

Presenting Incident-Based Reporting (IBR) Data - One Byte at a Time

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Introduction

The advent and diffusion of incident-based records management systems in law enforcement has moved crime analysis into a new era, founded on an unprecedented richness of crime data. Many jurisdictions have adopted information systems compliant with National Incident-based Reporting System (NIBRS) standards and, in many cases, exceeding the standards with a rich collection of information about crime. The amount of crime incident information now readily available to law enforcement officers, crime analysts and researchers reflects the data explosion evident in all areas of society as technology is continually adapted to business practices.

The availability of crime data does not by itself suggest that it is easily or readily transformed into information useful in crime analysis, public policy formation, and public education. In fact, crime analysts and researchers face challenges in the effective organization and presentation of crime data now more than ever. While the wide range of information available about crime incidents, victims and offenders far surpasses the summary reporting characteristic of the Uniform Crime Reports, using and translating this data into meaningful and useful information is the challenge now face by crime analysts.

This report chronicles the experiences using incident-based records (IBR) of the Vermont Crime Information Center (VCIC), the state's UCR repository, and Vermont Center for Justice Research (VCJR), the statistical analysis center. An overview of the IBR system from which crime data are drawn and experiences with presenting this data over the past eight years are included in this report, the purpose of which is share the experience and lessons learned.

Crime Byte Concept

Incident-based crime data were first collected in Vermont with the advent of the Vermont Incident-Based Reporting System commonly known as VIBRS in 1992. At that time the Vermont State Police and several municipalities formed a single statewide network and records management system. Since then a significant number of municipalities have been added to the network, although several large municipal departments continue to use stand-alone systems. About 90 percent of law enforcement agencies in the state presently contribute data to the IBR system; after January 2004 all agencies in the state not on the network will be required to submit NIBRS formatted data so that analysis will be capable statewide in the near future.

One of the objectives of VCIC is to prepare and disseminate information about crime for policy formation, feedback to law enforcement and public information purposes. Concurrent with the advent of the VIBRS system were increasing demands for crime information from the legislature, law enforcement, other agencies, the media and public. A solution was needed to disseminate information regularly and address issues of current policy concern or public interest.

Beginning in 1994 the VCIC began to prepare a series of short analyses based on the IBR data it now had available, typically confined to a single issue, relationship or dimension of crime. These reports were disseminated first through an e-mail distribution list then eventually moved to the VCIC area of the larger Department of Public Safety website.

A major challenge posed by the growing volume of IBR data is how to effectively identify characteristics of crime that are of interest to many constituencies, and to effectively communicate findings from crime analyses. One approach in demonstrating the contribution of IBR data to crime analysis and policy is found in the growing number of research projects that draw on these data to answer questions of criminological and policy formation importance. Researchers have discovered and used IBR data in creative new ways to address problems; examples are found in the research projects conducted by Statistical Analysis Centers available on the Justice Research and Statistics Association website and in professional journals.

Another approach, the focus of this brief, is to develop and present limited analyses of IBR data to a larger audience not generally schooled in research design or trends in criminal justice research. This audience consists of the public, media, legislators, colleagues in other agencies and those generally interested in criminal justice issues. The ability to communicate the value of IBR data is as crucial as the substantive characteristics about crime that might be reported.

This brief explores the experience in Vermont following implementation of the VIBRS network and wealth of new data it provided. Major lessons learned from this experience are summarized along with examples from analyses conducted over the past decade. One objective is to provide crime analysts with ideas about how to disseminate findings about crime effectively to a wider audience than may presently be the case.

Lessons Learned

The central challenge presented by the wealth of data in IBR systems is how to get the word out about how IBR data may contribute to policy formation and public education. One way to do this is with short, focused and graphics-oriented analyses that can be easily distributed to and understood by those who are not trained in criminal justice or criminology. The Vermont Crime Information Center pioneered a concept in the mid-1990's which became known as the "Crime Byte," described on the VCIC website

(http://www.dps.state.vt.us/cjs/crimbyt_index.htm) as:

CRIME BYTE n., A brief report on some aspect of criminal behavior or criminal investigation published weekly by the Vermont Crime Information Center.



Thus, the Crime Byte was born as a regularly distributed analysis that focused on a single issue or characteristic of crime. Although it has not always been published on a weekly basis (see the discussion below regarding resource issues), the concept remains viable and one that is adaptable to a variety of mediums as technology evolves.

A number of lessons were learned from this experience and are summarized below. Included are issues that should be considered when contemplating a Crime Byte type of distribution. Specifically, method of distribution, topic selection, graphical presentation, secondary dissemination and downloads, and resource issues should be planned when developing a reporting system.

Distribution.

People need to know that crime analyses are available to inform public discussion and policy formation if the potential of IBR data are to be fully realized. How analyses are distributed is a function of evolving technology and the resources available for dissemination.

When the Crime Byte was first developed in 1994 many agencies did not have websites or the Internet presence typical of government's electronic presence today. However, e-mail was quickly expanding as a method of reliable and fast communication, including the dissemination of research or analytical findings. The Crime Byte was initially distributed via e-mail to a wide range of consumers including VIBRS network users, media, analysts interested in IBR data analysis, and others. Two observations may be made from this first method of dissemination. First, as those on the mailing list came to regularly expect the Crime Byte, more sophisticated questions were posed of VCIC. This phenomenon resulted in simultaneously raising the complexity of discussion about IBR data and educating consumers about the ability of IBR data to answer important questions about crime. Second, it became increasingly clear as the distribution list grew that demands on the mail system and resources needed to maintain this more active distribution approach necessitated another approach.

The evolution of technology and advent of websites as major vehicles for information dissemination eventually replaced the e-mail distribution lists. While website distribution is economically feasible it is essentially a passive method and requires periodic marketing to potential users so that they are aware of the site and available resources. It is important that other websites visited by IBR users and data consumers contain links to the IBR website. This may require coordination with other agencies in the criminal justice system to be sure that links are provided and maintained.

Additionally, an IBR dissemination website should be capable of fielding requests for more information either directly through special submission forms, or indirectly through an e-mail capability. Many ideas for crime analysis have come from requests by Crime Byte consumers to look at specific relationships, analyze a problem differently or explore some feature of crime

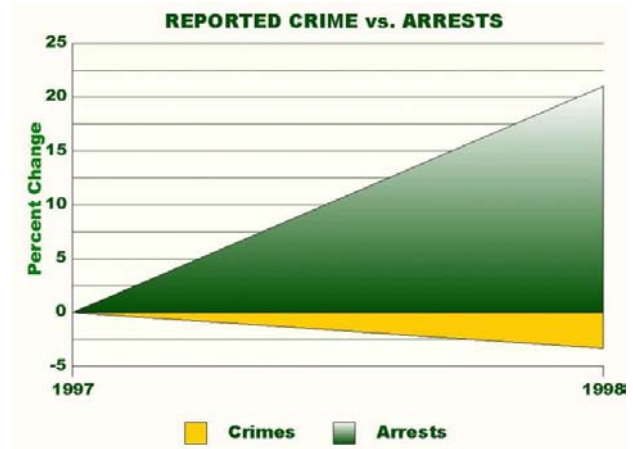
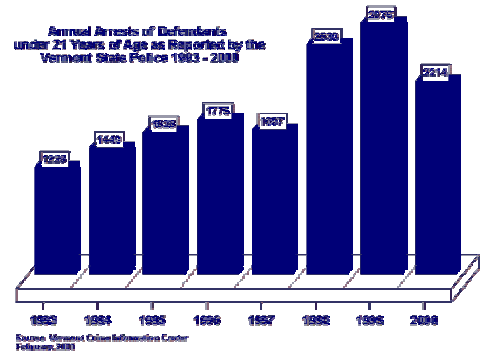
relevant to current policy formation or political debate. Solicitation of ideas from users makes the website relevant to a wide audience and provides direction for IBR analyses that are of contemporary concern. Additionally, when law enforcement use crime analyses the loop is completed by providing those who collect crime data with tangible outcomes. Once data consumers are aware of the contributions IBR data can make to the public education and policy processes demands for such analyses will increase, as has been the case with VCIC directly and indirectly through the SAC.

Topic Selection.

Deciding upon the type and subject of analysis is extremely important in generating interest about IBR data. Crime analysts often have interests in topics relevant to their agency's needs or larger research interests. However, the successful dissemination of IBR analyses depends upon selecting topics that are easily recognized and of current interest to constituents. Topics that are not relevant to users will generate little sustained interest in IBR analyses.

Experience with the Crime Byte concept suggests that monitoring the media and news stories, legislative activity and the endeavors of other agencies is critical to producing timely analyses relevant to current discussion or debate. Requests from the consumers of IBR analyses are also a good source for identifying topics. Most of the analyses presented in the Crime Byte series were developed from interest in current issues, legislative activity, relationships with media and public interest such as:

- Annual arrests of defendants under the age of 21
- Annual number of heroin arrests
- Bias-motivated crime
- Assaults on police officers
- Domestic assault arrests
- Incidents involving firearms
- Trends in crime incident reports
- Number and type of traffic citations
- Arrest vs. reported crime trends
- Check fraud
- Prescription Fraud



Experience has also shown that a brief background or explanation of the topic and findings is important to emphasize graphical or tabular presentations. Descriptions should be limited to a short paragraph if possible. The purpose of the Crime Byte is to communicate an idea or finding quickly and succinctly. Two examples of narratives used in Crime Bytes are listed below.

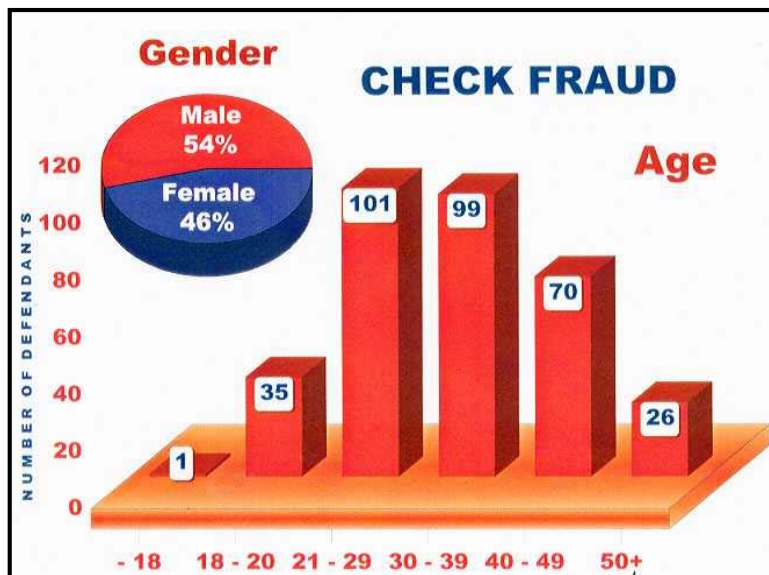
CHECK FRAUD (1999)

During calendar year 1998, VIBRS-Network agencies responded to over 1400 incidents involving check fraud. Check fraud includes:

- writing a check on insufficient funds;
- writing a check on a closed account; and
- check alteration/forgery.

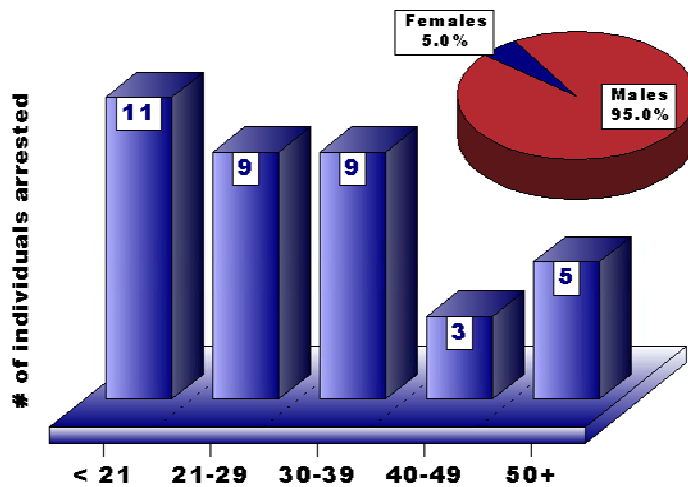
The most frequently victimized commercial establishments were grocery stores, convenience stores, and specialty stores.

VIBRS-Network agencies made 332 arrests for check fraud during this same time period. The demographics of arrested defendants are presented below:



CHILD SEXUAL ABUSE (1999)

During the period January 1, 1999, through July 1, 1999, VIBRS-Network agencies reported 75 incidents involving child molestation. During the same time period, VIBRS- Network agencies arrested 37 persons and charged them with 45 counts of Lewd and Lascivious Behavior with a Child. The demographics for arrested defendants are displayed below.



Additionally, every Crime Byte includes a preface regarding the source and limitations of the data. A statement to this effect is essential for proper interpretation and application of the analyses presented in this format, and often heads off phone calls with questions about the data. The statement used in the Crime Byte is listed below and could be used as an example for those contemplating this type of analysis dissemination.

“The CRIME BYTE is based on crimes reported to law enforcement agencies who are members of the **Vermont Incident Based Reporting System (VIBRS) Network**. Initiated in 1992 by the Department of Public Safety, VIBRS is a wide-area computer network of law enforcement agencies who contribute crime data to VCIC on a real-time basis in compliance with standards established by the FBI. Unfortunately, not all Vermont law enforcement agencies are members of the VIBRS network. VIBRS agencies include all Vermont State Police stations and a number of municipal and sheriff departments. Though it is anticipated that all Vermont law enforcement will eventually belong to the VIBRS Network, currently VIBRS agencies cover only 85% of the total crime reported in Vermont. Eighty-eight percent (88%) of Vermont residents are served by VIBRS agencies.”

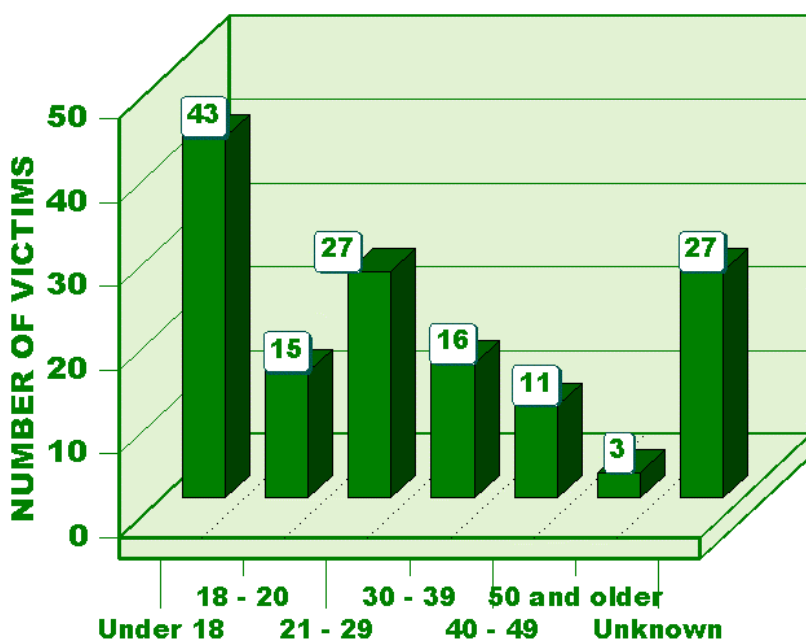
Because the CRIME BYTE is not based on crime reports from all Vermont law enforcement agencies, information provided in this feature should NOT be interpreted as complete statewide data for all of Vermont.

Graphical Presentation.

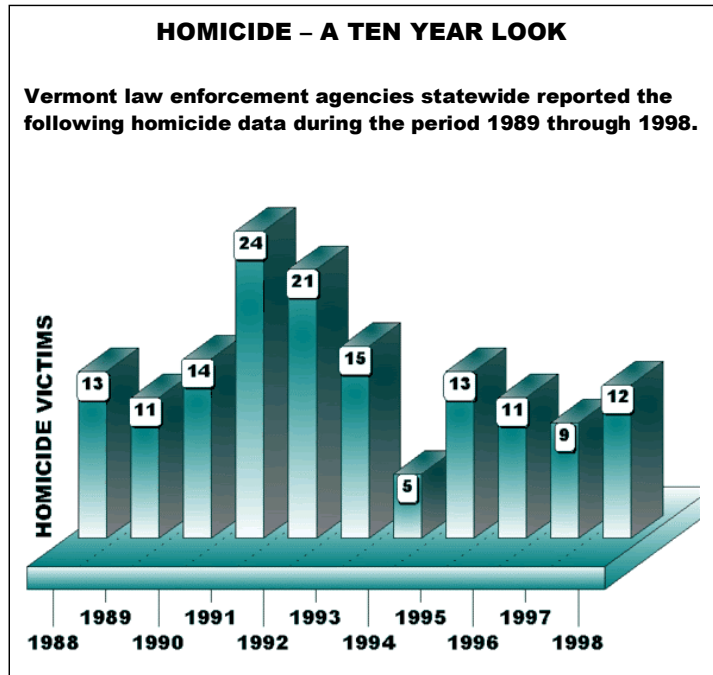
Not all Crime Bytes and presentations of findings may be done in graphical format, although the best approach is to use graphics to communicate as often as is possible. Tables have been used to convey findings of interest to a number of constituents, especially when a request for an analysis more detailed than usual is made. However, graphical presentations have been shown to yield the best understanding and use in this environment. Complicated issues are not generally well suited to the Crime Byte concept and care should be taken to avoid presenting complex or confusing analyses. Experience with the concept suggests that univariate presentations are typically the best approach, although bivariate relationships can be effectively presented in some cases.

Presented below are several examples of Crime Bytes that were particularly useful and widely used/referenced by a number of constituents. Note that several of the examples presented earlier in this report are also noteworthy for the ability to convey concise information about crime quickly and accurately.

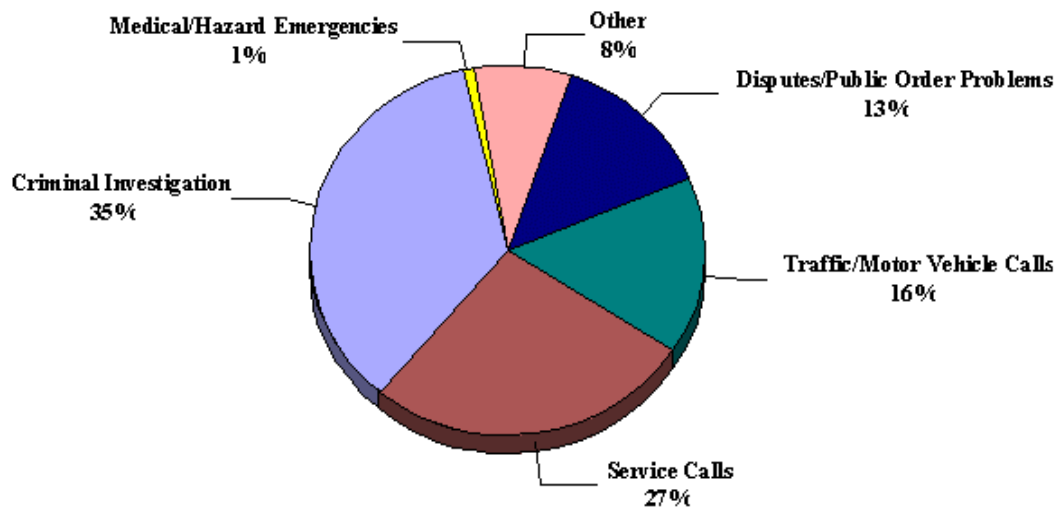
A victims of rape profile was published given concern over the dynamics of sexual assault, discussion in the legislature and media coverage of the topic. The caption for this graphic read: *“At least 30% of all rape victims in Vermont are between the ages of fourteen and eighteen.”*



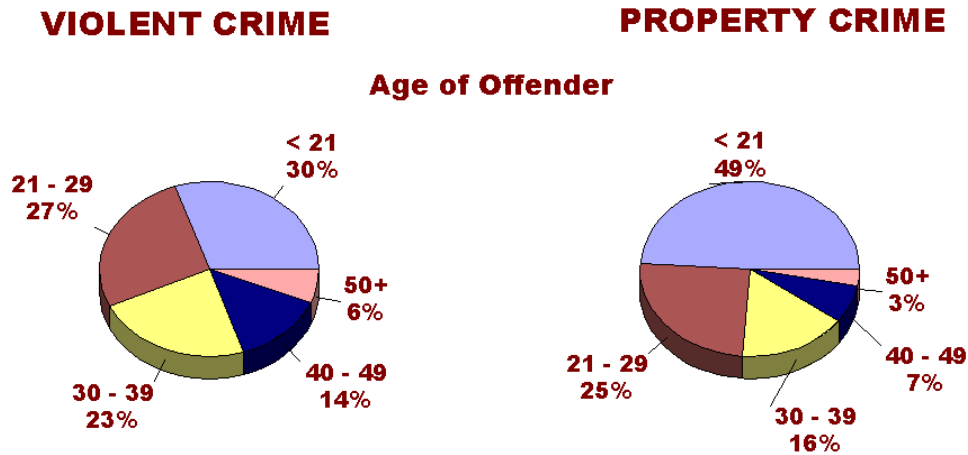
Homicide is typically a topic of discussion when what seems to be an unusual number have been committed in a year or shorter period of time. Vermont averages about ten to twelve homicides per year, but a single event in which two, three or even four victims are killed generates interest in the historical prevalence of homicide. This graphic was produced given numerous questions by the media and public about trends in homicide.



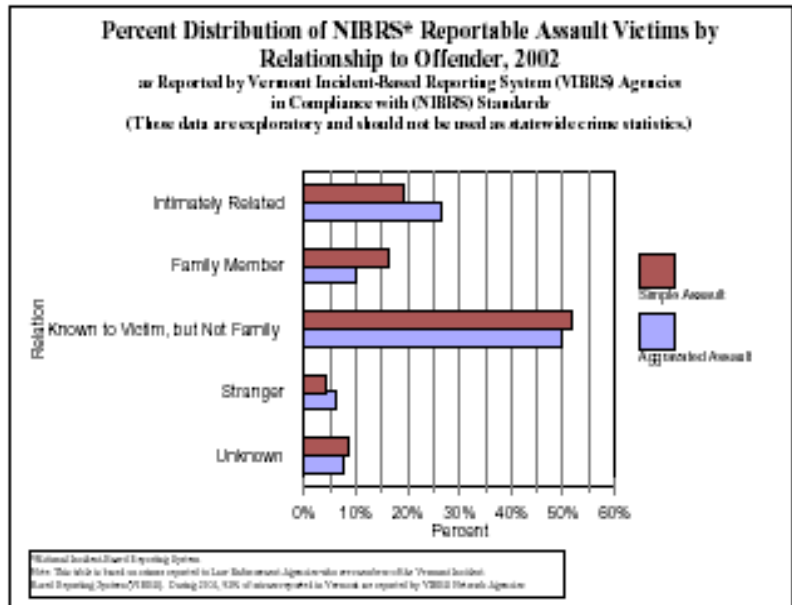
One of the advantages of IBR and computer-aided dispatch systems is that an analysis of incidents requiring a law enforcement response is possible. The graphic below was generated from VIBRS incident records and was designed to communicate the wide variety of activities law enforcement responds to, many of which are service and public order related.



Youth crime in Vermont is a regular issue at the forefront of discussion in the legislature, media and public, as it surely is in most jurisdictions. The graphic below was generated to indicate the proportion of violent and property crime arrests that involved offenders under the age of 21. As may be seen, a significant proportion of property crime arrests (about half) was for this age group, while the group accounted for a smaller but still significant proportion of violent crime arrests (30 percent).

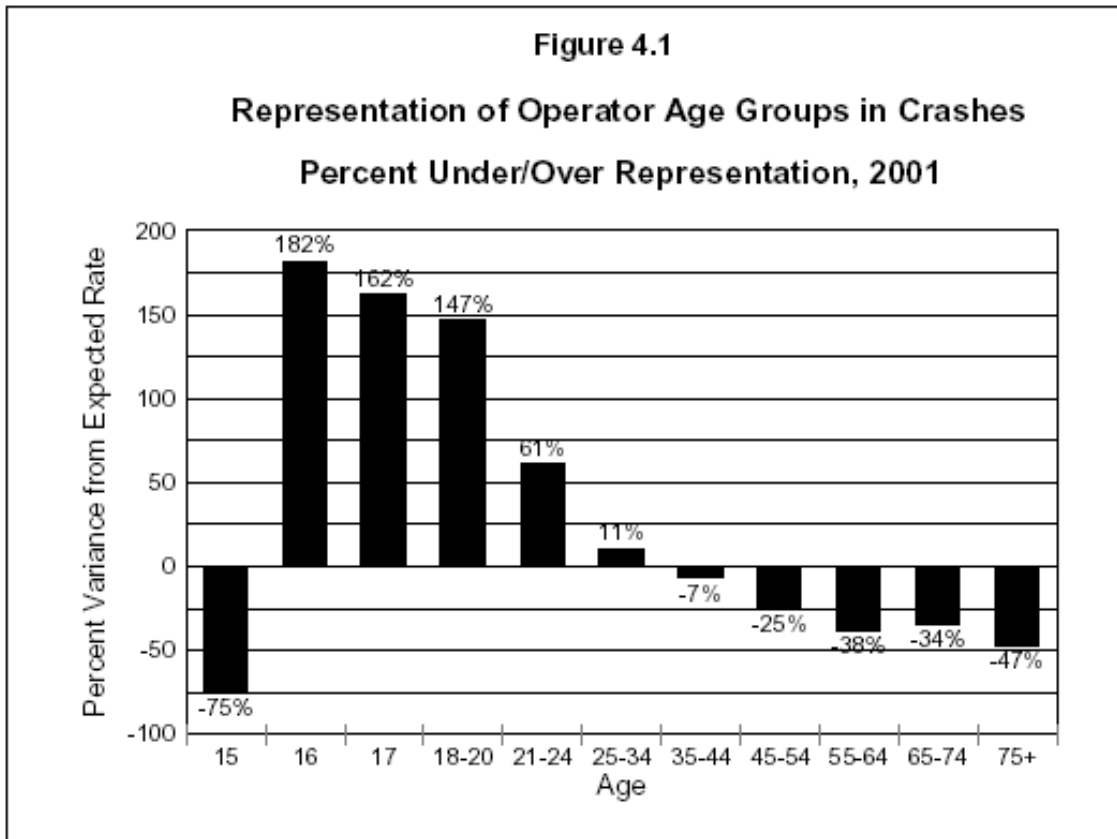


The Vermont Crime Information Center has cooperated with the Vermont Center for Justice Research (the SAC) the past two years to include analyses of Vermont NIBRS data as part of the annual Crime in Vermont report. This collaboration has created an opportunity to portray selected crime characteristics in both tabular and graphic form. The graphic to the right is taken from the crime report and depicts the victim-offender relationship for simple and aggravated assault. Although not part of the Crime Byte series, these tables have begun to be widely used by



the media, public and other agencies interested in data from the IBR system. The full report and tables are available on the VCIC website at: http://www.dps.state.vt.us/cjs/crime_02/index.html.

A final example drawn from motor vehicle crash reports has communicated the relationship between operator age and crash involvement quite effectively over the years. As motor vehicle crash reporting moves toward an electronic system and integration with IBR systems, this type of analysis will also be available to the crime analyst in coming years. Moreover, the approach may be applied to age-specific arrest rates in much the same way. The graphic presented below is taken from the annual Crash Report series, which may be accessed through the Department of Public Safety website at: <http://www.dps.state.vt.us/cjs/crash2001>



Secondary Dissemination and Downloads.

Access to the Crime Byte or other similar reports has been greatly improved with advancement of website technology. When preparing crime analysis reports for public dissemination it is important that consumers be able to download as well as view reports. Specifically, many reports and graphics will end up being further disseminated or used in other reports to the legislature, by the media or other agencies. Therefore, it is important that standard and easily downloadable formats be used when posting analyses to the Internet.

The Crime Byte series is available for viewing on-line in HTML format but may also be downloaded as a MS-Word document. The MS-Word format allows for easy downloads and the ability to cut and paste graphics for further dissemination and use in reports or briefs. The days of faxing or mailing results have long passed and most consumers expect the same type of service from governmental websites as they do from business websites.

An additional format that is increasingly used by state and federal agencies for document exchange is the Adobe Portable Data Format, or PDF. The advantage of PDF documents is that they retain original formatting, if it is important to maintain the integrity of a document. The disadvantage of PDF files is that they are not easily incorporated into other documents, although this may not be problematic in most instances where data consumers are primarily interested in findings.

Resource Considerations.

A final set of considerations for maintaining a series such as the Crime Byte are resources. Specifically, regular analyses must be conducted, converted to HTML format and posted to a maintained and managed website. Therefore, staff resources and a well constructed web-site are the primary requirements for effective dissemination of analyses. However, additional technological resources might be needed for analysis of data from the IBR system; one example might be the purchase of statistical software or a publication package such as Adobe. Technical and training costs should be considered, although many IBR systems allow for some data analysis and off the shelf software (e.g. MS - Word or Excel) will produce tabular and graphic presentations.

While it is not especially costly to conduct and publish IBR analyses the endeavor may compete with other resource demands in an agency. When planning to develop a similar approach resource considerations should be incorporated into the long-term management of the endeavor. The Crime Byte has not been published in recent years as frequently as desired given demands on staff time.

Conclusions

The Crime Byte concept is one approach to exploiting the power of IBR data to convey information about the contours and characteristics of crime and the criminal justice system. The concept has proven quite useful in Vermont and has served as a method for disseminating information relevant to the policy formation process, public interest and planning process. This article examined several lessons learned or features of the endeavor that should be considered when developing a similar approach. Issues of specific importance and related questions they raise include:

- **Distribution Method:** Is a website the best approach? How might information consumers provide input for analysis?
- **Topic Selection:** Are topics relevant to current public interest? How might topics inform policy formation? Which topics might be of interest to law enforcement?
- **Graphical Presentation:** How might the finding or relationship be depicted graphically? Does the graphic communicate the finding quickly and concisely? When might tabular presentation be indicated?
- **Secondary Dissemination:** How will users be able to download findings and graphics for secondary distribution or use? Graphics and reports prepared in formats generally available by most users?
- **Resource Constraints:** How often will analyses be reported? What resources (staff and technological) will be necessary to produce professional reports? How might a resources plan be developed to sustain the effort?

The Crime Byte concept may be easily replicated with IBR data and the desire to publish reports that illustrate the ways that crime analysis can contribute to policy formation, public information and planning.