shows how these *arrest* data have been used improperly to infer *offense* rates of juveniles (Snyder, 1999)

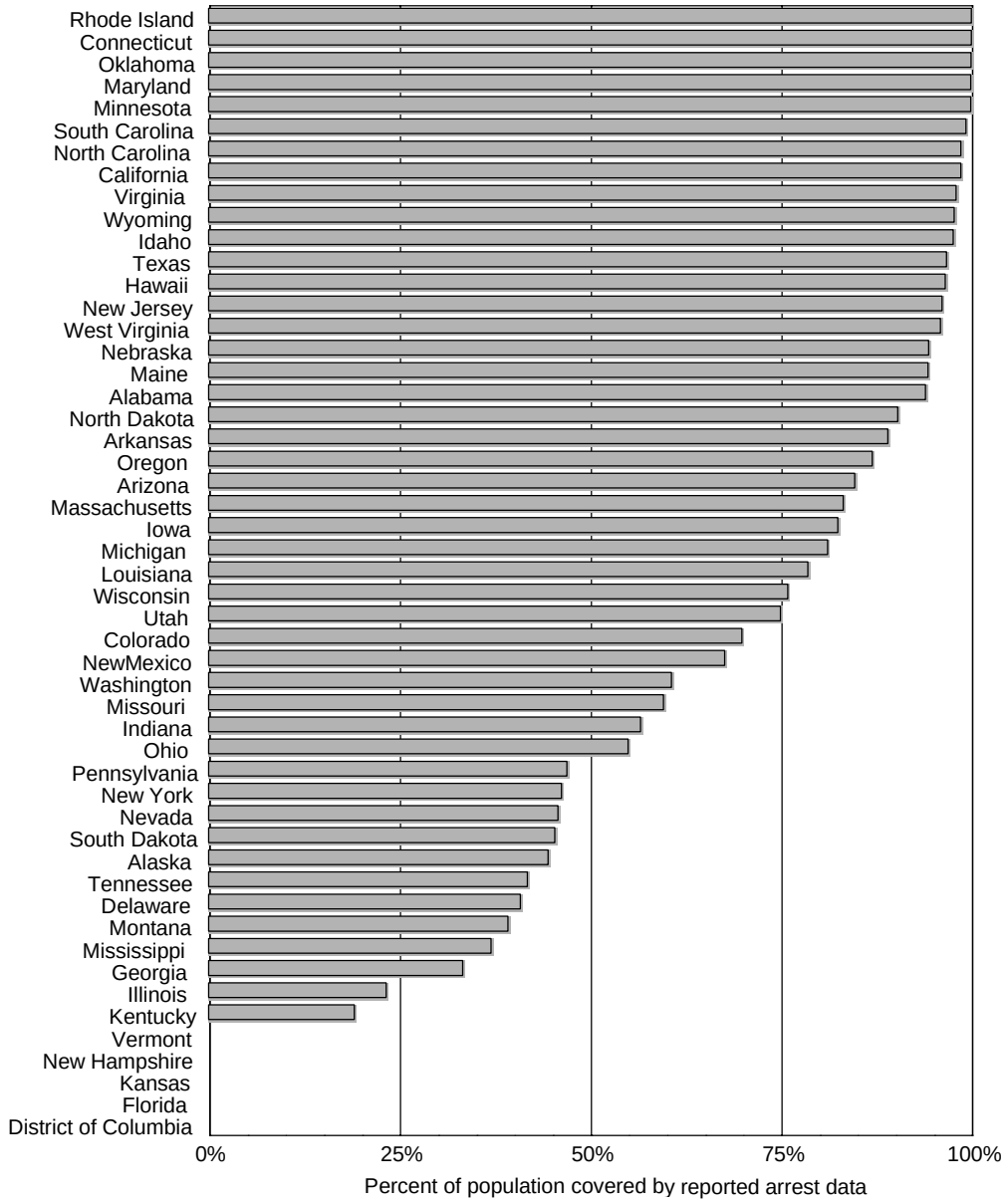


Figure 9. Percent of Population Covered in Arrest Data Reported to the FBI, 1997
Source: *CIUS, 1997*

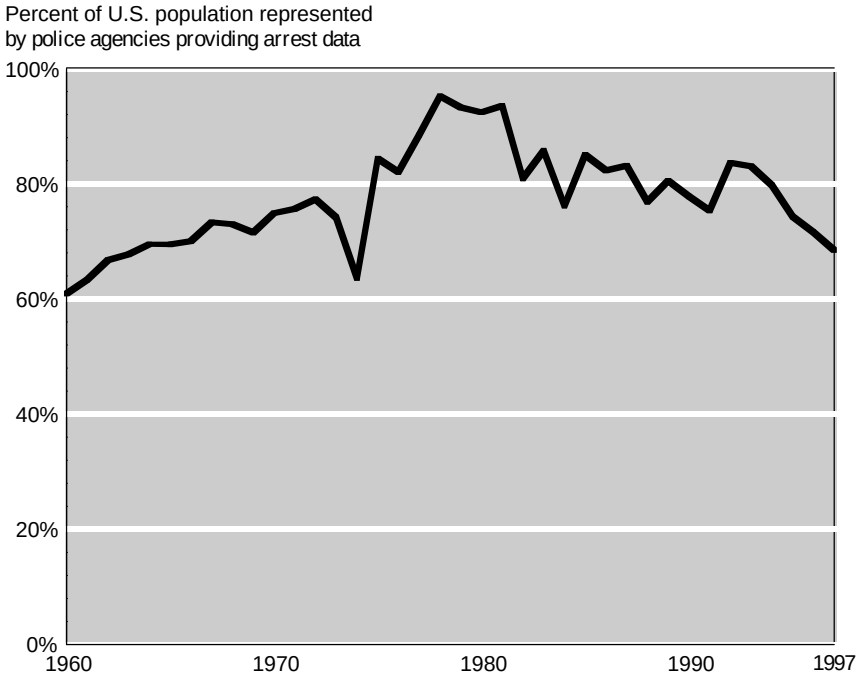


Figure 10. Percent of U.S. Population Represented by Agencies that Provide Arrest Data
Source: *CIUS, 1960-97*

CRIME BY COUNTY 1997 03/05/99 UCR55100

MO	CTY	SMA	ORI	G	AGENCY NAME	POPULA--TION	INDEX	MODI-FIED INDEX	MUR-DER	FORCI-BLE RAPE	ROB-BERY	AGGRA-VATED ASSAULT	BURG-LARY	LAR-CENY	MTR VEH THEFT	ARSON
12	001	556	AL00401	5	PRATVILLE	24,689	1,540	1,551	2	15	54	74	216	1,097	82	11
12	001	556	AL00400	9	AUTAUGA	14,534	199	200	1	2	3	14	96	70	13	1
					COUNTY TOTAL	39,223	1,739	1,751	3	17	57	88	312	1,167	95	12
12	002	547	AL00501	6	BAY MINETTE	8,655	108	108		1	6	9	21	61	10	
12	002	547	AL00502	5	FAIRHOPE	10,771	590	590	1	7	13	54	113	365	37	
12	002	547	AL00503	6	FOLEY	6,726	1,263	1,264	2	8	23	70	160	943	571	
12	002	547	AL00504	6	GULF SHORES	4,584	506	506			2	11	115	366	12	
12	002	547	AL00505	6	ROBERTDALE	3,106	124	124			1	7	25	86	5	
12	002	547	AL00508	5	DAPHNE	14,820	641	641		3	11	14	127	467	19	
12	002	547	AL00509	7	SUMMERDALE	832	81	81		1	1	3	14	59	3	
12	002	547	AL00512	6	ORANGE BEACH	2,690	295	295		3		5	65	216	6	
12	002	547	AL00500	9	BALDWIN	64,493	1,014	1,014	2	15	22	56	364	486	69	
					COUNTY TOTAL	116,677	4,622	4,623	5	38	79	229	1,004	3,049	218	
12	003		AL00601	5	EUFAULA	14,048	797		2	5	18	25	120	610	17	
12	003		AL00602	7	CLAYTON	1,635	24			1	1	7	3	8	4	
12	003		AL00604	7	LOUISVILLE	703	52				4	4	15	28	1	
12	003		AL00600	8	BARBOUR	8,621	1						1			
					COUNTY TOTAL	25,007	874	874	2	6	23	36	139	646	22	

Figure 11. Part of the Printout of the FBI's Crime-by-County File

V. Processing and Publishing the Crime Data

After the data are received by the FBI (specifically, by the Program Support Section of the Criminal Justice Information Services Division), they are stored in a data file that contains (among other data) offense data for each ORI taken from Return A (figure 7): month-by-month counts of each of the offenses listed. A computer program processes this file, in which the 12 months of data for each offense are summarized by two numbers: total for that offense and number of months reported. A page of output from one of the many programs used by the FBI to process the data is shown in Figure 11. This output file, "Crime by County," is one of the more widely distributed files. Note that—

- The ORIs are grouped by State and by county within each State.
- An ORI's population and its Standard Metropolitan Area (**SMA** — not the same codes as used by the U.S. Bureau of the Census) and population group indicators are given. (See table 2.)
- Both the total number of Index crimes and modified Index crimes (the first seven Index crimes plus arson) are given.[15]
- Although not apparent from the printout, only the reporting ORIs are included in this compilation. If an ORI does not submit any UCR data for a year, it is omitted from the data file, and its population is not included in the county total.

Table 2. FBI Classification of Population Groups

Population group	Political label	Population range
I	City	250,000 and over
II	City	100,000 to 249,999
III	City	50,000 to 99,999
IV	City	25,000 to 49,999
V	City	10,000 to 24,999
VI	City[a]	Less than 10,000
VIII (Rural County)	County[b]	. . .
IX (Suburban County)	County[b]	. . .

Note: Group VII, missing from this table, consists of cities with populations under 2,500 and universities and colleges to which no population is attributed. For compilation of CIUS, Group VII is included in Group VI.
[a]Includes universities and colleges to which no population is attributed.
[b]Includes State police to which no population is attributed.

Publishing the UCR

The deadline for submitting UCR data to the FBI is late March of the following year. Data submitted beyond this date are accepted by the FBI and incorporated in the data file until the FBI closes out the data file for that year. The date that this file is closed out is not fixed; for example, the 1997 file was not closed out until early April 1999.

The paper version of CIUS for a given year is published in the fall of the following year, usually in October or November. Between the March cutoff date and the publication date the staff of the Program Support Section perform the error checks and prepare the data for publication.

January and February are devoted to writing to the larger ORIs to verify data and/or to request missing months; listings of missing months are routinely prepared during this period. Data from agencies that do not provide 12 months of data are analyzed to identify any month(s) deviating from agency norms due to special circumstances affecting those agencies (e.g., floods, tornadoes, and fire). By early March all agencies with delinquent data have been contacted. By mid-February population estimates are calculated, based on Census Bureau data, and included in the raw data file.

By mid-April the data processing unit prepares a preliminary set of tables; this permits the Crime Analysis Research and Development Unit to begin to look for patterns in the data and draft the text and analysis for the report. In addition, the tables are sent to

[15]The arson totals provided in figure 11 are summaries of all arson on file for the respective agencies and may not be representative of the number of months reported in the MO column.

the outside contractor to format the tables for printing.

The material for CIUS is sent to an contractor in three installments. The first installment is delivered to the contractor in May. It consists chiefly of the appendixes, which have few tables and do not change much from year to year, the methodology section, and tables of law enforcement personnel, which had been collected from the ORIs in October. Over the next month the FBI corrects the proofs and returns them to the contractor twice in succession.

Installment 2, consisting chiefly of Crime Index Offenses Cleared, is sent to the contractor in early June and, as with the first installment, is proofread and returned to the contractor twice for revision over the next month.

The third installment consists primarily of tables and text on offenses and arrests, as well as the program summary (Section I) and the inclusion of some data that were omitted from sections that had been prepared earlier. For example, the schedule for the 1998 CIUS projects completion of these three installments by the end of July, and a final check of the entire report by early August.

Archiving the UCR Data File

At the request of BJS, the raw data file is provided to NACJD for archiving. The file is then restructured by NACJD and additional fields are included to make it more accessible for research purposes. In the past this restructuring has resulted in errors such as mismatched fields; consequently, the FBI cannot respond to queries about the data archived by NACJD.

The file that NACJD archives is not the one used to produce CIUS; rather, it is the updated file that contains the additional data received by the FBI after the March publication deadline. This has meant that analyses using the raw data cannot be compared to the tables in CIUS, because they are based on different data sets.

NACJD also produces county-level files from the raw data file (see Section II) which are available for downloading from NACJD (**http://www.icpsr.umich.edu/nacjd/ucr.html**) . Notes accompanying those files state that "UCR county-level files are not official FBI UCR releases and are being provided for research purposes only. Users with questions regarding these UCR county-level data files can contact the National Archive of Criminal Justice Data at ICPSR."

Thus, two sets of UCR data are made available to the public. One, published in CIUS and available through the FBI website, contains the data sent to the FBI before its publication cutoff date. The other, available through the NACJD website, contains data sent to the FBI before its data file cutoff date, which may be considerably later than the publication cutoff date. The difference between the two is usually not great, but has led to some misunderstandings.

VI. Procedures Used for Imputing Crime Data

It should be noted at the outset that the FBI does not publish or release data that include imputations below the State level. Its imputation procedures are used solely for estimating crime rates at the State and national levels. NACJD, however, does publish offense data that have been imputed at the county level. In this section we describe the imputation procedures used by both the FBI and NACJD.

FBI Imputation Procedures for Crime

Whether an ORI reports through the Summary UCR Program or through NIBRS, the FBI will still need to use imputation techniques that allow it to make reasonable estimates of crime and arrests. The imputation procedures used by the FBI for estimating crime rates are described below.

Since 1958 the FBI has used two different means of imputing crime data for a police agency.[16] If the agency reports 3 or more months, one procedure is used, while another is used when less than 3 months is reported.

Partial Use of Data. If an agency has provided reports of crime data for 3 or more months, the imputation procedure is based on those reports. The total annual crime for that jurisdiction is estimated by multiplying the reported number of crimes by 12/N, where N is the number of months for which reports exist. Thus, an agency that reports 4 months of crime data (a third of the year) would be estimated to have 12/4, or 3 times the number of crimes that it reports for that period.

Data Not Used. If an agency reports for 2 or fewer months, the number of crimes is estimated from scratch. These agencies are considered to be nonreporting agencies, and the FBI bases the imputed data for such agencies on the crime rates for the same year for similar agencies. “Similar agencies” are considered to be those in the same Population Group in the same State, but only those that provided 12 months of data. Table 2 (page 21) shows how the FBI categorizes these groups. Thus, if an agency in Alabama with a population of 150,000 reports 2 months or less of crime data in 1997, and the 1997 aggravated assault rate for Group II agencies (population between 100,000 and 249,999) in Alabama is 620.2 per 100,000, then the agency is estimated to have had 930.3 (620.2 x 150,000 / 100,000) aggravated assaults for 1997.[17]

NACJD Imputation Procedure

Every year NACJD obtains a data set from the FBI containing the raw UCR figures from the FBI, archives it, and uses it to develop a file containing crime and arrest data for each county in the US. NACJD also has to contend with missing data, in aggregating to the county level. It has used two different imputation procedures: one for the 1980-93 data sets and the other for datasets from 1994 onward.

As stated earlier, the original county-level imputation procedure was developed to be used to plot crime by county for a single year, 1980. When BJS decided to continue providing county-level data through NACJD, they continued to use the same imputation procedure, similar to the FBI procedure but with a different cut point: agencies that provided reports for 6 or more months were estimated to have 12/N crimes, where N is the number of months reported.

Those reporting less than 6 months were estimated to have the same offense rates as the rest of the *county* (*not* State and population group). If an agency with 10 percent of a county’s population provided reports for 5 months or less, then the county’s rates were used for that agency, and the estimated number of crimes for the county became C/.9, where C is the number of crimes reported by the rest of the county. However, from the 1994 data file onward

[16]Crime data are not imputed for all agencies; see “Imputation and Zero-Population Agencies.”

[17]If there are no comparable ORIs in the State, the estimate is based on the rates of occurrence in the region: New England, Middle Atlantic, East North Central, *etc.*

NACJD has used essentially the same imputation procedure as the FBI.

Coverage Factor. More recently, in consultation with BJS, NACJD began to include a new element, “coverage factor,” in its county-level data files. This factor represents the extent to which the crime and arrest figures for a county are based on real data and the extent to which they are based on imputed figures. For example, if a county with a population of 500,000 includes an agency with a population of 100,000 that reported for only 9 months (all other agencies reporting fully), then the coverage factor for that county would be 1.00 - (3/12) x (100,000/500,000) = .95, or 95 percent, because a fourth of the data are missing for 20 percent of the county population. If that agency reported for 2 months or less, then the coverage factor would be 1.00 - (12/12) x (100,000/500,000) = .80, or 80 percent, since all 12 months are considered missing. This does not correct the problems of imputation so much as it puts the users of the data on notice that the data they are using have been estimated to some degree.

Imputation Procedures for Arrests

Arrest data are missing to a much greater extent than crime data. Imputing the missing arrest figures thus becomes much more difficult. The imputation procedure used by the FBI to account for missing or late arrest data is applied to all ORIs that report fewer than 12 months of data, i.e., are not "12-months complete." It is similar to that used for crime data, with two exceptions: first, arrests are estimated only at the national level; and second, instead of basing the imputation on the arrest rates in the same population group *and* State, it is based on the arrest rates in the same population group throughout the country.

NACJD has used a similar arrest imputation procedure since the 1994 data year, except that data for the nonreporting agencies (2 or fewer months) are imputed based on the arrests rates in the same population group *and* the same State.

Imputation and “Zero-Population” Agencies

In compiling its crime and arrest statistics, the FBI tries to ensure that both the numerators (number of crimes and arrests) and denominators (number of people) are based on accurate data and estimates. This means that populations that are policed by more than one agency should be counted only once. Some jurisdictions are policed by State or county police departments, or even by other cities. For example, Chicago is in Cook County, Illinois. But the number of crimes reported by the Cook County Sheriff’s Police Department (**CCSPD**) is for the areas policed by the CCSPD, and only for those areas (both unincorporated areas and municipalities that contract with CCSPD); it does not include the crimes in Chicago or any other Cook County jurisdiction not policed by the CCSPD. Since the crime rate is the number of crimes divided by the population, the population in question should live only in the areas policed by the CCSPD.

As noted earlier (and in the footnotes to table 2), not all police agencies have populations associated with them in the UCR program. These “zero-population” agencies (transit police, park police, university police, and similar agencies) may be entirely within “primary” police jurisdictions (Groups I-VI in table 2) that already report crime to the FBI. Were these special police agencies to be associated in the UCR with the populations they serve, it would be tantamount to double-counting those populations.

When these agencies report crime data, the data are attributed to that ORI and are included in the respective counties of the agencies. When they are not reported (or are delayed in reporting, or report only partially), no imputation is made of the missing figures.

State police agencies are usually considered “zero-population” agencies because, for the most part, they police State highways and rural areas not covered by municipal agencies. When these agencies report crime or arrest data, the data are also

attributed to their ORI (for example, each State police barracks may have its own ORI) and are included in the respective counties of

1-704 (Rev. 4-24-95)
Form Approved
OMB No. 1110-000

SUPPLEMENTARY HOMICIDE REPORT

This report is authorized by law Title 28, Section 534, United States Code. While you are not required to respond, your cooperation in using this form to list data pertaining to all homicides reported on your Return A will assist the FBI in compiling comprehensive, accurate data regarding this important classification on a timely basis.

Ia. Murder and Nonnegligent Manslaughter

List below specific Information for all offenses shown in item Ia of the monthly Return A. In addition, list all Justifiable killings of felons by a citizen or by a peace officer in the line of duty. A brief explanation in the circumstances column regarding unfounded homicide offenses will aid the national Uniform Crime Reporting Program in editing the reports.

Incident	Situation*	Victim**				Offender**				Data Code		Weapon Used (Handgun, Rifle, Shotgun, Club, Poison, etc.)	Relationship of Victim to Offender (Husband, Wife, Son, Father, Acquaintance, Neighbor, Stranger, etc.)	Circumstances (Victim shot by robber, robbery victim short robber, killed by patron during barroom brawl, etc.)
		Age	Sex	Race	Ethnicity	Age	Sex	Race	Ethnicity	Do Not Write In These Spaces				

•
** - See reverse side for explanation

(DO NOT WRITE HERE)	
Recorded	
Edited	
Punched	
Verified	
Adjusted	

Month and Year _____ Agency Identifier _____ Prepared by _____ Title _____

Agency _____ State _____ Chief, Sheriff, Commissioner, superintendent _____

SUPPLEMENTARY HOMICIDE REPORT (Continued)

Ia. Manslaughter by Negligence

Do not list traffic fatalities, accidental deaths, or death due to the negligence of the victim. List below all other negligent manslaughters, regardless of prosecutive action taken.

Incident	Situation*	Victim**				Offender**				Data Code		Weapon Used (Handgun, Rifle, Shotgun, Club, Poison, etc.)	Relationship of Victim to Offender (Husband, Wife, Son, Father, Acquaintance, Neighbor, Stranger, etc.)	Circumstances (Victim shot by robber, robbery victim short robber, killed by patron during barroom brawl, etc.)
		Age	Sex	Race	Ethnicity	Age	Sex	Race	Ethnicity	Do Not Write In These Spaces				

* Situations
A - Single Victim/Single Offender
B - Single Victim/Unknown Offender or Offenders
C - Single Victim/Multiple Offenders
D - Multiple Victims/Single Offender
E - Multiple Victims/Multiple Offenders
F - Multiple Victims/Unknown Offender or Offenders

Use only one victim/offender situation code per set of information. The utilization of a new code will signify the beginning of a new murder situation.

** Age - 01 to 99. If 100 or older use 99. Newborn up to one week use NB. If over one week, but less than one year old use BB.
Use two characters only in age column.

Sex - M for Male and F for Female. Use one character only.

Race - White - W, Black B, American Indian or Alakan Native - 1, Asian or Pacific Islander - A, Unknown - U. Use only these as race designations.

Ethnicity - Hispanic Origin H, Not of Hispanic Origin - N, Unknown - U

Figure 12. Replica of *Supplementary Homicide Report Form*, pages 1 and 2

outcome of different crimes or "homicide syndromes," and analysis of homicide as a single entity can produce misleading results. The easy accessibility of the SHR data, then, has unfavorable as well as beneficial consequences.

A better way to look for patterns in homicide data is to consider the various circumstances under which homicides occur, that is, to disaggregate infanticides from felony homicides from spousal murders, and to consider the homicide rate from within the context of the underlying crime. From this type of analysis one can investigate the risk of death due to child abuse, armed robbery, or domestic violence (Maltz, 1976, 1998; Maxfield, 1989; Block and Block, 1992).

This, then is one of the great benefits of the SHR: because it provides detailed information about each homicide, it can be used to great advantage in exploring offense patterns and public policies. For example, if the risk of death due to child abuse is much higher in one jurisdiction than another, it may be that the true rates are the same but that the lower-rate jurisdiction has better child abuse reporting practices.

Incomplete Provision of SHR Data by Police Departments

The SHR has a number of shortcomings, in particular with respect to incomplete data. There are three ways in which SHR data may be incomplete. First, not all homicides reported on the UCR are reported on the SHR form. Second, some agencies do not include all the information about offender characteristics or motivations that is available to them. Third, even when the information is complete it may be wrong, because offender-victim relationship is given instead of victim-offender relationship or because the same relationship is given for all victims and/or offenders in an incident with more than one victim and/or offender.

The FBI tries to ensure that all homicides reported on the UCR are reported in the SHR as well, by specifically requesting this information from jurisdictions for each UCR-reported homicide. The FBI doesn't always obtain it, but the SHR/UCR ratio has run between 86 percent and 96 percent between 1980 and 1994 (Snyder, 1996: 10-11).

Incomplete reporting of SHR data is a greater problem. For example, the data element "Circumstance" reflects the nature of the homicide as far as it can be determined. See table 3. Yet, the number of homicides with unknown circumstances varies considerably from agency to agency, indicating that departmental policy more than knowledge of the circumstances governs the information collected by the SHR.

There may be a number of reasons for agencies not providing complete information. First, the information may not be readily available initially, when the officer first completes the agency's homicide report – and it may be this initial form that is used to

Table 3. Circumstances under Which Homicide Occurred

Circumstances coded in SHR records

2	Rape	32	Abortion	60	Other
3	Robbery	40	Lover's triangle	50	Victim shot in hunting accident
5	Burglary	41	Child killed by babysitter	51	Gun-cleaning death not self-inflicted
6	Larceny	42	Brawl due to influence of alcohol		
7	Motor vehicle theft	43	Brawl due to influence of narcotics	52	Children playing with guns
9	Arson	44	Argument over money or property	53	Other negligent handling of gun
10	Prostitution and commercialized vice	45	Other arguments	59	All other negligent manslaughter except traffic death
17	Other sex offense	46	Gangland killing	70	Suspected felony-type
18	Narcotics and drug laws	47	Juvenile gang killing	80	Felon killed by police
19	Gambling	48	Institutional killing	81	Felon killed by private citizen
26	Other felony-type not specified	49	Sniper attack		

Source: Fox, 1997

complete the SHR form. There are strong indications that the Washington, DC, Metropolitan Police Department may fill the form out based on this preliminary report – for example, in 1994 the offenders in 96 percent of homicides were listed as of unknown age (this was used as a proxy for "offender unknown"). Although this is the most extreme example of inadequate data collection efforts, figure 13 on page 35 (based on data from Snyder, 1996) shows that Washington is far from alone.

Second, some departments may downplay the utility of such information and give it low priority, since it is a voluntary collection system. Thus, the goal of obtaining complete information for crime prevention purposes too often takes a back seat to reducing the paperwork burden for a police department.

Third, one city (Boston) does not provide information about the offender or his/her possible motivation "in order to prevent creating documentation that would be discoverable and of potential use to the defense at trial" (Braga, Piehl and Kennedy, 1997).[19]

Fourth, there is a great deal of variability from city to city in the diligence with which the SHR information is provided. During the 1997 workshop it was mentioned that one city (Washington, DC) rarely records drug involvement in homicides, while in another city (Detroit) almost every homicide is recorded as drug-involved — when the actual truth for both cities is somewhere in between.

Moreover, incompleteness in SHR reporting also reflects the coding procedures established by the FBI to collect the data. The codebook (Fox, 1996) for the SHR data gives an example: "[T]he structure of the data collection forms prescribes that the relationship of the offender to the first victim (often chosen arbitrarily) be coded for this offender. Thus, for example, in 1977 a Redondo Beach, California, woman killed her husband and three step-children by burning down the family home. Appropriately in this case, the weapon was coded a ‘fire’ for all four victims, but the relationship of victim to offender was coded as ‘step-daughter’ for all victims — two 8-year-old white females, a 7-year-old white male, and a 40-year-old white male." That is, the FBI strips the relationship data that may be provided to the FBI and uses only one relationship to characterize the entire incident.

This problem does not affect most homicides, however, since the great majority of homicides consist of one victim and one offender.

Updating SHR Files

SHR files are updated when additional information is provided by police departments. It should be understood that *the SHR file* is updated, but *individual records* are not updated. For example, an accidental death may be reclassified as a homicide, and consequently is sent in to the FBI for inclusion in the SHR file; it is in this way that the SHR file is updated.

However, if police submit an SHR record to the FBI with a homicide whose offender was classified as unknown, and subsequently learn of the identity of the offender (the Unabomber or Theodore Kasczinski case is exemplary), the records of those homicides are not changed. The FBI cannot revisit old records because no unique index code is included in the SHR file that would permit them to identify specific homicides.

This problem will diminish when NIBRS is implemented, since each incident will have a unique identifier, permitting true

[19] I suspect that this policy was instituted after the information was used successfully in acquitting a defendant; I also suspect that a less drastic step could have been taken. In any event, this problem may be mooted by NIBRS, which allows a window of 2 years in which to update an incident with additional information.

updating for 2 years after the incident. Insofar as police departments adopt NIBRS and adhere to its requirements, it will be possible to truly update the incident files as more information about incidents develops.

Availability of SHR Data Sets

The FBI makes the data files available to BJS, and the files are then restructured, reformatted, cleaned, and given wider

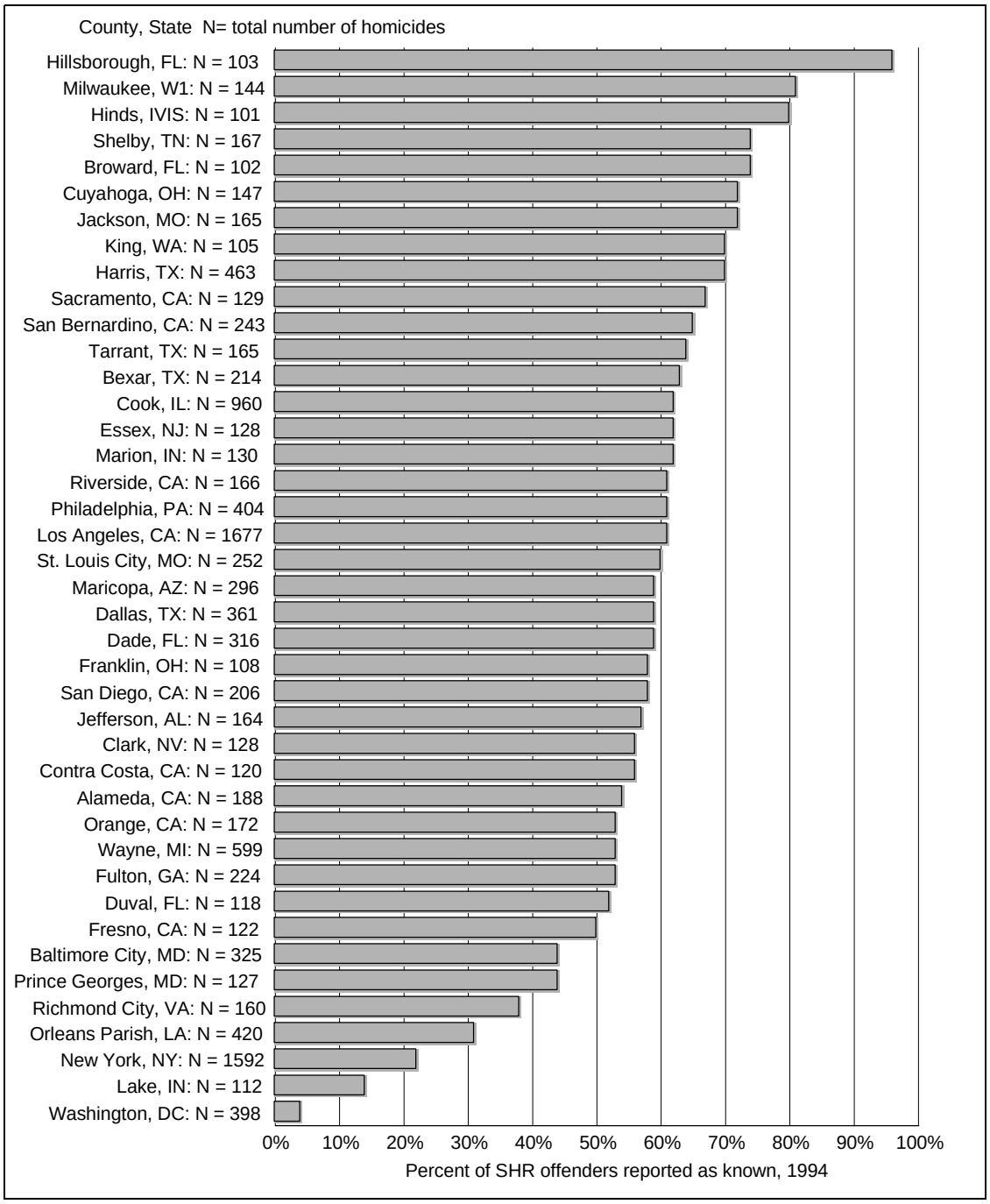


Figure 13. Percent of Offenders with Known Ages (as Proxy for Known Offenders) in SHR Data in Counties with More than 100 Homicides in 1994
Source: Snyder, 1997

accessibility through the NACJD website (at **http://icpsr.umich.edu/nacjd/ucr.html**). Each record can contain information on up to 11 victims and offenders; since most homicides are one-victim/one-offender homicides, this makes each year's file much larger than it need be and consequently more difficult to analyze. In addition, there is a separate file for each year, so these datasets need to be combined to perform any multi-year analyses.

For this reason, BJS and the National Institute of Justice funded an effort to make the SHR data more accessible, resulting in a multi-year SHR data set, 1976-94 (Fox, 1996). Included in the restructured file are weights that take into account missing offender data according to their age, race, and sex, at both the State and Federal levels. Manslaughters by negligence and justifiable homicides are not included in the data set.

There are problems in dealing with multiple victims and offenders in a single data set, in a way that keeps the victim-offender relationships intact without having to carry along (mostly empty) space for 11 victims and offenders. The way it is handled in the 1976-94 dataset is to create a different record for each victim-offender pair. That is, an incident with four victims and two offenders would have eight records, each record corresponding to a different victim-offender pair.

Multi-year SHR data sets from 1976-97 will soon be available at NACJD, which handle multiple victims and offenders in a different manner. Two separate data sets are generated from the FBI data files, a victim data set and an offender data set. The *victim data set* contains a separate record for each victim; if a single homicide incident includes four victims and two offenders, four records are created — one for each victim — and the offender data included on those four records are the characteristics of the first offender. To describe the same incident, the *offender data set* would include two records, one for each offender, and the victim data included on those two records are the characteristics of the first victim.

SHR Imputation

The first point to be made about imputation of the SHR is that *the FBI does not impute SHR data*. However, the victim and offender data sets for the combined 1976-97 SHR data, to be provided at NACJD, do include imputation procedures. The imputation procedures incorporated in these data sets are not the only ones that have been used for SHR data, but because they are used on the most complete SHR data sets (1976-97) — and the ones most likely to be used in the future — their characteristics are described below.

Two different kinds of imputation are used in the (to-be) archived multi-year SHR data set. The first one is used to reconcile the count of SHR homicide victims with the count in CIUS. The second imputation procedure is used to estimate the characteristics of offenders in incidents in which there is no information about the offender. In both types of imputation weights are assigned to each case. The best way to explain these imputation procedures and their use is to discuss each type of weight given in the SHR file.

Weighting the Victim File

The number of records in the victim file is the count of SHR homicides. As noted earlier, this number is often not the same as the count of UCR homicides, both nationally and at the State level. Two of the weights included in the victim file are used to reconcile these two numbers.

Table 4. Victim Imputation in the SHR

Year	UCR total	SHR total	UCR/ SHR ratio	SHR age 5 or under	Estimated UCR age 5 or under
1976	18,780	16,605	1.13	519	587
1977	19,120	18,032	1.06	548	581
Victims under age 5 —					
SHR percent increase					5.6%
Estimated UCR percent increase					-1.0%

Weight ***wtus***. This weight is the same for all cases for a given year. The weight represents the ratio of the number of homicides reported in CIUS to the number reported in the SHR. Thus, since the UCR reported 18,780 homicides and the SHR reported 16,605 homicides for 1976, the weighting factor *wtus* is 1.13 (18,870/16,605) for 1976. It is used in the following way: suppose one wants to estimate the number of homicide victims under 6 years of age. The UCR does not detail this information, but we can estimate the number by extrapolating from the known SHR cases to the UCR cases. In 1976 the SHR recorded 519 such cases, so the 1976 estimate would be (1.13 x 519 =) 587 victims under age 6. This would permit us to compare 1976 data with data from another year, in which a different weighting factor is used. For example, in 1977, 548 such cases were recorded in the SHR, representing a 6% increase over the 519 in 1976. However, *wtus* for 1977 was 1.06 (19,120 UCR homicides versus 18,032 SHR homicides), so we estimate that there actually were 581 such victims; this represents a 1% *decrease* from the 1976 estimate of 586.[20]

Weight ***wtst***. This weight is the same for all cases in a State. The weight represents the ratio of the number of homicides reported *by the State* in CIUS to the number reported In the SHR. Thus, the weighting factor *wtst* of 1.17 for Alabama's 453 SHR-recorded homicides for 1976 indicates that Alabama experienced (1.17 x 453 =) 530 homicides in 1976. For Alaska, however, *wtst* was 1.0 for all of the 43 homicides, indicating that the UCR and SHR reported the same number of homicides. In 1977 the values of *wtst* for Alabama and Alaska were 1.06 and 0.96, respectively, so the SHR counts of 487 and 46 indicate that these States had (1.06 x 487 =) 516 and (0.96 x 46 =) 44 UCR-reported homicides, respectively.[21]

Weighting the Offender File

There are three weights in the offender file. Just as the weights in the victim file are meant to provide a better estimate of the number of homicide *victims*, the weights in the offender file are meant to provide a better estimate of the number of homicide *offenders*. Whereas the victim file weights are used to fill in for *missing records*, the offender file weights are used to fill in for *missing data within records*, that is, for cases where the identity and characteristics of the offender are unknown.

Weight ***wtimp****.* This weight imputes, for the Nation at large, the number of offenders by age/race/sex category. Suppose that there are 500 victims in a specific age/sex/race category, and 400 of them are killed by known offenders. Then *wtimp* would equal 1.25 because the unknown offenders are presumed to have the same age/sex/race characteristics as the known offenders. For example, suppose that 25 percent of them (or 100) are killed by white males ages 15-24. Then we would estimate that 25 of the victims of *unknown* offenders are also killed by white males ages 15-24.

Weights ***wtimpus*** *and* ***wtimpst***. In order to take into account the cases that are reported to the UCR but not included in the SHR, we can estimate the total number of white male offenders ages 15-24 in the United States, by multiplying *wtimp* by the aforemen-

[20]These examples are given for illustrative purposes only. A better way of estimating year-to-year change is to obtain the rate, by dividing the estimates by the estimated population under 6 in each year.

[21]There may be more SHR homicides than UCR classifications due to crime reclassification across years. For example, perhaps two shooting victims in Alaska in incidents classified as aggravated assaults in 1976 died in 1977.

tioned *wtus*. If the latter is 1.13, as in the earlier example, the value of the weight *wtimpus* would be (1.13 * 1.25 =) 1.41. Similarly, if we wanted to estimate the number of such offenders in Alabama, we would weight each homicide committed by a 15- to 24-year-old white male by (1.17*1.25 =) 1.46, the value of *wtimpst* for Alabama.

Problems with this SHR Imputation Procedure

Since there are two different weighting schemes, for the victim and offender data sets respectively, the inaccuracies that arise from their application need to be considered separately.

Victim File. The weights *wtus* and *wtst* are applied to reconcile the number of homicides recorded in the UCR and SHR, at the national or State levels, respectively. When there is a discrepancy between the two, the UCR is usually (but not always) the larger of the two, so these weights are usually larger than 1. There may be a number of reasons for the discrepancy.

• There may be clerical errors in an agency's submission of either Return A or the SHR form. For example, some homicides that were reported to the UCR may have "slipped through the cracks" when an agency filled out the SHR form, or perhaps because the agency did not fill the form out at all. If the former is true, then the agency is likely to be a larger police department with many cases to report; if the latter is true, then the agency is likely to be a rural department that does not report homicides very often.

• Part of the discrepancy may be due to date slippage, as when a person is injured in one calendar year and succumbs to these injuries in another year. In such cases, the homicide may not be reported on the SHR form, especially if agency practice is to fill it out at the time of the offense.

In any case, assuming that the missing homicides generally have the same characteristics as the reported ones (which this weighting scheme implies) may be in error. The error attributable to this, however, is likely to be small, since the concordance between the two data sets is usually fairly high (Chilton and Jarvis, 1999).

Offender File. The weights *wtimp*, *wtimpus,* and *wtimpst* estimate the number of offenders in cases where the offenders are unknown. However, there is a problem in assuming that the best means of estimating offender characteristics is to predicate the estimation on the age, race, and sex of the victims. For example, suppose that most 45-year-old women are killed by their mates, i.e., by 40- to 49-year-old white males. However, if a 45-year-old female clerk at a convenience store is killed by an unknown assailant, not by her husband, there should be some way of including this in the imputation equation. In other words, the circumstance of the killing (which is included in the SHR record) is probably a better indicator of offender characteristics than a rule that does not include this information. Williams and Flewelling (1987) used this imputation method; however, Langford, Isaac, and Kabat (1998) describe some limitations to using circumstance for imputation purposes.

An indication of the problem with this type of imputation is made clear when investigating the distribution of unknown homicides within a State. Between 1976 and 1996 Richmond accounted for 18 percent of Virginia's homicides but 41 percent of its homicides by unknown assailants; Atlanta accounted for 29 percent of Georgia's homicides but 49 percent of its unknowns; and Indianapolis accounted for 21 percent of Indiana's homicides and 35 percent of its unknowns.[22] So making the assumption that the unknown assailants have the same characteristics as the known offenders is questionable.

[22]These figures are based on an analysis by the author.

More to the point, the very fact that the assailant is unknown often means that the type of homicide is quite different than those in which the assailant is known. Studies in Chicago and Boston confirm this assertion. Block (1998) compared 1993-94 Chicago homicides found in the SHR data with those in the Chicago Homicide Dataset (**CHD**), perhaps the most complete homicide dataset in the country. Her data show that about 10 percent of the CHD incidents had unknown offenders in the SHR data, but that it varied from around 30 percent (for sexual assault) to under 4 percent (when firearms were used).

Braga et al. (1997) compared Boston SHR data for 1990-94, for victims 21 or under (N = 155), with data they had collected for this population in conjunction with the Boston Gun Project (**BGP** — see Kennedy, Piehl, and Braga, 1996), a program to reduce youth gun violence. Since the BGP data were collected well after the events, they were much more detailed than the SHR data, especially considering the concerns of the Boston homicide detectives (see page 34 above). Thus, it was not surprising to find that, while the SHR data listed 65 percent as with unknown circumstances (and 79 percent with unknown victim-offender relationship), the BGP data had only 30 percent – less than half as many – with unknown circumstances and 40 percent – again about half as many – with unknown victim-offender relationship.

Although neither city is representative of the Nation as a whole, what these studies point out is that the unknown offenders are not necessarily representative of the knowns. This may be due to the fact that homicide is not a specific crime like robbery. Rather, as mentioned earlier, it is the *fatal outcome* of a lot of different crimes: intimate partner violence, armed robbery, child abuse, etc. The imputation rule used in the SHR offender file implicitly assumes that they are all of the same general nature, which is not the case; moreover, the information included in the SHR file is specifically included so that different types of homicides can be distinguished from each other, and an imputation rule for the SHR should take this information into account.

Suggested Alternative SHR Imputation Procedure

A homicide's *circumstance* (see table 3), rather than the victim's characteristics, would seem to be a more appropriate indicator of the characteristics of the offender. No matter what the age, race, and sex of the victim, if the homicide arose during the course of a robbery the characteristics of the offender would probably resemble other robbery-homicide offenders more than they would any other class of offender. To some extent, this suggestion takes the SHR reporting practices of some agencies into account: even though Washington, DC, reported that 94 percent of the 473 homicides had unknown offenders, the circumstances were listed as unknown in only 50 percent of the cases.

However, this suggestion should be considered carefully. Maxfield (1989) noted the lack of consistency among agencies in coding homicide circumstance. Because of its importance, imputation of homicide offenders is a topic that should not be undertaken lightly. In the aggregate it may not amount to much, but as we begin to go beyond looking only at aggregate rates and investigating small subgroups it takes on more importance.

Newspapers report not just on State-by-State homicide rates, but on offense rates, by State, by age group, by weapon, and the rates inferred by imputation may be seriously in error, as suggested by the Boston and Chicago studies. Granted, the "unknown" offenders in Boston and Chicago do not represent unknown offenders in the rest of the United States; these cities were chosen because of the availability of good data; in both cities homicide detectives and researchers have formed a strong working relationship. Rather, as noted earlier, despite their lack of representativeness, these studies do provide a benchmark against which to test different imputation procedures. Only through research like this can we find the extent to which our view of crime is distorted by incomplete and inaccurate data.

X. Conclusions and Recommendations

Reporting Practices

The primary focus of this report has been to understand, and make suggestions for improving, how the FBI collects and analyzes crime and arrest data that are subsequently published in CIUS. Along the way, however, one could not help but notice the recent decline in the quality and quantity of the data submitted by State and local agencies to the FBI. This trend compromises the quality of information we have about the nature and extent of crime in the United States. I hope that this report serves as an impetus to improve the completeness and accuracy of crime and arrest data.

One State, Illinois, sends data to the UCR program that do not adhere to UCR reporting standards with regard to the hierarchy rule (see page 14). This occurred for the best of reasons: in 1992 Illinois embarked on an ambitious effort to implement NIBRS statewide, but the complexities were too great, and the effort was suspended in 1994. Beginning with 1993 data and continuing to the present, Illinois has submitted only summary UCR data, but without applying the hierarchy rule, so that incidents with multiple offenses may be counted more than once.

In addition, since 1984 Illinois statutes have defined forcible sexual assault without reference to gender. This is not compatible with UCR standards. Because of this incompatibility, the UCR does not include Illinois data on rape. Illinois, one of the most populous States (and my home State), should be encouraged to change the reporting practices that have kept it from contributing to the UCR in the recent past.

Although this issue was not addressed in the report, and is somewhat beyond its scope, the absence of crime and arrest data from Federal agencies distorts the picture we have of crime in the United States. The recent report detailing the high rate of victimization of American Indians (Greenfeld and Smith, 1999) serves to underscore this deficiency in our crime statistics: insofar as UCR data are used to allocate resources, this would affect the extent to which enforcement resources for American Indians are provided.

Publishing and Archiving

It is a tribute to the diligence and dedication of the FBI's Program Support Section staff that there are so few errors in a report so filled with numerical data as CIUS; one cannot just run a spell-checking program to see if errors have been made in the manual transcription of numbers from one medium to another. However, it is a waste of personnel time to use a process that requires so much staff time to proofread numerical data. The tables were initially produced by a computer that could, with relatively little additional funding and effort (and that only for the first year) be set up to produce camera-ready output.

This added technology would not only remove an unneeded burden from the PSS staff, but it has the promise of reducing the time taken to produce CIUS by a matter of some weeks, perhaps even months. This extra time could be put to use at either end of the report production process: ORIs and States could be given more time to transmit their data to the FBI, which may become increasingly important as more agencies convert to NIBRS; and/or the report could be published earlier in the year. It should be noted that two other annual reports, *Hate Crime* and *Law Enforcement Officers Killed and Assaulted*, are published directly by the PSS staff; the FBI should consider direct publication for CIUS as well.

If it is possible for the FBI to do so, BJS should request the FBI to "freeze" the version of the raw data set that is used to produce CIUS, and send it to NACJD for archiving, as well as the final version of that data file. This will permit researchers to perform data analyses that are consistent with CIUS and/or use the most current data to provide more complete analyses.

Imputation

As this report details, imputation of crime and arrest data has been based on ad hoc procedures that were appropriate at the time they were made and for the uses to which they were originally put. Now that UCR data are being used for different purposes, new methods of imputing data need to be considered. This report describes some reasonable candidates, but these should not be applied without setting up an evaluation program to determine whether they actually provide improved estimates. This is true for all data sets in which imputation is being used: crime, arrest, and SHR data. One area where some experimentation might be helpful is to determine where the cutoff threshold should be before an ORI's data are sufficient to be included without full imputation, the 3 months used by FBI or the 6 months previously used by NACJD. Among the possible ways of performing these experiments are:

- Analyze nonreporting agencies' submissions to their municipal governments to see to what extent the imputation procedure is valid.

- Develop different categories of nonreporting ORIs and randomly select a number of full reporters from each category; apply an imputation method and see how closely the imputed data comes to the actual data.

- Do the same with incomplete-reporting ORIs.

The data from so-called "zero-population" agencies should also be imputed. The exact means of doing so should probably depend in part on the nature of the jurisdiction: the procedure for imputing a State police agency's data should not be the same as for a university police department.

NIBRS

NIBRS represents a major increase in the amount of data to be collected by local agencies and forwarded to the FBI. A number of States have implemented NIBRS successfully in essentially all their reporting agencies; however, others have had software and other problems that have not only prevented NIBRS from being fully implemented, but they have been unable to send even the summary UCR data to the FBI.

Some police administrators have complained about NIBRS and the level of detail it entails. However, its implementation is in part a recognition that if the focus of policing is to be more than just "catching the bad guys," and to deal with public safety more generally, then the police need to be concerned with analyzing crime for patterns that go beyond the *modus operandi* of individual offenders. Such a pattern may suggest, for example, that a new domestic violence or after-school program might reduce certain types of offenses. Implementing NIBRS will give us the ability to compare the effectiveness of such programs in different jurisdictions with different populations. A recent FBI report, *The Structure of Family Violence* (found on the FBI's website at **www.fbi.gov/ucr.htm/famvio21.pdf**), gives some indication of the way NIBRS data can be used for this purpose.

As I mentioned in the beginning of this report, my goal (and the goal of those who attended the workshop) has been to suggest some ideas for consideration in revising the FBI's Uniform Crime Reporting Program. While not all of the suggestions may be feasible to implement at this time, I hope that this report lays the groundwork for improving our knowledge of the nature and extent of crime in the United States, one of the more pressing social problems confronting the Nation.

Appendix A:
Persons Attending the Workshop on UCR Imputation Procedures

US Department of Justice Participants:

Bureau of Justice Assistance
Richard Ward

Bureau of Justice Statistics
Jan Chaiken
Lawrence Greenfeld
Charles Kindermann
Patrick Langan
Sue Lindgren
Michael Rand
Bruce Taylor
Marianne Zawitz

Criminal Division
Julie Samuels
Steven Shandy

Federal Bureau of Investigation
Yoshio Akiyama
Ben Brewer
Gilford Gee
Antonio Hwang
John Jarvis
Dawn Kording
Victoria Major
James Nolan
Sharon Propheter

National Institute of Justice
Jordan Leiter

Office of Juvenile Justice and Delinquency Prevention
Barbara Allen-Hagen

Other Participants:

American University
James Lynch

Inter-University Consortium for Political and Social Research
Nora Arato
Christopher Dunn
Christopher Lysholm
Kaye Marz

Massachusetts State Police
Daniel Bibel

National Center for Juvenile Justice
Howard Snyder

Northeastern University
James Fox

Research Triangle Institute
Robert Flewelling

Rutgers University
Michael Maxfield

Project SEARCH
David Roberts

University of Illinois at Chicago
Michael Maltz

University of Massachusetts, Amherst
Roland Chilton

Appendix B:
State On-Line Publication of Crime Data

			Data reported on website				
			Crime		Law enforcement		
State	UCR	Crime trends	Hate/ bias	Arrests	Officers killed/ assaulted	Personnel	Website URL
Alabama	97	93-97		■	■	■	http://agencies.state.al.us/ acjis/pages/alacrime.htm
Arkansas	95-96	97-98		■	■	■	http://www.acic.org/ statistics.htm
California	96-97		■	■	■	■	http://caag.state.ca.us/cjsc/ pubsol.htm
Colorado	80-96						http://www.state.co.us/gov/ dir/cdps/dci/ors/stats.htm
Connecticut	96-97						http://www.state.ct.us/dps/ CT-UCR.htm
Florida	97	96-97		■			http://www.fdle.state.fl.us/ Crime_Statistics
Georgia	98	85, 95-96		■			http://www.ganet.org/gbi/ stcrime.html
Hawaii	83-97	92-97		■	■	■	http://www.cpja.ag.state.hi.us/rs/
Illinois	94-97	93-97	■	■	■	■	http://www.state.il.us/isp/ cii00001.htm
Iowa	96			■	■	■	http://www.state.ia.us/ government/dps/crime/stats/
Kentucky	95-96			■	■	■	http://www.state.ky.us/ agencies/ksp/crime.htm
Massachusetts	95						http://www.magnet.state.ma.us/ msp/crimedat.htm#Taunton
Michigan	97	88-97	■	■	■	■	http://www.state.mi.us/msp/ crd/ucr/contents.htm
Minnesota	95-96						http://www.dps.state.mn.us/bca
Nebraska	93-95						http://www.info.ded.state.ne.us/ stathand/contents.htm
New Hampshire	97						http://www.state.nh.us/nhsp/
New Jersey	93-97	88-97	■	■	■		http://www.state.nj.us/lps/ njsp/stats.html
New York		90-96		■			http://criminaljustice.state. ny.us/crimnet/pubs.htm
North Carolina	93-98	78-97	■	■		■	http://sbi.jus.state.nc.us/crimstat/ nccrime.htm
Ohio	80-96	80-96					http://www.ocjs.state.oh.us/
Pennsylvania	76-96			■			http://www.state.pa.us/PA_Exec/ PCCD/stats/factsheets/ statspag.htm
Utah	96		■	■	■		http://www.ps.ex.state.ut.us/
Vermont	97			■		■	http://www.dps.state.vt.us/ cjs/crimestats.htm
Virginia	97	96-97		■	■	■	http://www.state.va.us/vsp/ zucr1.html

Appendix C:
Characteristics of State UCR Collection Programs

State	Problems with UCR				Statutes and consequences of failure to report				State contact
	Soft-ware	Change to NIBRS	Local agencies	Manpower and training	Statute	Penalty	Grants may be delayed	Vigorous reminding only	
Alabama	X				Y	N	Y		Therese Ford 334-242-4900
Alaska					Y	N			Kathleen Mather 907-269-5701
Arizona	X		X	X	Y	N		Y	Lynn Allmann 602-223-2263
Arkansas					Y	Y			Gwen Ervin-McLarty 501-682-7421
California	X				Y	N			Steve Galeria 916-227-3470
Colorado					Y	N		Y	Jennie Rylands 303-239-4222
Connecticut					Y	N			William Lopez 860-685-8030
Delaware		X			Y			Y*	Connie Moore 302-739-5876
Florida				X	Y			Y	Matthew Finn 850-410-7140
Georgia		X			Y			Y	Michelle Johnson 404-559-4949
Hawaii					N			Y	Paul Perrone 808-586-1500
Idaho					Y	N		Y	Robin Elson 208-884-7156
Illinois		X			Y	N		Y	Mark Myrent 312-793-8550
Indiana		No State-level program							Robert Omstead 317-232-8265
Iowa					Y				Martha Coco 515-281-8494
Kansas	X	X		X	Y	Y			Mary Ann Howerton 785-296-8277
Kentucky					Y	N		Y	Alice Strange 502-227-8700
Louisiana					Y		Y		Rachel Christ 504-383-8342
Maine					Y	N			Robert Ducasse 207-624-7003
Maryland					N				Ida Williams 410-298-3444
Massachusetts					N			Y	Dan Bibel 508-820-2111
Michigan		X			Y	N			Beth Huebner 517-353-4515
Minnesota					Y	N		Y	Kathy Leatherman 612-603-0121
Mississippi		No State-level program							Ron Sennett 601-359-7880
Missouri		No State-level program							Martin Carso 573-751-3313
Montana							Y		Thomas Murphy 406-444-4298
Nebraska		X			Y	Y			Marilyn Keelan 402-471-2194
Nevada					Y	N		Y	Mark Cameron 702-687-3342
New Hampshire	X		X		N			Y	Karen Lamb 603-271-2509
New Jersey	X							Y	Lt. John Burke 609-882-2000, x2392
New Mexico		No longer has a State-level program							Robert Hyde 505-277-4257

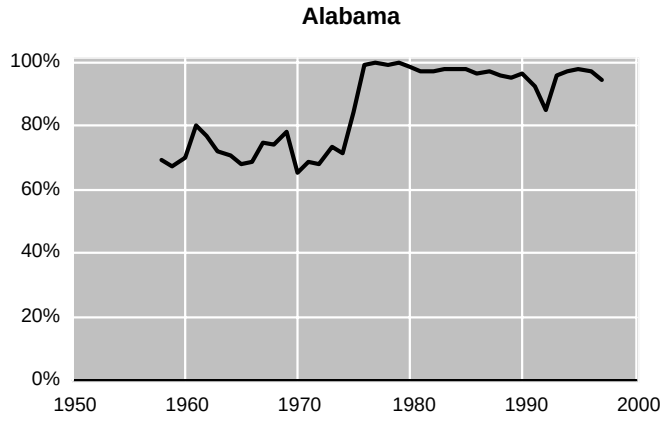
State	Problems with UCR				Statutes and consequences of failure to report				State contact
	Soft-ware	Change to NIBRS	Local agencies	Manpower and training	Statute	Penalty	Grants may be delayed	Vigorous reminding only	
New York			X		Y	Y			Robert Giblin 518-457-8381
North Carolina		X	X		Y			Y	Doug Yearwood 919-571-4736
North Dakota	X	X			N				Judy Volk 701-328-5500
Ohio	No longer has a State-level program								Melissa Winesburg 614-466-7782
Oklahoma					Y		Y		Freda Atkinson 405-879-2533
Oregon					Y	N	Y		Ray Spooner 503-378-3057
Pennsylvania					N				Carey Robinson 717-772-4888
Rhode Island					Y	N		Y	Linda Fracolla 401-444-1121
South Carolina					Y	N			Jerry Hamby 803-896-7016
South Dakota		X			Y	Y			Kari Stulken 605-773-6312
Tennessee	No longer has a State-level program								Jacqueline Vandercook 615-741-0430
Texas					Y	N	Y		Lori Kirk 512-424-2091
Utah			X	X	Y	N			Nannette Rofle 801-965-4571
Virginia					Y		Y		Donald Faggiani 804-371-2371
Vermont		X			Y	Y		Y	Max Schlueter 802-244-8727, x 5220
Washington	X			X	N				Beverly Hempleman 360-902-0594
West Virginia		X			Y	Y			Sgt. S. G. Midkiff 304-746-2159
Wisconsin					Y		Y		Tom Eversen 608-266 7644
Wyoming					Y	N		Y	Richard Russell 307-777-7625

*Delaware may audit an agency that fails to report UCR data.

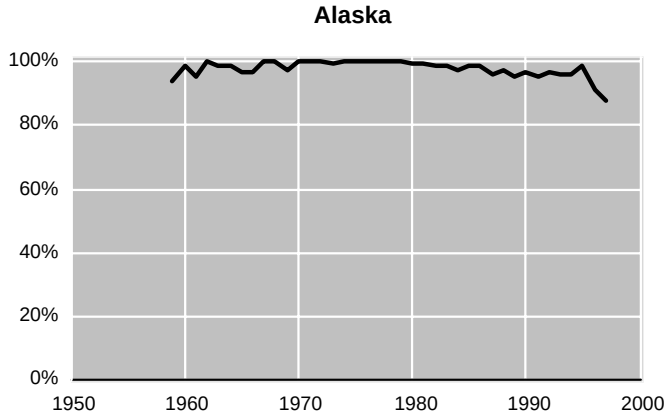
Appendix D:
Extent of UCR Data Coverage, Alabama - Wyoming, 1958-97

Percent of population represented by UCR

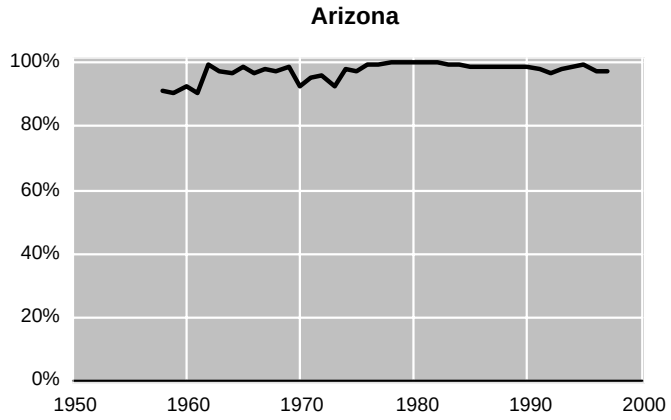
The population represented by Alabama's UCR data apparently shows an effect of LEAA funding in the mid-1970's.



Alaska's UCR reporting has been fairly strong but has fallen during the last few years.



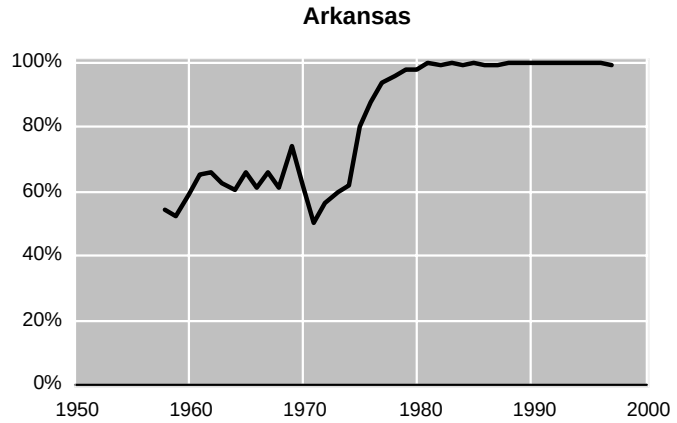
Arizona's UCR reporting has been consistently strong.



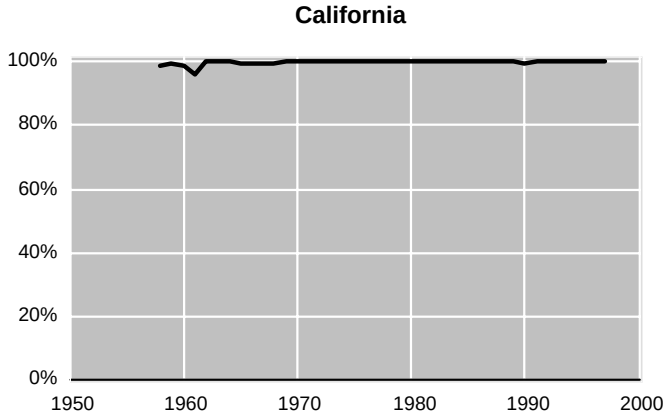
Note on sources: Data for these figures are from CIUS, 1958-97. The District of Columbia is not included because it consists of only one jurisdiction reporting 100% of its UCR data to the FBI since 1980.

Percent of population represented by UCR

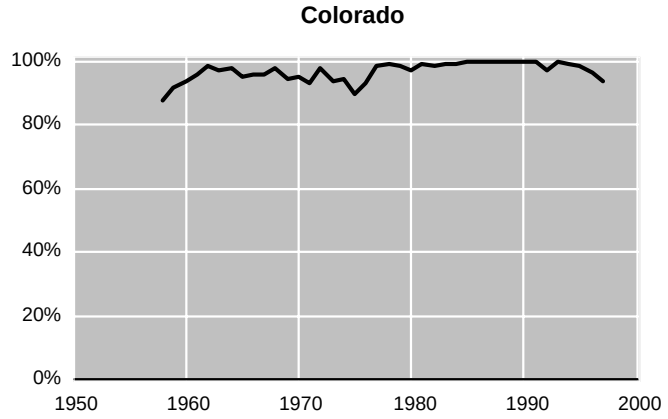
Arkansas' UCR reporting apparently shows the effect of LEAA funding in the mid-1970's.



California's UCR reporting has been consistently strong.

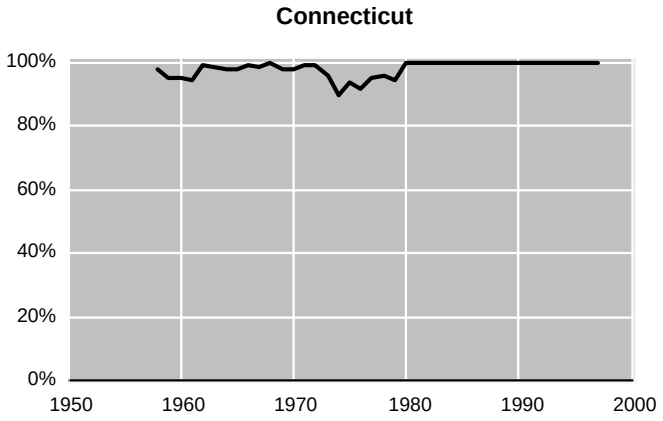


Colorado's UCR reporting has been fairly strong but has fallen slightly during the last few years.

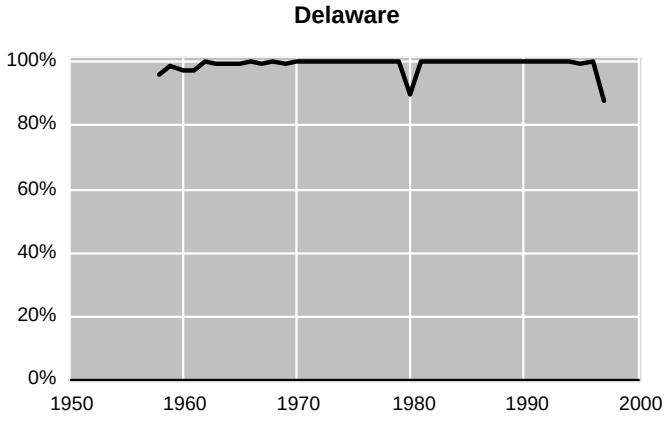


Percent of population represented by UCR

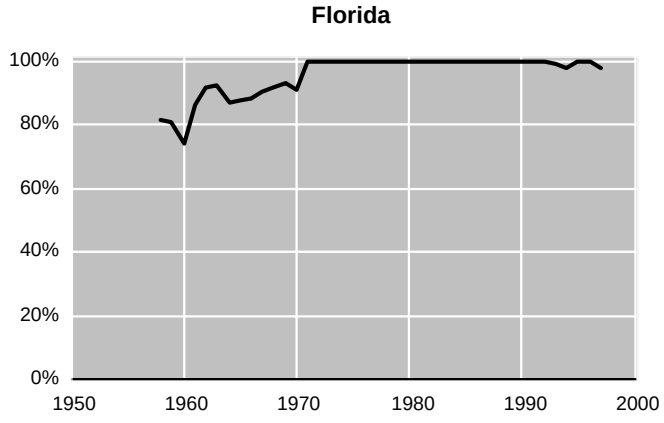
Since the 1980's Connecticut's UCR data collection effort has been strong.



Aside from occasional lapses, Delaware's UCR reporting has been consistently strong.

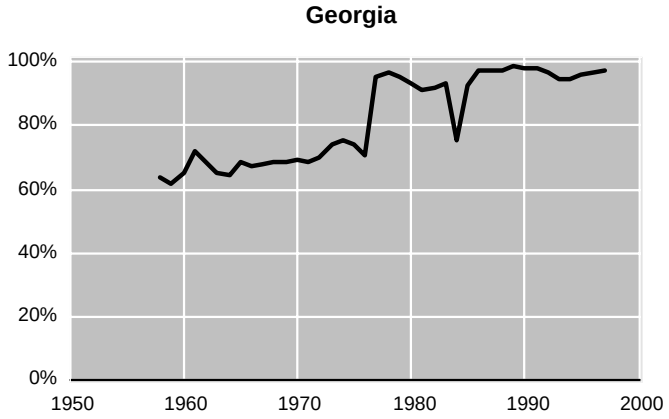


Since the 1970's Florida's UCR data collection effort has been strong.

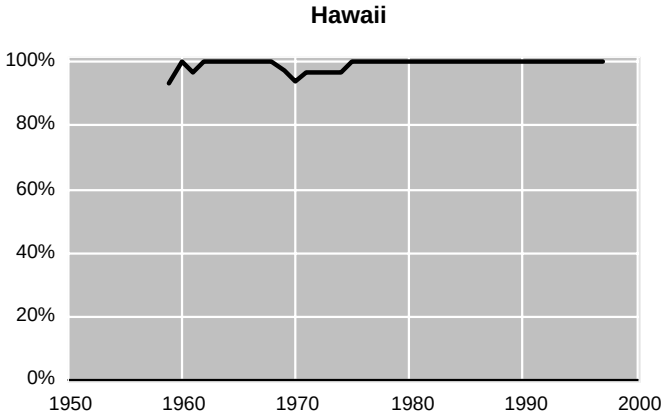


Percent of population represented by UCR

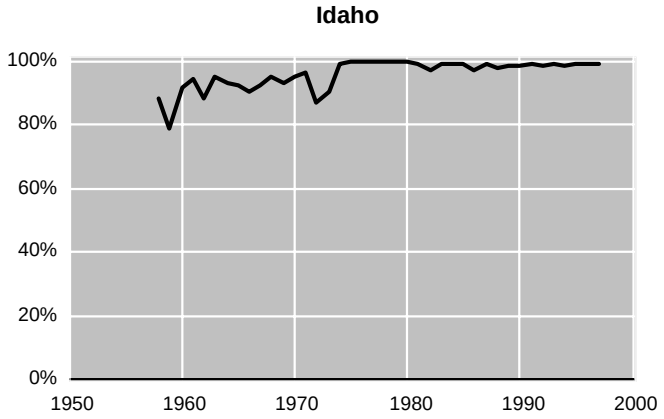
Georgia's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's.



Since the 1970's Hawaii's UCR reporting has been strong.

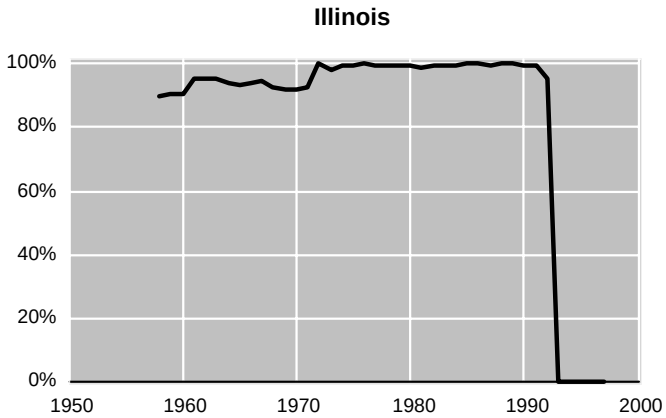


Since the 1970's Idaho's UCR reporting has been strong.

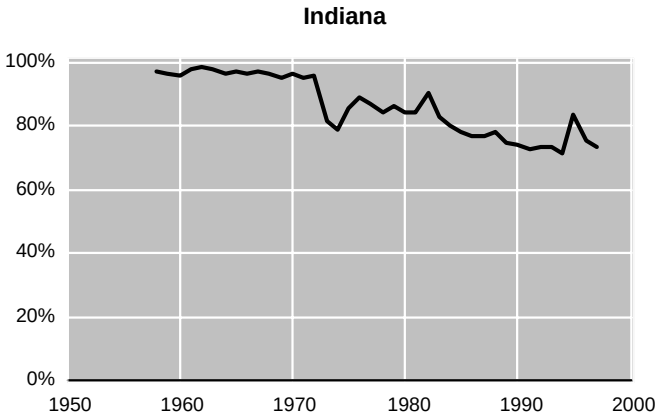


Percent of population represented by UCR

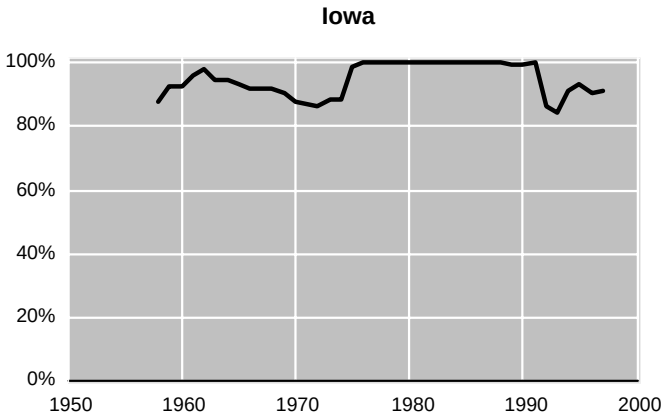
The FBI has not accepted Illinois UCR data in recent years. See page 40.



Indiana's UCR reporting has generally been falling over the last two decades.

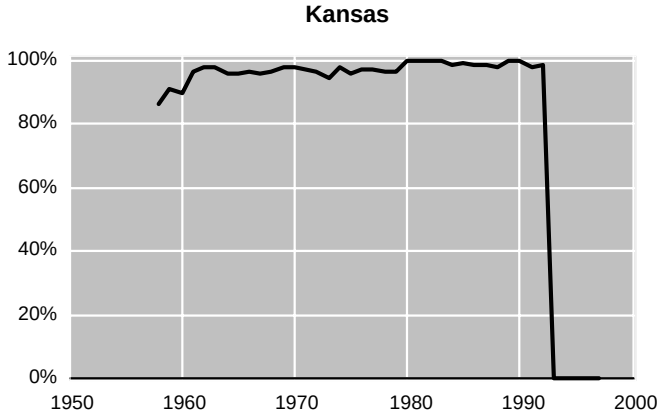


Iowa's UCR reporting has fallen in recent years.

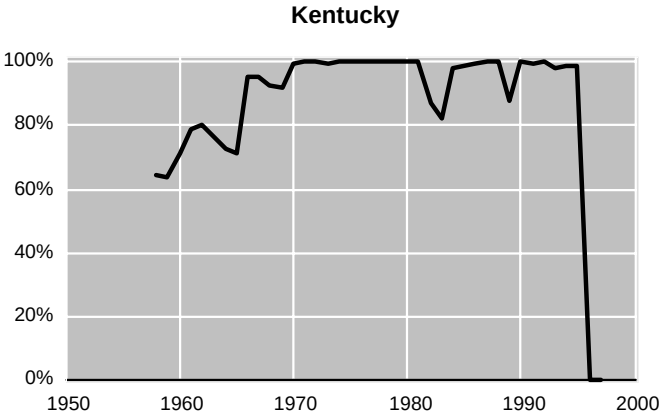


Percent of population represented by UCR

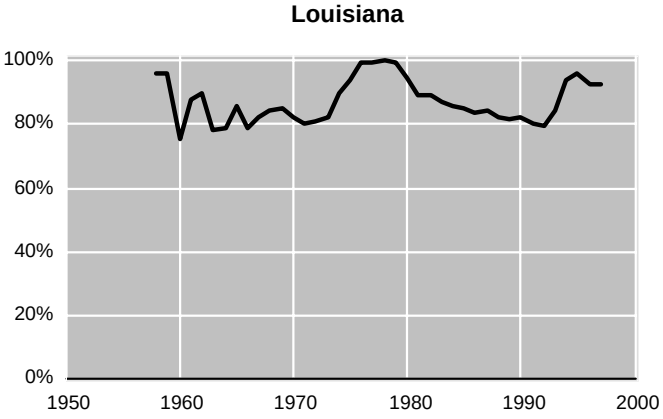
Kansas' data have not been included in recent years due to problems attendant to NIBRS conversion.



Kentucky's data have not been included for the past 2 years due in part to a damaged computer system.

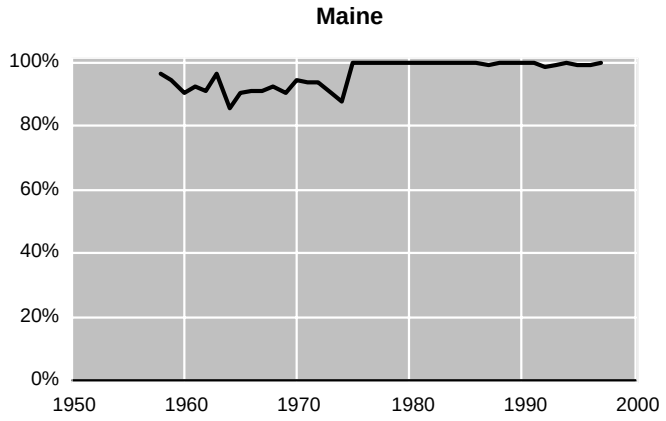


Louisiana's UCR reporting, after a decline in the 1980's, has improved in recent years.

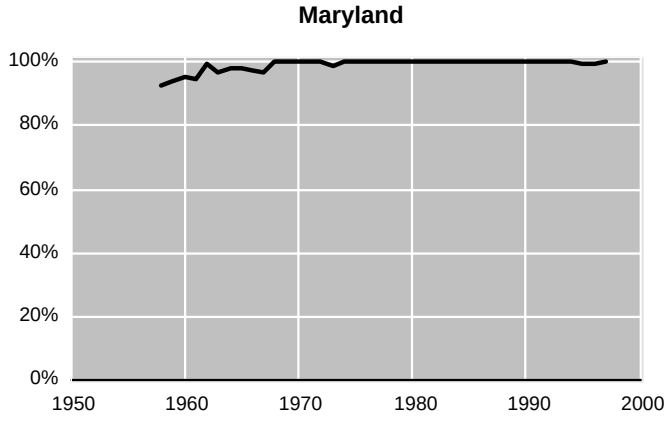


Percent of population represented by UCR

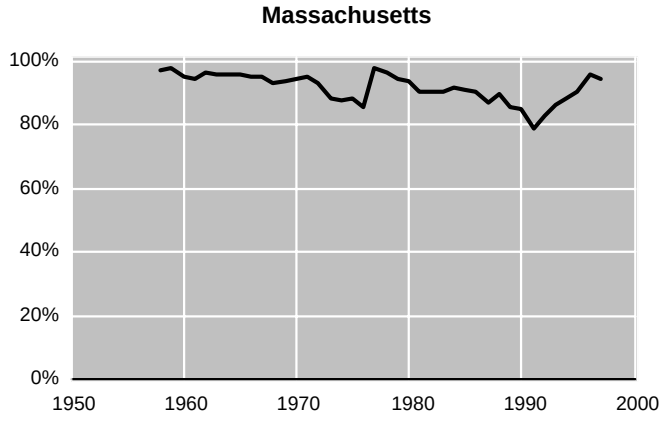
Since 1976 Maine's UCR reporting has been consistently strong.



Maryland's UCR reporting has been consistently strong.

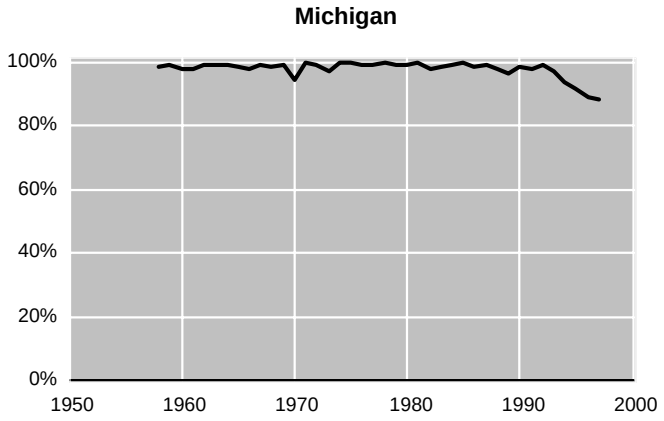


Massachusetts' UCR reporting, after a decline in the 1980's, has improved in recent years.

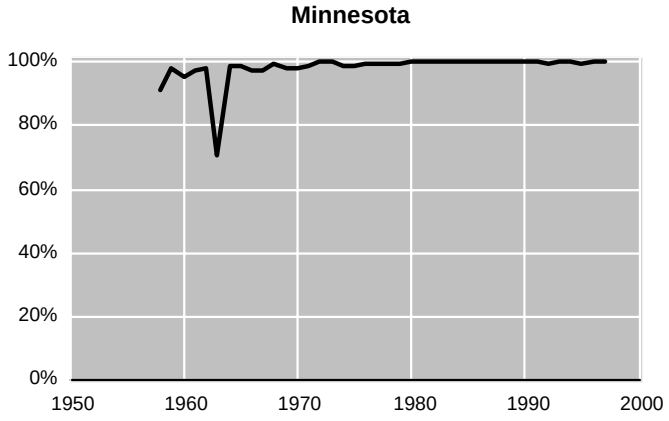


Percent of population represented by UCR

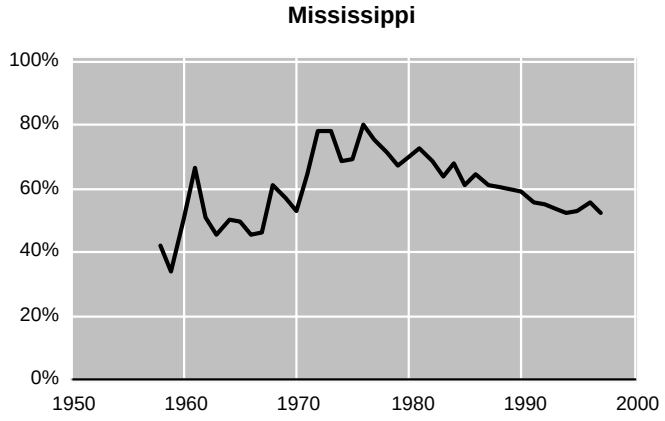
Michigan's UCR reporting has been fairly strong but has fallen during the last few years.



Except for 1 year, Minnesota's UCR reporting has been consistently strong.

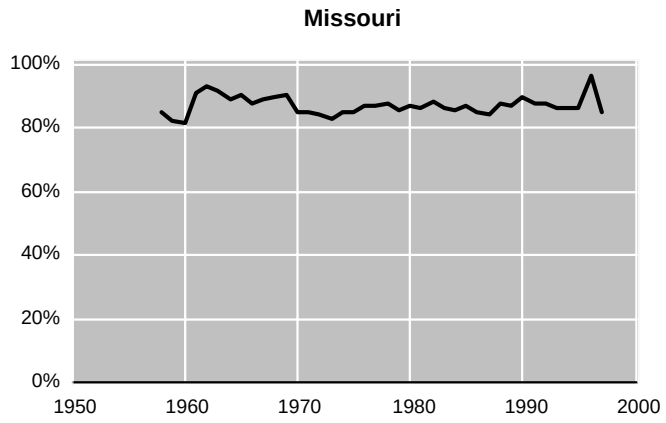


Mississippi's UCR reporting, after a period of improvement in the 1970's, has been falling over the last decades.

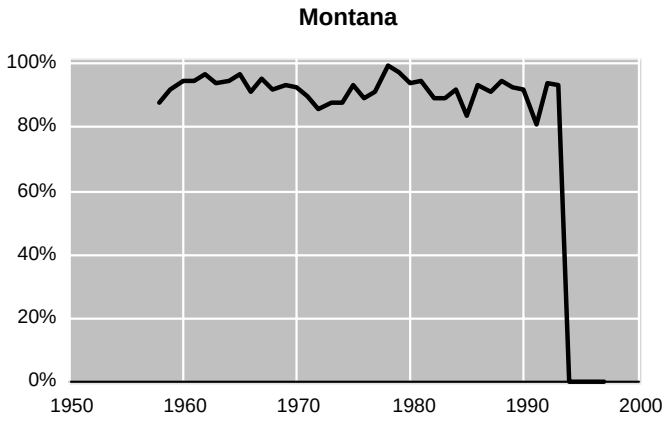


Percent of population represented by UCR

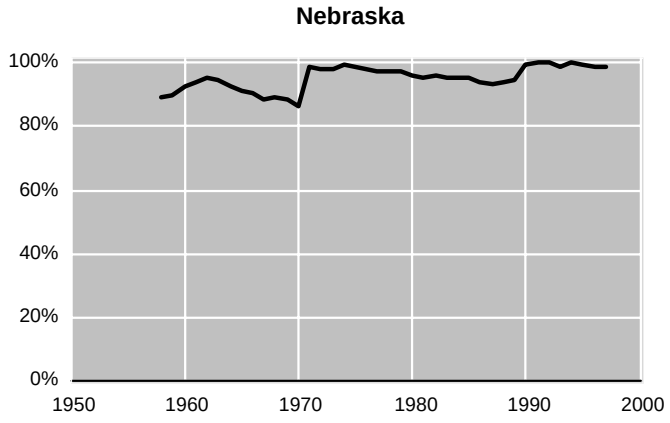
Missouri's UCR reporting has been reasonably strong, with a single, exceptional year of almost total coverage.



Montana's UCR data have not been available for the last 4 years due to late submissions from many local agencies that apparently had converted to new computer systems.

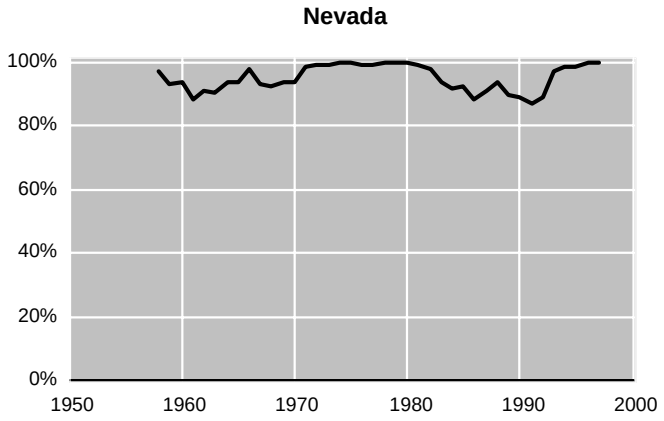


Since the 1970's Nebraska's UCR reporting has been fairly strong.

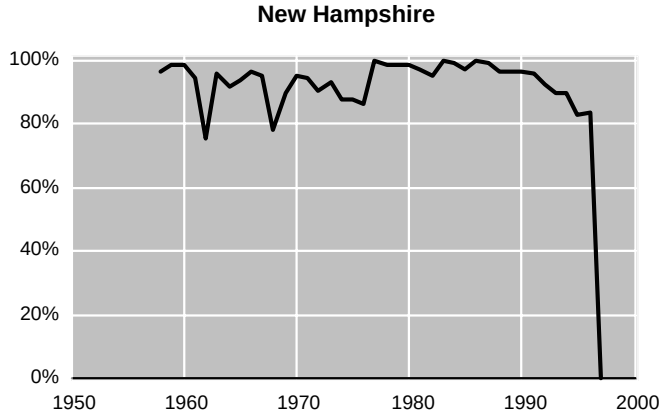


Percent of population represented by UCR

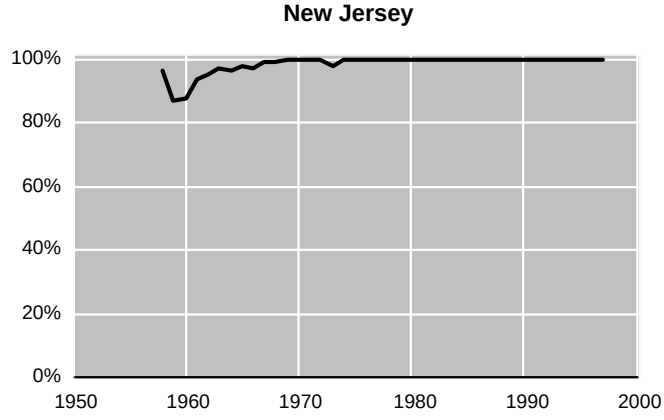
Nevada's UCR reporting, after a decline in the 1980's, has improved in recent years.



New Hampshire's UCR reporting over the past few years has fallen, and the data for 1997 were not available due to problems attendant to conversion to NIBRS.

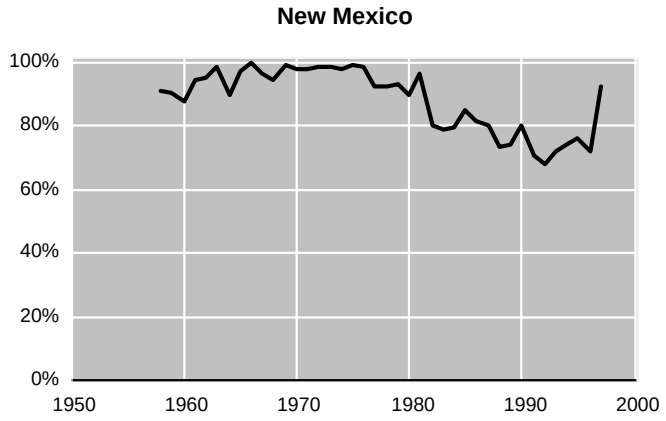


New Jersey's UCR reporting has been consistently strong.

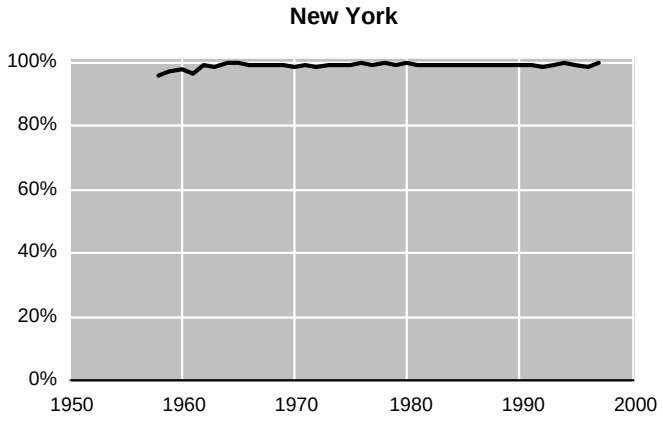


Percent of population represented by UCR

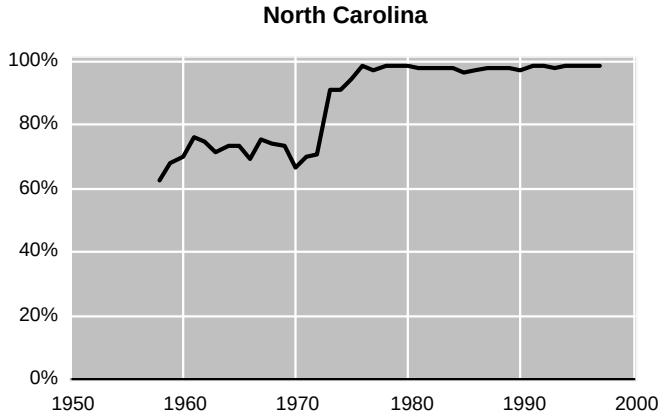
New Mexico's UCR reporting, after a decline in the 1980's, improved in 1997.



New York's UCR reporting has been consistently strong.

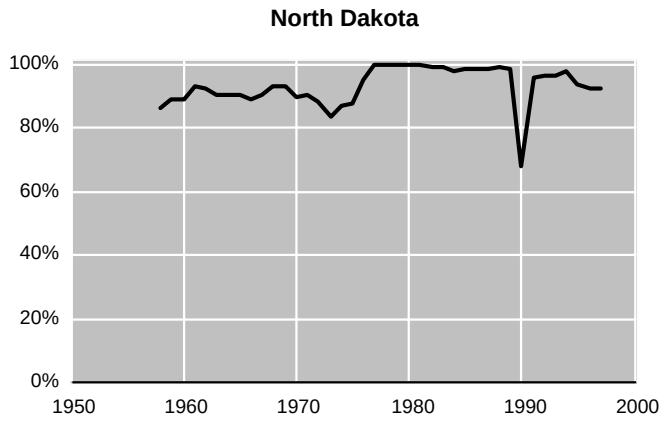


North Carolina's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's.

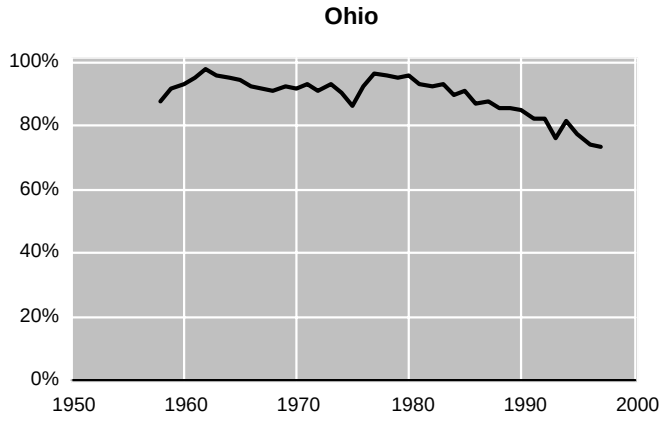


Percent of population represented by UCR

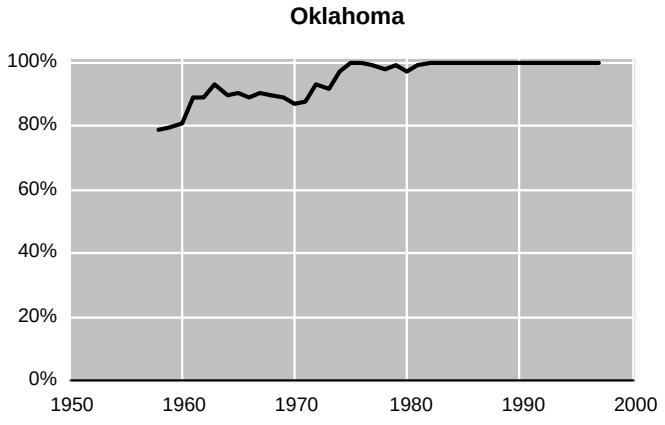
North Dakota's UCR reporting, since the 1970's has been fairly strong but has fallen during the last few years.



Ohio's UCR reporting has generally been falling over the last two decades.

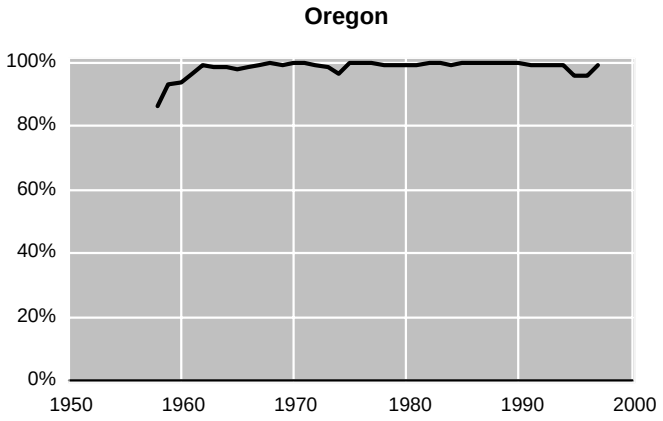


Oklahoma's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's and has been consistently strong since then.

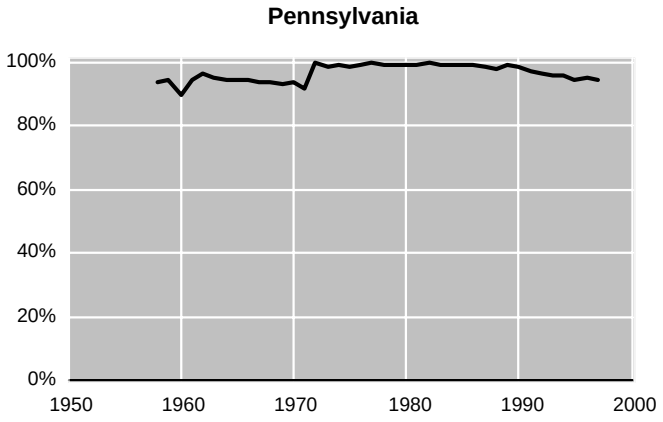


Percent of population represented by UCR

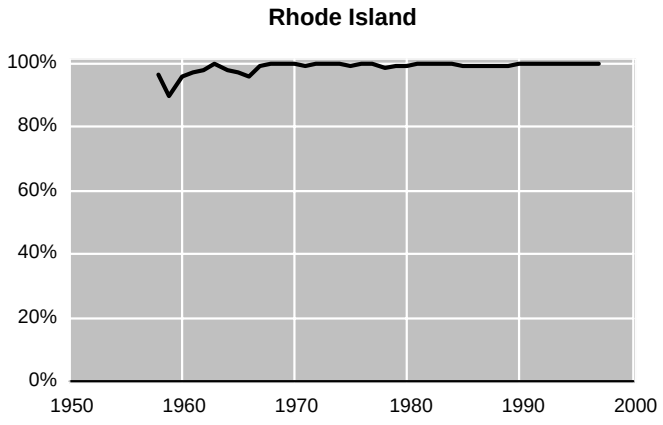
Oregon's UCR reporting has been consistently strong.



Pennsylvania's UCR reporting has been strong but has fallen slightly during the last few years.

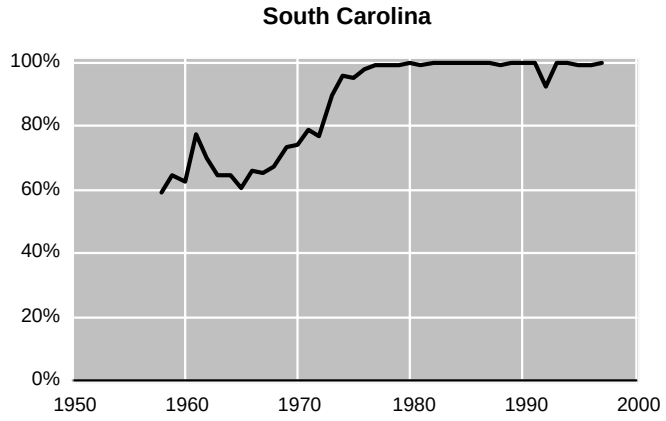


Rhode Island's UCR reporting has been consistently strong.

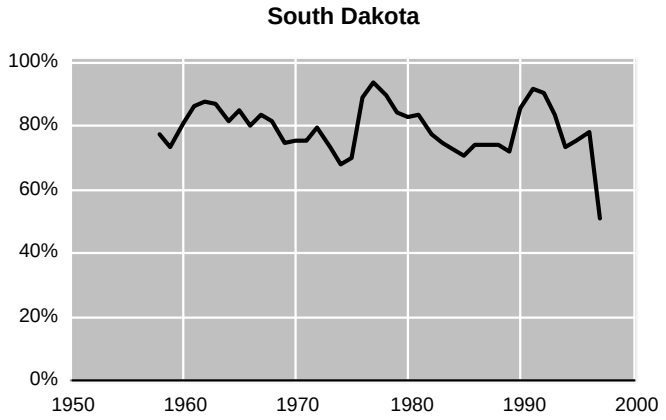


Percent of population represented by UCR

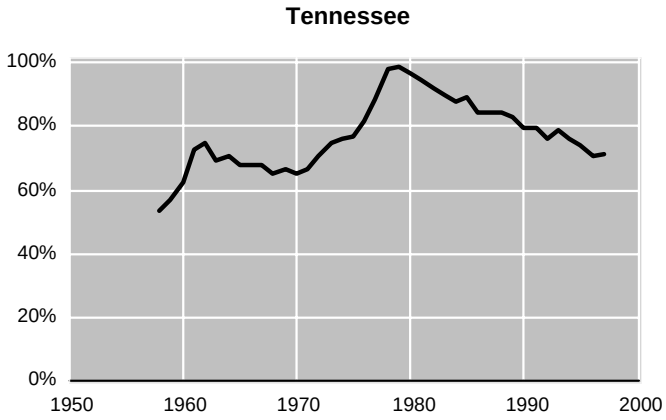
South Carolina's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's and has been strong since then.



South Dakota's UCR reporting has generally been inconsistent and declined considerably in 1997.

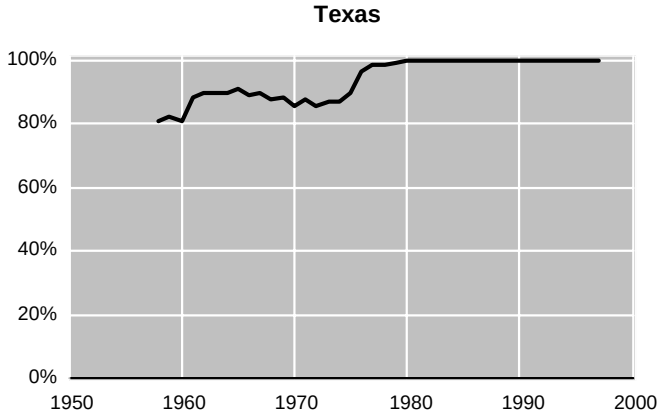


Tennessee's UCR reporting shows an effect of LEAA funding in the mid-1970's but started to decline after LEAA funding terminated.

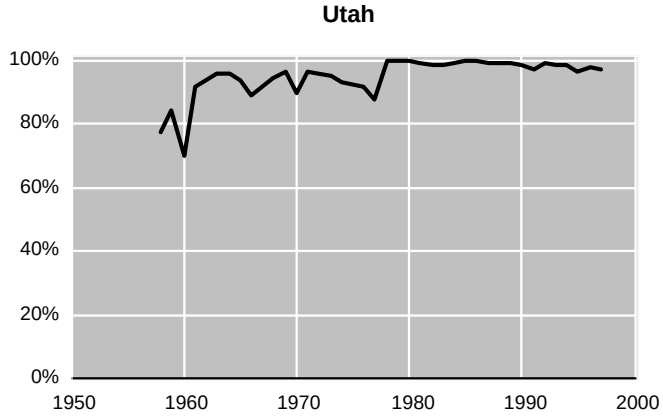


Percent of population represented by UCR

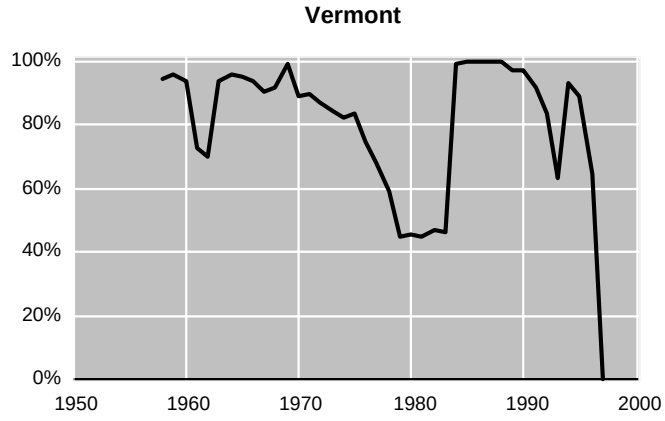
Texas' UCR reporting apparently shows an effect of LEAA funding in the mid-1970's and has been strong since then.



Utah's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's and has been strong since then.

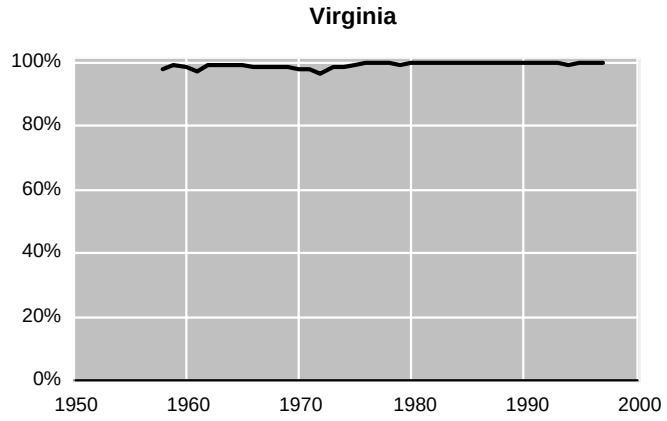


Vermont's UCR reporting has been inconsistent, and the data were unavailable in 1997, probably due to the change to NIBRS.

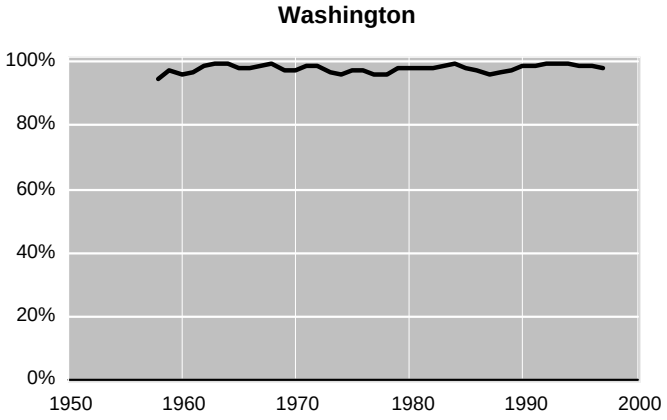


Percent of population represented by UCR

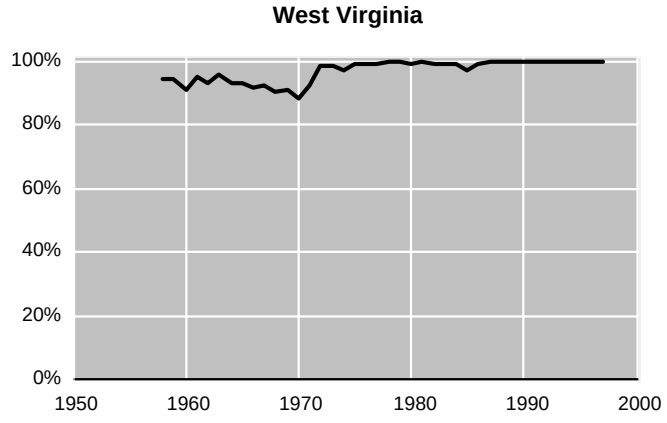
Virginia's UCR reporting has been consistently strong.



Washington's UCR reporting has been consistently strong.

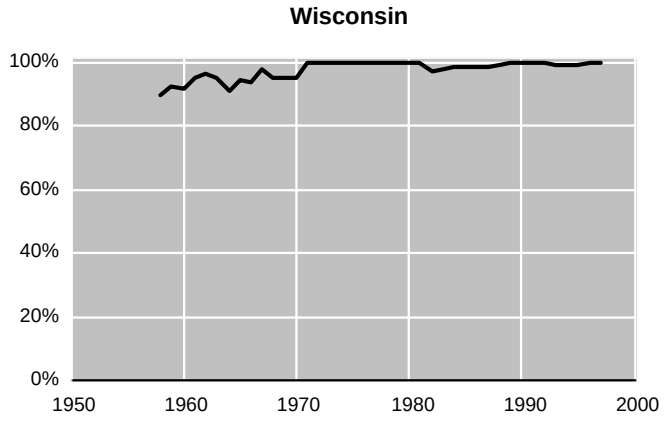


West Virginia's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's and has been strong since then.

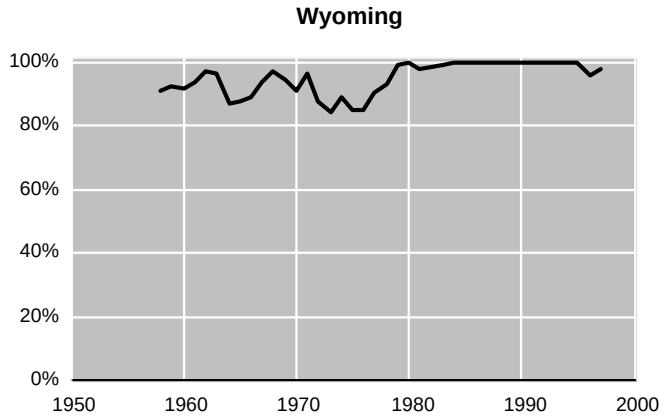


Percent of population represented by UCR

Since the 1970's Wisonsin's UCR data collection effort has been strong.



Wyoming's UCR reporting apparently shows an effect of LEAA funding in the mid-1970's and has been strong since then.



Appendix E:
Missing Data in UCR Files Used for the 1996 LLEBG Formula Calculations

Sue Lindgren
Bureau of Justice Statistics

January 23, 1997:
Modified for the April 24-25, 1997
Workshop on UCR Imputation Procedures

Background

The Local Law Enforcement Block Grant (LLEBG) program allocates Federal funds to State areas and local governments based on a 3-year average of Part I violent crimes as reported to the FBI. The Bureau of Justice Assistance (BJA) administers the program, using award amounts computed by the Bureau of Justice Statistics (BJS). The legislation recognizes that some jurisdictions do not report to the FBI and prescribes that we estimate data for such "nonreporting agencies." Because of the press of time and our unfamiliarity with the Uniform Crime Reporting (UCR) data base to be used in the formula, it was not possible to attempt any such estimates for the 1996 awards (computed late spring, early summer 1996 after the formula was enacted in April 1996). Rather, we assumed that there would *not* be a significant number of such "nonreporting" agencies eligible for an award and decided that we would handle such situations on a case-by-case basis. A few such cases were brought to our attention and we researched and resolved each on an individual basis.

Once the formula was run and the grants awarded, and State and local government inquiries about award amounts researched and resolved, we began the following analysis to inform BJS and BJA of the extent and nature of missing data in the UCR data set.

Extent of Missing Data, by State

As the first part of this analysis, we compared the violent crime State-wide totals we computed by summing all agency records within each State on the UCR files to the estimated violent crime totals published by the FBI in table 5 of *Crime in the United States* for the 1992-94 period used in the 1996 formula awards and for the 1995 data.[1] As seen in the attached tables 1-3, there is considerable variability across States. For the 1992-94 period, three States had less than 70% complete data, and 11 had less than 90%. By 1995, 28 States had even lower coverage than in the 1992-94 period, although the 1995 data for at least 4 States are low because of conversion to NIBRS. (We used data prior to 1994 for three of these States in the 1996 awards).

Characteristics of Agencies with Less Than 36 Months of Violent Crime Data

The second part of this analysis examined what kinds of agencies are included in the UCR files, but, according to the FBI, reported zero months for the period used for the formula. The FBI files contain a variable giving the number of months reporting for each year; using this variable for the three years, we were able to construct a "Number of months reporting" variable with a range of 0 to 36 months. Of 18,413 agencies in the FBI's UCR files for 1992-94, 3,516 (19.1%) did not report for any month during the 36-month period used in the formula and another 3,197 (17.4%) reported between 1 and 35 months. (See attached table 4.) Agencies reporting 0 months and agencies reporting 1 to 35 months are examined separately below.

Agencies with 0 Months of Data

We looked first at the 3,516 agencies reporting for no months during the 36 month period used in the formula. Based on our analysis, we discovered that many of the agencies on the files are now "retired" or "inoperative." This is less important for imputation purposes than for formula purposes, where we need to be sure we are not estimating data for agencies no longer in existence. Despite the research described

[1]Earlier years data were used in the fiscal 1996 formula data set for Kansas, Illinois, and Montana because of their conversion to NIBRS. For those States, the fiscal 1996 analysis examined data availability for those earlier years.

below, we are not in a position to say with certainty which are inactive and which are nonreporting, although the research gives some idea of the relative sizes of each group.

As seen in table 5, almost half, 1,652, of those reporting no months were covered by another reporting agency by the end of 1994, making them ineligible for an LLEBG grant by our interpretation of the legislation, and a third, or 1,221, are "zero population" agencies, meaning they are almost certainly State agencies or special police agencies (such as transit police) that probably are not eligible for a formula award. (194 of those were covered by another reporting agency as well as being zero population.)

Excluding all of these presumably ineligible agencies, we are left with 866 agencies coded as reporting no months, most of which are small jurisdictions. As seen in table 6, nearly 70% are cities with less than 10,000 population. However, when looking at the actual jurisdictions, there are 2 counties and 1 city with over 100,000 population, 3 cities with between 50,000 and 100,000, and 199 cities and counties with over 10,000 population. For formula allocation purposes, it is important to keep in mind that in less populous States, cities with 10,000 population receive awards; thus, there is more of a potential impact here than we originally thought.

Jurisdictions with between 1 and 35 Months of Data

Table 4 shows that 17.4% of the agencies in the UCR files reported for at least 1 month, but less than 36. This represents 3,197 agencies. As seen in table 7, 17% of these, or 554, are zero population agencies, again meaning they are probably not eligible jurisdictions, including 5 that were covered by another reporting agency by the end of 1994. An additional 50 with populations are covered by another reporting agency, again indicating ineligibility. Of the remaining 2,593 that might be eligible for an LLEBG grant, 10%, or 262 jurisdictions, already exceeded their State threshold for an award; their awards would increase if they reported for more of the period.[2]

Most of the 2,331 that did not get an award would not reach the threshold if they reported fully; 525 of them reported no violent crime, so it is unlikely that they would have enough violent crime in the months they did not report to get an award.[3] Of those reporting some violent crime, the overwhelming majority are so far below the threshold for an award in their States that it seems unlikely that they would receive an award even if they had complete data. However, 28 of the 2,331 had over 90% of the threshold amount, and another 26 had between 80% and 90%, and more complete data may have resulted in an award.

Impact of Incomplete Data

It is clear that a considerable number of agencies are adversely affected in the formula by missing data in the UCR data sets; data that are missing for a variety of reasons beyond not participating in the UCR program. In the course of responding to State and local inquires, we heard some anecdotal evidence from individual police departments who claim they submitted data to the State program that are not showing up on the UCR files. For formula purposes, the reason for missing data is a concern, but not necessarily for imputation purposes.

[2]This includes three State police barracks that were not "zeropop;" that is, unlike most State-level agencies they had an entry other than zero in the "population covered" variable. See "Addendum on zeropop agencies" on page 64.

[3]Zero violent crime is a possibility; the agency may have reported property crime (which is not on the files supplied to us), or may have no crime at all but continues to participate in the UCR program. Interestingly, 792 fully-reporting agencies report no violent crime; 484 are zero population, and 308 have populations.

While estimating the total impact of missing data on the formula allocations is not attempted, a few facts are clear:

- 262 jurisdictions that received an award would get a larger award with more complete data coverage.

- It is possible to estimate that, if all cities reported at the same rate as those that did for 36 months, an additional 84 cities would receive an award.

- Because of the configuration of the award files, it is not possible to replicate that computation for counties, but presumably some of the 2,212 counties that did not get an award would with more complete data coverage.

Although the impact of incomplete data seems greatest for larger jurisdictions which may have hundreds of violent crimes a year, each of which brings $216.62 in most States, small jurisdictions in those States with very low thresholds such as Vermont (4 violent crimes) and North Dakota (7 violent crimes) might quickly become eligible for an award with more complete data.[4] In addition, the dollars per crime figures for those States are considerably higher: $2,321.17 per crime in Vermont and $1,509.17 in North Dakota.

In reviewing these results, it is necessary to keep in mind that because the formula is relative and interdependent, an increase in reporting (or in estimating missing data) would result in an increase in the thresholds and a decrease in the dollar value of a single crime.

Addendum on "Zeropop" Agencies

Agencies without an entry in the "population covered" variable on the UCR tapes were coded to be "zeropop" in the variable by that name. This was used as a surrogate indicator to identify State police, special police, and similar agencies that were not a city or county police or sheriff's office that might be eligible for a local law enforcement formula award. This was necessary because the UCR coding scheme does not allow the separation of State police and university police from county and city police. In the process of examining the extent of missing data in the UCR files, it was discovered that some of these agencies actually had a population entry and thus were not coded "zeropop." A search of the file for "State Police" in the agency name uncovered 136 of these with a population figure, about 15% of agencies with "State Police" in the name. These are primarily State police barracks in various counties reporting data for the county area.

This had no effect on the distribution of fiscal 1996 awards because any agency not coded as a city was treated as reporting for a county. It will not affect the fiscal 1997 awards because they will rely on the Census Bureau government identification number that is being added to the files to allow accurate identification of city, county, and State agencies and special police forces.

This should have no impact on the imputation of county-level data because we will be able to provide a crosswalk between the FBI's agency codes (ORI codes) and the Census Bureau government identification, level-of- government, and type-of-agency codes so that those doing the imputation can treat those agencies any way they want.

[4]The LLEBG legislation establishes $10,000 as the minimum local award. Thus, a jurisdiction needs a certain amount of violent crime to qualify for an award. In some States this amount is lower than the national average because the State-level formula establishes a minimum State award regardless of violent crime levels.

Table 1. 1992-94 UCR Total Violent Crime Data for Input to 1996 LLEBG Formula

(Numbers on data file as percent of estimated amounts presented in *Crime in the U.S.*)

State	Percent	State	Percent
South Carolina	101.57%	Minnesota	97.74%
Idaho	100.49	Colorado	97.56
Wyoming	100.15	Arizona	97.50
Connecticut	100.01	Nebraska	97.48
Rhode Island	100.01	Alaska	96.39
Hawaii	100.00	Georgia	95.52
New Jersey	99.99	Missouri	95.41
Maryland	99.98	Illinois	95.32
Texas	99.97	Pennsylvania	94.99
West Virginia	99.89	Nevada	94.49
California	99.87	Michigan	94.13
Oklahoma	99.86	Tennessee	90.36
Virginia	99.81	Alabama	90.24
New York	99.73	Ohio	90.07
Wisconsin	99.70	South Dakota	89.65
Arkansas	99.66	Louisiana	89.27
Oregon	99.43	New Hampshire	87.37
Maine	99.31	Massachusetts	86.33
North Dakota	99.30	Indiana	82.29
Washington	99.13	New Mexico	75.81
Kansas	98.98	Iowa	74.56
Kentucky	98.45	Vermont	74.35
Florida	98.37	Mississippi	68.04
Utah	98.33	Delaware	65.35
North Carolina	98.24	Montana	63.00

Table 2. 1992-94 Summary of Actual Counts of Violent Crime on LLEBG Data Files as a Percent of the Amount Estimated by the FBI

Part I violent crimes on data files as a percent of published estimate	Number of States	Percent of estimated number of Part I violent crimes	Cumulative percent of estimated crime
100% or more	6	12%	12%
99% to 99.99%	14	28	40
98% to 98.99%	5	10	50
96% to 97.99%	5	10	60
90% to 95.99%	9	18	78
80% to 89.99%	5	10	88
Less than 80%	6	12	100
	50	100%	

Table 3. Comparisons of UCR Violent Crime Data for Input to 1996 and 1997 LLEBG Formula

(Numbers on data file as percent of estimated amounts present in *Crime in the U.S.*)

	Part I violent crimes as percent of published estimates		Difference in the percentages, from 1992-94 to 1995
	1992-94	1995	
Alabama	90.24%	95.09%	4.85%
Alaska	96.39	94.18	-2.21
Arizona	97.50	96.87	-0.63
Arkansas	99.66	99.78	0.12
California	99.87	97.19	-2.68
Colorado	97.56	97.12	-0.44
Connecticut	100.01	99.92	-0.09
Delaware	65.35	35.51	-29.84
Florida	98.37	98.75	0.38
Georgia	95.52	96.39	0.87
Hawaii	100.00	100.00	0.00
Idaho	100.49	99.17	-1.32
Illinois*	95.32	63.03	-32.29
Indiana	82.29	75.05	-7.24
Iowa	74.56	79.03	4.47
Kansas*	98.98	34.21	-64.77
Kentucky	98.45	91.51	-6.94
Louisiana	89.27	94.50	5.23
Maine	99.31	99.63	0.32
Maryland	99.98	99.99	0.01
Massachusetts	86.33	91.49	5.16
Michigan	94.13	94.96	0.83
Minnesota	97.74	99.47	1.73
Mississippi	68.04	61.41	-6.63
Missouri	95.41	94.74	-0.67
Montana	63.00	17.92	-45.08
Nebraska	97.48	99.07	1.59
Nevada	94.49	99.32	4.83
New Hampshire	87.37	75.19	-12.18
New Jersey	99.99	100.09	0.10
New Mexico	75.81	73.24	-2.57
New York	99.73	98.70	-1.03
North Carolina	98.24	98.83	0.59
North Dakota	99.30	95.32	-3.98
Ohio	90.07	83.98	-6.09
Oklahoma	99.86	99.84	-0.02
Oregon	99.43	97.90	-1.53
Pennsylvania	94.99	83.95	-11.04
Rhode Island	100.01	100.11	0.10
South Carolina	101.57	102.38	0.81
South Dakota	89.65	82.35	-7.30
Tennessee	90.36	87.66	-2.70
Texas	99.97	99.78	-0.19
Utah	98.33	95.84	-2.49
Vermont	74.35	90.61	16.26
Virginia	99.81	99.88	0.07
Washington	99.13	95.90	-3.23
West Virginia	99.89	99.90	0.01
Wisconsin	99.70	99.83	0.13
Wyoming	100.15	99.34	-0.81
Maximum	101.57%	102.38%	
Minimum	63.00%	17.92%	

Table 4. Number of Months/Years Reporting, All Agencies in UCR Files, 1992-94

	Number of reporting agencies	Percent of all agencies
No months	3,516	19.1%
1 - 11 months	404	2.2
1 full year	508	2.8
13 - 23 months	464	2.5
2 full years	530	2.9
25 - 35 months	1,291	7.0
3 full years	11,700	63.5
Total	18,413	100%

Table 5. Agencies Reporting Zero Months, by Whether Covered by Another Reporting Agency or "Zeropop"

	Covered by another agency		
	No	Yes	Total
Zeropop	1,027	194	1,221
Non-zeropop	836	1,458	2,294
Total	1,863	1,652	3,515

Table 6. Population Distribution of Agencies Reporting Zero Months and not Covered by Another Reporting Agency or "Zeropop"

Government type and size	Frequency	Percent
City 100,000-250,000	1	0.1%
City 50,000-100,000	3	0.3
City 25,000-50,000	12	1.4
City 10,000-25,000	38	4.4
City 2,500-10,000	197	22.7
City under 2,500	398	46.0
County 100,000 or more	2	0.2
County 25,000-100,000	46	5.3
County 10,000-25,000	97	11.2
County under 10,000	72	8.3
Total	866	100%

Table 7. Agencies Reporting 1 to 35 Months, by Whether Covered by Another Reporting Agency by 1994 or "Zeropop"

	Covered by another agency		
	No	Yes	Total
Zeropop	549	5	554
Non-zeropop	2,593	50	2,643
Total	3,142	55	3,197

References

Akiyama, Yoshio, and James Nolan (1999). "Methods for Understanding and Analyzing NIBRS Data." *Journal of Quantitative Criminology*, 15, 2, 225-238.

Akiyama, Yoshio, and James Nolan (1999b). "UCR Data Imputation: Longitudinal vs Cross-Sectional Approaches." Internal memorandum, FBI Criminal Justice Information Services Division, August 1999.

Biderman, Albert D., and James Lynch (1991). *Understanding Crime Incidence Statistics : Why the UCR Diverges from the NCS*. Springer-Verlag, New York, NY.

Black, Dan A., and Daniel S. Nagin (1998). "Do Right-to-Carry Laws Deter Violent Crime?" *Journal of Legal Studies,* 27, 1, 209-220.

Block, Carolyn Rebecca (1998). *An Evaluation of the Completeness and Accuracy of SHR Data: Chicago, 1993 and 1994*. Illinois Criminal Justice Information Authority, Chicago, IL.

Block, Richard and Carolyn Rebecca Block, "Homicide Syndromes and Vulnerability: Violence in Chicago Community Areas over 25 Years." *Studies on Crime & Crime Prevention* 1, 1992, 61-87.

Braga, Anthony A., Anne M. Piehl, and David M. Kennedy (1997). *Youth Homicides in Boston: An Assessment of Supplementary Homicide Report Data*. John F. Kennedy School of Government, Harvard University, Cambridge, MA.

Chilton, Roland, and John Jarvis (1999). "Victims and Offenders in Two Crime Statistics Programs: A Comparison of the National Incident-Based Reporting System (NIBRS) and the National Crime Victimization Survey (NCVS)." *Journal of Quantitative Criminology*, 15, 2, 193-205.

Ehrlich, Isaac (1975). "The Deterrent Effect of Capital Punishment: A Question of Life and Death." *American Economic Review*, 65, 397-417.

Federal Bureau of Investigation (annually). *Crime in the United States*. Federal Bureau of Investigation, U.S. Department of Justice, Washington, DC.

Federal Bureau of Investigation (1958). *Crime in the United States*. Special Issue, containing the Report of the Consultant Committee. Federal Bureau of Investigation, U.S. Department of Justice, Washington, DC.

Fox, James Alan (1996). *Uniform Crime Reports: Supplementary Homicide Reports, 1976-1994.* [Computer file and codebook]. ICPSR version. Northeastern University, College of Criminal Justice, Boston, MA [producer]. Inter-university Consortium for Political and Social Research [distributor], Ann Arbor, MI.

Fox, James Alan (1996). *Trends in Juvenile Violence: A Report to the United States Attorney General on Current and Future Rates of Juvenile Offending*. Northeastern University, Boston, MA.

Greenfeld, Lawrence A., and Steven K. Smith (1999). *American Indians and Crime*. BJS Report NCJ 173386, U.S. Department of Justice, Washington, DC. Available at **http://www.ojp.usdoj.gov/bjs/pub/pdf/aic.pdf**.

Illinois Criminal Justice Information Authority (1987). *Trends and Issues: Criminal and Juvenile Justice in Illinois*. Illinois Criminal Justice Information Authority, Chicago, IL.

International Association of Chiefs of Police (1929). *Uniform Crime Reporting*. IACP, New York, NY

Kennedy, David M., Anne M. Piehl, and Anthony A. Braga (1996). "Youth Violence in Boston: Gun Markets, Serious Youth Offenders, and a Use-Reduction Strategy." *Law and Contemporary Problems,* 59, 1, 147-196.

Lattimore, Pamela K., James Trudeau, K. Jack Riley, Jordan Leiter, and Steven Edwards (1997). *Homicide in Eight American Cities: Trends, Context, and Policy Implications*. Report NCJ 167262. National Institute of Justice, Washington, DC. Available at **http://ncjrs.org/pdffiles/ 167262-1.pdf**.

Lott, John R., Jr. (1998). *More Guns, Less Crime: Understanding Crime and Gun Control Laws.* University of Chicago Press, Chicago, IL.

Lott, John R., Jr., and David B. Mustard (1997). "Crime, Deterrence, and Right-to-Carry Concealed Handguns." *Journal of Legal Studies,* 26, 1, 1-68.

Maltz, Michael D. (1972 [1999]). *Evaluation of Crime Control Programs* (monograph), National Institute of Law Enforcement and Criminal Justice, GPO: Washington. Internet version, published in 1999, found at **http://www.uic.edu/~mikem/ homepage.html**

Maltz, Michael D. (1976). "Secondary Analysis of the UCR: An Index of the Risk of Death Due to Robbery," *Journal of Criminal Justice* 4, 2, 153-56.

Maltz, Michael D. (1977). "Crime Statistics: A Historical Perspective," *Crime and Delinquency* 23, 1, January, 32-40. Reprinted in Eric Monkkonen, Ed., *Crime And Justice in American History*, Meckler, 1990.

Maltz, Michael D. (1998). "Visualizing Homicide: A Research Note," *Journal of Quantitative Criminology*, 14, 4, 397-410.

Maxfield, Michael G. (1989). "Circumstances in Supplementary Homicide Reports: Variety and Validity." *Criminology*, 27, 4, 671-694.

Poggio, Eugene C., Stephen D. Kennedy, Jan M. Chaiken, and Kenneth E. Carlson (1985). *Blueprint for the Future of the Uniform Crime Reporting Program*. Bureau of Justice Statistics and Federal Bureau of Investigation, U.S. Department of Justice, Washington, DC.

Riedel, Marc (1990) "Nationwide Homicide Data Sets: An Evaluation of the Uniform Crime Reports and the National Center for Health Statistics Data." Chp. 9 in Doris Layton MacKenzie, Phyllis Jo Baunach, and Roy R. Roberg, Eds., *Measuring Crime: Large-Scale, Long-Range Effects*, State University of New York Press, Albany, NY.

Sherman, Lawrence W., Denise Gottfredson, Doris MacKenzie, John Eck, Peter Reuter, Shawn Bushway, in collaboration with members of the Graduate Program (1997). *Preventing Crime: What Works, What Doesn't, What's Promising.* Department of Criminology and Criminal Justice, University of Maryland, College Park, MD.

Snyder, Howard (1996). *National Juvenile Violent Crime Trends, 1980-1994.* National Center for Juvenile Justice, Pittsburgh, PA.

Snyder, Howard (1999). "The Overrepresentation of Juvenile Crime Proportions in Robbery Clearance Statistics." *Journal of Quantitative Criminology*, 15, 2, 151-161.

Stamp, Sir Josiah (1929). *Some Economic Factors in Modern Life*. P. S. King and Son, Ltd., London, UK.

Williams, Kirk and Robert L. Flewelling (1987). “Family, acquaintance, and stranger homicide: Alternate procedures for rate calculations.” *Criminology,* 25: 543-560.

Zawitz, Marianne W., Ed. (1983). *Report to the Nation on Crime and Justice: The Data*. BJS Report NCJ 87068, U.S. Department of Justice, Washington, DC.

Zawitz, Marianne W., Ed. (1988a). *Report to the Nation on Crime and Justice: Second Edition*. BJS Report, NCJ 105506, U.S. Department of Justice, Washington, DC.

Zawitz, Marianne W., Ed. (1988b). *Technical Appendix, Report to the Nation on Crime and Justice: Second Edition*. BJS Report, NCJ 112011, U.S. Department of Justice, Washington, DC.

Glossary

BGP: Boston Gun Project, a multi-organization effort that served to reduce the number of youth homicides in Boston.

BJA: Bureau of Justice Assistance, one of the agencies of the Office of Justice Programs that provides programmatic and financial assistance to State and local criminal justice agencies.

BJS: Bureau of Justice Statistics, the statistical arm of the U.S. Department of Justice.

CCSPD: Cook County (Illinois) Sheriff's Police Department.

CHD: Chicago Homicide Dataset, a computer file of homicides maintained by the Illinois Criminal Justice Information Authority and available for downloading from NACJD.

CIUS: *Crime in the United States,* the annual report on crime published by the FBI.

CJIS: Criminal Justice Information Services Division of the FBI, responsible for the collection, analysis, and publication of crime, arrest, and other police-related data.

DOJ: U.S. Department of Justice.

FBI: Federal Bureau of Investigation, the investigative arm of the U.S. Department of Justice.

IACP: International Association of Chiefs of Police, the organization that initiated the Uniform Crime Reporting Program.

ICPSR: Inter-university Consortium of Political and Social Research, an organization established by colleges and universities to store political and social data files so they may be accessed by researchers for analysis.

LEAA: the Law Enforcement Assistance Administration, an agency established by the Omnibus Crime Control and Safe Streets Act of 1968, in which was housed many of the agencies and functions now part of the Office of Justice Programs.

NACJD: National Archive of Criminal Justice Data, a unit within the Inter-university Consortium of Political and Social Research that serves as a repository of criminal justice data funded by BJS and NIJ and housing data files produced by these agencies and their grantees/contractors, from which the files can be obtained.

NCHS: National Center for Health Statistics, a statistical arm of the U.S. Department of Health and Human Services.

NIBRS: National Incident-Based Reporting System, the crime data collection system that will replace the UCR system.

NIJ: National Institute of Justice, the research arm of the U.S. Department of Justice.

OJP: Office of Justice Programs, an office within DOJ that houses the Bureau of Justice Statistics, Bureau of Justice Assistance, National Institute of Justice, and other agencies that deal with State and local criminal justice agencies, issues and programs.

ORI: Originating Agency Identifier, the identification number used by the FBI to identify police agencies

PSS: Program Support Section, the section of the FBI's Criminal Justice Information Services Division that deals with the collection, analysis, and publication of crime data.

SAC: Statistical Analysis Center, an agency established in many States during the 1970's, often with funding from BJS.

SAS: Statistical Analysis System, computer software for data analysis.

SHR: Supplementary Homicide Reports, a supplement to the Uniform Crime Reporting Program that collects information about each homicide incident, including victim and offender characteristics, the relation between victim(s) and offender(s), and incident circumstances.

SPSS: Statistical Program for the Social Sciences, computer software for data analysis.

UCR: Uniform Crime Reports or the Uniform Crime Reporting Program, the FBI program that collects, analyzes, and publishes crime, arrest and police personnel data from police agencies throughout the United States.