

Law Enforcement Data Quality Assessment Project
Final Report
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SUBMITTED TO:

The Vermont Department of Public Safety

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Statement of the Problem

Based on crime data reported to the Vermont Crime Information Center (VCIC), the FBI reports that overall crime in Vermont dropped by 60.9 percent between 2012 and 2015.¹ The accuracy of Vermont crime statistics has been called into question, as the precipitous drop in crime could reflect inaccuracies in reporting.

Accurate, comprehensive and timely crime data is critical. The benefits to law enforcement agencies are obvious. Data driven crime prevention strategies can make the case for additional resources and inform decision-making surrounding resource allocation. Accurate crime data enable agencies to work together to strategize and develop solutions to fighting similar problems. Accurate crime data also enable a law enforcement agency to provide a full accounting of the status of public safety within their jurisdiction. Inaccurate crime data interferes with all of these processes, and may work to undermine one of the primary reasons that law enforcement agencies exist—public safety. Legislators, municipal planners/administrators, grantors, social service agencies, researchers, and the public rely on accurate, comprehensive, and timely crime data as well. In recent years, Vermont has fallen short.

History of NIBRS

The need for crime statistics became apparent to law enforcement agencies in the 1920's. The International Association of Chiefs of Police (IACP) spearheaded the creation of the Uniform Crime Reporting (UCR), which was finalized in 1929. This UCR included standardized definitions of crimes, and the Hierarchy Rule that in 1930 became the Summary Reporting System (SRS). The Hierarchy Rule determines which crime in a multiple crime incident is reported to the FBI. The most serious crime is reported, so for example, if a homicide also involved a burglary, only the homicide would be reported. Thus, the SRS results in an under reporting of crime.

The SRS also collects limited information on the nature of the offense, victim offender relationships and only provides information on eight Index Crimes: murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault, and the property crimes of burglary, larceny-theft, and motor vehicle theft, and arson.

In the 1970's law enforcement, policy makers, researchers and the media began to demand greater information on crime than the SRS provided. The FBI, Bureau of Justice Statistics (BJS), IACP and National Sheriffs Association (NSA) convened a study commission to provide feedback on how to update and improve the UCR. The study commission recommended moving to an incident based reporting system that included more offenses and more data fields.²

The FBI adopted the recommendations of the report, and through the 1980s began the process of moving agencies to the National Incident Based Reporting System, or NIBRS. The NIBRS captures up to 57 data elements via six types of data segments: administrative, offense, victim, property, offender, and arrestee. The NIBRS system also collects information on more crimes than the SRS. NIBRS collects information on 49 crimes (Part A) and arrestee information on 10 less serious crimes (Part B). South Carolina tested the new system, and the FBI received its first NIBRS submission in 1989.

¹ <http://vcic.vermont.gov/ch-information/statistics/vt-crime-report>

² <https://www.ncjrs.gov/pdffiles1/bjs/98348.pdf>

The FBI continued to work with law enforcement agencies to adopt the new system. The FBI announced in 2004 that it would discontinue the SRS and require all law enforcement agencies to use NIBRS by 2021.

History of the Vermont Incident-Based Reporting System (VIBRS)

The Vermont Incident Based Reporting System (VIBRS) was developed in the early 1990s, with the first agencies becoming certified by the FBI in 1993.³ By 2004, all law enforcement agencies were NIBRS certified, making Vermont one of the first states to have 100% of its agencies certified. In 2005, the Vermont Crime Information Center (VCIC), working with Beyond 20/20, released Vermont Crime On-Line⁴ an interactive interface with NIBRS data. The portal allows users to create custom reports on all segments of VIBRS data. Additionally, researchers and law enforcement have access to raw data, which allows users to match specific offenses to victim, arrestee and other segments.

In 2011, a new CAD/RMS product, Valcour, was introduced to Vermont and many law enforcement agencies began using this in place of the Spillman product that had been used throughout Vermont. The FBI reports indicated that agencies using Valcour software had been underreporting crimes. Many errors were due to problems with the Valcour software.⁵

Many remaining errors in both the Spillman and Valcour systems are due to inadequate NIBRS training and an underappreciation of the importance of complete, accurate and timely crime data among those who enter NIBRS data and those who supervise them.

NIBRS Data Quality

One of the main benefits of NIBRS data for agencies, policy makers, researchers and the public is that the data is audited before it is published. Each contributing law enforcement agency employs a NIBRS auditor who reviews the data, checks for internal consistency using a series of software applications, and then sends it to the state auditor at the Vermont Crime Information Center (VCIC) for validation. The data are then sent to the FBI to be audited. The FBI subsequently conducts validation checks on the data error reports are sent back to VCIC where they are reviewed and returned to the contributing agency for correction and resubmission.

Although all of these procedures unquestionably improve the quality of NIBRS data, current auditing strategies are not able to reliably audit a critical element of crime reporting – the classification of the crime. Classification involves applying the correct offense category to each crime reported. For example, if the crime incident involved a bar fight, the incident should be classified as an “assault.” If that bar fight also involved a knife, then the incident should be classified as an “aggravated assault.” The importance of classification cannot be underestimated since the validity of all research and planning efforts relies on the nature of crime in a jurisdiction being correctly classified. Early in 2017, corrections were made in the Valcour software by creating a common call type, which ties inconsistent call types across ORIs to the common call type.

³ <http://www.jrsa.org/ibrcc/state-profiles/vermont.html>

⁴ <http://vtweb2.beyond2020.com/public/>

⁵ The Valcour Governance Board recently reported that many of these problems have been fixed.

To assess the data quality of Vermont NIBRS data, CRG relied on the April 2016 Quality Assurance Review (QAR) Audit of the Vermont NIBRS program by FBI's Criminal Justice Information System (CJIS) Division, CJIS Audit Unit. This representative audit was based on detailed audits of a sample of 10 Vermont law enforcement agencies. The FBI audit was based on their tested methodology.⁶

Classification

Part of the QAR Audit involved verifying the accuracy of crime classifications at the audited law enforcement agencies (LEA). This process involves reading the case report for a sample of crime incidents reported to the FBI to determine if the crime was classified correctly. The FBI auditors found the State of Vermont to be out of compliance regarding the accuracy of crime classifications of "Group A"⁷ offenses. The FBI considers submissions with classification errors of 10% or higher as noncompliant. The Group A offense classification error rate for Vermont was 18.31%. The classification error rates for "Group B"⁸ crimes was 3% and in compliance with FBI data quality standards.

For the audited LEAs, the Group A offense classification error rate ranged from 0% to 30% with a median error rate of 16.07% and an average error rate of 16.43%. Three of the four largest LEAs audited had error rates above the state average. The second largest LEA audited had the highest error rate.

Procedure Assessment

All of the LEAs audited as part of the FBI QAR met NIBRS guidelines for all reporting procedures assessed. For example, all LEAs in the sample correctly identified crimes against person, property, and society when reported. All agencies correctly reported the type of arrest made in a case and arrestee data. All agencies reported on only those offenses and arrests which occur within their jurisdiction. Lastly, all agencies reported only recovered property stolen from their jurisdiction as opposed to reporting on recovered property that may have been stolen in other jurisdictions. This procedure reduces the possibility of double counting recovered stolen property.

Group A Data Elements

When a Group A crime is reported, the responding LEA is required to collect a variety of information regarding the event, the location, the victim, the offender, property loss, weapons used, types of drugs involved, and bias motivation. During the course of the audit, the FBI assessed the accuracy of 20 different data elements for each case sampled. Of the 3,781 data fields reviewed, 4.23% were discrepant with the information provided in the police report for that incident. Discrepancy rates for data elements ranged from 0% to 26.3%. Information regarding bias motivation, weapons information, and drug data were the most accurate (0% discrepant). Reporting regarding the age, sex, and race of offenders (vs. arrestees) were discrepant 4.3% of the time. Information regarding descriptions of stolen property was the most inaccurate (26.3% discrepant). Understanding and correcting this error rate is contingent on better training of officers. When NIBRS validations are moved from a single Agency NIBRS Auditor to individual officers, all officers need to know what constitutes reportable data and how to

⁶ <https://ucr.fbi.gov/quality-assurance>, see Available QAR Options.

⁷ Group A offenses include 49 offenses grouped in 23 crime categories. Specific facts about these offenses are gathered and reported in the NIBRS system.

⁸ Group B offenses include 10 less serious offenses which are only reported when an arrest is made in the case.

properly document that in an incident. VCIC provides training on Group A and Group B crimes to agencies' approving supervisors and their superiors. Group A, Group B and NIBRS elements also need to be addressed at the Police Academy and Full Time Officer (FTO) certification.

Reasons for Data Errors

Input From the Data Assessment Working Group

In February 2017, CRG convened a Data Quality Assessment Working Group to discuss problems associated with NIBRS data quality reported to the FBI. The group consisted of law enforcement executives, officers, dispatchers, administrative assistants, and Vermont's NIBRS auditor/data analyst for VCIC. Several attendees serve as NIBRS auditors for their agency. The group met again in September to discuss a draft of this report.

CRG asked members of the group to complete an on-line survey prior to their first meeting to assess their perceptions of the extent of data quality issues and sources of the problems. Seventy-five percent of respondents thought that data quality is a problem in their agency ("major problem" or "somewhat of a problem" combined), while 87.5% thought that data quality is a problem statewide. Asked to select the top three reasons for data quality issues within their agency, respondents identified a lack of commitment by those who enter data, a lack of commitment by supervisors, and a lack of training. Respondents also identified these as the top three reasons for data quality issues statewide.

The group discussed issues that may have contributed to the under-reporting of crime and the resulting perception of a precipitous drop in crime in Vermont in recent years. These issues include:

- 1) A general lack of training on the data needed for NIBRS submissions, and a lack of training for officers who are promoted to become approving supervisors or those who move from one CAD/RMS to the other on how differences between systems affect NIBRS submissions. For example, even though the officers are not charging someone, or the statute and NIBRS offenses do not match, the offense still needs to be entered and reported to the FBI. In instances when there is no charge, often times data is not entered. For example, the crime of vandalism still needs to be reported along with victim, type of property, and value of property.
- 2) As noted above, both systems are plagued by the fact that the names of some offenses in the Vermont statutes do not match names in NIBRS, which may lead to under-reporting or misclassification of some crimes by those who enter NIBRS data. John Gonyea, Deputy Director of VCIC at the Department of Public Safety, is currently working on mapping the overlap and differences between state statute and NIBRS.
- 3) Both Valcour and Spillman systems allow agencies to customize their data fields. While this may be desirable, it should not allow agencies to omit crimes and fields required by NIBRS.⁹ In other words, these systems should only permit an agency to build on (rather than delete fields from) a NIBRS base if the agency wants to collect additional information. Also problematic is the use of text fields rather than drop-down menus. Many of the text fields have been changed to a drop-down menu, however, there are still a few issues to be corrected. For instance, there is no policy

⁹ Omitted crimes are not counted in NIBRS error rates since the FBI cannot know whether a crime that wasn't submitted occurred or not. Error rates can only be based on the records that are submitted.

on uniformity for entering addresses, which makes compiling data more time consuming. Text fields accept spelling errors and variations in spellings for addresses. Free texting for addresses doesn't allow for accurate mapping or co-locating of crimes to a particular address. The use of text fields should be minimized.

- 4) Vermont has a lower standard for Aggravated Assault than NIBRS does. The police narrative must document why the offense qualifies as an Aggravated Assault or NIBRS will not accept it as such.
- 5) Many agencies, both Valcour and Spillman, are delinquent in submitting NIBRS data—some extremely so. Submissions should occur monthly, but many agencies do not comply. Incomplete crime data means that submitted data are inaccurate.
- 6) There still remain some problems specific to the Valcour system, which 51% of Vermont law enforcement agencies now use (Spillman agencies are not error free, but most technical errors in NIBRS submissions originate in Valcour agencies). This information is based on error reports returned from the FBI. Examples of problems include:
 - The highest number of errors for the Valcour submissions is the glitch associated with victim-offender relationships. The Valcour CAD/RMS requires that two offenders be listed for every victim. This issue has resulted in domestic violence offenses being under-reported, with serious ramifications for law enforcement strategies and for resource allocation, particularly among social service agencies that serve victims. If this one glitch were corrected, the error rate for submissions would drop sharply.
 - The omission of some Group A crimes from Valcour;
 - Coding errors for some crimes;
 - Residency status of victim and offender, which are static in the Valcour system, but in NIBRS, residency status refers to whether offender and victim are a resident of the location where the incident occurred, which can change;
 - An important related issue is whether law enforcement agencies will retroactively fix data entries so that crime data for 2012-2017 more accurately reflects crime levels for these years.

The topic of inaccurate crime reporting and the reason for it is sensitive. There were, and remain, challenging issues related to the adoption of Valcour by so many Vermont law enforcement agencies. As with the transition to any new system, glitches are identified, fixes and corrections are needed, training on the new system is critical, and data quality suffers. The transition to Valcour has not been immune from these issues.

Several important points came to light during writing and reviewing this report.

At the time of the meeting in February 2017, problems with the Valcour system were well-documented and had been submitted to Crosswind. Because of the high error rate the FBI was not allowing the Valcour agencies to submit NIBRS data. Since then, the Valcour Governance Board and the Valcour agencies have made significant improvements, and many of the issues identified at the first meeting of the Law Enforcement Audit Working Group have been corrected. During this time the FBI started allowing Valcour agencies to submit NIBRS reports because the error rate went down to an acceptable

rate. In a special FBI error report issued in May 2017 for the Valcour agencies that submitted NIBRS data, the error rate was 2.59%, with by far the highest number of errors in victim-offender relationships.

It's important to keep in mind that this was one report and that all agencies were not included in the submission so it remains to be seen whether the low error rate will continue. One of the difficulties of monitoring Valcour's error rate going forward is that FBI error reports, which are normally completed monthly, unfortunately combine Valcour and Spillman information into one report, making it challenging to separate out errors and agencies.

Since compliance with NIBRS submissions requires ongoing corrections and improvements, attention must be given to both moving forward.

As previously indicated, Spillman is not without its own challenges. There are issues as noted above, such as a commitment to accurate data entry and timely submission of reports.

This project was undertaken to assess the quality of the crime data in Vermont with the intent to offer recommendations for improvement. Significant strides have been accomplished but more remains to be done. It is anticipated that Vermont's 2017 crime data will be much improved.

Input From NIBRS Auditors

Five NIBRS auditors from law enforcement agencies also provided their perspectives on NIBRS data quality and training issues. These auditors represented large and small agencies, including Vermont State Police and a sheriff's office. These auditors included an officer, a deputy, a dispatcher, a dispatch supervisor and an administrative assistant. Two agencies use the Spillman system and three, Valcour.

Three of the five auditors indicated that they are having problems with their NIBRS software. Those on the Spillman system said the system was easier to use before the last upgrade. Although just two of the five auditors saw data quality as a problem for their agency and for the state, when asked whether Vermont's 18% NIBRS error rate is acceptable, all said no (in their view, acceptable rates ranged from 0 to < 5 percent).

Three of the auditors attended a NIBRS training in 2016, but either did not have training when they began as auditors or training has been irregular. Four of the five indicated that in general, NIBRS training is inadequate for dispatchers, officers, and supervisors. Supervision of those entering NIBRS data was also viewed as inadequate by most of these auditors. Three of the five agencies represented by the auditors do not have written policies related to NIBRS data.

All five auditors agreed or strongly agreed that the primary reason for NIBRS data quality issues is a lack of commitment on the part of dispatchers, officers and supervisors. These five auditors think that training should be offered at least once per year, and three of the five said that training at the police academy is critical. Several auditors noted, however, that unless there is recognition among supervisors of the importance of good data quality, they will not encourage or mandate officers, dispatchers and others to attend NIBRS trainings (or attend themselves). These auditors favored trainings that require in-person attendance rather than webinars or "Go to Meetings" because it is easier to focus on the training if held off site.

Lack of Access to Accurate and Timely Data

In addition to the data quality issues outlined above, a critical issue is access to up-to-date Vermont crime data. Vermont Crime On-Line (VCON) just recently posted data for 2015. Downloadable data are available for 2016 from the FBI, although not all NIBRS variables are included.¹⁰ The timeliness of the data being available hinges on having to wait for a final flat file from the FBI for any given year, and then having to update the yearly summary comparisons. The online analytical processing (OLAP) capabilities of VCON can provide users with the capacity to conduct simple or detailed analyses of crime and crime trends in their jurisdiction, but is currently not fully used. Updating (VCON) quarterly, including all NIBRS data elements for all jurisdictions in the state and allowing users to conduct analyses would provide law enforcement, researchers, social service agencies, legislators, other public officials and the general public timely access to crime data. This in turn will support data-driven approaches to crime prevention and control, requests for resources, and inform resource allocation and social service programming.

Recommendations

- 1) Increase NIBRS training and funding for training** for all who enter NIBRS data and their supervisors. The state NIBRS auditor, Amy Messier, recognizes the critical role of training in improving data quality. However, she is currently the only person doing NIBRS training. She has found that small group trainings (e.g., at one agency) are most effective, but also the most labor-intensive. One person (with additional job responsibilities) cannot train all individuals in the state.
 - Hire at least one additional trainer/auditor. This would ensure that there is consistency in the trainings and auditing, which is important;
 - Review training models in other states (see Appendix A for a sample of training models which have been implemented in other states);
 - Provide regional trainings once or twice per year for continuing education credit (introductory and refresher; action oriented; scenario based; interactive);
 - Provide a short introduction to NIBRS at the police academy—perhaps as short as an hour, explaining what NIBRS is and why it's important, using real data (some work on this is in process);
 - Explore other potential training points, such as Field Training Officer (FTO) certification and re-certification; training for clerical staff and supervisors is also needed, including what to look for in NIBRS submissions. (Note: the state NIBRS auditor was asked to present on NIBRS at the January 2018 FTO training.)
 - Develop on-line resources for newly-hired individuals who miss training (see link in Appendix A for example);
 - Develop a NIBRS manual for Vermont;
 - Work to re-energize the law enforcement community regarding the value of accurate crime data and NIBRS reporting. This can be accomplished as part of the smaller trainings on site. Once LEA's are made aware of where this information goes and why, there will be more compliance with data collection.

¹⁰ <https://crime-data-explorer.fr.cloud.gov/>

- 2) **Improve communications between the state NIBRS auditor and Crosswind, the Valcour software developer, and the Valcour Governance Board.** It's important that the state auditor have information on the corrections being made, confirm that corrections show up in the FBI reports, and communicate the success of the correction to Crosswind. One suggestion is to identify a point of contact for the state NIBRS auditor.
- 3) **Establish a working group** led by a high-level Department of Public Safety administrator to provide leadership and put together a plan to address the need for accurate and timely NIBRS submissions and accessible, and timely on-line crime data at various levels of aggregation (state, county, and town).
- 4) **Continue to link agencies' NIBRS compliance (timely submissions and acceptable error rates) to state grant distributions** made by the Emergency Management, Homeland Security, and Governor's Highway Safety programs. These agencies rely on data so have a vested interest in its accuracy.
- 5) **Develop a crime analysis capability within law enforcement agencies** to enhance proactive policing strategies, which should result in a greater commitment to data quality on the part of law enforcement agencies. Crime Research Group could try to secure federal funding to develop a course to be taught at the police academy on how to understand and use data; basic data analysis; how to interpret "canned" reports; and the importance of accurate data. The course would be offered for continuing education credit.
- 6) **Consider periodically distributing a statewide list of agency error rates and delinquency status** to police chiefs and sheriffs to encourage compliance and attention to data quality, and provide assistance when needed.
- 7) **Purchase a NIBRS repository software application** that receives NIBRS extracts from agencies, runs an audit, sends the extract back to agencies with errors, packages data in the FBI's required format, receives error messages from the FBI, and updates new data as it comes in. Data in the repository can be used by the state's Statistical Analysis Center (SAC) to answer queries and conduct analyses. The NIBRS repository software must be able to automatically update Vermont Crime On-Line or a comparable publicly accessible online crime reporting and analysis tool. Importantly, the repository should decrease, not increase, the workload for the NIBRS auditor.

APPENDIX A

TRAINING MODELS IN OTHER STATES

Washington State

In Washington State, the NIBRS program is housed in the Chief of Police and Sheriff's Association. There are three employees. The NIBRS coordinator has regional trainings as needed, and prefers at least 10 participants. Basic NIBRS training is available on-line at:

https://nibrstng.waspc.org/General_NIBRS_Overview/story.html (Microsoft Explorer, preferred).

Officers earn 30 minutes of continuing education credit for taking the on-line course.

Washington State also has an active NIBRS listserv and publishes a NIBRS Tip of the Month. Using the listserv, the coordinator answers a "Great Question"— a question she has been asked and is probably a common issue. The Tip of the Month has been used to map NIBRS Categories to state statutes and to highlight particular crimes and appropriate coding.

Montana

In Montana, the UCR program is housed within the SAC. There are two employees. Most training is done by the auditor when she travels to locations. They do offer several levels of training in a course like environment. It is offered in one location now, but they are thinking of expanding to a regional approach.

Idaho

In Idaho, in-person trainings are offered twice per year in each region of the state, and include basic and advanced content. Attendees receive eight hours of professional credit for eight hours of training. Trainings average 35-40 attendees per session (minimum of 12 required). If an employee is hired and the next training session is too far away, a trainer travels to the new hire's agency. Idaho does not offer on-line training yet, but hopes to develop it.