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The 2007 Survey of Law Enforcement Forensic Evidence Processing

Final Report

Prepared for

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Abstract

Research has shown that more forensic evidence is collected than analyzed, resulting in substantial backlogs (Durose, 2008; Mennell & Shaw, 2006; Lovrich et al., 2004; Horvath & Meesig, 1996). Yet, while the forensic backlogs within crime laboratories have been relatively well established, the size and characteristics of forensic evidence caseloads in law enforcement agencies are less certain.

In 2007, RTI International (RTI) was funded by the National Institute of Justice (NIJ) to conduct the Survey of Law Enforcement Forensic Evidence Processing (LEFP). The primary objectives of the study were to (1) estimate the number of unsolved homicide, rape, and property cases in the United States that contained forensic evidence, but that were not submitted to a crime laboratory for analysis and (2) describe the policies and procedures used in law enforcement agencies for processing, submitting, and retaining forensic evidence.

Data were collected from a nationally representative sample of state and local law enforcement agencies using a multimode approach that included Web-based, mail, fax, and telephone response options. From the probability sample of 3,153 agencies selected, 59 agencies were deemed ineligible for the study, which resulted in an eligible sample of 3,094 agencies. From these eligible agencies, a total of 2,250 agencies actually participated in the study and, thus, resulted in an overall survey response rate of 72.7%. Findings showed that 14% of all unsolved homicides (an estimated 3,975 cases) and 18% of unsolved rapes (an estimated 27,595) contained forensic evidence that was not submitted by law enforcement agencies to a crime laboratory for analysis. DNA was the most common form of forensic evidence associated with these homicide and rape cases. Results also indicated that 23% of all unsolved property crimes (an estimated 5,126,719 cases) contained unanalyzed forensic evidence.

The implications of these findings are considerable. The LEFP results demonstrate that law enforcement agencies continue to face substantial forensic evidence caseloads, especially for rape and property cases. In addition, the results show that law enforcement personnel require more uniform procedures for submitting evidence, including some level of prioritization based on factors such as case seriousness, as well as improved training on the benefits and use of forensic analysis. Some law enforcement officers may have a limited understanding of the full benefits of forensic evidence, with a mindset that forensic evidence is beneficial for prosecuting crimes but is not a tool for developing new leads in investigations. Other resource needs include the lack of information systems in law enforcement agencies with the ability to track forensic evidence associated with criminal cases and the need to have more standardized guidelines for evidence retention.

EXECUTIVE SUMMARY

Introduction

Many research efforts and financial investments have supported the need to improve our nation's forensic evidence processing, which is critical for investigating, prosecuting, and defending criminal cases. Yet while the processing and movement of forensic evidence in crime laboratories has been documented in surveys and reports, there has been a limited amount of research to determine the current size of forensic evidence caseloads in law enforcement agencies, as well as to determine their capacity for collecting and processing forensic evidence. Ultimately, case backlogs must be quantified in order to help estimate the number of unsolved criminal cases in the United States that may benefit from timely forensic analysis.

The NIJ-funded Survey of Law Enforcement Forensic Evidence Processing (LEFP) was conducted to estimate the number of unsolved criminal cases containing forensic evidence that had not been submitted to crime laboratories for analysis. Unsolved (or open) cases were defined as cases that had not been officially cleared by the law enforcement agency, including all cases that had not been closed by arrest or cleared by exceptional means (for example, cases closed because of the death of the primary suspect).

Specific objectives of the LEFP survey included the following:

1. Estimating the number of homicide, rape, and property cases reported during 2007 for which forensic evidence was collected
2. Developing national estimates for the number of unsolved homicide, rape, and property cases in state and local law enforcement agencies over the past 5 years that contain forensic evidence but that have not been submitted to a crime laboratory for analysis
3. Estimating the types of forensic evidence (biologicals to include DNA, trace evidence, latent print, firearms/toolmarks) that comprise the nation's forensic evidence caseload for homicides, rapes, and property crimes
4. Describing the policies and procedures used in U.S. law enforcement agencies for processing, submitting, and retaining forensic evidence, as well as the availability of information systems capable of tracking forensic evidence inventory

Research Design and Methods

RTI surveyed a nationally representative sample of state and local law enforcement agencies. The LEFP sampling frame used BJS' national 2004 Census of State and Local Law Enforcement Agencies, which represents nearly 18,000 state and local law enforcement agencies with the equivalent of at least one full-time officer operating in the United States (Reaves, 2007). From a probability sample of 3,153 agencies, 59 agencies were deemed ineligible for the study. This resulted in 3,094 eligible agencies and, therefore, excluded agencies that were removed because they either did not investigate crimes (e.g., sheriff's departments that only perform jail and court security), agencies that were not the lead investigating agency for criminal cases in their jurisdiction, or agencies that had merged with another agency in the sample or were found to no longer exist. A multimode data collection approach was used that included a Web-based survey, a hardcopy survey, and telephone follow-up. This approach provided respondents with multiple options for completing the survey, including Web, mail, fax, and telephone. The LEFP survey was reviewed and approved by RTI's Institutional Review Board (IRB).

Sampled law enforcement agencies were sent an initial lead letter and survey package describing the study and were provided a unique study identification number and a hyperlink to the LEFP Web site. A subsequent mailing was sent to nonresponders and telephone follow-up calls to prompt agencies to respond followed. A project Helpdesk was used throughout the data collection process to field questions and problems encountered by agencies in completing the survey. The response rate for survey completion for the sampled state and local law enforcement agencies was 72.7% (2,250 law enforcement agencies).

Our sampling approach follows a similar methodology used by the BJS Law Enforcement Management and Administrative Statistics (LEMAS) surveys and the NIJ-funded 2002 National Forensic DNA study. The LEFP sampling frame was first stratified by agency type (state police agency; municipal police agency; sheriff's department). The second stratum partitioned the sampling frame based on agency size (defined as full-time sworn personnel or full-time equivalents). The four agency-size categories were agencies with (1) fewer than 25 officers, (2) 25 to 49 officers, (3) 50 to 99 officers, and (4) 100 or more officers. All U.S. law enforcement agencies with 100 or more sworn officers were included with certainty in the sampling frame.

The LEFP questionnaire was developed by RTI project staff with input from NIJ and from a panel of recognized experts in the fields of law enforcement and forensics. This initial LEFP instrument was modified from the survey used in the 2002 NIJ National Forensic DNA Study, which included questions on the number of homicide and rapes with DNA evidence, storage procedures, reasons for not processing this evidence, and whether the department

had a cold case squad to review unsolved crimes. This instrument was augmented to reflect a broader range of forensic evidence, including controlled substances, firearms, latent prints, and toxicology. Additional questions were also added about evidence storage policies and agency procedures for processing forensic evidence.

Survey Results

The LEFP survey included many areas for which data concerning forensic evidence were informative. Survey respondents reported on information such as proportion of cases for which forensic evidence was collected in 2007, open cases that contained unanalyzed evidence from 2003 to 2007, the types of forensic evidence included in unanalyzed cases, the presence of non-laboratory agency staff responsible for evidence collection and analysis, and evidence retention policies. The survey also collected information on forensic evidence associated with drug arrests. For the purposes of the survey, forensic evidence was defined as "any physical evidence collected during a criminal investigation that could be processed by scientific methods and usable in the courts." This definition included, but was not limited to, trace evidence; biological screening, including DNA; latent prints; and firearms and tool marks.

One of the objectives for the study was to approximate how frequently forensic evidence is collected by police departments. Of crimes received by U.S. law enforcement agencies during 2007, there were an estimated total of 6,728 unsolved homicides; 33,696 unsolved rapes; and 4,776,127 unsolved property crimes. Among these unsolved crimes, agencies reported that forensic evidence was collected in 88% of homicides, 73% of rapes, and 29% of property crimes.

Findings from the LEFP survey also indicate that, among crimes committed over the past 5 years, a sizable number of unsolved cases contained forensic evidence that was never submitted to a crime laboratory for analysis. Specifically, state and local law enforcement agencies reported an estimated 3,975 unsolved homicides (14%) and 27,595 unsolved (18%) rapes that had not been submitted to a crime laboratory. About 40% of unsolved homicide and rape cases were estimated to have contained DNA evidence (an estimated 12,548 unsolved cases), and 26% were estimated to have contained latent prints (8,274 cases).

The LEFP survey also investigated evidence in property cases that remained unanalyzed. About 23% of unsolved property crimes with forensic evidence from 2002 to 2007 (more than 5 million cases) had not been submitted for analysis by a forensic laboratory. Considering the findings from the NIJ-funded DNA Field Experiment study, which demonstrated that collecting and analyzing DNA evidence from property crime scenes can

have a significant effect on arrests and prosecutions (Roman et al., 2008), these LEFP findings suggest that the analysis of evidence from a greater number of property crime scenes could support new leads, more arrests, and higher closure rates for property cases.

Larger police agencies (those with 100 or more sworn officers) accounted for 84% of all backlogged homicide cases, 59% of all backlogged rape cases, and 65% of all backlogged property cases. Mid-sized agencies (those with 25 to 99 sworn officers) accounted for 15% of all unanalyzed homicide cases, 27% of unanalyzed rape cases, and 22% of unanalyzed property cases. Smaller agencies (with fewer than 25 sworn officers) indicated larger relative percentages of rape cases (13% of total backlogged rapes) and property cases (13% of total backlogged property cases) in comparison with total backlogged homicide cases (2% of total).

Municipal police agencies accounted for about four out of five unsolved homicides (79%) and property crime cases (78%), but accounted for a slightly lower percentage of unsolved rapes (73%). Sheriff's departments reported about 18% of homicides, 19% of rape cases, and 20% of backlogged property cases. State police agencies accounted for about 9% of all unsolved rape cases, 3% of homicides, and 2% of property crimes with forensic evidence that remained unanalyzed.

By census region, law enforcement agencies in the South (47%) and West (30%) reported the largest 5-year homicide backlogs, followed by the Midwest (14%) and Northeast (9%). This was similar to backlogged rape cases, where half of cases were reported in the South (50%), about one-quarter in the West (26%), and the remainder in the Midwest (17%) and Northeast (8%). Similarly, the South accounted for 41% of unanalyzed and open property cases, while the West accounted for 27% of cases, the Midwest for 24%, and the Northeast for 8%.

Law enforcement respondents provided explanations for why forensic evidence for open cases has not been submitted for analysis. Nearly one in five (17%) agencies reported that forensic evidence had not been submitted because they did not feel the evidence was useful to the case. In addition, nearly half of responding agencies indicated that they may not submit evidence if a suspect had not yet been identified (44%). Law enforcement agencies also reported not submitting evidence because the analysis had not been requested by the prosecutor (15%) or because the suspect had been identified but not formally charged (12%). Agencies also reported not submitting evidence because the suspect had been adjudicated without forensic testing (24%) or the case had been dismissed (19%). The final categories were all related to laboratory resource or timeliness issues—these factors included the inability of the laboratory to produce timely results (11%), insufficient funding

for analysis (9%), and that the laboratory was not accepting evidence because of backlog issues (6%).

Results suggest that case backlogs also exist for forensic evidence being processed by non-laboratory internal law enforcement staff. These are personnel who assist with tasks related to collecting, processing, classifying, preserving, and analyzing forensic evidence (e.g., latent prints, firearm and tool marks, serological/biological evidence, trace evidence, and digital evidence). Among agencies that reported employing staff in these areas, more than 20% reported a case backlog among their non-laboratory personnel, defined as having cases that had not been analyzed within 30 days of receipt.

The LEFP survey asked about arrests for the illegal possession or trafficking of controlled substances made by the agency in 2007 that had not been submitted to a crime laboratory for analysis. While a sizable proportion of these drug arrest cases are likely to have been resolved without requiring a laboratory analysis, it is likely that some proportion of these drug cases would ultimately require analysis by the crime laboratory. Findings showed that there were an estimated 480,840 drug arrests nationwide for calendar year 2007 that had forensic evidence collected. Of these, 21% had forensic evidence (total 2,298,481) that was not submitted to a crime laboratory for analysis.

Findings from the LEFP survey also provide a greater understanding of the capacity and procedures used by law enforcement agencies for processing and storing forensic evidence. Nearly half of law enforcement respondents reported having an evidence retention policy for preserving biological evidence for cases in which the defendant was found guilty; these policies were most commonly dictated by state statute or agency policy. In 80% of instances, the investigating law enforcement agencies were responsible for storing the biological evidence. Unanalyzed forensic evidence was stored on site in law enforcement agencies for the vast majority of cases. Overall, 92% of respondents reported that unanalyzed evidence was stored on site. Finally, in regard to information and reporting systems, less than half of all agency respondents (43%) reported having an information system capable of tracking forensic evidence.

The primary location for forensic evidence submission was reported in the LEFP survey. Law enforcement agencies submitted their forensic evidence to a state crime laboratory more than 80% of the time for most forensic evidence types. State laboratories received 88% of DNA and trace evidence, while local crime laboratories most often received latent prints (18%) and controlled substances (14%). Many of the largest municipal law enforcement agencies had their own crime laboratories, and these are categorized as local crime laboratories. Forensic evidence was submitted to private and commercial laboratories infrequently, ranging from less than 1.0% for latent prints and firearms and toolmarks to

2.2% for DNA analysis. In most cases, services of federal crime laboratories were reserved for special analyses.

Study Implications

The efficient processing and analysis of forensic evidence is an increasingly critical issue in the today's criminal justice system. In reviewing the results from the LEFP survey, particular attention should be paid to the following findings:

1. **Law enforcement agencies continue to face substantial forensic case backlogs for homicide, rape, and property cases.** Nearly one in seven unsolved homicide cases, one in five unsolved rape cases, and one in four property crimes with forensic evidence were not submitted to a forensic laboratory for analysis. More research is required to better understand what these unanalyzed cases actually represent in terms of the proportion of open cases that could benefit from forensic testing and how cases should be prioritized for submission and analysis. Agencies should develop more uniform procedures and processes to ensure that when evidence is probative it is submitted and analyzed in a timely fashion. This prioritization also may take into account instances where analysis of the evidence is likely to have the greatest impact in terms of closing the case and case seriousness. For example, while testing of additional property cases could yield positive results, the cost of additional testing of property evidence and the effect on law enforcement and crime laboratories must be closely considered. Failure to adequately plan for such a change could ultimately mean time spent analyzing forensic evidence in property crimes in lieu of forensic evidence for more serious crimes. Additional resources for law enforcement and crime laboratories would certainly help address the processing of forensic evidence. However, systemic solutions are also necessary to create a more efficient system that promotes coordination and information sharing across law enforcement agencies, forensic laboratories, and prosecutors. For example, if more homicide and rape cases are analyzed by the laboratories, then police will need to move cases to the laboratories more quickly, in accordance with established and mutually acceptable prioritization. In turn, prosecutors will need to have the resources and staffing levels in place to handle this increased flow of cases.
2. **Greater attention should be placed on the processing of forensic evidence in mid- to small-sized police departments.** Law enforcement agencies vary considerably in their procedures for processing, analyzing, and submitting forensic evidence. While larger police agencies typically collect more forensic evidence, the challenges associated with processing physical evidence are not limited to agencies of certain sizes or types. As an example, police agencies with fewer than 50 sworn

officers accounted for nearly 3 out of 10 unsolved rape cases that contained unanalyzed forensic evidence. Typically, larger agencies may receive grant funding more readily than smaller agencies, which can affect their ability to implement backlog reduction initiatives. This finding is in part reflected by the LEFP results, which show that only 1% of police agencies with 50 or fewer officers reported having a backlog reduction program or initiative in place. The finding may be due to larger agencies' having greater capacity and more staff available to formally request and manage grant funding.

3. **Law enforcement personnel require improved training on benefits and use of forensic analysis.** Results support the notion that some U.S. law enforcement agencies continue to have only a limited understanding of the full benefits of forensic evidence with a mindset that forensic evidence is only beneficial for prosecuting crimes, not for developing new leads in investigations. Nearly half of law enforcement agencies reported that their principal reason for not submitting forensic evidence was that a suspect had not been identified. It must be recognized, however, that national information systems such as the Combined DNA Index System (CODIS) are still relatively new (for example, CODIS became operational in the late 1990s). As a result, some investigators may "triage" their cases according to their need and experiences. The LEFP results suggest either that some law enforcement agencies are not aware that forensic evidence can be used for investigative purposes or, in the matter of "no suspect" cases, that there are standing policies or other inhibitors preventing them from doing so. About 15% of agencies indicated that evidence may not be submitted to a laboratory if the analysis was not requested by a prosecutor. In some jurisdictions, laboratories may require prosecutors to sign off that a case requiring forensic analyses will, in fact, go forward in order to avoid what would otherwise be viewed as an unnecessary use of laboratory resources.
4. **Laboratory resource and timeliness issues can directly affect evidence submissions from law enforcement.** Forensic laboratories can play a crucial role in potentially hindering the processing and use of forensics, especially for investigative purposes. Some law enforcement agencies reported that they did not submit forensic evidence specifically because of issues with crime laboratories. For example, 11% reported not submitting evidence because of the inability of the laboratory to produce timely results, and 6% indicated that the laboratory was not accepting forensic evidence because of an existing backlog. An additional 9% of agencies reported that insufficient funding for the analysis of evidence was a factor inhibiting submission.
5. **Law enforcement information systems should be enhanced so that they can systematically track and monitor forensic evidence associated with criminal**

cases. About 4 in 10 law enforcement agencies reported having a computerized information system in place capable of tracking forensic evidence inventory. Among agencies that did report having a system with these capabilities, it is not known the exact capabilities of these systems or if these systems are integrated with more centralized police records management systems. This could include systems that are able to specify what evidence has been tested (or not tested) in a case, how long the evidence in a case has been in storage, and the status of cases for which forensic evidence was collected (i.e., whether it has been solved or remains open). In some instances, larger police agencies (including large county agencies and state police agencies) reported significant difficulty answering questions about unsolved rape and property cases because this information was not maintained in a centralized system. For example, property crimes in larger agencies are typically investigated at the precinct level and, as a result, case status information is maintained at similar levels. The same may be true for rape cases.

6. **More guidelines, documentation, and resources are required for evidence retention in law enforcement agencies.** Storage capacity, along with more detailed guidelines and documentation of evidence retention procedures within agencies, both for analyzed and unanalyzed forensic evidence, must be addressed. Fewer than half of all police agencies reported having a policy in place for preserving biological evidence for cases in which the defendant is found guilty. About one in five agencies reported they were unsure if their agency had such a policy or not. In cases where a policy was in place, the investigating law enforcement agency was responsible for storing the evidence in the vast majority of instances. Law enforcement agencies were also responsible in most cases for storing unanalyzed forensic evidence, most often in on-site storage locations. Guidelines and documentation for retaining evidence are critical for ensuring due justice. Yet any policies must also take into account the resources available to law enforcement agencies for evidence storage. In addition, steps should be taken to improve the capacity of police agencies to track and discard evidence that is no longer required to be maintained by law. This process could include working with prosecutors to develop systems for flagging evidence that is eligible for destruction.

1. INTRODUCTION

Physical evidence is paramount for prosecuting and defending criminal cases, yet research confirms that more forensic evidence is collected than analyzed, resulting in substantial backlogs (Horvath & Meesig, 1996; Mennell & Shaw, 2006; Lovrich et al., 2004). The 2003 Advancing Justice Through DNA Technology Act (H.R. 3214) aimed to update laws relating to the use of DNA technology in the criminal justice system. The bill provided states with training, funding, and guidelines aimed at eliminating the backlog. Subsequent initiative reflect a Federal commitment to improving the criminal justice system's capacity to process forensic evidence, in part by reducing forensic case backlogs, which have been estimated at more than half a million cases (Lovrich et al., 2004). Yet, despite surveys of forensic laboratories and local law enforcement agencies (Lovrich et al., 2004; Peterson & Hickman, 2005; Weimer et al., 2005; Durose, 2008), there is limited information regarding the current size and nature of forensic evidence caseloads and their processing within law enforcement agencies.

The importance of addressing caseloads has been underscored in past research. A National Institute of Justice (NIJ)-funded survey of local law enforcement agencies and state and local crime laboratories estimated that 542,700 criminal cases with possible biological evidence were either in the possession of law enforcement or sitting in forensic laboratories waiting to be analyzed (Lovrich et al., 2004). Peterson and Hickman (2005) reported that, on average, forensic laboratories began 2002 with a backlog of 390 requests, received 4,900 through the year, and completed 4,600. Hence, on average, 690 requests would remain backlogged at the end of 2002, close to doubling the backlog from the prior year. A follow-up laboratory survey by the Bureau of Justice Statistics (BJS) showed that an estimated 359,000 cases were backlogged at the end of 2005, representing a 24 percent increase from 2002 (Durose, 2008).

Practitioners in the criminal justice field have been critical of forensic backlogs. One attorney noted the year-long processing delays and observed, "…the human and financial costs of the delayed scientific information are tremendous" (Hayes, 2005). Recent reports have also shown that the processing of forensic evidence remains a problematic issue for many jurisdictions. The *Boston Globe* reported that the Massachusetts State Police crime laboratory failed to process potentially crucial DNA evidence from 16,000 cases, including 4,000 rape evidence kits, some of which dated back to 1989 (Estes, 2007). In addition, the Los Angeles Police Department (LAPD) and Los Angeles Sheriff's Department have both acknowledged failing to identify forensic evidence from rape kits potentially contributing to unsolved sexual assaults (Rubin, 2009). For the LAPD, DNA evidence from more than 400 unsolved rapes and sexual assaults from cases involving strangers were reportedly not

submitted to the crime laboratory for analysis. Such backlogs can have serious consequences, by delaying the administration of justice, affecting both the defense and prosecution of a case, creating feelings of distrust among crime victims, and potentially allowing perpetrators to commit more crimes (*The New York Times*, 2002; Perkel, 2007).

1.1 Project Objectives

The Survey of Law Enforcement Forensic Evidence Processing (LEFP) was conducted to obtain estimates for the number of unsolved criminal cases containing forensic evidence that have not been submitted to crime laboratories for analysis. These open (unsolved or backlogged) cases were defined as cases that had not been officially cleared by the agency, including all cases that had not been closed by arrest or cleared by exceptional means (for example, cases closed because of the death of the primary suspect). Estimates were developed not only for the total size of the forensic evidence caseload in law enforcement agencies, but also for the characteristics of these caseloads.

As part of this project, RTI surveyed a nationally representative sample of 3,094 state and local law enforcement agencies (a total of 59 agencies were deemed ineligible from the original sample of 3,153, resulting in a final survey sample of 3,094 agencies). The survey utilized a multimode data collection approach that allowed respondents to complete the survey by Web, mail, fax, or telephone. Law enforcement respondents were asked questions about the number of unsolved homicide, rape, and property crime cases maintained by their agency (in the past year and past 5 years), the percentage of cases with forensic evidence available for testing, and the procedures used for processing and storing forensic evidence. In addition, other topics surveyed included cold case squads, non-laboratory forensic personnel in law enforcement agencies, information systems, and forensic backlog initiatives.

Specific goals of the LEFP survey included the following:

1. To develop national and regional estimates for the number of unsolved criminal cases in the United States that might benefit from forensic analysis, specifically as they relate to evidence in unsolved homicide, rape, and property crime cases that have not been submitted to a crime laboratory for analysis. These estimates included unsolved cases from the past 5 years, as well as unsolved cases that contained forensic evidence from calendar year (CY) 2007.
2. To develop national estimates for the number of drug arrests from CY 2007 that contained forensic evidence but were not submitted to a crime laboratory for analysis.

3. To describe the policies and procedures used in law enforcement agencies for processing, submitting, and retaining forensic evidence, as well as the availability of information systems capable of tracking forensic evidence inventory.

1.2 Technical Overview

To achieve the goals of this project, RTI performed three major categories of tasks, data collection preparation activities, data collection, and data analysis and reporting.

1. **Data collection preparation activities** pertained to all tasks related to preparing for and designing the survey process. This included drawing the LEFP nationally representative sample of 3,153 state and local law enforcement agencies (as stated earlier, 59 of these agencies were found to be ineligible, resulting in a final survey sample of 3,094). Once the sample was identified, RTI attempted to verify available contact information for all sampled agencies including mail and telephone information. The LEFP questionnaire was developed with significant input from NIJ and from an expert panel of recognized experts in the fields of law enforcement and forensics. Prior to its being finalized, the survey instrument was pre-tested with six police agencies, a process that helped identify problematic questions in the survey. The final process in the data collection preparation activities was creating the project Web site for online data collection. The project Web site provided a user-friendly and secure location for on-line data collection, project management, and survey receipt tracking system.

2. **Data collection** utilized a multimode collection approach that allowed respondents to complete the survey by Web, mail, fax, or telephone. Hardcopy surveys were mailed to all sampled agencies including an initial lead letter and then two subsequent survey packages which included a unique study identification number and a hyperlink to the LEFP Web site. All agencies that did not respond to the mail surveys were contacted by telephone. The purpose of these calls was to conduct the survey over the telephone; prompt the respondent to complete the survey, or identify any problems keeping the respondent from completing the survey. A project Helpdesk was used throughout the data collection process to answer questions and problems encountered in completing the survey. The final response rate for the survey for the sampled state and local law enforcement agencies was 72.7%.

3. **Data analysis and reporting** included data Integration and development of analysis data file, weighting and imputation procedures, data analysis, and the production of a final report. After data collection ended, a data file was prepared for analysis. The final analysis data set was converted to SAS for weighting, analysis, and imputation. In the construction of the final analysis data file, accepted weighting

and imputations procedures were used to reduce potential bias due to nonresponding agencies and account for item-level nonresponse. Using the results generated, a final report was prepared which presented the full range of survey results and the implications of the survey findings for policy and practice

A more detailed description of the phases that comprise these major categories is included in the subsequent sections of the report.

2. SURVEY DESIGN AND METHODS

2.1 Preparing for Data Collection

2.1.1 Obtaining a Nationally Representative Sample

The LEFP sampling frame of state and local law enforcement agencies used BJS' national 2004 Census of State and Local Law Enforcement Agencies (Reaves, 2007). The 2004 Census represents nearly 18,000 state and local law enforcement agencies with the equivalent of at least one full-time officer operating in the United States.

Our sampling approach follows a similar methodology used by the BJS Law Enforcement Management and Administrative Statistics (LEMAS) surveys and the NIJ-funded 2002 National Forensic DNA study. The LEFP sampling frame was first stratified by agency type (e.g., state police agency, municipal police agency, sheriff's department). Information provided by BJS was also used to remove sheriff's departments that did not have a law enforcement investigative function. This primarily involved sheriff's departments that provide security for jails and courts but that do not investigate crimes as part of their regular functions.

The second stratum partitioned the sampling frame based on agency size (defined as full-time sworn personnel or full-time equivalents). The agency-size categories were (1) fewer than 25 officers, (2) 25 to 49 officers, (3) 50 to 99 officers, and (4) 100 or more officers. Agencies with 100 or more sworn officers were included with certainty. Then an equal probability sample was selected within each stratum combination of agency type and agency size for a total of 3,153 agencies. Exhibit 2-1 provides the final stratified LEFP sampling frame by agency size and type of agency, and Exhibit 2-2 gives the number of agencies selected from each stratum combination.

Exhibit 2-1. LEFP Sampling Frame of Agencies, by Type and Number of Sworn Officers

Agency Type	<25 Officers	25–49 Officers	50–99 Officers	≥100 Officers	Total Agencies
Sheriff's department	1,737	579	317	331	2,964
Municipal police department	9,649	1,556	807	600	12,612
State police	0	0	0	49	49
Total	**11,386**	**2,135**	**1,124**	**980**	**15,625**

Exhibit 2-2. LEFP Sample, by Type and Number of Sworn Officers

Agency Type	<25 Officers	25–49 Officers	50–99 Officers	≥100 Officers	Total Agencies
Sheriff's department	355	362	317	331	1,365
Municipal police department	376	391	372	600	1,739
State police	0	0	0	49	49
Total	**731**	**753**	**689**	**980**	**3,153[a]**

[a] From the original sample of 3,153, a total of 59 agencies were deemed ineligible, resulting in a final sample of 3,094. This included 54 agencies that were removed because they either did not investigate crimes (e.g., sheriff's departments that only perform jail and court security) and agencies that were not the lead investigating agency for criminal cases in their jurisdiction (e.g., state police that only serve as support agencies). An additional five cases were considered ineligible because the investigating agency merged with another agency in the sample or was found to no longer exist.

2.1.2 Verifying Contact Information at Sampled LEFP Agencies

Once the sample was identified, RTI attempted to confirm the existence of each agency and, if available, to verify available contact information including mailing addresses, telephone numbers, and e-mail information. The Internet was used as the primary source for verifying available contact information for each agency. If information could not be found in this manner or if there was a discrepancy, RTI staff contacted the agency by telephone to obtain updated information. The verification process resulted in three agencies being removed from the sample because they no longer existed. Two other agencies were identified as having merged with other law enforcement agencies that were already in the sample. Those that merged with agencies already in the sample were included in the study, and their individual survey records were excluded to avoid double-counting. One agency merged with an agency not surveyed and, therefore, was excluded from the study.

2.1.3 Developing the LEFP Survey Instrument

The LEFP questionnaire was developed by RTI project staff with input from NIJ and from a panel of recognized experts in the fields of law enforcement and forensics (Exhibit 2-3). This initial LEFP instrument was modified from the survey used in the 2002 NIJ National Forensic DNA Study (Lovrich et al., 2004), which included questions on the number of homicide and rapes with DNA evidence, storage procedures, reasons for not processing this evidence, and whether the department had a cold case squad to review unsolved crimes. This instrument was augmented to reflect a broader range of forensic evidence, including controlled substances, firearms, latent prints, and toxicology. The LEFP instrument also includes

questions about evidence storage policies and agency procedures for processing forensic evidence.

The LEFP questionnaire was finalized after several stages of review. First, an internal group of substantive and methodological experts reviewed an early draft of the questionnaire created by the RTI project team. Second, NIJ reviewed recommendations regarding question wording, respondent instructions, layout, and other formatting issues that might affect unit and item nonresponse. Third, the revised questionnaire was reviewed by the project's expert panel, which was convened in a teleconference during the first several months of the project.

2.1.4 Convening the Expert Panel

The expert panel was composed of individuals with expertise in law enforcement investigations, the collection and processing of forensic evidence, forensic analysis, legal procedures, and national surveys of law enforcement agencies (Exhibit 2-3). In addition to providing assistance on the completion of the LEFP questionnaire, members of the expert panel also assisted with other phases of the project, including facilitating the pilot testing process, contacting specific agencies during data collection, and reviewing the draft of the final project report.

2.1.5 Pilot Testing the LEFP Survey Instrument

RTI pilot tested the survey with six law enforcement agencies across the country. For the pilot test, we attempted to select a range of agencies including state police agencies, municipal police departments, and county sheriff's departments. We asked agencies participating in the pilot test to provide feedback on specific questions, as well as suggestions for other potential questions that they thought may provide a better understanding of forensic evidence processing by law enforcement agencies. RTI's objective was to provide a survey instrument that promoted a high response rate (e.g., brief and requiring little time to finish) but also provided complete, accurate, and useful data.

The LEFP draft questionnaire was forwarded to all agencies that agreed to participate in the pilot test. Within 2 weeks, we attempted to conduct debriefing interviews over the telephone with these agencies. The debriefing interviews assessed how well survey questions were understood and what record checks would be needed to respond to specific questions. RTI also asked the respondents for their insight on how best to reach law enforcement and how to motivate overall participation. Several agencies provided detailed comments via e-mail regarding recommendations and suggested revisions. Recommendations included providing more clear directions on the units within the agency that should assist in completing the survey, revising the wording on specific questions, and limiting the time period for unsolved cases to the previous 5 years. Upon concluding the

pilot testing process, RTI provided an update to NIJ summarizing issues and problems encountered by agencies, and we presented recommended changes to the survey instrument. The final version of the LEFP survey questionnaire can be found in Appendix A. The survey includes definitions for all relevant terms on page 3 of the instrument.

Exhibit 2-3. LEFP Expert Panel Areas of Expertise

Name	Affiliation	Area of Expertise
Barry Fisher, MBA	Crime Laboratory Director, Los Angeles County Sheriff's Department	Administers a staff of more than 200 sworn and civilian personnel. Scientific Services Bureau is a modern crime laboratory providing forensic science services for all agencies in Los Angeles County.
Barrington Gore	West Virginia State Police, Bureau of Criminal Investigations. Commander (Ret.)	Served on the Advisory Board for the National Registry of Missing and Unidentified Persons.
Matthew Hickman, PhD	Seattle University, Assistant Professor	Former statistician at BJS with expertise on conducting nationally representative establishment surveys of law enforcement agencies and forensic data collection projects, including a census of forensic crime laboratories and medical examiner/coroner offices.
Benjamin Perillo	Forensic Division Manager, Palm Beach County Sheriff's Office (Florida) (Ret.)	Has more than 40 years of experience working in forensics and law enforcement operations.
Laura Sudkamp	Kentucky State Police, Forensic Laboratory Manager	Operations manager for the Kentucky State Police crime laboratory. In this capacity, responsible for the supervision and safety of employees comprising the seven sections of the Central Laboratory Branch.
Vicky Watts, MS	Forensic Toxicology Associates, Senior Criminalist	Recognized forensic expert by the American Academy of Forensic Sciences and a court-qualified expert witness. Former criminalist at the Arizona State Department of Public Safety.

2.1.6 Developing Web Systems

2.1.6.1 Project Web Site

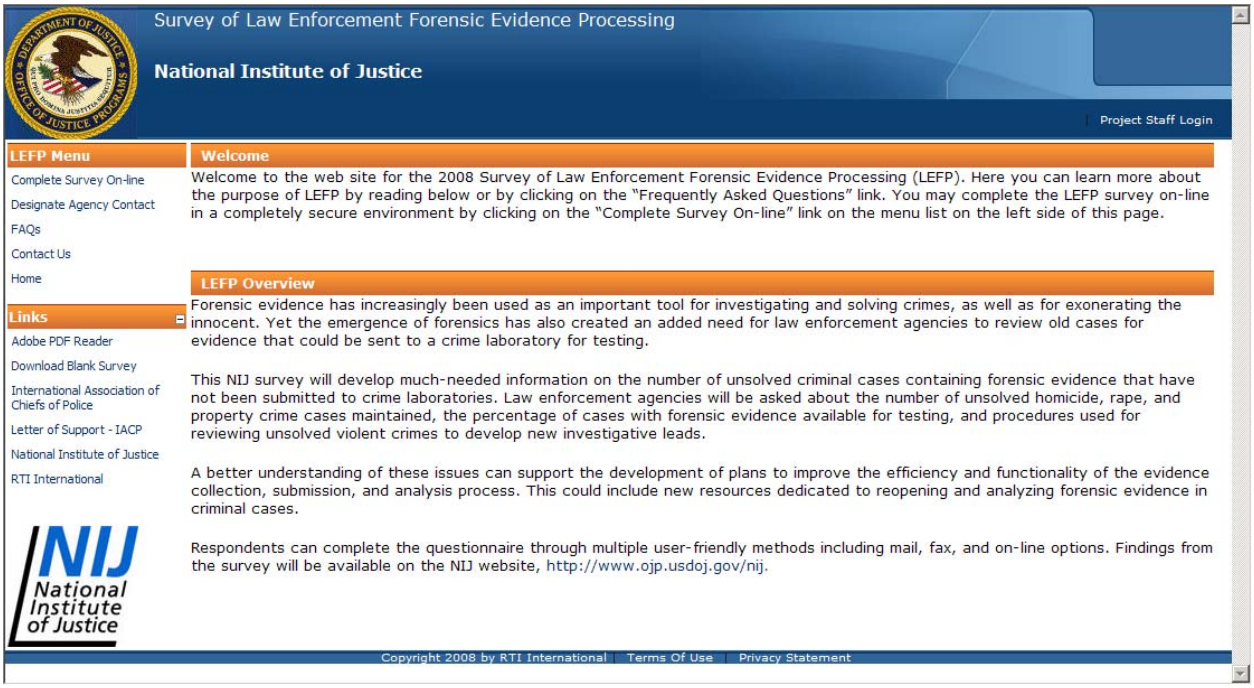
RTI developed the LEFP project Web site to support the project's goals and objectives. The Web site functioned as a project management system, data collection portal, and survey receipt tracking system (Exhibit 2-4). For the Web site, we purchased and installed a Secure Sockets Layer (SSL) certificate, an industry-standard data encryption method that ensures

the privacy of all data passed between the user and the Web site. The Web site was implemented using DotNetNuke, an open-source .NET-based Web portal framework that facilitates ease of design and quick integration of user-developed modules into the core application. A built-in security module, using user-level security, supported the development of both public and secure sections of the Web site. Additional public and secure modules were developed and installed to support the specific requirements of the project.

The project Web site provided several publicly available features, including the following key features:

1. an overview of the 2007 LEFP Survey
2. a set of frequently asked questions (FAQs)
3. downloadable versions of blank survey forms (in PDF format)
4. important links to letters of support and related Web sites
5. a log-in screen for survey respondents

Exhibit 2-4. Public Version of the LEFP Web Site



2.1.7 Programming the Web Instrument

The Web-based instrument (Exhibit 2-5) was implemented using custom-built .NET-based software consisting of a standard interface frame, survey engine, survey metadata, and respondent data. Several rounds of beta testing of the Web instrument were included as a

final stage of programming. The interface frame included a custom header, survey body, and footer. The interface was designed to render the survey content and facilitate the navigation of the instrument in the easiest manner possible for the respondent. The interface functionality included the following:

1. navigation buttons to move forward and backward through the survey; responses were saved only when the user successfully continued to the next question
2. a "Breakoff" or "Cancel" button to temporarily exit the survey
3. helpdesk contact information
4. a link to a printable version of a blank survey form

The survey engine was customized to handle the unique content and data validation requirements of the LEFP instrument. Specific features of the engine enabled the Web instrument to render various question types (e.g., open ended, Likert scale, multiple response), apply prompts for missing or out-of-range responses, handle skip patterns, allow continuation from the last completed question following a respondent "break-off," display the completed survey (as HTML) for review and printing, and validate user input. Each survey question also had an optional Response Comments text box, which allowed respondents to further clarify their response or give a comment about the question. The survey metadata included all survey question and response value content, validation constraints, and respondent access and status information. Once the programming was complete and the database was populated with the metadata, the instrument was rigorously tested and debugged with the assistance of project staff and select respondents.

Following the last question on the survey, an HTML report (a similar report is shown in Exhibit 2-6) of the instrument and the agency's responses were displayed for final review and printing. If necessary, the respondent could return to completed sections to make any necessary changes. After the final review, the completed survey was finalized and submitted for analysis. From this point, the survey was no longer available to the agency for changes; however, an agency could still return to the log-in page and access the HTML report of the completed survey.

Exhibit 2-5. LEFP Web Instrument

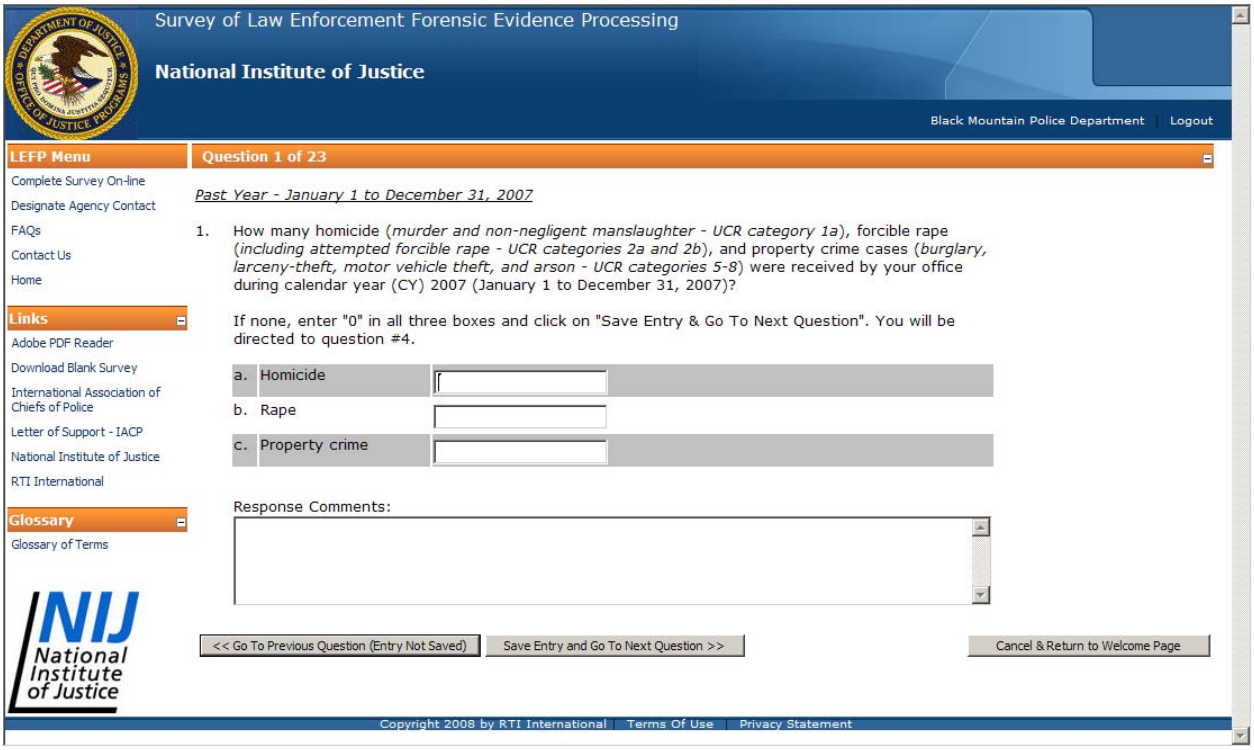
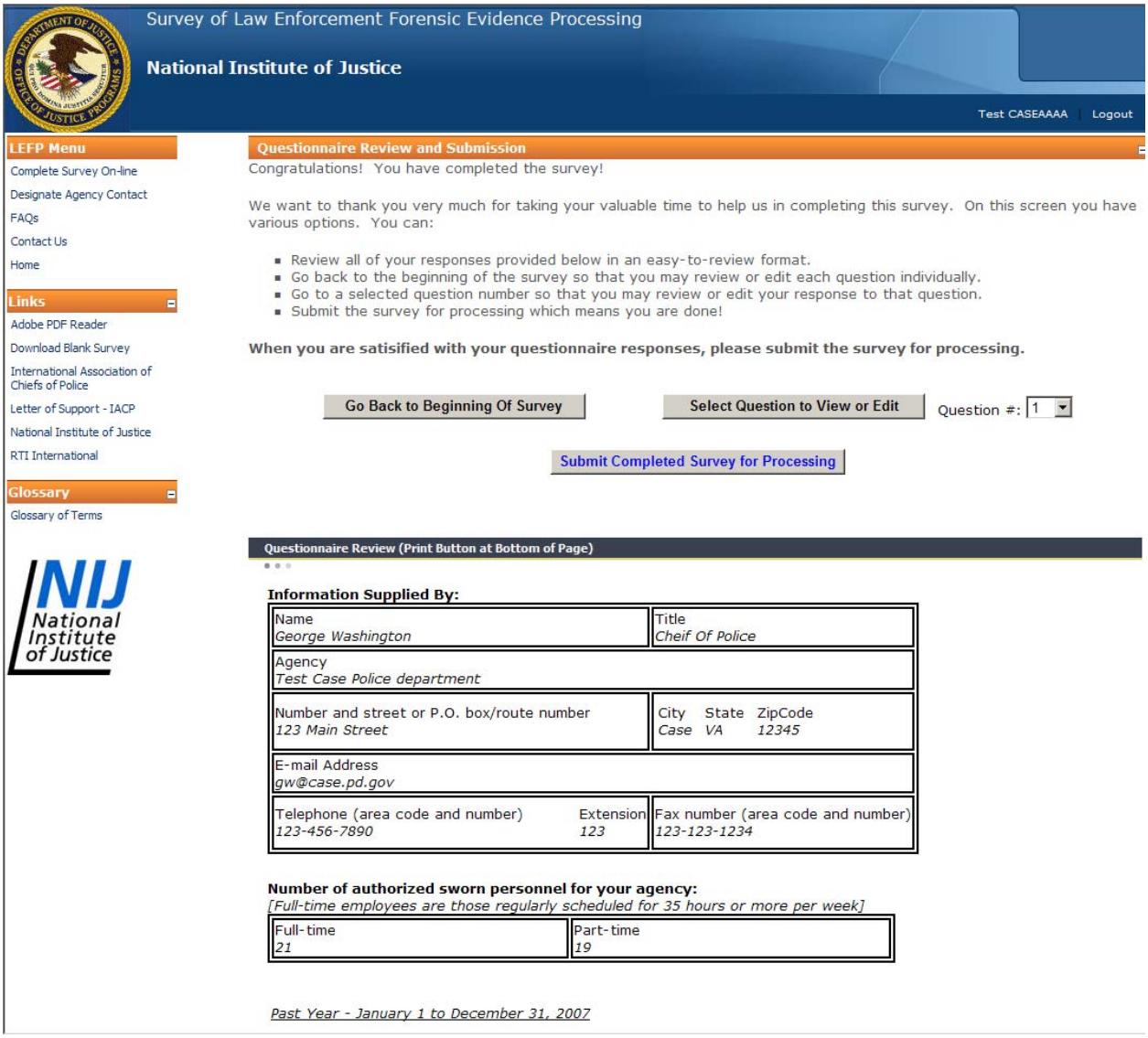


Exhibit 2-6. LEFP Downloadable Respondent Survey



2.1.8 Using the LEFP Data Tracking System

The LEFP Data Collection Tracking System was a secured component of the LEFP Web site accessible to RTI project staff. The system was composed of HTML-based reports developed as DotNetNuke modules, including two primary reports. The first, the Data Collection Summary Report (Exhibit 2-7), provided summary status information based on the data collection phase and agency type. This report allowed RTI to monitor response rates by agency type, agency size, and state. A second report, the Case Count by State (Exhibit 2-8), provided a range of details, from summary status information by state, to detailed information about the individual offices within each state, to completed processed, surveys (as HTML).

Exhibit 2-7. LEFP Data Collection Summary Report

Survey of Law Enforcement Forensic Evidence Processing

National Institute of Justice

Nathan Sikes | Logout

Help Desk | Reports | Operations Reports

LEFP Menu

- Complete Survey On-line
- Designate Agency Contact
- FAQs
- Contact Us
- Home

Links

- Adobe PDF Reader
- Download Blank Survey
- International Association of Chiefs of Police
- Letter of Support - IACP
- National Institute of Justice
- RTI International

Glossary

- Glossary of Terms

Data Collection Summary Report

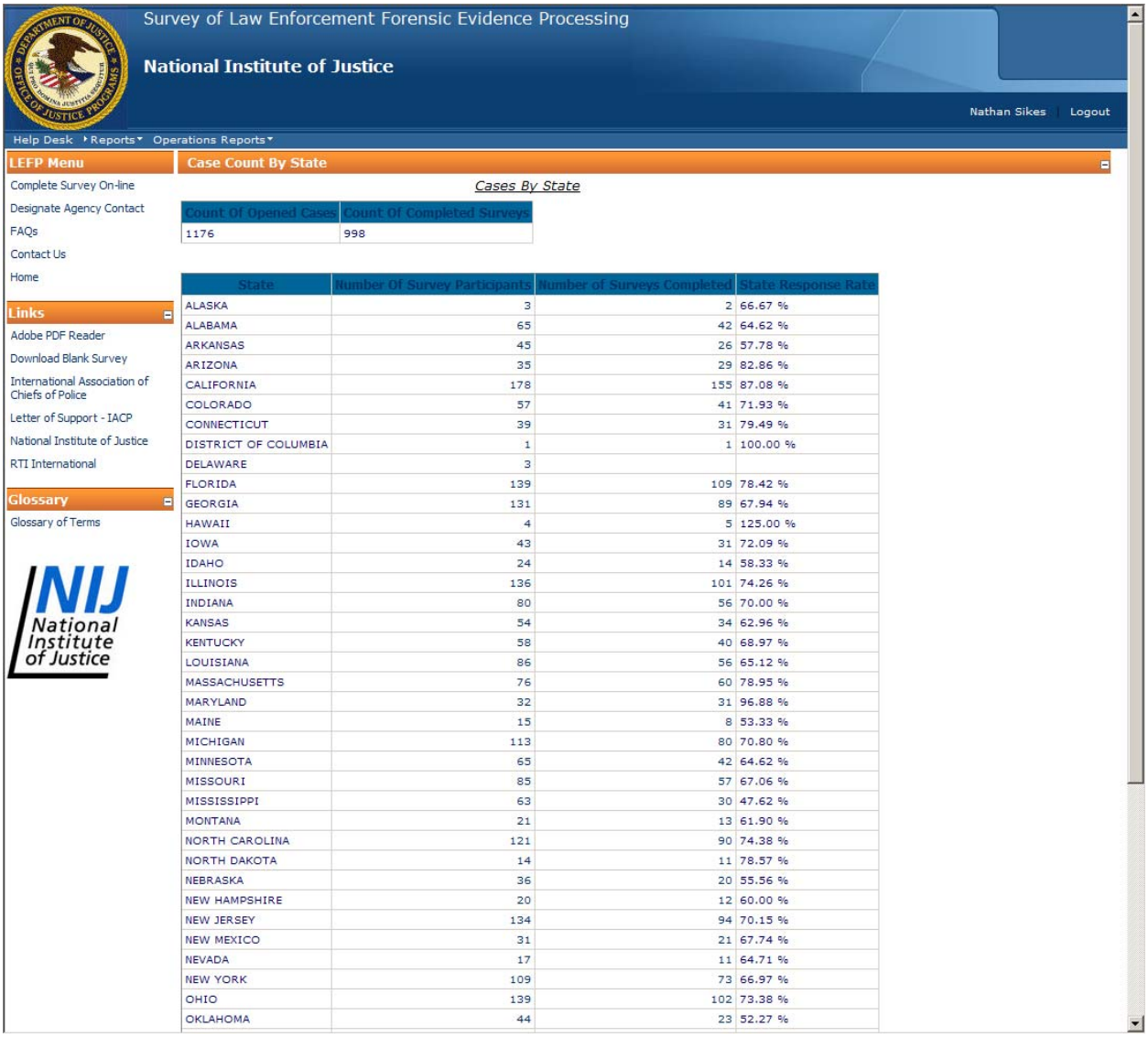
Survey for Law Enforcement Forensics Processing
Data Collection Summary Report

Report Date
2/16/2009

ReportOrder	Classification	Classification Count	Percent Of Total
100	Pending	877	27.81 %
200	Ineligible	58	1.84 %
300	Eligible	2218	70.35 %

Classification	Event Number	Meaning	Event Count	Percent Of Classification	Percent Of Total Sample
Pending	310	Second Questionaire Mailing Sent	5	0.57 %	0.16 %
Pending	335	Designated Agency Contact	2	0.23 %	0.06 %
Pending	390	Case On Hold; Do Not Release to CCS	2	0.23 %	0.06 %
Pending	395	Case released back to CCS; No longer on Hold	1	0.11 %	0.03 %
Pending	400	Sent To CATI System - Case Active at CCS	749	85.40 %	23.76 %
Pending	410	3rd mailing requested at direction of CCS	18	2.05 %	0.57 %
Pending	415	3rd mailing sent by Helpdesk	25	2.85 %	0.79 %
Pending	420	Email survey requested at direction of CCS	34	3.88 %	1.08 %
Pending	425	Email survey sent by Helpdesk	27	3.08 %	0.86 %
Pending	600	Agency Merged with Another Sampled Agency	1	0.11 %	0.03 %
Pending	620	Refused	13	1.48 %	0.41 %
Ineligible	220	First Questionnaire Mailing Undeliverable - no new address	4	6.90 %	0.13 %
Ineligible	320	Second Questionnaire Mailing Undeliverable - no new address	4	6.90 %	0.13 %
Ineligible	602	Agency Non-existent	3	5.17 %	0.10 %
Ineligible	603	Agency Merged with Another Agency Not in Sample - removed from sample	1	1.72 %	0.03 %
Ineligible	604	Agency Merged with Another Sampled Agency - removed from sample	2	3.45 %	0.06 %
Ineligible	610	Ineligible	18	31.03 %	0.57 %
Ineligible	615	Ineligible from CCS	26	44.83 %	0.82 %
Eligible	800	Completed Paper Questionnaire - Received	1	0.05 %	0.03 %
Eligible	805	Completed Paper Questionnaire - In Problem Bin	1	0.05 %	0.03 %
Eligible	806	Completed Paper Questionnaire - Problem Resolved	1	0.05 %	0.03 %
Eligible	810	Completed Faxed Questionnaire - Received	1	0.05 %	0.03 %
Eligible	820	Questionnaire Issue(s), Eligibility Pending	1	0.05 %	0.03 %
Eligible	851	Completed Questionnaire Keyed By Data Entry	1167	52.61 %	37.01 %
Eligible	852	Questionnaire completed on web by Call Center with Respondent on Phone	48	2.16 %	1.52 %
Eligible	853	Web questionnaire completed by Respondent	998	45.00 %	31.65 %

Exhibit 2-8. LEFP Case Count by State Report



Survey of Law Enforcement Forensic Evidence Processing

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LEFP Menu

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- RTI International

Glossary

- Glossary of Terms

Case Count By State

Cases By State

Count Of Opened Cases	Count Of Completed Surveys
1176	998

State	Number Of Survey Participants	Number of Surveys Completed	State Response Rate
ALASKA	3	2	66.67 %
ALABAMA	65	42	64.62 %
ARKANSAS	45	26	57.78 %
ARIZONA	35	29	82.86 %
CALIFORNIA	178	155	87.08 %
COLORADO	57	41	71.93 %
CONNECTICUT	39	31	79.49 %
DISTRICT OF COLUMBIA	1	1	100.00 %
DELAWARE	3		
FLORIDA	139	109	78.42 %
GEORGIA	131	89	67.94 %
HAWAII	4	5	125.00 %
IOWA	43	31	72.09 %
IDAHO	24	14	58.33 %
ILLINOIS	136	101	74.26 %
INDIANA	80	56	70.00 %
KANSAS	54	34	62.96 %
KENTUCKY	58	40	68.97 %
LOUISIANA	86	56	65.12 %
MASSACHUSETTS	76	60	78.95 %
MARYLAND	32	31	96.88 %
MAINE	15	8	53.33 %
MICHIGAN	113	80	70.80 %
MINNESOTA	65	42	64.62 %
MISSOURI	85	57	67.06 %
MISSISSIPPI	63	30	47.62 %
MONTANA	21	13	61.90 %
NORTH CAROLINA	121	90	74.38 %
NORTH DAKOTA	14	11	78.57 %
NEBRASKA	36	20	55.56 %
NEW HAMPSHIRE	20	12	60.00 %
NEW JERSEY	134	94	70.15 %
NEW MEXICO	31	21	67.74 %
NEVADA	17	11	64.71 %
NEW YORK	109	73	66.97 %
OHIO	139	102	73.38 %
OKLAHOMA	44	23	52.27 %

2.2 Data Collection

2.2.1 Approach

Our data collection approach included a series of personalized contacts, including a pre-survey notification letter, two questionnaire packages, a telephone prompt, and an offer to complete the survey by telephone. A mixed-mode data collection approach was employed, which included a Web-based survey, a hardcopy survey, and a telephone follow-up. This approach provided respondents with multiple options for completing the survey, including Web, mail, fax, and telephone. One of our goals was to maximize the number of responses via the Web-based survey, which we felt would improve data quality, as well as reduce the

amount of labor needed to send out hardcopy surveys and conduct telephone follow-up and data entry.

2.2.2 Schedule of Mailings

RTI received official Office of Management and Budget (OMB) approval to field the LEFP survey on August 15, 2008. Data collection was conducted between August 20, 2008, and December 31, 2008. Respondents were initially provided the option to complete a hardcopy version of the LEFP questionnaire and return it by mail or fax or use the project Web site to complete the survey online.

2.2.2.1 Advance Notice

The lead letter was mailed out to the entire sample of agencies on August 20, 2008. Prior to mailing the first questionnaire package, RTI received a letter of support from the International Association of Chiefs of Police (IACP) to post on the LEFP Web site and to include in the first questionnaire mailout package. We also included a lead letter from NIJ in the package, which was signed by the NIJ director. This letter explained the study objectives and notified respondents that a questionnaire package would be forthcoming. The letter was addressed to the agency's sheriff or police chief and was mailed to all agencies in the LEFP sample approximately 2 weeks before the start of data collection.

2.2.2.2 First Questionnaire Package

The first questionnaire package was mailed on September 5, 2008, and included a full-length, 8-page questionnaire and a personalized cover letter on NIJ letterhead describing the purpose of the study. A toll-free helpline number was provided for respondents who had questions or concerns about the study. The lead letter, which was addressed to the agency head (e.g., police chief or sheriff), requested that the agency designate an appropriate point of contact for the survey and directed the person to the LEFP Web site to fill out the agency's contact information, including an e-mail address. Based on our previous survey work, the task of identifying an appropriate contact was important for streamlining data collection.

The lead letter also explained the three initial options for completing the survey: via Web, mail, or fax. For those who wished to complete their survey on hardcopy and return it via mail, a stamped return envelope was included. The questionnaire was also printed booklet style with special perforated paper, and a toll-free fax number was provided for respondents who wished to return their completed questionnaire via fax. Finally, the lead letter included a unique username and the project Web site URL. Respondents were invited to log on to the Web site to learn more about the purpose of the study, link to the RTI and NIJ Web sites, and complete the survey online. Also included in the survey packages was the endorsement letter from IACP.

2.2.2.3 Second Questionnaire Package

A second mailout was sent to nonrespondents on October 1, 2008, approximately 1 month after the first questionnaire packet was mailed. The second questionnaire packet included a new cover letter stressing the importance of the study, a replacement questionnaire, and a stamped return envelope.

2.2.3 Helpdesk

In each of our three mailouts—the advance notice package and two questionnaire packages—participants were provided with a toll-free telephone number to call and a project e-mail address to write to if they had questions or concerns about the study. The project email was monitored and the project helpline was staffed by a professional member of the project staff. Helpdesk calls fell into four categories: (1) general questions about the study, (2) questions about the survey content, (3) requests for Web survey log-in information, and (4) browser problems with the Web survey. All calls were logged into a helpdesk tracking system and returned within the same or next business day. Agency questions were assigned to different project staff depending on the topic of the question or concern.

2.2.4 Use of Call Center

Starting in October 2008, the RTI Call Center interviewers began contacting all nonrespondents via telephone. The purpose of these calls was to conduct the survey over the telephone; prompt the respondent to complete the survey by Web, mail, or fax; or identify any problems keeping the respondent from completing the survey. The interviewers were instructed to ask to speak with the police chief or sheriff or with another staff member who would be able to answer questions about the survey content. During the telephone data collection process, we made a special effort to include several categories of agencies in our follow-up procedures. For example, we contacted agencies that had started the LEFP survey online but had not completed it. During the callbacks, we also initially prioritized large law enforcement agencies (defined as agencies with 100 or more sworn officers). Finally, in selected instances, members of our expert panel contacted specific agencies.

Because the LEFP survey content might require an agency to coordinate responses across units within the agency (e.g., investigations, crime analysis, research and planning), we realized that completing the survey by telephone would be challenging for many agencies. In many cases, respondents did not have the necessary data to complete the survey by telephone. As a result, a major objective of the nonrespondent calls was to address any concerns or other obstacles to participation and to prompt nonrespondents to complete the survey via one of the other response methods. In addition, some nonrespondents contacted during the follow-up calls asked for a new survey to be sent to them by e-mail, mail, or fax.

2.2.5 Response Rates

The overall response rate for survey completion was 72.7%. By mode of response, 46% of responding agencies completed the survey via the Web, 41% returned a completed hardcopy survey by mail, 11% returned a completed hardcopy survey by fax, and 2% completed the survey by telephone (Exhibit 2-9). As mentioned previously, since completing the survey often required coordination across multiple units within the agency, the primary goal of the telephone follow-ups was not to complete the survey by phone rather to prompt the agency to complete the survey utilizing the web or another response method. As such, we believe the telephone contacts were successful in motivating a number of agencies to complete the survey using one of these other response options during the later stages of data collection.

Exhibit 2-9. Response Rate, by Mode

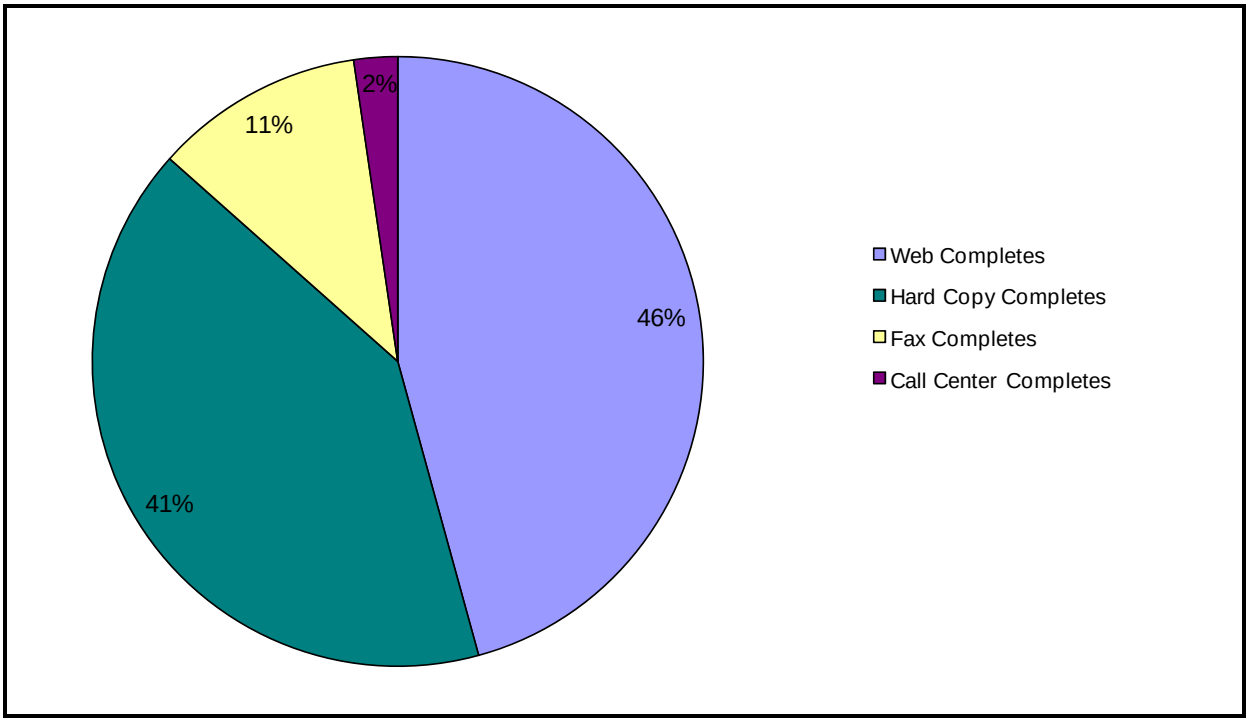

Exhibit 2-10 describes the LEFP response rates by agency type and agency size. By agency type, response rates were highest for municipal police departments (75%), followed by sheriff's departments (70%) and state police agencies (63%). By agency size, the largest agencies reported the highest overall response rates. Agencies with 100 or more sworn personnel had a response rate of 76%, while agencies with sworn personnel between 50 and 99 officers had a response rate of 77%. Response rates were lowest for agencies with fewer than 25 sworn personnel (65%).

Exhibit 2-10. 2007 Survey of Law Enforcement Forensic Evidence Processing

	Number of Sampled Law Enforcement Agencies	Number of Law Enforcement Agencies Completing Survey	Response Rate
Overall			**72.7%**
Type of Agency			
Municipal police department	1,724	1,294	75.1%
Sheriff's department	1,327	929	70.0%
State police	43	27	62.8%
Total	**3,094**	**2,250**	**72.7%**
Agency Size			
≥100 officers	963	735	76.3%
50–99 officers	681	524	76.9%
25–49 officers	745	536	71.9%
<25 officers	705	455	64.5%
Total	**3,094**	**2,250**	**72.7%**

2.3 Quality Control

Data were collected using three primary modes: (1) Web, (2) hardcopy, and (3) computer-assisted telephone interview (CATI). Although the quality assurance and quality control (QA/QC) methods for all data collection modes were essentially the same, different procedures were implemented according to each mode's applications. For all modes, surveys were reviewed as they came in, and agencies were followed up as needed.

2.3.1 Quality Assurance Procedures, by Mode

2.3.1.1 Web-Based Mode

The primary QA/QC method implemented and maintained for the Web-based mode included the extensive data validation constraints configured for each question response or variable in each version of the survey implemented on the Web. A core set of constraints were already included as part of RTI's .NET-based survey software, and additional constraints were programmed, as necessary, to handle unique data validation requirements. These constraints were tested rigorously by all project staff. Some constraints were designed to provide warnings to the user, but still allowed some flexibility for user input; whereas, others were designed to limit responses to predefined ranges (Appendix C). Additionally, data consistency checks were completed on the Web instruments to ensure that the

response values for specific questions matched their corresponding questions/values in the hardcopy versions.

2.3.1.2 Hard Copy Mode

As hardcopy surveys were returned, they were noted as received in the LEFP control system. These surveys were then entered by data entry clerks using the LEFP Web site. Each data entry clerk was provided a unique log-in to the LEFP Web site. After login, the data entry clerks used a data entry section of the Web site, where they entered the hardcopy surveys. As these surveys were entered using the same Web-based interface, they were subject to the same validation checks and data entry constraints as the law enforcement agencies that completed the survey using the LEFP Web site.

All paper forms were scan-edited upon receipt. The purpose of this edit was to prepare the document for keying. Detailed edit specifications were developed, and receipt-control staff were trained to check for errors made by the respondent when completing the questionnaire. Questionnaires partially or fully completed were receipted and routed to data entry for keying. Questionnaires that were entirely incomplete or returned blank with a note were routed to project staff for follow-up. Likewise, questionnaires with unusual errors were routed to project staff for follow-up.

RTI implemented a data entry application to process returned hardcopy surveys. Data entry applications for each survey version were developed using commercial data entry programming software, and data consistency rules were programmed according to the same specifications provided for the Web-based instruments. The applications also were tested using methods consistent with those used to validate the Web instruments. The final applications were installed on RTI's server for use by our data entry staff. As hardcopy surveys were received, they were logged into a receipt control system, batched into small sets of completed surveys, and then double-keyed. Under this methodology, the survey was keyed by a data entry operator, and was then keyed again (i.e., verified) by another data entry operator. Inconsistencies, if any, were immediately resolved by the second keyer as they were encountered.

2.3.1.3 Computer-Assisted Telephone Interview (CATI) Mode

Similar to the hardcopy data entry, surveys completed by the RTI Call Center were also entered using the LEFP Web site. A Web-based case management system was also used by the RTI Call Center to schedule and track calls to nonrespondents.

2.3.2 Data Integration and Development of Analysis Data Files

After data collection ended, all remaining surveys that had incomplete or questionable responses were resolved and their data entered. An initial preliminary data file was exported

during this time in order to prepare for the weighting, imputation, and analysis tasks that would occur. This file was checked to ensure that values exported correctly from the SQL database and to verify which variables from the control system were needed to develop the weights. After all surveys had been entered post data collection, a final data file was exported. In order to calculate response rates and weights, a second file from the project's control system was exported, detailing the final status for each sampled law enforcement agency (e.g., "Completed via Web," "Refused"). The final analysis data set was converted to SAS for weighting, analysis, and imputation.

RTI project staff used their experience designing and implementing multimode data collection systems in the LEFP project. This included incorporating the use of the Web system for both data capture and for providing near-real-time data reporting. The study data maintained in the RTI computer system were routinely uploaded into data sets, where the data were reviewed, cleaned, and edited. The codebooks generated during the data entry process were used in conjunction with RTI software to generate the SPSS code to convert the raw entered data files into SPSS files. The programs that created the SPSS file also included code to produce the frequency count for each variable in the file and other relevant cross-tabulation tables. The data were merged into single analytic and Web-view tables using a multistaged approach. For each version, excluding the Web, data were imported into raw staging tables and then processed into a final, consolidated table of all keyed data. Final processing then integrated the keyed and Web data into the final analytic and Web-view tables. Finally, one more set of validation processes were executed to verify that the contents of the analytic data table had not been altered from their original values. The final analytic table was then exported for additional SPSS processing.

2.3.3 LEFP Weighting and Imputation Procedures

In order to reduce potential bias due to nonresponding agencies, the design weights for responding agencies were adjusted within cells indexed by variables that were predictors of response status, such as the sample stratification variables. The sample design weights for responding agencies were adjusted upward to compensate for those agencies that did not respond. These weights were computed using RTI's generalized exponential models (GEM) software (Folsom & Singh, 2000). GEM is a raking procedure that is a generalization of the logic-type model, which has been proven to produce weights with less variability than what is achievable via traditional methods. GEM should enable the weighted agency data to better reflect distributions from the target agency universe with respect to the strata defined based on agency type and agency size. These are obtained by producing survey estimates that better represent the universe of agencies without significantly increasing the variance of the survey estimates.

Hot-deck imputation methods are one of the most cost-effective methods. These procedures use item respondents in the current data file as response "donors" for the item nonrespondents (which become the "receptors"). For each receptor, a donor is identified either by ordering the database on various characteristics and selecting the donor most similar to the receptor or by randomly selecting a donor from a pool of donors with similar characteristics, such as agency type by agency size. For the LEFP study, we used a weighted sequential hot-deck procedure developed by Iannacchione (1982). This procedure selects a donor from a receptor pool of donors using the sampling weights of donors and probability minimal replacement sequential sampling (Chromy, 1979).

2.3.4 Data Analysis

Our statistical analysis of the LEFP data was conducted so that statistical inferences from the 2,250 participating agencies could be made to the entire population of state and local law enforcement agencies in the United States. This was possible due to having used probability sampling to select the agency sample such that in general, each participating agency represented approximately 7 agencies in the population (15,625/2,250). Hence, each participating agency had the weight of 6 other agencies that were not selected for the study. The weight of each agency was then applied to the survey data for each participating agency to obtain reliable national estimates. Estimation for specific analysis domains or subgroups was obtained by partitioning the weighted estimates by domains such as; agency type, agency size, and U.S. census region. To produce the estimates, the recent RTI edition of SUDAAN was used because it computes weighted statistics and variance estimates for cluster correlated data.

The 2007 survey estimates for the proportion of unsolved cases with forensic evidence by crime type (homicide, rape, and property crime) were based on the weighted product of Q2*Q3 for each participating agency. To obtain the total estimate for the nation, this weighted estimate was summed over all participating agencies. Likewise, weighted responses for Q4*Q5 were summed to generate the 5-year total backlog national estimates. The percentage of cases that contain forensic evidence among 5-year backlog for open homicide and rape cases was estimated from the weighted product of Q4*Q5*Q6 summed over the responding agencies. For Q6 we took the midpoint percentages, since the responses were categorical. Similarly, we used the midpoint for Q10 in the weighted product of Q9*Q10 summed over sample agencies to estimate the number of drug arrests with forensic evidence not submitted to crime labs. Subgroup estimates for agency type, size, and region were obtained by restricting the sums to the subgroup during summation.

3. RESULTS

3.1 Estimating the Size and Characteristics of Law Enforcement Forensic Backlogs

This section describes estimates for the size and characteristics of forensic caseloads in U.S. law enforcement agencies. Specifically, determining forensic evidence backlogs or open criminal cases that have not been submitted to a crime laboratory for analysis was a primary objective. Estimates are provided for unsolved homicide, rape, and property cases with forensic evidence that was not submitted to a laboratory, along with the types of evidence that comprise the backlogs for unsolved violent crimes (i.e., homicides and rapes).

3.1.1 Estimating Unsolved Law Enforcement Cases with Forensic Evidence, January 1 to December 31, 2007

Of crimes received by U.S. law enforcement agencies during CY 2007, there were an estimated total of 6,728 unsolved homicides; 33,696 unsolved rapes; and 4,776,127 unsolved property crimes (Exhibit 3-1). Among these unsolved crimes, agencies reported that forensic evidence was collected in 88% of homicides, 73% of rapes, and 29% of property crimes. Forensic evidence was defined as "any physical evidence collected during a criminal investigation that could be processed by scientific methods and usable in the courts." This included but was not limited to trace evidence, biological screening including DNA, latent prints, and firearms and tool marks.

Exhibit 3-1. Unsolved Violent and Property Cases with Forensic Evidence, 2007

Crime Type	Estimated Number of Unsolved Cases	Estimated Number of Unsolved Cases with Forensic Evidence	Percentage of Unsolved Cases with Forensic Evidence
Homicide	6,728	5,901	87.7%
Rape	33,696	24,436	72.5%
Property crimes	4,776,127	1,391,813	29.1%

3.1.2 Estimating the Size and Characteristics of Law Enforcement Forensic Case Backlogs

3.1.2.1 Unsolved Homicide and Rape Cases with Unanalyzed Forensic Evidence

In order to collect updated statistics on backlogged cases within police agencies, law enforcement agencies were asked about unsolved homicide, rape, and property cases for the past 5 years (cases originating during or after 2003) that contained forensic evidence that was not submitted to a crime laboratory for analysis. Exhibit 3-2 shows national

estimates for the total number of unsolved homicides and unsolved rapes in the United States that contained forensic evidence but were not submitted to a crime laboratory for analysis. Specifically, 14% of all unsolved homicides reported over this period—an estimated 3,975 cases total—contained forensic evidence that was not analyzed by a crime laboratory. In comparison, 18% of unsolved rape cases (an estimated 27,595 cases) were reported to contain forensic evidence that had not been submitted to a laboratory.

Exhibit 3-2. Unsolved Homicide and Rape Cases Containing Unanalyzed Forensic Evidence, Past 5 Years

Crime Type	Estimated Number of Unsolved Homicide and Rape Cases	Estimated Number of Unsolved Homicide and Rape Cases with Unanalyzed Forensic Evidence	Percentage of Unsolved Homicide and Rape Cases with Unanalyzed Forensic Evidence
Homicide	28,319	3,975	14.0%
Rape	150,070	27,595	18.4%

3.1.2.2 The Types of Evidence Comprising Violent Crime Forensic Backlogs

One of the objectives of the LEFP survey was not only to quantify the total size of forensic backlogs within state and local police departments, but also to estimate the types of evidence comprising these forensic backlogs for violent crimes. As such, agency respondents were asked to approximate what types of forensic evidence comprised the unanalyzed homicide and rape cases reported by law enforcement agencies (Exhibit 3-3). Overall, about 40% of the unanalyzed cases were estimated to have contained DNA evidence. In other words, an estimated 12,548 unsolved homicide and rape cases contained DNA evidence that had not been analyzed. In addition, 27% of unsolved homicide and rape cases were estimated to have contained trace evidence (8,520 cases), 26% contained latent prints (8,274 cases), and 23% contained firearm and toolmark evidence (7,363 cases).

Exhibit 3-3. Types of Forensic Evidence Contained in Unanalyzed Homicide and Rape Cases, Past 5 Years

Type of Forensic Evidence	Estimated Number of Backlogged Homicide/Rape Cases Containing Evidence	Percentage of Backlogged Cases Containing Evidence
DNA	12,548	39.7%
Trace evidence	8,520	26.8%
Latent prints	8,274	26.1%
Firearm/toolmarks	7,363	23.2%

3.1.2.3 Unsolved Property Crime Cases with Unanalyzed Forensic Evidence

Past research from NIJ has shown that collecting and analyzing forensic evidence in property crimes, specifically DNA evidence, can have significant effects both in terms of increasing arrests and prosecutions (Roman et al., 2008). These efforts can also have positive effects on public safety, as the persons identified using these techniques can have numerous prior convictions for property and violent crimes. The testing of fingerprints and other forms of forensic evidence can also benefit property cases by providing new leads and by connecting offenders across multiple crime scenes. Findings from the survey demonstrate that there are a significant number of open property cases that have forensic evidence that has not been analyzed. Among property crimes committed over the past 5 years, law enforcement agencies reported that there were more than 5 million unsolved cases (n = 5,126,719) that contained forensic evidence but that was not analyzed by a forensic laboratory (Exhibit 3-4). This translated to 23% of property cases with forensic evidence of any type had not been analyzed.

Exhibit 3-4. Unsolved Property Cases with Unanalyzed Forensic Evidence, Past 5 Years

	Estimated Number of Unsolved Property Cases	Estimated Number of Unsolved Property Cases with Unanalyzed Forensic Evidence	Percentage of Unsolved Property Cases with Unanalyzed Forensic Evidence
Property crimes	22,013,113	5,126,719	23.3%

3.1.2.4 Law Enforcement Agency Characteristics for Backlogged Violent and Property Cases

Forensic Case Backlogs, by Agency Size. By agency size, more than four out of five unsolved homicide cases (84%) with unanalyzed forensic evidence were from the largest police departments (i.e., 100 or more sworn officers) (Exhibit 3-5). About 8% of unsolved homicides with unanalyzed evidence were reported by agencies with 50 to 99 sworn personnel, 6% by agencies with 25 to 49 officers, and 2% from agencies with fewer than 25 officers. Mid- to small-sized agencies accounted for larger proportions of rape and property backlogged cases than homicide cases. Among all unsolved rape cases with unanalyzed forensic evidence, large agencies with 100 or more sworn officers accounted for 59% of cases, agencies with 50 to 99 sworn officers for 13% of cases, agencies with 25 to 49 sworn officers for 14% of cases, and small agencies with fewer than 25 sworn officers for 13% of cases. Similar patterns were reported for unsolved property cases, with the largest agencies accounting for nearly two-thirds of backlogged cases (65%).

Exhibit 3-5. Backlogged Violent and Property Cases, by Agency Size, Past 5 Years

	Crime Type					
Agency Size	**Homicide**	**Percent**	**Rape**	**Percent**	**Property**	**Percent**
<25 officers	86	2.2%	3,690	13.4%	648,074	12.6%
25–49 officers	233	5.9%	3,955	14.3%	480,457	9.4%
50–99 officers	323	8.1%	3,564	12.9%	652,474	12.7%
≥100 officers	3,333	83.8%	16,386	59.4%	3,345,714	65.3%
Total	**3,975**	**100.0%**	**27,595**	**100.0%**	**5,126,719**	**100.0%**

Forensic Case Backlogs, by Agency Type. Municipal police agencies accounted for about four out of five unsolved homicides (79%) and property crime cases (78%), but accounted for a slightly lower percentage of unsolved rapes (73%) (Exhibit 3-6). Sheriff's departments reported about 18% of homicides, 19% of rape cases, and 20% of property backlogged cases. State police agencies accounted for about 9% of all unsolved rape cases, 3% of homicides, and 2% of property crimes with forensic evidence that remained unanalyzed.

Exhibit 3-6. Backlogged Violent and Property Cases, by Agency Type, Past 5 Years

	Crime Type					
Agency Type	**Homicide**	**Percent**	**Rape**	**Percent**	**Property**	**Percent**
Sheriff's department	721	18.1%	5,207	18.9%	1,031,928	20.1%
Municipal police department	3,153	79.3%	20,016	72.5%	3,986,278	77.8%
State police	102	2.6%	2,371[a]	8.6%	108,513[a]	2.1%
Total	**3,976**	**100.0%**	**27,594**	**100.0%**	**5,126,719**	**100.0%**

[a] Low precision attributed to sample size.

Forensic Case Backlogs, by Census Region. Law enforcement agencies in the South (47%) and West (30%) reported the largest homicide backlogs, followed by the Midwest (14%) and Northeast (9%) (Exhibit 3-7). This was similar to backlogged rape cases, where half of cases were reported in the South (50%), about one-quarter in the West (26%), and the remainder in the Midwest (17%) and Northeast (8%). For backlogged property cases, the South reported 41% of all cases, while the West accounted for 27% of cases, the Midwest for 24%, and the Northeast for 8%.

Exhibit 3-7. Backlogged Violent and Property Cases, by Census Region, Past 5 Years

	Crime Type					
Agency Region	**Homicide**	**Percent**	**Rape**	**Percent**	**Property**	**Percent**
Midwest	548	13.8%	4,573	16.6%	1,239,982	24.2%
Northeast	373	9.4%	2,068	7.5%	397,314	7.7%
South	1,863	46.9%	13,695	49.6%	2,089,378	40.8%
West	1,191	30.0%	7,259	26.3%	1,400,046	27.3%
Total	**3,975**	**100.0%**	**27,595**	**100.0%**	**5,126,719**	**100.0%**

3.1.3 Estimating Forensic Backlogs in Drug Cases

The chemical analysis of controlled substances accounts for a substantial portion of the workload of forensic laboratories (Peterson a Hickman, 2005). Data from the National Forensic Laboratory Information System (NFLIS) indicate that state and local laboratories analyzed an estimated 1.3 million drug cases in 2005 (Weimer et al., 2005). The primary goal of the analysis process is to scientifically confirm the identity of the substance and determine if its possession violates federal or state law. Prosecutors then use this evidentiary information during the court process both to prove the drug's identity and to document certain characteristics of the evidence, including total weight and drug purity (these latter factors can affect sentencing in states like New York, which have mandatory minimums associated with weight of the pure form of the substance). Yet, due to the large volume of drug arrests in the United States, controlled substances have consistently accounted for a large proportion of backlogs in forensic laboratories (Durose, 2008; Peterson & Hickman, 2005). Of the estimated 435,879 cases backlogged in forensic crime laboratories in 2005, about half were controlled substance cases.

However, previously there has been limited information on the number of drug arrests that had not been submitted by law enforcement to a crime laboratory for analysis. The LEFP survey asked about arrests for the illegal possession or trafficking of controlled substances made by the agency in 2007 that had not been submitted to a crime laboratory for analysis To be clear, a sizable proportion of these drug arrest cases are likely to have been resolved without requiring a laboratory analysis (e.g., a presumptive field test used to elicit a defendant plea). However, it is likely that some proportion of these drug cases would ultimately require analysis by the crime laboratory, especially if the case proceeded to trial. Findings showed that there were an estimated 480,840 drug arrests for CY 2007, or 21% of all drug arrests with forensic evidence (total 2,298,481), that were not submitted to a crime laboratory (Exhibit 3-8). This number is similar to the findings reported in past BJS surveys (Durose, 2008).

Exhibit 3-8. Drug Arrests with Unanalyzed Forensic Evidence, 2007

	Estimated Number of Drug Arrests	Estimated Number of Drug Arrests with Evidence Not Submitted to a Crime Laboratory	Percentage of Drug Arrests with Evidence Not Submitted to a Crime Laboratory
Drug arrests	2,298,481	480,840	20.9%

3.2 The Role of Law Enforcement in Processing and Analyzing Forensic Evidence

To better interpret the LEFP survey results, it is important to understand the policies and procedures under which state and local law enforcement agencies operate in terms of processing, retaining, and analyzing forensic evidence. A great deal of variation exists across U.S. law enforcement agencies in the area of forensics, including policies that guide daily operations. This section presents information on the procedures used for processing and tracking evidence, including the availability of internal non-laboratory personnel assigned to process and analyze latent prints, digital evidence, and other forms of forensic evidence. Agencies also reported on their policies for retaining evidence, where they store evidence, their ability to systematically track evidence, and to which types of crime laboratories they ultimately submit their evidence.

3.2.1 Reasons Why Law Enforcement Agencies Did Not Submit Forensic Evidence for Unsolved Cases

There are multiple potential explanations for forensic case backlogs in law enforcement agencies. Exhibit 3-9 describes the most common reasons provided by law enforcement respondents for why unsolved crimes have not been sent to a crime laboratory for testing. Nearly one in five (17%) agencies reported that forensic evidence had not been submitted because they did not feel the evidence was useful to the case. Nearly half of responding agencies indicated that they may not have submitted evidence if a suspect had not yet been identified (44%). These findings (which did not vary considerably by agency size categories) suggest that some law enforcement agencies are still not fully aware that forensic evidence can be used as an investigative tool and not just used during the prosecution phase. In addition, in the matter of "no suspect" cases, there may be standing policies or other inhibitors (such as resource limitations) that assign these types of cases a lower priority. Law enforcement agencies also reported that they did not submit evidence because the suspect had been identified but not formally charged (12%), the analysis had not been requested by the prosecutor (15%), or the case had been dismissed (19%). Agencies also reported not submitting evidence because the suspect in the case had been adjudicated without forensic testing (24%). The final categories were related to laboratory resource or timeliness issues—these factors included the inability of the laboratory to produce timely

results (11%), insufficient funding for analysis (9%), and that the laboratory was not accepting evidence because of backlog issues (6%). Thus, unless law enforcement agencies believe that the forensic evidence has probative utility and that the laboratory testing will be completed in a timely manner, forensic evidence can be held instead of submitted to the crime laboratory. Finally, 24% of agencies reported that inhibiting factors were not applicable to their agency either because they submitted all forensic evidence or because they reported an "other" inhibiting factor that was not listed.

Exhibit 3-9. Factors Inhibiting the Submission of Forensic Evidence to Crime Laboratories[a]

Factors Inhibiting Submission of Forensic Evidence for Open Homicide, Rape, and Property Crime Cases	Percentage Selecting Factor
Suspect has not been identified	44%
Suspect adjudicated without forensic evidence testing	24%
Other/Not applicable	24%
Case has been dismissed	19%
Uncertain of usefulness of forensic evidence	17%
Analysis not requested by prosecutors	15%
Suspect has been identified but not formally charged	12%
Inability of laboratory to produce timely results	11%
Insufficient funding for analysis of evidence	9%
Laboratory will not accept forensic evidence due to backlog	6%
Uncertain where to send forensic evidence for analysis	2%

[a] Agencies could mark all categories that applied.

3.2.2 Non-laboratory Forensic Personnel in Police Agencies

Law enforcement agencies employ a number of different personnel outside of the laboratory for assisting with collecting, processing, identifying, classifying, preserving, and analyzing forensic evidence. Among other positions, this may include crime scene technicians who collect and process evidence at the crime scene and latent fingerprint specialists, who examine and evaluate latent prints. Fingerprint specialists may also enter and compare prints in the Automated Fingerprint Identification System (AFIS) and testify in court on their findings. Respondents were asked if their agency employs personnel responsible for evidence collection and analysis in different forensic disciplines. Exhibit 3-10 illustrates that agencies most commonly reported having staff employed for processing or analyzing latent prints (39%), followed by digital evidence (26%), trace evidence (22%), firearms and toolmarks (18%), and serological/biological evidence (17%). Biological evidence not intended for DNA analysis, such as blood patterns and toxicology, was a forensic evidence

category defined as "serological/biological evidence," Case backlogs, defined as having cases that had not having analyzed within 30 days of receipt, was an issue for some of these agencies. Exhibit 3-11 shows that, among agencies that employed non-laboratory forensic staff, about one in five (21%) reported having a forensic evidence case backlog.

Exhibit 3-10. Non-laboratory Personnel in Law Enforcement Agencies with Forensic Responsibilities

Forensic Evidence Tested by Non-laboratory Personnel	Percentage Selecting Factor
Latent prints	38.5%
Digital evidence	25.7%
Trace evidence	21.8%
Firearm/ toolmarks	17.6%
Serological/biological	17.3%

Exhibit 3-11. Case Backlogs Reported by Non-laboratory Forensic Personnel

Do These Agency Personnel Currently Have a Forensic Case Backlog?	Percentage
Yes	21.4%
No	70.7%
Unknown	7.9%

3.2.3 Cold Case Squads

Cold case squads are used in jurisdictions across the country to reopen old cases to look for new investigatory leads. As part of the LEFP survey, law enforcement agencies were asked if they have a cold case squad assigned to review unsolved violent crimes. Findings show that only 6% of state and local law enforcement agencies reported having a cold case squad assigned to review open violent crimes (Exhibit 3-12). Large police agencies with 100 or more sworn officers (41%) and state police agencies (57%) were the most likely to report having a cold case unit (not shown in table). The overall proportion of agencies that reported having cold case squads was lower than the proportions reported in previous studies. For example, the 2002 NIJ survey of law enforcement agencies found that about one in five agencies (23%) had a cold case squad.

Exhibit 3-12. Cold Case Squads in Law Enforcement Agencies

Does Your Agency Have a Cold Case Squad Assigned to Review Open Violent Crimes?	Percentage
Yes	6.0%
No	92.9%
Unknown	1.1%

3.2.4 Law Enforcement Policies for Retaining Biological Evidence

Law enforcement agencies vary widely in terms of their policies for retaining forensic evidence, especially in cases where a defendant has been convicted of a crime. In some cases, evidence can be destroyed even while inmates are appealing their cases. Developing policies that provide clear guidelines for the preservation and documentation of biological evidence by law enforcement agencies are a major area of need. In addition to the need to retain evidence for unsolved crimes, there have also been an increasing number of states passing statutes that require the indefinite storage of forensic evidence used in crime convictions. Specifically, cases where post-conviction DNA testing may result in exoneration have led a number of state legislatures to develop strict evidence retention policies.

The 2007 LEFP survey asked law enforcement respondents if they had an evidence retention policy regarding the preservation of biological evidence that was secured in the investigation of an offense if the defendant was found guilty. Slightly less than half of all respondents (46%) reported having a policy in place that met this defined criteria (Exhibit 3-13). About one-third of agencies (38%) reported that they did not have such a policy in place, and nearly 16% indicated they were unsure whether their agency had such a policy.
Exhibit 3-14 shows that, among those agencies with an evidence retention policy, 51% reported that the policy was governed by state statute, and 43% reported that evidence was retained due to agency policy. An additional 5% of agencies reported that the policy was in place due to a legal decision. Finally, agencies with an evidence retention policy for biological evidence were asked who was responsible for retaining the evidence in these cases (multiple types of agencies could have responsibility). Exhibit 3-15 demonstrates that the responsibility for retaining this evidence most commonly was placed on the investigating law enforcement agency (80%), followed by the crime laboratory (21%). The court system (8%) and the prosecuting attorney's office (8%) were less frequently identified as having any responsibility for retention of biological evidence in post-conviction cases.

Exhibit 3-13. Evidence Retention Policies for Biological Evidence

Biological Evidence Retention if Defendant Found Guilty?	Percentage
Yes, there is such a policy meeting this criteria	46.2%
No, there is no such policy	38.0%
Unsure if such a policy exists	15.9%

Exhibit 3-14. Governing Authority for Biological Evidence Retention Policies

What Governs the Biological Evidence Retention Policy?	Percentage
State statute	51.4%
Local ordinance	0.8%
Legal decision	5.2%
Agency policy	42.7%

Exhibit 3-15. Responsibility for Retaining Biological Evidence[a]

Who Is Responsible for Retaining Biological Evidence?	Percentage
Investigating law enforcement agency	80.2%
Crime laboratory	20.9%
Court system	7.6%
Prosecuting attorney's office	7.5%
Other	2.3%

[a] Agencies could mark all categories that applied.

3.2.5 Storage Locations for Unanalyzed Evidence

Evidence can be stored in a number of different locations, including a courthouse, on-site at the police agency, at the forensic laboratory facility, or in other off-site locations. Evidence storage procedures can help maintain the integrity of evidence, as well as its availability for investigations and judicial proceedings. Storage locations are used for evidence that has not been analyzed by crime laboratories (including both solved and unsolved cases), as well as for evidence that has been submitted and analyzed by the laboratory but is then returned to the police agency. Failures in evidence storage can negatively affect the condition of forensic evidence, as can discarding or not being able to locate critical evidence. These problems pertain to not having sufficient storage space and to the lack of tracking systems and processes in place for determining when forensic evidence can be discarded and when it should be retained.

Findings from the LEFP survey demonstrate that the vast majority of law enforcement agencies (92%) utilize an on-site storage area for unanalyzed evidence (Exhibit 3-16). These areas could be used both for solved and unsolved cases that contain forensic evidence that has not been sent to a crime laboratory for analysis. About 11% of agencies reported using a crime laboratory for storing unanalyzed evidence. An additional 8% of agencies reported using an off-site storage location (other than the crime laboratory for storage), while 3% reported using an "other" type of location for evidence storage.

Exhibit 3-16. Storage Locations for Unanalyzed Evidence[a]

Where Is Unanalyzed Evidence Stored?	Percentage
On-site storage area	92.0%
Crime laboratory facility	10.7%
Off-site storage area	7.9%
Other	3.3%

[a] Agencies could mark all categories that applied.

3.2.6 Law Enforcement Information Systems and Forensic Evidence

The use of information systems can enhance the ability of police agencies to manage, track, and monitor forensic evidence associated with criminal cases. This could include identifying cases that are in need of additional analysis. Yet, some police records systems do not include details on forensic evidence associated with cases and can provide no clear account of evidence that has been tested, how long the evidence has been in storage, or the status of the case associated with the evidence. As shown by the difficulties in tracking evidence in Los Angeles (Rubin, 2009), these challenges related to evidence tracking systems are not limited to mid- to small-sized agencies. Results from the LEFP survey show that less than half of law enforcement agencies (43%) reported having an information system in place that was capable of tracking forensic evidence inventory (Exhibit 3-17). Larger police agencies were more likely to report having an information system that contained information on forensic evidence in place. Nearly three in four agencies with 100 or more sworn officers reported having such a system.

Exhibit 3-17. Computerized Systems Capable of Tracking Forensic Evidence

Does the Agency Have a Computerized System Capable of Tracking Forensic Evidence Inventory?	Percentage
Yes	43.4%
No	56.6%

3.2.7 Types of Forensic Laboratories Used by Law Enforcement Agencies for Submitting and Analyzing Forensic Evidence

Police agencies are most likely to use state crime laboratories for submitting forensic evidence (Exhibit 3-18). This was true for every form of evidence, most commonly DNA and trace evidence, both at 88%. Agencies were most likely to use local crime laboratories for latent prints (18%) or controlled substances (14%). Private/commercial laboratories were not used frequently, but when they were, it was most commonly for DNA evidence (2%) or controlled substances (1%). These findings do not take into account the number of submissions by agencies and, therefore, do not necessarily mean that state laboratories process the vast majority of all forensic evidence. Many of the largest municipal law enforcement agencies, which account for the largest number of evidence submissions, have their own crime laboratories, which would be defined as local crime laboratories. Also of note, a relatively low number of law enforcement agencies utilize either federal crime laboratories or private/commercial forensic laboratories. Private laboratories typically charge fees for analyzing evidence and, as a result, many agencies may only utilize these services for special analyses. Another caveat for these data concerns DNA analysis. DNA analysis may be performed by a combination of laboratories and this question, as stated in the LEFP survey, may not have been accurately reported. For instance, forensic evidence sent to private laboratories may first be submitted to a government laboratory, where it is prepared and then forwarded to the private laboratory for analysis. In this case, the law enforcement agency could only report one laboratory for each type of evidence.

Exhibit 3-18. Primary Location for Submitting Forensic Evidence

Type of Evidence	State Lab	Local Lab	Federal Lab	Private/ Commercial Lab	Other
Trace evidence	87.9%	8.9%	1.0%	1.2%	1.1%
DNA	88.2%	7.8%	0.7%	2.2%	1.2%
Latent prints	77.9%	17.7%	0.6%	0.7%	3.1%
Firearm/toolmarks	85.8%	11.3%	0.4%	0.8%	1.7%
Controlled substance/toxicology	83.3%	14.0%	0.3%	1.4%	0.9%

3.2.8 Forensic Backlog Reduction Programs in Law Enforcement Agencies and Crime Laboratories

The U.S Department of Justice has initiated numerous programs for reducing forensic backlogs at the state and local levels. These programs include NIJ's Forensic DNA Backlog Reduction Program, which assists eligible state and local crime laboratories in reducing forensic DNA sample turnaround time, increasing the throughput of public DNA laboratories,

and reducing DNA forensic casework backlogs. In 2007, the Forensic Casework and Capacity Enhancement backlog Reduction Programs were merged into the Forensic DNA Backlog Reduction Program, which maintains the objectives of both programs. In 2008, nearly all U.S. territories (excluding Washington, D.C.; Iowa; and New Jersey) received funding ranging from $100,000 to more than $7 million (DNA Initiative, n.d.). Law enforcement agencies, prosecutors' offices, and crime laboratories from across the country have also been funded to establish programs to review old cold cases. Under this program, NIJ has funded states and local agencies to identify, review, and investigate "violent crime cold cases" that have the potential to be solved using DNA analysis and to locate and analyze biological evidence associated with these cases. However, recently cold case squads have been reduced and even eliminated in some states most likely due to reduction in federal funding upwards of 40% (from $14.2 million in 2005 to $8.5 million in 2007 (Gomez, n.d.).

The LEFP survey asked law enforcement agencies if they had a forensic backlog reduction program or initiative currently in place. As shown in Exhibit 3-19, about 2% of law enforcement agencies reported having such a program in place. About 58% of responding state police agencies and 14% of the largest police agencies (those with 100 or more sworn officers) reported having a backlog reduction program or initiative in place. Four percent of police agencies with 50 to 99 sworn officers, 3% of agencies with 25 to 49 officers, and less than 1% of agencies with fewer than 25 sworn officers reported having a forensic backlog program or initiative in place.

Exhibit 3-19. Law Enforcement Agencies with Forensic Backlog Reduction Programs or Initiatives

Does the Agency Have a Forensic Backlog Reduction Program or Initiative?	Percentage
Yes	2.4%
No	87.7%
Unknown	9.9%

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Summary of Findings

Forensic backlogs in state and local crime laboratories have received considerable attention in recent years. Yet, there has been limited information on the size and characteristics of case backlogs in law enforcement agencies. One of the primary purposes of this project was to estimate the number of open cases in law enforcement agencies for which new investigatory leads could be developed through analysis of the unanalyzed forensic evidence available. These open (or unsolved) cases were defined as cases that had not been officially cleared by the agency, to include all cases that had not been closed by arrest or cleared by exceptional means (for example, cases closed by exceptional means because of the death of the primary suspect). Estimates were developed not only for the total size of the forensic evidence caseload in law enforcement agencies, but also for the characteristics of these caseloads, including backlogs.

Specific objectives of the LEFP survey included the following:

1. To estimate the number of homicide, rape, and property crime cases reported during 2007 for which forensic evidence was collected.
2. To develop national estimates for the number of unsolved homicide, rape, and property crime cases in state and local law enforcement agencies over the past 5 years that contain forensic evidence but that have not been submitted to a crime laboratory for analysis.
3. To estimate the types of forensic evidence (serological/biological, DNA, trace evidence, latent print, firearms/toolmarks) that comprise these national backlogs for homicide and rape cases.
4. To describe the policies and procedures used in U.S. law enforcement agencies for processing, submitting, and retaining forensic evidence, as well as the availability of information systems capable of tracking forensic evidence inventory.

Findings from the LEFP survey confirm that there are a substantial number of unsolved homicides and rapes with forensic evidence that have not been submitted to forensic laboratories for analysis. Among crimes committed over the past 5 years, there are an estimated 3,975 unsolved homicides and 27,595 unsolved rapes that have not been submitted to a crime laboratory. This translated to 14% of unsolved homicides and 18% of unsolved rapes contain forensic evidence that has not subsequently been analyzed. Backlogged homicide and rape cases most commonly contained DNA evidence that can be used to identify potential unknown suspects or to link a perpetrator to a specific crime (i.e., linking a rapist to a semen sample). Similarly, about one in four backlogged homicide and rape cases contained latent prints; evidence which can be used for identifying unknown perpetrators through the use of automated fingerprint identification systems like the

national Integrated Automated Fingerprint Identification System (IAFIS) and criminal history system maintained by the Federal Bureau of Investigation.

Results also show that large police agencies (those with 100 or more sworn officers) accounted for more than 80% of all backlogged homicide cases but accounted for lower percentages of backlogged rapes and property cases (60% of all backlogged rape cases and 65% of all backlogged property cases). Smaller agencies, with fewer than 50 sworn officers, contributed larger relative percentages of the nation's backlogged rape cases (28% of total backlogged rapes) compared with backlogged homicide or property cases. When looking at the results by type of agency, municipal police departments accounted for about three out of four backlogged homicide, rape, and property cases, while sheriff's departments accounted for about one in five backlogged cases. State police agencies reported about 9% of all unsolved rape cases with unanalyzed forensic evidence.

Findings from the survey also demonstrate that backlogs in terms of the processing of forensic evidence are not limited to evidence being sent outside the law enforcement agency to crime laboratories. Law enforcement agencies frequently employ non-laboratory staff to conduct forensic processing and analysis tasks, most commonly for latent prints and digital evidence, but also for trace evidence, firearms and toolmarks, and serological/biological evidence. Among agencies that reported employing staff in these areas, more than one in five agencies reported that these staff have a case backlog, defined as having cases that had not been analyzed within 30 days of receipt.

Another important finding from the LEFP survey pertains to the substantial number of property cases that contained unanalyzed forensic evidence. Law enforcement agencies reported more than 5 million unsolved property crimes with forensic evidence had not been analyzed by a forensic laboratory. In other words, 23% of unsolved property cases containing forensic evidence that was not being submitted for analysis. Findings from the NIJ-funded DNA Field Experiment study demonstrated that collecting and analyzing DNA evidence from property crime scenes can have a dramatic effect on arrests and prosecutions (Roman et al., 2008). Persons arrested in the DNA property cases also had a larger number of prior arrests and double the prior convictions compared with persons arrested through traditional investigations. While the potential benefits to clearing property crimes and improving public safety could be substantial, the costs and agency and laboratory resources associated with such a shift must be closely considered and planned for.

Results from the LEFP survey also shed new light on the capacity, procedures, and policies used by law enforcement agencies for collecting, processing, and storing forensic evidence. Less than half of law enforcement respondents reported having an evidence retention policy for preserving biological evidence for cases in which the defendant was found guilty. These

policies were most commonly governed by state statute or agency policy. Four out of five responding agencies with evidence retention policies reported that the investigating law enforcement agency was responsible for storing the biological evidence. Unanalyzed forensic evidence was also stored on site in law enforcement agencies for the vast majority of cases. Overall, 92% of respondents reported that unanalyzed evidence was stored on site. Finally, in regard to information and reporting systems, less than half of all agency respondents (43%) reported having an information system capable of tracking forensic evidence.

4.2 Study Implications

The efficient processing and analysis of forensic evidence is an increasingly critical issue in today's criminal justice system. Law enforcement agencies vary considerably in their procedures for processing, analyzing, and submitting forensic evidence, and backlog problems are not limited to police agencies of certain sizes or types. The challenge is to identify the key factors that contribute to successful case processing systems, as defined by reduced (or eliminated) backlogs and decreased turnaround time, while also maintaining high analytic standards for accuracy and precision. Establishing uniform case submission protocols and criteria for prioritizing cases for analysis are other effective methods to address the backlog problem. In reviewing the results from the LEFP survey, particular attention should be paid to the following findings.

First, law enforcement agencies continue to face substantial forensic case backlogs, especially for rape and property cases. About one in seven unsolved homicide cases with forensic evidence, nearly one in five unsolved rape cases, and one in four property crimes were not submitted to a forensic laboratory for analysis. More research is required to better understand what forensic backlogs actually represent in terms of the proportion of open cases that could benefit from forensic testing and how cases should be prioritized for testing. Procedures should be developed to quickly ensure that when evidence is probative it is submitted and analyzed in a timely fashion. This prioritization also may take into account issues related to case seriousness and instances where analysis of the evidence can have the greatest effect in terms of closing the case.

While additional resources for law enforcement and crime laboratories would certainly help the case backlog issue, systemic solutions are necessary to create a more efficient system that promotes coordination and information sharing across law enforcement agencies, forensic laboratories, and prosecutors. For example, if more homicide and rape cases are analyzed by the laboratories, then police will need to move cases to the laboratories more quickly, based on an established and mutually acceptable prioritization. In turn, prosecutors will need to have the resources and staffing levels in place to handle this increased flow of cases.

Second, greater attention should be placed on reducing case backlogs and improving efficiencies within mid- to small-sized police departments. As an example, police agencies with fewer than 50 sworn officers accounted for nearly 3 out of 10 unsolved rape cases that contained forensic evidence but that remained unanalyzed. Historically, larger agencies may have received grant funding more readily than smaller agencies in general, which in turn impacts programs that they may have to implement backlog reduction initiatives. This is in part reflected by the LEFP results that show that only 1% of police agencies with 50 or fewer officers reported having a backlog reduction program or initiative in place. The finding may be due to larger agency's having greater capacity and more staff available to formally request and manage grant funding in general.

Third, law enforcement personnel across all levels of agencies require improved training on the benefits and use of forensic analysis. Results from the survey support the notion that some U.S. law enforcement agencies continue to have only a limited understanding of the full benefits of forensic evidence and a mindset that forensic evidence is beneficial mainly for prosecuting crimes, not for developing new leads in investigations. Nearly half of law enforcement agencies reported that an inhibiting factor for not submitting forensic evidence was that a suspect had not been identified. These findings may be indicators of a knowledge gap among some personnel in law enforcement. To be fair, it must be recognized that national information systems such as CODIS are still relatively new (for example, CODIS became operational in the late 1990s). As a result, some investigators may "triage" their cases based on their need and experiences and may not yet have fully internalized the potential for advancing a "no suspect" case based on DNA evidence. In other words, the LEFP results suggest that some law enforcement agencies are either not aware that forensic evidence can be used for investigative purposes or, in the matter of "no suspect" cases, there may be standing policies or other inhibitors preventing them from doing so. On the latter point, almost 15% of agencies indicated that evidence may not be submitted to a laboratory if the analysis was not requested by a prosecutor. In some jurisdictions, laboratories may require prosecutors to sign off that a case requiring forensic analyses will, in fact, go forward in order to avoid what would otherwise be viewed as an unnecessary use of laboratory resources. This also speaks to the role of the laboratory in potentially hindering the use of forensics for investigative purposes.

Fourth, laboratory resource and timeliness issues were reported by some police agencies as factors that inhibited the submission of forensic evidence. Forensic laboratories can play a crucial role in potentially hindering the processing and use of forensics, especially for investigative purposes. Some law enforcement agencies reported that they did not submit forensic evidence specifically because of issues with crime laboratories. For example, 11% of agencies reported not submitting evidence because of the inability of the laboratory to

produce timely results, and 6% indicated that the laboratory was not accepting forensic evidence because of an existing backlog. An additional 9% of agencies reported that insufficient funding for the analysis of evidence was a factor inhibiting submission. These types of factors should be investigated more closely to determine resolutions. In some instances, more effective communication between law enforcement, their supporting laboratories, and prosecutors could help minimize these inhibiting factors.

Fifth, law enforcement information systems should be enhanced so that they can systematically track and monitor forensic evidence associated with criminal cases. About 4 in 10 law enforcement agencies reported having a computerized information system in place capable of tracking forensic evidence inventory. Among these agencies that did report having a system with these capabilities, it is not known whether those systems are integrated with more centralized police records management systems. This could include the ability to determine what evidence has been tested (or not tested) in a case, how long the evidence in a case has been in storage, and the status of cases for which forensic evidence was collected. In some instances, larger police agencies (including large county agencies and state police agencies) reported significant difficulty providing forensic backlog questions about open rape and property cases because this information was not maintained in a centralized system. For example, property crimes in larger agencies are typically investigated at the precinct level and, as a result, case status information is maintained at similar levels. The same may be true for rape cases. Finally, more guidelines, documentation, and resources are required for evidence retention in law enforcement agencies. Storage capacity and protocols both for analyzed and unanalyzed forensic evidence must be addressed. Less than half of all police agencies reported having a policy in place for preserving biological evidence for cases in which the defendant was found guilty. About one in five agencies reported being unsure whether their agency had such a policy. In cases where a policy was in place, law enforcement agencies were most commonly responsible for storing the evidence, in some cases indefinitely. Law enforcement agencies were also responsible in most cases for storing unanalyzed forensic evidence, most often in on-site storage locations. While guidelines and documentation for retaining evidence are critical for ensuring due justice, these policies must also take into account the resources available to law enforcement agencies for evidence storage. In addition, steps should be taken to improve the capacity of police agencies to track and discard evidence that is no longer required to be maintained by law. This approach could include working with prosecutors to develop systems for flagging evidence that is eligible for destruction.

4.3 Study Limitations

Although the LEFP survey methodology was effective and efficient, and generated many useful findings, certain limitations of the study must be acknowledged. For one, information on the percentage of unsolved cases that contained unanalyzed evidence was based on estimates reported by the law enforcement respondents. While some agencies had the ability to query information systems to calculate the requested information, many based these responses on approximations or memory recall. As a result of the self-reporting nature of the survey and variability in laboratory management systems, these estimations have biases which cannot be controlled.

Second, this analysis captures the number of unsolved cases with forensic evidence that were not submitted to a crime laboratory. Yet it is unknown how many of the investigations for these open, backlogged cases would benefit from analysis. As an example, in some cases, the evidence may not have been tested because the investigator knew it was unrelated to the case. The survey also does not capture evidence for unsolved cases that had been analyzed at one point in time but that would benefit from re-analysis. For example, if latent print evidence was analyzed and submitted to the IAFIS several years ago with no successful match on a suspect, the case could benefit from being resubmitted to IAFIS because the offender in question could have been entered into the system in the interim. Also, new analytic technologies may warrant testing for the first or re-analysis of forensic evidence that was inappropriate to test in the past.

Third, because multiple offices within the agencies were often involved in completing the survey (especially for mid- to large-sized agencies), it was difficult to verify that completed responses were dependent on which office completed which questions. In other words, if criminal investigations and research and planning offices were forced to both answer the same questions on backlogs, it is possible that both would provide different answers. Detained directions were provided to agencies to request that some coordination within the agency would likely be required.

4.4 Conclusions

The LEFP survey sought to develop current estimates for the number of unsolved law enforcement cases containing forensic evidence that have not been submitted to crime laboratories for analysis. The survey used a multimode approach to collect information from a national sample of more than 3,000 law enforcement agencies. Police agencies may improve their extent of backlogged cases through better organization and tracking of unsolved cases. However, the LEFP findings also demonstrated the need for

- more uniform procedures and processes for submitting and analyzing probative evidence that includes some prioritization based on factors such as case seriousness;
- improved information systems for tracking and monitoring forensic evidence within a records management framework;
- more systematic policies and resources for evidence retention and storage;
- increased training for law enforcement on the benefits and goals of forensic evidence, including guidelines for prioritizing cases for analysis; and
- improved coordination on forensic analysis both within law enforcement agencies themselves and across police agencies, forensic laboratories, and prosecutor's offices, which could include dedicated staff for case management, scheduled team meetings for case review, and case tracking systems that promote information sharing across these criminal justice entities.

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APPENDIX A:
LEFP SURVEY INSTRUMENT

Instructions for Completing the Survey of Law Enforcement Forensic Evidence Processing

1. The person(s) designated to respond to this survey should have an understanding of the agency's system for processing evidence in criminal cases. We would recommend designating a single point of contact for the survey. This individual should be positioned to assist with coordination between various units within the agency whose input may be necessary in completing the survey. These units may include staff in Crime Analysis, Research and Planning, and Criminal Investigations. Because the survey is focused on forensic evidence that has not been submitted for analysis, your participating Forensic Crime Laboratory is most likely **not** the best unit to complete this survey (although they may assist in answering specific questions).

2. Please make every attempt to answer the survey questions as completely as possible, but understand that **exact numbers are not required—your best estimate is an appropriate response.**

3. Answer all questions for the jurisdiction that your agency serves. We should stress that any of the information reported as part of this survey will only be used in aggregate form. **No agencies will be mentioned by name in any NIJ reports.**

4. Answer each question in sequence by marking the appropriate box and/or by printing the requested information in the space provided. In some cases, you will be requested to skip certain questions based on your response. If you need to give an explanation for an answer, please use the space provided.

5. Please complete the survey as soon as possible and return it using one of the following methods:

   a. **E-mail:** You can complete the survey and return via email to LEFP@rti.org

   b. **Fax:** You can fax the completed survey to 1-866-253-2452.

6. If you need assistance answering any question, please contact our Helpdesk either by emailing RTI at LEFP@rti.org or calling RTI at 1-866-354-4992.

Although you are not required to respond, your participation is very important for the success of this DOJ survey.

Glossary of Terms

Case – Cases should be counted per criminal investigation (i.e., investigations with a single case number). For example, a multiple homicide at a residence should be counted as one case. However, in cases that are investigated as serial crimes, each crime should be counted as an individual case.

DNA – Deoxyribonucleic acid is the chemical substance found in blood and other biological evidence such as semen and saliva, which determines each person's individual characteristics. The genetic material can be analyzed and used for identification purposes.

DNA Forensic Evidence – DNA evidence suitable for use in a court of law.

Drug Chemistry Evidence – Includes controlled substances (i.e., any drugs or chemical substances) whose possession and use are regulated under either the Controlled Substances Act or state or local statutes.

Firearm and Tool Marks (Ballistics) – Forensic evidence collected during a criminal investigation that employs methods to study firearms; their manufacture, operation, and performance; and ammunition and its byproducts, as well as the individualizing characteristics that are transferred from firearms to bullets and cartridge casings.

Forensic Evidence – Any physical item collected at a crime scene that establishes that a crime has been committed or that can link a crime to the victim or suspect (examples include firearm and tool marks, latent prints, serology/biology screening [i.e., blood test], trace evidence, controlled substances/toxicology, and DNA).

Homicide – Includes all crimes of murder and nonnegligent manslaughter (UCR offense category 1a) that are defined as the willful (nonnegligent) killing of one human being by another.

Latent Prints – Forensic evidence collected during a criminal investigation, such as finger, palm, or partial prints, that can be processed to identify an individual involved in a criminal act and used for legal purposes.

Other Forensic Evidence – Any physical evidence collected during a criminal investigation and processed by scientific methods that is usable in the courts but that has not been specifically defined by this survey in a distinct category, including digital evidence; larger physical evidence for identification purposes such as automobile headlamps, tail lights, and speedometers; fire debris; etc.

Property Crime – Includes the offenses of burglary, larceny-theft, motor vehicle theft, and arson.

Rape – Includes forcible rape, attempted forcible rape (UCR offense categories 2a and 2b), and other definitions of rape as supported by your state statute (e.g., 1st degree sexual assault).

Trace Evidence – Small particles collected during a criminal investigation, including hair, paint, glass, textiles and fibers, soils, and gunshot residue. Although not considered as trace evidence by definition, many laboratories examine and analyze impression evidence such as footwear and tire track impressions within their trace evidence section. All of this evidence should be reported for the purpose of this survey.

Violent Crimes – Includes murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault.

Past Year – January 1 to December 31, 2007

1. **How many homicide (murder and non-negligent manslaughter – UCR category 1a), forcible rape (including attempted forcible rape – UCR categories 2a and 2b), and property crime cases (burglary, larceny-theft, motor vehicle theft, and arson – UCR categories 5-8) were received by your office during calendar year (CY) 2007 (January 1 to December 31, 2007)?**

   a. Homicide.....
   b. Rape.....
   c. Property crime .....

2. **Of those homicide, rape, and property crime cases investigated in CY 2007, how many remain open?**

   a. Homicide.....
   b. Rape.....
   c. Property crime .....

3. **Of the open homicide, rape, and property crime cases investigated in CY 2007, please estimate the <u>percentage</u> of cases for which forensic evidence was collected?**

   a. Homicide..... %
   b. Rape..... %
   c. Property crime ..... %

Open Cases within the Past 5 Years

4. **How many homicide, rape, and property crime cases remain open for crimes committed within the past 5 years?** ***[If none, skip to Question 9.]***

   a. Homicide.....
   b. Rape.....
   c. Property crime .....

5. **Estimate what <u>percentage</u> of these open homicide, rape, and property crime cases contain forensic evidence (such as trace evidence, serology/biology screening, DNA, latent prints, firearms and tool marks) that has not been submitted to a crime laboratory for analysis?**

   a. Homicide..... %
   b. Rape..... %
   c. Property crime ..... %

6. **For these open homicide and rape cases, approximate the percentage of cases that contain each of the following types of forensic evidence:**

	0%	1%–25%	26%–50%	51%–75%	76%–100%
a. Trace evidence (such as hair, paint flecks, soil, fibers, dust and glass fragments)	☐1	☐2	☐3	☐4	☐5
b. Serological/biological (bloodstains and other bodily fluids, excluding DNA)	☐1	☐2	☐3	☐4	☐5
c. DNA	☐1	☐2	☐3	☐4	☐5
d. Latent prints	☐1	☐2	☐3	☐4	☐5
e. Firearm and tool marks	☐1	☐2	☐3	☐4	☐5

7. **If forensic evidence for open homicide, rape, and property crime cases has not yet been submitted to a crime laboratory, list all the factors inhibiting submission. Mark all that apply.**

- Suspect has not yet been identified ☐1
- Suspect has been identified but not formally charged ☐2
- Suspect adjudicated without forensic evidence testing ☐3
- Case has been dismissed ☐4
- Uncertain of usefulness of forensic evidence ☐5
- Uncertain where to send forensic evidence for analysis ☐6
- Insufficient funding for analysis of forensic evidence ☐7
- Analysis not requested by prosecutors ☐8
- Inability of laboratory to produce timely results ☐9
- Laboratory will not accept forensic evidence due to backlog ☐10
- Other not listed above ☐11 → Please specify:

8. **From the selections made above, which is the primary inhibiting factor preventing the submission of case evidence to a laboratory?**

Drug Chemistry Evidence

9. **Estimate how many drug arrests (i.e., arrests for the illegal possession or trafficking of controlled substances) were made by your agency during CY 2007 (January 1 to December 31, 2007)? If your department belongs to a multi-jurisdictional task force, complete the question based on the availability of data for your agency.** ***[If none, skip to Question 11.]***

☐

10. **Of the drug arrests listed in Question 9 above, estimate the percentage of arrests that had forensic evidence (i.e., controlled substances) but for which the evidence was not submitted to a crime laboratory for analysis.**

0%	1%–10%	11%–25%	26%–50%	51%–100%
☐1	☐2	☐3	☐4	☐5

General

11. **Outside of the forensic crime laboratory, does your agency employ personnel responsible for evidence collection and analysis in the following areas? Please mark all that apply.** ***[If none, skip to Question 13.]***

- Latent prints ☐1
- Firearms and tool marks ☐2
- Serological/biological ☐3
- Trace evidence ☐4
- Digital evidence ☐5

12. Do these agency personnel currently have a case backlog (defined as cases that have not been analyzed within 30 days of receipt)?

Yes ☐1
No. ☐2
Unknown ☐3

13. Does your agency have a cold case squad assigned to review open violent crimes?

Yes ☐1
No ☐2
Unknown ☐3

14. Is there an evidence retention policy regarding preservation of biological evidence that was secured in the investigation of an offense if the defendant is found guilty? *[If "No" or "Unsure," skip to Question 17.]*

Yes, there is such a policy meeting this criteria ☐1
No, there is no such policy ☐2
Unsure if such a policy exists ☐3

15. What governs this policy?

State statute ☐1
Local ordinance ☐2
Legal decision ☐3
Agency policy ☐4

16. Who is responsible for retaining this evidence? Mark all that apply.

Crime laboratory ☐1
Prosecuting attorney's office ☐2
Investigating law enforcement agency ☐3
Court system ☐4
Other ☐5→Please specify:

17. Does your office have a computerized system capable of tracking forensic evidence inventory? *[If no, skip to Question 19.]*

Yes ☐1
No ☐2

18. If your office has a computerized system, was this system able to capture most of the data needed to complete this survey?

Yes ☐1
No ☐2

19. For evidence maintained by your agency, where is the unanalyzed evidence stored? Mark all that apply.

On-site storage area ☐1
Crime lab facility ☐2
Off-site storage area ☐3
Other ☐4→Please specify:

20. Please indicate the primary location where your office submits the following types of forensic evidence for analysis.

	State Lab ▼	Local Lab ▼	Federal Lab ▼	Private/ Commercial Lab ▼	Other ▼
a. Trace evidence (such as hair, paint flecks, soil, fibers, dust and glass fragments)	☐1	☐2	☐3	☐4	☐5
b. Serological/biological (bloodstains and other bodily fluids, excluding DNA)	☐1	☐2	☐3	☐4	☐5
c. DNA	☐1	☐2	☐3	☐4	☐5
d. Latent prints	☐1	☐2	☐3	☐4	☐5
e. Firearm and tool marks	☐1	☐2	☐3	☐4	☐5
f. Controlled substances/toxicology	☐1	☐2	☐3	☐4	☐5

21. Does your agency have a forensic backlog reduction program or initiative in place? *[If "No" or "Unknown" skip to Question 23.]*

Yes ☐1

No ☐2

Unknown ☐3

22. If yes, please briefly describe this program or initiative, including funding source.

Comments

23. Please use the remaining space (or attach a separate page) to provide any comments or concerns regarding evidence case processing and forensic analysis that pertain to your agency.

APPENDIX B:
SURVEY LEAD LETTER

U.S. Department of Justice

Office of Justice Programs

National Institute of Justice

Office of the Director

Washington, D.C. 20531

August 19, 2008

Agency Head
Agency Name
Address1
Address2
City, State Zip code

To Police Chiefs and Sheriffs:

Within the next several weeks, you will receive a request to fill out a questionnaire for the 2008 Survey of Law Enforcement Forensic Evidence Processing (LEFP), which is funded by the U.S. Department of Justice, National Institute of Justice (NIJ). The project has also been endorsed by the International Association of Chiefs of Police (IACP).

Forensic evidence continues to be used as a critical tool for investigating and solving crimes and for exonerating the innocent. However, it is important to note that with the advancements in forensic technologies, there has been an increased need for law enforcement agencies to review unsolved cases for evidence that could be viable for forensic testing.

This NIJ survey will collect information on the number of unsolved criminal cases containing forensic evidence that have not been submitted to crime laboratories. Law enforcement agencies will be asked about the number of unsolved homicide, rape, and property crime cases maintained; the percentage of cases with forensic evidence available for testing; and the procedures used for reviewing unsolved crimes in order to develop new investigative leads. *The information reported to NIJ will be used only in aggregate form. No agencies will be mentioned by name in any NIJ reports.*

Thank you in advance for your participation in this survey. If you have any questions, please contact Kevin Strom with RTI International at 1-866-354-4992 or LEFP@rti.org.

Sincerely,

David W. Hagy
Director
National Institute of Justice

APPENDIX C:
SURVEY FIRST MAIL-OUT LETTER

U.S. Department of Justice

Office of Justice Programs

National Institute of Justice

Office of the Director

Washington, D.C. 20531

September 2, 2008

«Agency Head»
«Agency Name»
«Address1», «Address2»
«City», «STATE» «Zipcode»

To Police Chiefs and Sheriffs:

The U.S. Department of Justice, National Institute of Justice (NIJ), is conducting the 2008 Survey of Law Enforcement Forensic Evidence Processing (LEFP), which will provide much needed information on the number of unsolved criminal cases containing forensic evidence that have not been submitted to crime laboratories. This project has been endorsed by the International Association of Chiefs of Police (IACP).

Forensic evidence is a critical tool for investigating and solving crimes, as well as for exonerating the innocent. Yet, the increased emphasis on forensic evidence has created an added need for law enforcement agencies to review unsolved cases for evidence that could be used to develop new investigative leads.

This NIJ survey will collect information on the number of unsolved homicide, rape, and property crime cases maintained by agencies; the percentage of cases with forensic evidence available for testing; and the procedures used for reviewing unsolved cases. It is envisioned that the information collected through this survey will be used to support plans for improving the efficiency and functionality of the evidence collection, submission, and analysis processes. Improvements may include adding additional resources dedicated to reopening and analyzing forensic evidence in unsolved cases.

NIJ has contracted with RTI International to administer the survey. Although this survey is voluntary, we urgently need and appreciate your cooperation to ensure that the results are comprehensive, accurate, and timely. There are three ways to complete the survey:

1. **Internet:** The survey can be completed online at http://lefp.rti.org. Your logon ID is «participantID» and your password is «Password».
2. **Fax:** You can fax the completed survey to 1-866-253-2452.
3. **Mail:** You can return the completed survey by mail in the enclosed envelope.

As a first step, we ask that you designate a person in your agency as a point of contact for the survey. Contact information for this individual can be entered into the system by going to

http://lefp.rti.org and clicking on "Add Contact Information." You may also e-mail the contact information to LEFP@rti.org.

We understand that you and your staff have limited time and resources to complete the requested information. While we ask that you make every attempt to answer the survey questions as completely as possible, exact numbers are not required and estimates are an appropriate response. *The information reported to NIJ will be used only in aggregate form. No agencies will be mentioned by name in any NIJ reports.*

Thank you again for your participation in this study. If you have any questions, please call RTI at 1-866-354-4992 or e-mail RTI at LEFP@rti.org.

Sincerely,

David W. Hagy
Director
National Institute of Justice

APPENDIX D:
LETTER OF SUPPORT FROM IACP

International Association of Chiefs of Police
515 North Washington Street
Alexandria, VA 22314–2357
Phone: 703-836–6767; 1–800-THE IACP
Fax: 703-836–4543
Web: www.theiacp.org

August 2008

Dear Law Enforcement Colleague,

As the world's oldest and largest nonprofit membership organization of police executives, the International Association of Chiefs of Police (IACP) seeks to constantly advance the science and art of police services. To this end, the IACP would like to express its full support for the 2008 Survey of Law Enforcement Forensic Evidence Processing which is being conducted by RTI International on behalf of the U.S. Department of Justice, National Institute of Justice (NIJ).

Forensic science has increasingly been used as an important tool for investigating and solving crimes, and IACP support has included promoting the development and application of forensic technologies such as the national use of fingerprint identification. Developments in forensic science however, have also created a need for law enforcement agencies to review old cases for evidence that could be sent to a crime laboratory for testing, requiring additional resources that are often lacking.

This NIJ survey will provide much-needed information on the number of unsolved criminal cases containing forensic evidence that have not been submitted to crime laboratories. Law enforcement agencies are being asked about the number of unsolved homicide, rape, and property crime cases maintained, the percentage of cases with forensic evidence available for testing, and procedures used for reviewing unsolved violent crimes to develop new investigative leads.

A better understanding of these issues can support the development of plans to improve the efficiency and functionality of the evidence collection, submission, and analysis process. This could include new resources dedicated to reopening and analyzing forensic evidence in criminal cases.

We are pleased to support this project and encourage all state and local law enforcement agencies to complete this survey.

Sincerely,

Ronald C. Ruecker
IACP President

APPENDIX E:
STANDARD ERROR AND CONFIDENCE INTERVALS FOR ESTIMATED NUMBER OF UNSOLVED CASES WITH FORENSIC EVIDENCE

Exhibit E-1. Standard Error and Confidence Intervals for Estimated Number of Unsolved Cases with Forensic Evidence

	Estimated Number of Unsolved Cases with Forensic Evidence	Standard Error	Confidence Interval	
			Lower 95% Limit	Upper 95% Limit
By Crime Type, 2007				
Homicide	5,901	694	4,540	7,262
Rape	24,436	1,821	20,865	28,007
Property crimes	1,391,813	90,677	1,213,993	1,569,633
By Crime Type, Past 5 Years				
Homicide	3,975	511	2,973	4,978
Rape	27,595	3,290	21,144	34,046
Property crimes	5,126,719	416,611	4,309,735	5,943,703
By Type of Forensic Evidence, Past 5 Years				
DNA	12,548	1,662	9,287	15,808
Trace evidence	8,520	820	6,913	10,128
Latent prints	8,274	1,255	5,813	10,734
Firearm/toolmarks	7,363	1,504	4,414	10,312
By Agency Size and Crime Type, Past 5 Years				
Homicide				
<25 officers	86	31	26	147
25–49 officers	233	44	147	319
50–99 officers	323	76	173	473
≥100 officers	3,333	503	2,347	4,318
Rape				
<25 officers	3,690	1,872	18	7,362
25–49 officers	3,955	715	2,554	5,357
50–99 officers	3,564	538	2,510	4,619
≥100 officers	16,386	2,553	11,378	21,393
Property Crimes				
<25 officers	648,074	104,511	443,125	853,023
25–49 officers	480,457	64,023	354,906	606,008
50–99 officers	652,474	72,631	510,042	794,905
≥100 officers	3,345,714	391,498	2,577,977	4,113,451

(continued)

Exhibit E-1. Standard Error and Confidence Intervals for Estimated Number of Unsolved Cases with Forensic Evidence (continued)

	Estimated Number of Unsolved Cases with Forensic Evidence	Standard Error	Confidence Interval	
			Lower 95% Limit	Upper 95% Limit
By Agency Type and Crime Type, Past 5 Years				
Homicide				
Sheriff's department	721	200	328	1,114
Municipal police department	3,153	468	2,236	4,070
State police	102	49	5	198
Rape				
Sheriff's department	5,207	783	3,672	6,743
Municipal police department	20,016	2,665	14,791	25,242
State police[a]	2,371	1,763	–1,086	5,829
Property Crimes				
Sheriff's department	1,031,928	106,971	822,156	1,241,700
Municipal police department	3,986,278	397,060	3,207,634	4,764,921
State police[a]	108,513	66,826	–22,535	239,562
By Census Region and Crime Type, Past 5 Years				
Homicide				
Midwest	548	211	134	962
Northeast	373	95	186	560
South	1,863	397	1,084	2,642
West	1,191	247	707	1,676
Rape				
Midwest	4,573	821	2,963	6,182
Northeast	2,068	425	1,234	2,902
South	13,695	3,042	7,730	19,660
West	7,259	990	5,318	9,199
Property Crimes				
Midwest	1,239,982	201,222	845,380	1,634,583
Northeast	397,314	59,162	281,296	513,332
South	2,089,378	295,394	1,510,104	2,668,652
West	1,400,046	235,252	938,712	1,861,380
Drug Arrests with Unanalyzed Forensic Evidence, 2007				
Drug arrests	480,840	25,751	430,341	531,339

[a] Low precision attributed to sample size.