SEXUAL ASSAULT KIT BACKLOG STUDY

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Executive Summary

Background

Sexual assault is one of the most serious crimes facing society and, over the past several decades, increasing attention has been paid to the proper collection of physical evidence from victims to document and reconstruct the crime, to identify the assailant, and to aid in the prosecution of the assailant. When victims report such offenses to the police and are examined at hospitals, medical personnel employ sexual assault kits and accompanying protocols to guide the collection of evidence from the victim. Sexual assault kit (SAK) report forms also record important information from the victim about activities prior to, during and after the assault. Given the likely transfer of biological secretions in such crimes, sexual assault kits and DNA evidence have the power to verify the crime and pinpoint the identity of the assailant. The probative value of such scientific evidence, however, depends largely on the circumstances of the particular case, being pivotal in one instance and less important in another.

Although law enforcement agencies and hospitals have greatly improved and expanded procedures to gather sexual assault kit evidence, scientific resources and procedures to test such evidence have not kept pace. The National Institute of Justice staff, researchers and investigative journalists have uncovered the fact that backlogged and untested sexual assault kits (SAKs) are a major problem facing forensic crime laboratories and law enforcement agencies throughout the United States. The combined untested SAKs from the Los Angeles Sheriff's Department (LASD) and Los Angeles Police Department (LAPD) reached 10,895 cases in the fall of 2008. As the result of growing public concern, Human Rights Watch undertook a study in Los Angeles to document reasons behind the accumulation of these untested kits and found a number of organizational and resource deficiencies throughout the city and county. They were not crime laboratory backlogs per se but were untested kits held in police property rooms in cold storage, where investigators and prosecutors had not requested that the SAK be tested. In 2009, however, the chief executives of Los Angles city and county law enforcement agencies announced that all backlogged kits would be tested, using outside private DNA testing laboratories.

Study Objectives and Research Design

The untested sexual assault kit problem in Los Angeles, coupled with the fact that agencies had decided to test all such kits for the presence of DNA evidence, presented a unique research opportunity. The Sexual Assault Kit Backlog Project at California State University, Los Angeles (CSULA) was funded by the National Institute of Justice (NIJ) in 2009 to accomplish four primary objectives: 1) evaluate the results of scientific tests performed by private laboratories on backlogged sexual assault kit (SAK) evidence from the LASD and LAPD crime laboratories, 2) review the sexual assault case processing literature and the role played by evidence and other factors in solving and prosecuting such cases; 3) determine the criminal justice dispositions of a sample of backlogged and non-backlogged cases before and after kit testing; and 4) identify principal case and evidence characteristics that could be used by forensic laboratories to evaluate and prioritize sexual assault evidence submitted to crime laboratories. The accomplishment of such goals would aid all law enforcement agencies and associated crime laboratories about the value of testing backlogged sexual assault kits and to set guidelines for processing such evidence in the future.

The backlogged cases in Los Angeles were ones where investigators and prosecutors had concluded the case would not be helped by SAK testing and failed to submit them to the crime laboratory for analysis by November 2008. Project researchers from CSULA developed a research design to randomly collect a 20% sample (1,948 cases) of the 10,895 backlogged cases to be tested and to evaluate the scientific results achieved by private testing laboratories. Data collection focused on the respective agencies' crime laboratory files and the DNA reports submitted by outside private testing laboratories. Data collection tools for this project focused on laboratory records and included key descriptive, investigative, dates of critical events, physical evidence, and analytical tests performed on the evidence. Records yielded information on DNA profiles and related CODIS submission activity. Researchers also took note of missing data in the laboratory files that often prevented a full accounting of forensic evidence processing. In addition, grant resources did not permit a complete review of detective case and prosecutorial records for these backlogged cases.

Researchers were interested in both the results of the scientific testing of these backlogged cases, and if the test results had any appreciable effect on the criminal justice outcomes of these or other cases. To accomplish this latter objective, we compared the disposition outcomes of a smaller sample of backlogged cases with a sample of current non-backlogged cases where SAKs were being tested in the home crime laboratories. While the backlogged sample represented cases that investigators (historically) thought would not benefit from SAK testing, the present day sample represented all cases where kits were collected and submitted to local crime laboratories for testing (current policy is to test all submitted SAKs.) The full report describes how these subsamples were chosen and tracked over a six-month period -- between receipt of laboratory test results and recording of criminal justice dispositions. In all, we tracked a random sample of 371 backlogged cases and 371 non-backlogged cases from both agencies for a total of 742 outcomes. Outcomes (arrest, charge, plea/trial, conviction, and sentence) were determined before and after testing occurred.

The research design also included a review of the sexual assault case processing literature focusing on the role sexual assault kits, forensic evidence, and related information supplied by the victim played in such cases. It addressed the general theory of forensic evidence and how such evidence documenting the assault and victim injuries, and other legal and extralegal evidence, may assist detectives and prosecutors in their investigation and prosecution of such acts. In addition, researchers held focus groups with sexual assault investigators, prosecuting attorneys, and criminalists to discuss the role SAK evidence plays in resolving both stranger and non-stranger sexual assaults. Such qualitative information helped to frame the data gleaned from laboratory files, and to gain first hand views of practitioners engaged in case level decisions.

This study was faced with similar challenges facing all researchers attempting to determine the role and impact of scientific evidence (from among a host of other case factors) in processing cases through progressive stages of the criminal justice process from arrest, through charging and adjudication, and concluding with sentencing. The fact this study focused on older, backlogged sexual assault kits confronted more hurdles because of: 1) the fact that paper and computer files were located in numerous locations and computer files; 2) the absence of important data from files describing key variables; 3) the lack of resources to review all detective and prosecutor files

associated with the kits; and 4) time constraints limited tracking of criminal justice dispositions of cases to six months after testing was completed.

Findings

Laboratory Results

Data from tested SAKs were drawn from crime laboratory files and focused on victim and assailant demographic characteristics, the nature of the sexual assault, information collected by sexual assault nurses at the time of victim examination, laboratory test results, and the success of laboratories in uploading CODIS profiles and achieving case-to-case and offender hits. Ninety-three percent of victims were female, victims averaged 22.2 years of age, and 39% were Hispanic/Latino. While female victims far outnumbered male victims by a ratio of 15 to 1, a significantly higher percentage of male victims were 13 or younger (47.6%) compared with females (16.7%). Two-thirds of victims knew their assailants, almost 35% self reported they were intoxicated with alcohol or drugs at the time of the assault, almost three-quarters (71%) reported sustaining one or more injuries, three-quarters reported vaginal penetration, and only about one-quarter thought the assailant had ejaculated. Victims also reported actions that could have compromised the scientific evidence present: a high percentage of victims (80%) reported they had engaged in post-assault hygiene, and almost half (46.4%) changed their clothing before undergoing the sexual assault examination.

The average post-coital interval (PCI) between the time of the assault and victim examination was 23.3 hours, but this time interval varied depending upon the gender, ethnicity, age of the victim, and the victim's relationship to the assailant. Both male and female victims 13 years of age and under (and their parents or caregivers) took much longer than adults to report the crime to authorities and to submit to an examination. Hispanic/Latino victims (in the LASD sample) waited the longest to undergo sexual assault examinations and victims who knew their assailants also averaged longer PCIs.

Bode Technology was the primary private laboratory performing tests on SAKs for both LAPD (66.8%) and LASD (40.9%); Orchid Cellmark was the second leading laboratory that performed testing of LAPD kits (30.4%) and LASD kits (12.3%). Laboratory results included screening tests to find different biological markers (sperm, P30, Y chromosome, acid phosphatase, amylase and epithelial cells) in various orifices and in dried secretions on the body. We then determined the percent time laboratories found foreign and male DNA in the kits, and developed full and partial DNA profiles. Semen markers and Y chromosome screening tests were positive from 40% to 50% of the time in the vaginal and external genitalia areas. Y chromosome screening tests were also positive about 50% of the time for dried secretions. Conventional serological marker and Y chromosome screening tests varied widely with oral, rectal and dried secretion tests. Using STR analysis, male DNA was found in about 80% of attempts with samples taken from the vagina and two-thirds of samples from the external genitalia and dried secretions. Full DNA profiles were determined in two-thirds of DNA samples taken from the vaginal area, but in a smaller percentage from other body regions. Samples from the rectal area yielded full DNA profiles less than half the time and in only about 5% of samples taken from the oral region.

Success in finding foreign DNA and CODIS uploads was related to post-coital interval (PCI), with diminishing success as PCI increased. Successful foreign DNA detection descended as PCI increased for both conventional and Y chromosome screening techniques for up to 72 hours, but Y chromosome screening had greater success after 24 hours and up to 72 hours. PCI is a critical factor in the successful detection of DNA and subsequent CODIS inquiries and underscores the value of rapid victim reporting and medical examination.

The respective LAPD and LASD crime laboratories were successful in uploading profiles to CODIS about 36% of the backlogged sample; and in achieving offender hits in almost 46% of the uploads and case-to-case hits in less than 4% of uploads. Offender hits (cold/warm and conviction matches) constituted more than 90% of all hits that occurred, and most of them resulted where the suspect was known to the victim. Although case-to-case hits occurred less than 8% of all hits, most of these hits also connected a known offender to one or more of the cases. Nevertheless, it was unusual for DNA/CODIS to link multiple cases together and to a known offender. The non-backlog sample yielded similar CODIS upload rates, but the overall hit rate was ten points lower, yet produced a higher rate of 'cold' offender hits and case-to-case hits. The use of CODIS to achieve such investigative ends needs additional study.

The full report also explains that in between 20 - 30% of the hits resulting from the backlogged sample the suspect was known, had been arrested and convicted in the same sexual assault, and his DNA already entered into CODIS. The DNA profile developed from evidence in these sexual assault kits essentially 'duplicated' the DNA profile (and offender's identity) that had already been entered into CODIS by virtue of a prior conviction. Jurisdictions contemplating the testing of backlogged cases should keep this limitation in mind.

Disposition of Backlogged and Non-Backlogged Cases

One of the primary objectives of the study was to examine the disposition of cases that had been backlogged with another sample of more recently investigated and tested, non-backlogged cases. Two smaller *disposition* subsamples of backlogged and non-backlogged cases were used for this purpose. For the backlogged SAK disposition sample (n=371), no new arrests resulted after SAK testing occurred, but one filing and two convictions did. We determined that neither of the two new convictions involved helpful DNA testing. Almost 40% of these sampled cases had previously resulted in arrests without the benefit of a SAK analysis and 18% had resulted in convictions. For the matched sample of 371 non-backlog cases, almost the same percentage of cases had resulted in arrest, filing and conviction prior to SAK testing. *After* the tests, however, an additional percentage of cases resulted in arrest (2%), filing (5%), and conviction (11%). SAK testing of the present day sample was primarily associated with cases going farther into the criminal justice system, many in conviction.

Much of the needed data to predict DNA testing outcomes is collected at the time of victim medical examination and from the sexual assault investigator's report on the assault, including the victim/assailant relationship. Just as crime laboratories provide information to investigators after testing evidence, they also need reliable data from investigators to determine if the SAK should be examined. Due primarily to missing data, researchers in this project were

unable to build statistical models predicting the successful development of DNA profiles and case outcomes. Bivariate analyses, however, showed that post-coital interval (PCI) was linked to development of DNA profiles and CODIS uploads, but so were other variables, including: if the victim had engaged in recent consensual sex or in post-assault hygienic activity, and if the assailant was thought to have ejaculated or used a condom.

A comparison of stranger and non-stranger files for both the backlogged and non-backlogged samples suggested that the identification of DNA in cases involving *strangers* within non-backlogged cases was associated with substantially higher rates of arrest, charging and conviction as cases moved deeper into the criminal justice system. While time to disposition, number of case files, and limited information about sampled cases precluded more definitive findings, this represents a promising area for future study.

Focus Group Findings and Better Data Collection

Focus group participants expressed the belief that mandatory testing of all backlogged SAKs was unnecessary and that future kit testing must reflect investigator and prosecutor evaluation of the case. Many of the cases in the backlog were those where the assailant's identity was not in question and investigators thought SAK results would not be of use. Focus group investigators thought that most of the (historical) decisions that led the kit to be placed in the backlog were sound and that testing would not have been of assistance. Communication between investigators and laboratory criminalists is paramount to set priorities in deciding when such testing in a case in the future is warranted. Prosecutors believed DNA results were primarily helpful in corroborating other evidence but believed investigators can properly employ discretion as to when such testing is necessary. Many cases with weak evidence to begin with will not be sufficiently strengthened by the DNA testing to permit a successful prosecution. The deputy district attorneys also expressed strong support for SAK testing in stranger cases and where it was vital to establish that a crime had actually occurred. Prosecutors saw positive DNA results as important leverage in securing guilty pleas and avoiding trials whenever possible. Given limited resources, criminalists believed it was important to consider sexual assault cases with all other cases coming into the crime laboratory in deciding if DNA testing should be done. All focus group members agreed that community (victim group) pressure should not dictate analysis protocols.

A system of priorities needs to be established to determine which cases (and which evidence within the kits) need to be tested and recognition that forensic resources are limited. DNA testing can contribute to both stranger and non-stranger sexual assault cases, but the SAK and the particular case at hand requires assessment before testing takes place. Also, although uploading DNA profiles into CODIS may have value in the long term, many of the backlog 'hits' that occur are those where the assailant's DNA profile has already been entered into CODIS for a prior arrest and conviction. This is another consideration in determining the value of testing contents of a SAK. An overall priority scheme with scientific, investigator and prosecutor input should be devised and implemented.

Principal Policy Recommendations

1. The forensic testing of ALL backlogged sexual assault kits is not recommended. Before testing, the goals of agencies must be clearly defined, the investigation status of cases determined, and agencies become familiar with the likely short and long term benefits of such testing. For future testing, unsolved stranger cases should be the primary focus.

2. Advisory committees, composed of law enforcement, medical and forensic representatives should collaborate to establish criteria for future SAK testing. Agencies should commit resources to share and compile data at key decision points in the investigation and prosecution process and work toward the development of consolidated databases and models to better predict successful sexual assault case outcomes and the role of scientific evidence.

3. Crime laboratories are in need of various types of investigative and medical information in order to begin their analyses of sexual assault kit evidence. Laboratories should routinely receive and review investigator case files, medical victim examination reports, and CODIS status information before commencing their examination procedures. Also:

a. Post-Coital Interval (PCI) is a key factor in predicting hits and is unknown (25%+) in an unacceptably high percentage of cases.
b. Data from the sexual assault victim examination reports (areas penetrated, possible ejaculation, use of condom, etc) yield results useful to criminalists examining sexual assault evidence in the forensic laboratory.
c. Samples from very young victims yield valuable information on biological secretions left on regions of the body that can help inform analytical procedures.

4. All victims, young and old, should report sexual assaults as quickly as possible and undergo sexual assault examinations; this is critically important in the successful recovery of evidence and in deciding if laboratory testing should be undertaken.

5. The long term effects of SAK testing are also reliant on more detailed information being available on CODIS hits that differentiate true cold hits from 'conviction match' hits that occur where the offender's profile is 're-identified' in the immediate case.

6. A range of quantitative and qualitative data is needed from investigators, hospitals, crime laboratories and prosecutors for inclusion in such databases. In particular, better information is needed on the sizable percentage of non-stranger cases (involving intimates, family members, dating, work and/or casual relationships), scientific results, and the role played by scientific evidence in the outcome of these cases.

7. Better published research will result from improved report keeping and comprehensive databases. The quantitative data would collect basic discrete factors on every sexual assault case, its investigation, analysis of sexual assault kit evidence. prosecution, adjudication and sentencing. Qualitative data would include such factors as the persuasiveness of various factors that influenced arrest, charging, plea negotiation, trial verdict (including interviews with jurors after verdict), and sentencing outcomes.

TABLE OF CONTENTS

APPENDICES

APPENDIX A: LAPD/LASD Sexual Assault Kit Backlog Data Collection Form

TABLES

FIGURES

Chapter I

Introduction/Problem Statement

This first chapter will introduce the subject of forensic evidence, sexual assault, and the use of sexual assault kits to gather scientific evidence. Although sexual assault kits hold the potential to answer many questions surrounding these crimes, the circumstances surrounding such crimes may limit the value of scientific evidence. Sexual assault kit (SAK) backlogs have grown in many cities around the country, including the site of this research study - Los Angeles, California.

Theoretical and Practical Value of Forensic Evidence

Rape is one of society's most serious crimes, and greater attention is being paid to the collection of physical evidence from the victim (and the suspect) to establish that sexual intercourse took place, to help reconstruct the crime, and to identify the assailant. Evidence is transferred between parties in a sexual encounter and that evidence varies in quantity as a result of the intensity and duration of contact between individuals. Scientific evidence "can establish the elements of the crime, reconstruct the sequence of events, establish the identities of the victim and assailant, and corroborate or challenge witness statements and alibis" (Johnson et al., 2011). Laboratory methods are both used to identify evidence in question (identification) as well as serve to determine its source (individualization). It is important to note, however, that the probative value of physical evidence depends heavily on the circumstance of the particular case, being pivotal in one instance and inconsequential in another. The forensic examinations, however, are usually unable to distinguish if evidence was deposited lawfully as the result of consensual sex, or unlawfully in a case of sexual assault.

DNA evidence can yield important information in sexual assault casework due to its enhanced sensitivity, specificity and robustness, and its power to identify or exclude particular individuals. DNA profiles can be obtained from a variety of biological material (semen) that results from sexual intercourse and from buccal cells left on the victim as the result of kissing, biting or sucking. Dried biological stains left on bedding, clothing, or towels can also yield the DNA profile of the person leaving their semen, saliva or other body secretions. Cells left on the exterior or interior of discarded condoms or other objects (clothing, towels, etc.) handled by the assailant can also be DNA typed. The large and growing DNA CODIS database also gives investigators the power to identify otherwise unknown suspects (cold hits), to corroborate and/or test other case information, and to associate offenses committed by an offender in a serial fashion.

Typically, sexual assault forensic nurses at hospitals and medical centers employ kits to facilitate their gathering of physical evidence. If there is a suspect, the kits may also be used to gather physical evidence from the suspected attacker. The kits guide the examination of the victim, document physical trauma, as well as the collection of biological and trace evidence (e.g., vaginal, anal, and oral swabs, dried body secretion swabbings, and public hair combings), and the collection of blood and urine specimens. Sexual assault kit report forms also document important information from the victim about the assault and her sexual history. There is a growing literature surrounding the use and value of sexual assault kits in the investigation and prosecution of rapes, some showing that the willingness of the victim to undergo a sexual assault examination is associated with improved case success.

There are few studies that have traced the value of forensic evidence in the course of investigations and prosecutions. A recent national study of the role and impact of forensic

evidence in the criminal justice process included an examination of rapes (Peterson et al, 2010). This study found 80% of rapes were committed between persons having a prior relationship. Physical evidence and substrates (clothing, towels, etc.) were collected in more than two-thirds of incidents, most of it in the form of sexual assault kits. There was, however, a major decline in evidence actually submitted to and examined by crime laboratories and labs individualized biological and latent print evidence in only 2.5% and .5% of cases respectively (Peterson et al., p 93); the collection and examination of evidence, as well as a prior relationship between victim and assailant predicted arrest. This and other sexual assault literature will be covered in Chapter III of this report.

Sexual Assault Kits

The failure to analyze evidence in sexual assault kits has received major attention in the past two years. Perhaps the most comprehensive treatment of the problem is contained in the NIJ Report "The Road Ahead: Unanalyzed Evidence in Sexual Assault Cases" (Ritter, 2011). This report focuses on the purposes of these kits, estimates the quantity of untested evidence contained in these kits, and efforts ongoing to understand the reasons cited by law enforcement and crime laboratories for this situation. The report also describes funded projects to classify the types of scientific information resulting from the analysis of these kits, questions about the value of evidence in stranger versus acquaintance rape, strategies for notifying victims about the status of SAK testing, legal and statute of limitation considerations, the role of limited crime laboratory resources, and the setting of priorities in examining backlogged kits as well as kits submitted on a real time basis.

In 2009, NIJ published results of a survey of 2,000 law enforcement agencies nationwide that found agencies had not submitted forensic evidence to crime laboratories in 18% of

unsolved rapes, often because of one or more of the following: no suspect had been identified, the prosecutor had not requested the analysis, and because they were unsure of its 'usefulness' (Strom, et al., Research Triangle, 2009). A question that remains is: "What is the value of the analysis of the evidence contained in these kits?" Clearly, there needs to be further study to understand how law enforcement agencies weigh various factors in deciding to submit evidence for analysis, and how crime laboratories triage and prioritize such evidence. There is additional information on the utility of scientific evidence and other factors that predict successful sexual assault dispositions in the literature review contained in the following chapter.

The Los Angeles Backlogs

Sexual assault kit backlogs in law enforcement storage facilities in the City and County of Los Angeles had grown to more than 10,000 kits in the fall of 2008. (Up to this time, the New York City Office of the Medical Examiner had completed the largest single effort to undertake the examination of such backlogged kits, testing about 16,500 such kits between 2000 and 2003.) The chief executives of the Los Angeles Police Department and the Los Angeles Sheriff's Department made a public commitment in late 2008 to sexual assault victims and the citizens at large that their respective agencies would test all of the backlogged kits. Whereas crime laboratory resources were not sufficient to eliminate this backlog, various city, county, federal grants and other funding resources were identified that would enable the laboratories to outsource the testing of backlogged kits to private forensic testing laboratories.

Beginning in 2007, Human Rights Watch undertook a major study of sexual violence in the Log Angeles region, investigating the reasons and consequences of untested sexual assault kits and issued a report (Human Rights Watch, Testing Justice: The Rape Kit Backlog in Los Angeles City and County, March 2009). The authors of this report and various journalists had

investigated the problem of sexual violence in Los Angeles, finding that most untested rape kits were housed in police storage facilities (not crime laboratories). Some of the kits were more than ten years old and involved stranger assaults, but local crime labs lacked the capacity to perform the necessary testing of these kits, and the untested kits had consequences for the victims and the community at large. Interviews with victims found that the failure of the system to have a process for notification of victims of the status of testing of their kits was also an important and sensitive issue.

Actions Leading up to the Current NIJ Study

The reasons for the growth of these backlogs in Los Angeles and other communities around the United States over the past ten years are complex and involve many factors, including a reluctance by detectives and prosecutors to request an analysis of the SAK evidence in cases where they doubted the probative value of lab testing. While both the LAPD and LASD laboratories had given instructions to detectives to request analyses in cases when they believe evidence may shed light on the investigation, many sexual assault kits remained in storage awaiting analysis. Previous research suggests that many of these incidents involve cases where the suspected assailant is known, where he claims sexual relations with the victim was consensual, or where detectives question if a sexual assault had, in fact, taken place. Prosecutors had declined or dropped charges in many of these cases, as well. In both LASD and LAPD laboratories, thousands of sexual assault kits remained in cold storage and untested because authorities didn't believe the evidence to be of probative value and did not request an analysis.

If evidence in these backlogged kits were to be examined, DNA profiles generated through such testing would be uploaded to CODIS to potentially identify unknown offenders and possibly link together crimes committed by the same offender. Simultaneously, investigative and

prosecutorial information would be gathered about these cases to determine their status and the reasons why investigators and/or prosecutors had not requested scientific analyses of this evidence when the sexual assault kits were first gathered. Conceivably, the new scientific information might stimulate investigators and prosecutors to reexamine the evidence in these backlogged cases and pursue them through the criminal justice process. The identification of DNA profiles might also link the assailant in a backlogged case with other incidents where he left his DNA. The testing of this evidence and the review of case files presented an opportunity to determine the value of this testing to these investigations, and to help set priorities for sexual assault kit testing in the future.

Laboratory Processing of Sexual Assault Kits

Before data collection procedures and results are discussed, we first present the procedures employed by the in-house crime laboratories of LASD and LAPD, and those of private laboratories, in the review and testing of backlogged sexual assault kit evidence. The crime laboratories of the City and County of Los Angeles use the same manufactured sexual assault kit for the collection of evidence to standardize the documentation and collection process. The kit can be used on victims or suspects and on males or females. The LAPD and LASD crime laboratories began the analysis of the backlogged sexual assault kits by making an inventory of the contents of each kit. The kits were then shipped in their entirety (minus the urine samples) to the contract laboratories. Neither agency screened the kits for probative samples by laboratory testing (such as with presumptive catalytic tests) prior to the shipment of the kits. The samples collected for each case depended on the reported circumstances of the crime, but the samples enclosed in the kits may have included swabs and microscope slide preparations of the mouth, vulva, vagina, cervix, rectum, penis, scrotum, or dried secretions

(such as saliva stains on the neck or breasts). Additionally, a vaginal lavage (rinse) may have been collected with the vaginal swabs.

The sexual assault kits also contained materials for the collection of other types of physical evidence such as pubic combings, debris, and clothing. Each kit additionally enclosed a blood card for the collection of a blood sample from the victim. The blood sample was used to generate a DNA reference profile of the victim, which was needed for the interpretation of the evidence profiles, particularly those that were a mixture of victim's and suspect's DNA. However, the victim's reference sample was missing in some kits, which in some cases prevented the determination of the suspect's profile and its submission to the DNA database.

The contract laboratories were provided with written instructions from the departments as to the testing of the kits, the reporting of the results, and the return of the evidence. An analytical scheme was developed by each agency for the selection and testing of samples by the contract laboratories and the approach was dependent on the reported circumstances of each case. For example, for cases where the victim reported a lapse of memory or loss of consciousness, both agencies instructed the contract laboratory to screen all of the samples of the kit for probative evidence, and then perform DNA typing on all of the samples likely to give results. The same instructions were to be followed for cases reportedly involving multiple suspects. For cases involving one suspect as reported by the victim, the instructions were to screen all of the samples, but select the single best sample for DNA analysis. For certain cases, the LASD laboratory would select the single best sample for submission to the contract laboratory, and the selection was based on the victim's statements as to the sexual act recorded in the medical report which accompanied the sexual assault kit. This procedure was followed for LASD adjudicated cases and unfounded cases.

The LAPD also processed the sexual assault kits of adjudicated cases included in their backlog, but excluded the testing of kits from cases determined to be "unfounded" by detectives. DNA profiles generated from unfounded cases are ineligible for upload into the Combined DNA Index System (CODIS), and protocols of both agencies required analysts to strictly follow the data entry requirements of CODIS with respect to the STR profiles obtained from the sexual assault kit samples.

The LAPD and LASD outsourced the testing of the sexual assault kits among seven laboratories: Bode Technology, Fairfax Identity Laboratories, Marshall University Forensic Science Center, Orchid Cellmark, SERI, Sorenson Genomics, and Strand Analytical Laboratories. The contract laboratories screened the sexual assault kit samples for probative evidence by conventional serological methods and/or Y-chromosome detection systems. The conventional serological markers used for screening included acid phosphatase, p30, and sperm cells for the presence of semen, and amylase for the presence of saliva. Additionally, epithelial cells were used as markers for saliva and vaginal secretions; the mouth and vagina are lined with nucleated, squamous epithelial cells. The microscopic identification of sperm cells and the immunological detection of p30 (a glycoprotein produced almost exclusively by the prostate gland) are considered confirmatory tests for the presence of semen. Catalytic color tests for acid phosphatase (an enzyme produced in high amounts by the prostate gland) are considered presumptive tests for the presence of semen. The specificity of the amylase test for saliva is dependent on the assay; therefore, the conclusions drawn from the results as to the identification of saliva of this test will vary between laboratories.

Some laboratories employed Y-chromosome markers as a screening test for foreign male DNA, which is a recent and alternate approach to serological screening. Y-chromosome

screening is a PCR-based molecular technique, whereas conventional serological testing is based on catalytic color tests, immunological and enzymatic assays, and microscopy. In general, Y-screening is best suited for cases involving victims and suspects of different sexes; it has limited application with male versus male cases, and cannot be used with female versus female cases.

The contract laboratories employed their own various practices for the analysis of the evidence, but while in compliance with the testing requirements of each crime laboratory. The contract laboratories screened evidence with both conventional serological and Y-chromosome screening techniques. However, Bode Technology used Y-chromosome screening in 99.5% of the cases; whereas, the other laboratories used conventional methods in the majority of cases. Bode Technology initially used a domestic Y-chromosome assay, which was replaced by the Applied Biosystems Quantifiler® Duo kit in March 2009. (The Quantifiler® Duo kit targets human male DNA with a 130 basepair SRY [Sex determining Region Y] marker and provides information on the quantity of male DNA.) The laboratories may have tested a general lysate of the sample for male DNA or the individual fractions of a differential extraction carried out on the sample. (A differential extraction is used to separate sperm DNA from non-sperm DNA in mixture samples such as vaginal swabs that contain semen.)

Based on the results of the serological and/or Y-chromosome screening tests, and following the testing strategies of the agencies (which again were dependent on the circumstances of each case), the contract laboratories then performed short tandem repeat (STR) genotyping on select samples using the AmpF*l*STR® Identifiler™ PCR Amplification Kit (Applied Biosystems, Foster City, California). The AmpF*l*STR® Identifiler™ PCR Amplification Kit amplifies 15 tetranucleotide repeat loci and the amelogenin gender determining marker, which includes the thirteen CODIS core loci for databasing. The resultant

STR profiles were sent to the crime laboratories (in the form of hard copies of key GeneMapper® [DNA typing software] plots or the entire electronic GeneMapper® file) and then reviewed by qualified personnel under each laboratory's vendor review protocol. (The LAPD and LASD crime laboratories are not involved in the databasing of offender DNA profiles from arrests or convictions; their purview is restricted to casework samples.)

For a casework DNA profile to be eligible for CODIS entry at the state level (State DNA Index System), the profile must have results for a minimum of seven loci (STR markers). For entry at a national level (National DNA Index System), a casework DNA profile must have results for a minimum of ten loci. For casework samples, full or partial profiles from one person and profiles obtained from certain DNA admixtures can be eligible for CODIS databasing. A suspect's profile derived from an unequal DNA mixture (the suspect can be the major or minor contributor to the mixture) is eligible for CODIS entry if certain criteria are met. Mixture profiles that have ≤ four loci (STR markers) with each having no more than four alleles (DNA types), and with each remaining locus having one or two alleles, are eligible for uploading. For elimination purposes, DNA reference samples from consensual sex partners are routinely sought in casework. In the absence of an elimination sample, a profile foreign to the victim can be uploaded if an attempt was made to obtain the elimination sample. Additionally, profiles generated from cases rejected by the District Attorney's Office as having insufficient evidence to prosecute, but where detectives believe a crime was possibly committed, are eligible for CODIS databasing.

Chapter II

Sexual Assault Investigation Literature Review

Introduction

This project focuses on sexual assault kit backlogs in Los Angeles City and County, the scientific results obtained from the testing of this backlogged evidence, and if the resulting scientific information was associated with added criminal justice outcomes. Before reviewing these data, we present a brief literature review that addresses the general theory of forensic evidence and how such evidence collected from victims may assist detectives and prosecutors in their inquiry and evaluation of alleged sexual assaults. It also briefly reviews the social science literature examining the legal and extralegal factors that are associated with the arrest, prosecution and punishment of sexual offenders and the role played by physical/scientific evidence that documents the assault and/or injuries sustained by the victim.

Unlike most other serious crimes, the value of forensic evidence in sexual assault investigations is tempered by many social, demographic, and other factors about the assault that victims may provide medical and police personnel. The sexual assault kit is only one product of the medical examination and the interview of the sexual assault victim following the crime that may also produce important information about her leading up to the assault and her physical and mental health. This review will briefly touch on these various factors, and how such information shapes the progress of cases through the criminal justice process. This section concludes with a review of recent publications that treat how the backlog of sexual assault kits in law enforcement agencies and crime laboratories has grown into a national problem.

General Theory of Forensic Evidence

The physical interaction between the victim and assailant in the various forms of sexual assault will commonly result in the reciprocal transfer of physical material between the parties and with the crime scene. The quantity of evidence produced in a criminal act varies with the intensity and duration of contact between parties. Physiological fluids are often exchanged. The objectives of the forensic inquiry are to detect, preserve, and examine this physical evidence and provide information about the crime to law enforcement investigators and the courts. The sexual assault casework of forensic laboratories encompasses a wide range of unlawful sexual activity, from violent rape and date rape, to child molestation that produce a variety of biological and non-biological evidentiary materials. It is the biological materials that often help to prove that a sexual crime took place, to reconstruct the actions of the parties, and to associate or disassociate the accused with the victim. Numerous factors affect the success of the scientific inquiry: the speed with which the victim reports the crime and submits to an examination, the quantity and quality of the samples recovered, and the analytical capabilities of the forensic laboratory (Fisher, 2004; James & Nordby, 2005).

Sexual Assault Kit Components

Sexual assault kits (SAK) were created to aid the investigative and legal processing of such cases by standardizing the examination of the victim and the recovery of evidence from victims by specialized nurses and physicians (DuMont & Parnis, 1999). According to Gaensslen and Lee (2002), the sexual assault (or rape) kit evidence has a twofold purpose; first, to corroborate the victim's account of the incident by demonstrating the presence of seminal fluid found in the victim; and, second, the analysis of the specimens in the kit to establish the identity of the person from which the evidence originated. The examination of evidence collected in the

kit is often deemed to be the most accurate and valid means of providing evidence that a sexual assault took place (DuMont & Parnis, 1999).

The SAK consists of a small cardboard box or envelope into which biological and trace evidence collected from the victim of an alleged sexual assault is placed and routed to a forensic crime laboratory for analysis. The evidence often includes swabs taken from vaginal, oral, and anal orifices, and other dry secretions left on the victim's body that may contain the assailant's biological fluids and his DNA (Ritter, 2010). Samples from the SAK are typically compared with reference samples of known origin that can lead to an association or disassociation between persons. The significance and uniqueness of a comparison between DNA evidence and known exemplars may be expressed probabilistically (Sommers, Schafer, Zink, Hutson & Hillard, 2001) Other components of the SAK protocol include an examination of the victim for injuries, both genital and extra-genital, the collection of toxicological samples, and search for condoms and/or lubricants used by the assailant (Parnis & DuMont, 2006). Sexual assault nurse examiner (SANE) professionals are also instructed to obtain information regarding the victim's sexual history. This is done so that the laboratory examiners can verify the source of the secretions found in or on the victim. Considerable literature has developed over the past twenty-five years that evaluates the information collected through sexual assault examinations and the role this information plays in investigating, verifying, and prosecuting sexual assaults.

Genital Injuries

McLean, Roberts, and Paul (2011) found that while the rate of genital injuries sustained by victims of sexual assault is higher than for a comparison group of women engaged in consensual intercourse, the rate of genital injuries was substantially less than victims receiving extra-genital injuries. Hilden, Schei, and Sidenius (2005), found that most sexual assaults did

not result in visible genitoanal injuries, and that the risk of sustaining such injury is higher in women who had no sexual intercourse history and those who were anally penetrated by their assailant. Conversely, another study found that more than half of victims received anal-genital injuries (Janisch et al, 2010). So, while the finding of semen or foreign DNA in or on an assault victim does not prove a sexual assault occurred, when coupled with medical examinations showing the victim also suffered genital or extra-genital injuries, such evidence serves to show the sex was not consensual (Sommers et al, 2001).

Extra-Genital Injuries and Use of a Weapon

Past research has revealed that sexual assaults are likely to result in some type of extra-genital injury to the victim (Dumont & White, 2007). For instance, Campbell, Patterson, Bybee, and Dworkin (2009) found that 62% of sexual assault victims reported that the assailant used a weapon, and most victims sustained at least one injury. Stene, Ormstad and Schei (2010) found that the most common types of injuries observed were extra-genital injuries (bruises and abrasions) (37%), and genital injuries were observed in only 19% of the cases. McLean et al (2011) also found a greater rate of extra-genital injuries (72%). In another study, physical exam findings revealed that most victims received extra-genital injuries (70%), most of which presented to the exam within 24 hours of the assault. The most frequently found injuries were bruises, followed by use of blunt force (Janisch et al, 2010) and injuries to skin and bones (Ingemann-Hansen, Brink, Sabroe, Soreson, & Vesterbye-Charles, 2008). McGregor, Le, Marion and Wiebe (1999) found that most cases involved moderate injuries, followed by mild injuries, no injuries, and severe injuries, respectively. Janisch et al (2010) also concluded most of the valuable forensic evidence was the result of these physical injuries to the victim. Several

commentators noted that finding such injuries was particularly important in prosecuting cases in non-stranger sexual assaults where a defense of consent is likely (Gaensslen and Lee, 2002).

Toxicological Samples

SAKs commonly include the collection of blood and urine for toxicological examination purposes. The sampling of the victim's urine and/or blood is done to see if the victim had used drugs or alcohol before or during the incident, both voluntarily and involuntarily (DuMont & Parnis, 1999). Forensic toxicological exams can also provide corroborative evidence of sexual assault by the identification of "date-rape" drugs, such as GHB and Rohypnol®, in blood, urine, and hair. These exams are time-critical, but new techniques are extending the time interval when such drugs can be detected and measured (Negrusz, 2003).

There have been many studies, most documenting high rates of alcohol and lower rates of drug use by victims (Ingemann-Hansen et al, 2008; Wayne Jones, Kugelberg, Holmgren, and Ahlner, 2008; Janisch et al, 2010; and Campbell et al, 2009). The studies also note results are highly dependent on time between ingestion and when the test was administered. Testing is often compromised in cases involving known assailants and possible date-rape victims who commonly are delayed in reporting the crime and providing samples (Olsen, et al, 2005, p. 174; and Wayne Jones et al, 2008). The Wayne Jones et al (2008) study also found a high blood alcohol concentration in most victims, a finding suggesting voluntary rather than involuntary use. Many questions remain, however, in distinguishing voluntary and involuntary use of alcohol and drugs and that urine samples may afford advantages over blood because detection times are longer (Wayne Jones et al, 2008).

Since this study consisted of backlogged cases where the SAKs were collected anywhere from 2 to 17 years ago, the toxicological samples were rarely, if ever, tested. This is due to the

perishability of the toxicological samples from these backlogged cases. While toxicological samples are a source of important information in investigations in current cases, our study was unable to assess toxicological results, due to the loss of testability of these samples.

Condom and lubricants

Maynard, Allwell, Roux, Dawson, and Royds (2001) stated that the main reason assailants may use a condom during a rape is because they are aware that investigators will collect biological evidence from the victim. Furthermore, it has been suggested that sexual assault assailants may choose to use some form of lubrication, or another slippery substance, to aid in penetrating the victim. Based on these assumptions, Maynard et al (2001) attempted to create a protocol for the forensic analysis of condoms and lubricants in sexual assault cases, as "DNA extraction techniques can interfere with the recovery of trace lubricants" (Maynard et al, 2001, p. 155). In assessing these components of the SAK, forensic scientists should be aware of post coital interval issues, as well as specific brands of condoms and lubricants (Campbell & Gordon, 2007; and Maynard et al, 2001).

DNA Analysis of Sexual Assault Evidence

PCR-based nuclear and mitochondrial DNA analytical methods have revolutionized the forensic sciences, the testing of evidence collected via SAKs, and the criminal justice system. DNA methods routinely yield highly informative results owing to their sensitivity, specificity, robustness, and power of discrimination and can link a specific suspect to the sexual assault victim (Butler, 2005; and FBI, 2008). Furthermore, DNA technology has expanded the types of samples available for analysis, including urine, fecal matter, perspiration, saliva, hair, buccal cells, and abortion products associated with rape-related pregnancies. Additionally, the DNA profile of a rape victim can be obtained from swabbings of the suspect's penis, scrotum, or

fingers. Conversely, assailant DNA profiles have been obtained from skin tissue or blood collected from underneath the victim's fingernails. DNA analysis can also serve to link victim and rapist by typing cells from condoms, objects handled by the assailant or victim, dried secretions from the victim's body, and the ejaculate of vasectomized males (Butler, 2005).

Post Coital Interval (PCI)

Because of the transient nature of biological evidence and the information that can be derived from it, the immediate examination of the victim and collection of SAK samples are critical (Allard, 1997). Therefore, Post Coital Interval (PCI), or the time between the sexual assault and the victim's medical examination, is important. The overall assumption is that, as PCI increases, the likelihood of finding male DNA in a rape kit sample decreases (Hall & Ballantyne, 2003).

Studies have examined the impact that PCI has on the degradation of biological evidence in a rape case. When a SAK exam took place within 72 hours after the assault, the presence of sperm was detected in 30% of cases, and no significant differences were found between detection of sperm and time from assault in the 24 hour PCI, 48 hour PCI, and 72 hour PCI (Ingemann-Hansen et al, 2008). In another study, it was found that the quicker the victim presented to the exam, the more likely would her samples result in sperm detection (47% of samples collected within 12 hours, 43% of samples collected within 24 hours, and no samples collected after 3 days) (Janisch et al, 2010).

In looking at different PCI groups of victims of sexual assault, Grossin et al (2003) contrasted characteristics of victims reporting where the PCI was 72 hours or less and those where it was more than 72 hours. Looking at the 72 hours or less group, most victims were female, an average age of 22 years old, were assaulted for the first time at home, were vaginally

penetrated, did not sustain physical or genital injuries, there was an absence of sperm, and were assaulted by strangers. For the greater than 72 hour group, most were minors who were sexually abused frequently by a family member, These victims were more likely to be digitally penetrated without being threatened, and more likely to sustain genital injuries (Grossin et al, 2003). Semen was seldom found in either group.

Hall and Ballantyne (2003) assessed the effectiveness of different DNA analysis techniques with regard to increased PCI intervals. While differential extraction was only effective up to 12 hours after intercourse, the sperm enhanced fraction was principally successful in samples 24 hours post coitus. In samples with 48 hour post coitus, partial profiles were obtained (eight loci) using the MPII system, and researchers were unable to obtain foreign male DNA from samples that were 72 hours or longer (Hall & Ballantyne, 2003). In a more recent study, Mayntz-Press, Sims, Hall, and Ballantyne (2008) tested different Y-STR methods and the development of DNA profiles from samples with long PCIs. Full profiles were detectable using this technique after longer period of time (3-4 days) and partial profiles at 5-6 days.

Scientific research continues to advance methods for detecting male DNA in victims for longer periods after intercourse. Hatsch, Amory, Keyser, Hienne and Bertrand (2007) explored the value of mitochondrial DNA mixture analysis. Garvin, Bottinelli, Gola, Conti, and Soldati (2009) determined a different approach to selectively degrade a victim's DNA versus that of the assailant and concluded that a nuclease technique gave superior short tandem repeat profiles as compared to the standard method employed by most analysts. Khalsi, Miras, Botti, Benali, and Gromb (2004) set out to examine the viability of seminal fluid fast detection tests on sperm specimens in various samples after 0, 48 and 72 hour time intervals, and found prostate specific antigen (PSA) detection superior to acid phosphatase detection. Dziegelewski, Simich, and

Rittenhouse-Olson (2002) found Fluorescent Insitu Hybridization (FISH) was effective in detecting Y chromosome male cells one to seven days after intercourse where ejaculation did not take place.

Combined DNA Index System (CODIS)

The Combined DNA Index System (CODIS) is a software platform, into which DNA profiles are stored and searched, and include local (LDIS), state (SDIS), and national (NDIS) databases (Nelson, 2010; and FBI, 2010). CODIS is searched to determine if a profile from a case can be matched to a known offender or other cases with the same profile. These searches may generate investigative leads when matches or 'hits' are discovered. In 2010, CODIS contained more than 8.7 million offender profiles, and about 330,000 forensic profiles have been uploaded into CODIS from crime scene evidence. At the same time, there have been about 125,000 CODIS hits, where crime scene evidence matches a profile already in CODIS, and about 122,000 investigations aided by such matches (Nelson, 2010; and FBI, 2010).

With the advent of CODIS and each locality's ability to connect to it, "DNA from rape kits alone can also reveal the existence of a serial rapist even if his identity remains a mystery" (Ryan, 2003, p. 2). CODIS has linked serial rape cases whose relationship was previously unknown, and has identified suspects in recent and dated sex-related crimes (FBI, 2010). Since the inception of CODIS and shared databanks, there is no valid reason to deny the analysis of these 'no-suspect' kits (Gaensslen & Lee, 2002). Because of the implementation of CODIS, there are both potential 'immediate' benefits (to the current case being investigated) and 'long term' benefits (where an offender is linked to other crimes in which he was involved -- previously, currently, and in the future). Many states, such as California, now collect DNA

samples from all felony arrestees, which is greatly expanding its database and increasing the opportunities for 'hits'.

Nature of Victim and Assailant Relationship in Sexual Assaults

The sexual assault literature has also examined the different challenges in investigating both stranger and non-stranger rape cases. Contrary to popular belief, and although the percentages varied by the particular study undertaken, most research has found that the majority (48%-75%) of sexual assault incidents occur between a victim and an assailant who know one another (Janisch et al, 2010; Ingemann-Hansen et al, 2008; Campbell et al, 2009; McLean et al, 2011; and Spohn, Beichner & Davis-Frenzel, 2001). Locating the assailant's DNA in the victim, and exploiting CODIS, is of more limited value in non-stranger cases. Consequently, any discussion of the value of sexual assault kits must consider this parameter and will be addressed in a later section of this review addressing criminal justice dispositions.

Relationship between SAK Evidence, Other Evidence and Criminal Justice Disposition

Several studies have considered the role of forensic (SAK) evidence vis-à-vis other victim, suspect and crime parameters in predicting the success with which a case is investigated and prosecuted.

A recent empirical study of felony cases by Peterson, Sommers, Baskin, and Johnson (2010) examined the role and impact of forensic evidence in the criminal justice process and included 602 randomly selected rape incidents from five jurisdictions nationally. All of the victims were female and all of the suspects were male. The overwhelming majority of rapes were among people that knew each other, either as intimates/family (36%) or as friends/acquaintances (43%). Victims received medical treatment for their injuries in 68% of cases, and two-thirds of rapes occurred in houses and apartments.

Approximately 64% of incidents had physical evidence or substrates collected, with SAKs often employed to gather physical evidence (51% of rapes). The data revealed that there was a dramatic decline of collected evidence that was submitted to crime labs, with the biggest decline occurring in the submission of SAKs (68%). Bivariate comparisons indicated that rape cases with crime scene evidence, including SAK evidence, were significantly more likely to lead to arrest, to be referred to the prosecutor, to be charged, and to result in conviction than cases without forensic evidence. Multivariate analysis showed the collection of forensic evidence and 'laboratory examined' evidence were both significant predictors of arrest. However, of the 191 rape cases with crime scene evidence that had an arrest, physical evidence was examined in less than 2% of the cases prior to the time the arrest was made. Still, laboratory examined forensic evidence increased the odds of DA case charges by over five times. The strongest predictors of case charging, however, were victims' reports and victims' receipt of medical treatment. The strongest predictors of conviction were victims' reports to the police and direct arrest techniques.

Overall, 67 of 81 (83%) charged cases resulted in convictions. Cases where physical evidence was collected resulted in convictions 87% of the time as opposed to 67% of the time in cases without physical evidence collected. Seventy-eight percent of rape dispositions were through pleas and 22% through trials. Eighteen out of 19 trials (95%) resulted from cases where physical evidence was collected. The trial conviction rate for cases with evidence was 83%. The sole trial without physical evidence resulted in an acquittal (Peterson et al, 2010). This study relieved upon a review of case files and paper records and therefore was unable to determine the weight given by jurors or attorneys to various types of evidence.

Alderden (2009) found that the availability of a rape kit with assailant DNA, presence of injuries, and witnesses increased the likelihood of arrest. When any of these factors were present,

the likelihood of clearing a case increased. Interestingly, cases in which rape kits were available, but did not contain forensic evidence were more than three times more likely to be presented to the prosecution than cases in which no rape kits were available (Alderden, 2009). "The significance of the variable [sexual assault] kit-no forensic evidence, may reflect the willingness of detectives to present cases to the prosecution if the victim has assisted the investigation by documenting evidence of the assault via submitting to a [sexual assault] kit examination" (p. 111). The fact that the rape kit ultimately did not contain forensic evidence may not have been important at the point in which detectives decided to present the case to the prosecution given time delays in having kits examined by the state crime laboratory (Alderden, 2009).

Another study interviewed different criminal justice personnel and found the most important evidence required by legal professionals to solve and adjudicate a rape consisted of physical evidence linking the suspect to the victim. A specific component of the SAK that was deemed valuable by the respondents to this study was the presence of semen and genetic marker testing that included or excluded a suspect. The importance of physical evidence increased when a victim could not identify the assailant and when she was deemed to be a bad witness by the prosecutor (Gaensslen & Lee, 2002). In a study by Campbell et al (2009), two types of forensic evidence were predictive of 'higher level dispositional outcomes' (referral, charging and conviction): DNA evidence, and anogential/physical redness (injuries) (Campbell et al, 2009).

A review of existing literature conducted by White and Dumont (2009) revealed that half the studies resulted in an association between presence of biological samples and legal outcomes. Specifically, cases with biological samples were more likely to be referred to the prosecutor, and the prosecutor was more likely to charge, and to achieve a conviction. However, studies that specifically looked at sperm/semen, found no relationship between that type of sample and a

legal outcome (White & Dumont, 2009). Furthermore, studies that assessed the relationship of forensic evidence to legal outcome in a "no, yes" format, have shown "that medico-legal evidence appears to be of minimal importance to the courts…and that supportive medico-legal findings are not always necessary for a case to progress" (White & Dumont, 2009, p. 28). Another study by Dumont and White (2007) found that evidence of penetration, use of physical force or verbal coercion on the part of the assailant, as well as use of weapons and corroborating testimonies, increased the likelihood of case processing (Dumont & White, 2007).

Other studies have only assessed the impact of such evidence on particular stages of the criminal justice disposition. With regard to conviction, research has assessed the impact of several forensic evidence factors, including documented injuries, alcohol intoxication, and sperm presence or a DNA match. The most significant factor that predicted conviction was use of 'severe coercion' by the assailant. Other contributing predictors included use of moderate coercion, but that forensic evidence exerted no influence on conviction (Ingemann-Hansen et al, 2008). In regards to conviction and sentencing, an older study by Feldberg (1997) found no correlation between the use of medical evidence in a trial, if the trial resulted in conviction, and defendant sentencing. In fact, Feldberg (1997) found judges sometimes used the limited findings of medical evidence as justification for a shorter sentence.

In regards to filing charges by the DA, while some studies found an association between forensic evidence (semen, blood, clothing, bedding and hair) and charging (McGregor, DuMont, & Myhr, 2002; and Spohn & Holleran, 2004), another study found that prosecutors rejected cases more often if physical evidence connected the suspect to the crime (Spohn et al, 2001). Thus, even though forensic evidence may not be the only factor that influences criminal justice

decisions, there are studies that have shown its impact is important (Frazier & Haney, 1996; Spears & Spohn, 1997; and Spohn et al, 2001).

Disposition and Genital and Extra-Genital Injuries and Weapons

Research has also assessed the relationship between physical injuries, weapon use, and level of case disposition. Particular studies showed that the decision to charge a case was influenced by evidence-based factors, including sustained injury and presence of a weapon (Alderden, 2009; and Gray-Eurom, Seaberg & Wears, 2002). Other studies found the best predictor of charging a sexual assault case by the DA was injuries sustained by the victim (Peterson et al, 2010; and McGregor et al, 2002). McGregor et al (1999) found moderate and severe injuries positively related to filing charges, but no relationship between charge laying and genital injuries. Studies by McLean et al (2011), Frazier and Haney (1996), Spohn et al, (2001), and Kingsnorth, McIntosh and Wentworth (1999) all found that prosecutors were more likely to charge a sexual assault case when the victim was injured or threatened, or when a weapon was used by the assailant. Dumont and White's (2007) review of the literature found that about two-thirds of rape victims received some level of injury, and those injuries were associated with charges being filed by prosecutors. An interesting question remains if reliance on injuries in making charging decisions is changing as the sensitivity and use of DNA testing increases.

Some studies found physical evidence in the form of photographs of victim injuries were associated with determination of guilt and sentence length (Feldberg, 1997). Similarly, another study found that cases resulting in conviction had a higher frequency of injuries to the victim (McLean et al, 2011), while Dumont and White (2007) found that only severe injuries were associated with conviction. Overall, 44% of studies reviewed revealed a positive relationship between injuries and legal outcomes (Dumont & White, 2007). So while a defense of consent

may diminish the value of physical evidence showing there was contact between the alleged assailant and the victim, photographs of injuries tend to sustain the charge.

While one study did not find a relationship between charge laying (filing) and genital injuries (McGregor et al, 1999), most studies did. Specifically, ano-genital injuries found in the region around the vulva, hymen, vagina, cervix, or anus, were found in about one-third of studies, and about 30% of them showed a strong association between such injuries and legal outcomes (Dumont & White, 2007). Based on these findings, researchers argue that extra-genital and genital injuries serve as contributing factors in rape cases, representing visual and clinical evidence that a rape took place, making a positive criminal justice disposition more likely (Gray-Eurom et al, 2002).

Disposition and Nature of Victim-Assailant Relationship

Most studies reveal that the nature of the relationship between the victim and assailant exerts influence on dispositional outcomes. Estrich (1987), for example, suggests that criminal justice officials differentiate between the "aggravated, jump-from-the-bushes stranger rapes and the simple cases of unarmed rape by friends, neighbors, and acquaintances." A study found that, of those cases leading to arrest, stranger rapes resulted in increased odds of presenting a case to the prosecutor (Alderden, 2009). Still, most studies show that a prior relationship between the victim and assailant has a strong influence on the outcome, where the more intimate the relationship, the more likely a case will be processed (via arrest, charge, and conviction) (Bouffard, 2000; Spohn et al, 2001; Alderden, 2009; LaFree, 1981; McGregor et al, 1999; and McGregor et al, 2002). The positive association between prior relationship with the assailant and case processing implies that the police's ability to locate the assailant has a strong influence on arrest and charge laying in a sexual assault case (LaFree, 1981).

Ingemann-Hansen et al (2008) found that "…the presence of sperm has poor sensitivity in predicting sexual assault and securing conviction" (p. 103) in non-stranger cases. On the other hand, they did find that the collection of sperm samples is necessary in attempting to detect DNA from an unknown assailant (Ingemann-Hansen et al, 2008). The presence of physical evidence increased odds of charging for stranger, intimate, and acquaintance rape cases; however, only significantly so in cases where the victim and perpetrator were strangers. Logistic regression results showed that cases with physical evidence were twice as likely to result in the decision to charge in stranger cases, compared to less than 1.5 times more likely to charge in intimate cases, and not as likely to result in a charge in acquaintance rape. However, charges were more likely to be filed in intimate rape cases if the victim was injured (Spohn & Holleran, 2004).

In looking at different levels of non-stranger relationships, Campbell et al (2009) found that intimate rapes were more than twice as likely to have a higher level outcome as compared to acquaintance or stranger rapes. Another study found no difference between stranger rapes, acquaintance rapes, and intimate rapes on the decision to charge (Spohn & Holleran, 2004).

Disposition and Other Factors

Campbell et al (2009) discovered that the victim's drug/alcohol use decreased the chances of her case reaching a high level outcome. There have also been several studies that looked at the relationship between disposition and PCI and generally found that delays in reporting and examination diminish the chances of a successful prosecution (Kingsnorth et al, 1999; and Spohn et al, 2001). These finding suggest not only does the credibility of the victim suffer when there are long reporting delays, but that valuable physical evidence is likely to be lost (Campbell et al, 2009).

Disposition and Legal versus Extralegal Evidence

Research has shown that there are other extralegal factors that exert an influence over dispositions. Alderden (2009) found only extralegal factors, such as the lack of discrepancies in the victim's statement, the victim's (and the suspect's) prior arrest history, and the victim's level of resistance influenced the founding of cases by detectives. At the charging level, both legal and extralegal factors (no victim report discrepancies, less familiarity with the suspect, and promptness of reporting), lead to increased likelihood of felony charges being filed, Legal factors included injuries, and use of alcohol/drugs by either the victim or suspect (as opposed to no use or use by both). Another study found that legal factors were more likely to predict a higher level outcome than extralegal factors; however, extralegal factors remained important in these decisions (Campbell et al, 2009). This author concluded there might be a shift away from extralegal factors to forensic evidence factors in the way sexual assault cases are being processed by the criminal justice system, but presently both categories are important to consider

Backlogged Forensic and DNA Evidence

Peterson and Hickman (2005) conducted one of the first national censuses of public forensic crime laboratories for the Bureau of Justice Statistics in 2002. In part, this survey documented over 500,000 backlogged requests for forensic analyses in the nation's crime laboratories at yearend 2002, a figure 70% more than existed at the beginning of the calendar year. A request was defined as backlogged if it had been submitted to the laboratory and remained unreported for a period of thirty days. Backlogs were on the increase because laboratories did not have the resources to meet the increasing demand for forensic services by the police and prosecution. Durose (2008) further documented backlogs in the 2005 crime laboratory census, and the Urban Institute's Justice Policy Center (2011) is undertaking a 2009

crime laboratory census update with NIJ funding. The testing of DNA evidence contributes an important part of crime laboratories' caseloads and backlogs.

Several researchers have attributed the backlog problem primarily to the overall increased demand for forensic evidence testing, the shortage of forensic scientists, and the time required to examine complex evidence, including that from sexual assault kits (Nelson, 2010; and Briody, 2005). And, also, ."..it is in part because DNA evidence is such a powerful tool and so widely collected that the current backlog exists" (Menkes, 2006, p. 5). Demand for DNA testing has increased mainly due to the rise in awareness of the benefits of DNA evidence in helping to solve crimes, and to link defendants conclusively to their crimes. Increased demand is also a function of scientific advances that has allowed law enforcement agencies to test smaller and compromised evidence samples, from cold/dated cases, using more sensitive techniques. It has also allowed prisoners protesting their innocence to demand old evidence be reanalyzed, both to challenge faulty eyewitness testimony and to reexamine physical evidence that incorrectly implicated the defendant. As a result, hundreds of wrongfully convicted persons have had their cases overturned (Briody, 2005).

Law Enforcement Explanations for Untested Evidence

Two studies published in 2009 and 2010 provided additional insight into DNA backlogs in general and untested evidence in particular in the hands of law enforcement (Strom et al, 2009; and Strom and Hickman, 2010). Strom et al (2009) addressed the untested evidence problem in their NIJ sponsored 2007 survey of more than 2,000 police departments that showed unanalyzed evidence in the hands of police agencies and not submitted to crime laboratories to be a mounting problem. Relevant to the present study, they found 18% of open rape cases nationwide had physical evidence/sexual assault kits never sent to a laboratory. Strom and

Hickman (2010) in their Criminology and Public Policy article found the most common reason given by law enforcement agencies for not submitting forensic evidence in unsolved cases was that the suspect had not been identified (44%). Other notable reasons included a suspect was already adjudicated without testing the evidence (24%), the case had been dismissed (19%), or that the prosecutor had failed to request an analysis of the forensic evidence (15%).

While the BJS censuses cited earlier identified two types of crime laboratory DNA backlogs (casework and convicted offender/arrestee samples), Mark Nelson addressed this issue in greater detail in his 2010 publication 'Making Sense of DNA Backlogs – Myths v. Reality.' Even though crime laboratory DNA testing output has grown greatly in recent years, backlogs will continue to exist until the testing capacity of laboratories can keep pace with law enforcement demand. Nelson (2010) also addressed the problem of untested evidence (including sexual assault kits) stored in police department evidence rooms awaiting submission to crime laboratories that were not even included in published crime laboratory backlog data. While federal legislation and funding had made headway in building laboratory capacity and reducing backlogs, these initiatives were not designed to address this latter issue of evidence not submitted to laboratories for testing.

Law Enforcement Reasons for not Requesting SAK Testing

Resource limitations in forensic laboratories have had a particular negative effect on the ability of criminal justice agencies and crime laboratories to test sexual assault kit evidence. Previously, Lovrich et al (2004) found that kits were left unanalyzed due to detectives' belief that this type of evidence was not a useful investigative tool, but rather primarily a tool for the prosecution (50%). Under this umbrella, rationales for failure to request an analysis included an unidentified suspect (31%), a suspect was identified but not yet charged (10%), and the

prosecutor had not requested an analysis of the evidence (9%). Monetary consideration was another major theme that emerged in 23% of cases. Specifically, the reasons included lack of funding (9%), lengthy delays in analysis (10%), and the belief that the crime laboratory was not conducting DNA analysis of this type of evidence (4%). Based on these results, the authors argued that most local and state investigators were not aware of the actual value of DNA evidence and CODIS as enhanced investigative tools (Lovrich et al, 2004).

The study by Pratt, Gaffney, Lovrich, and Johnson (2006) confirmed these explanations and found the leading reason to be not having an identified suspect (31%), followed by an expectation the defendant would enter a guilty plea, slow laboratory turnaround time, and that the prosecutor has not requested an analysis. These results reinforce the conclusion that "…law enforcement agencies continue to misunderstand the potential benefit of forensic DNA testing" (Pratt, et al, 2006, p. 44). Other researchers argue the crux of the problem is the lack of laboratory resources and the shortage of forensic scientists (Hewitt, Podesta, & Longley, 2002; and Ryan, 2003). In one of the earliest studies investigating this issue, Gaensslen and Lee (2002) found that in cases where victim 'consent' is the main issue, law enforcement is not likely to send a SAK for testing. Nancy Ritter has brought this problem into sharper focus with her recent 2011 NIJ publication 'The Road Ahead: Unanalyzed Evidence in Sexual Assault Cases.' Ritter emphasized the fact that one of the leading reasons evidence from sexual assault kits was not submitted to a laboratory for analysis was because the assailant maintained sexual contact was consensual, investigators questioned the probative value of the evidence in this type of case, and even cases where charges had been dropped or the suspect had pled guilty.

Current NIJ Action Research

NIJ is currently making another effort to address untested sexual assault kit evidence by supporting two collaborative action-research studies in Houston, TX and Detroit, MI. This research involves researchers to help in identifying the problem, analyzing the data, and developing and monitoring an intervention strategy, and practitioner agencies to implement the strategy. Phase I of the studies is reviewing the inventory of kits in police evidence rooms in those two jurisdictions not submitted for testing. Phase II will entail the implementation and evaluation of proposed strategies for solving the untested sexual assault kits, plus a strategy for keeping victims notified of testing procedures. Should all sexual assault kits be tested, how can such evidence be triaged/prioritized, and how can investigators be better trained to select evidence that should be submitted to forensic laboratories for testing?

Legislative Efforts to Reduce SAK Backlogs

It is also important to keep in mind that for more than a decade, legislative efforts have been made to address DNA evidence and backlog issues. Going back to 1994, the DNA Identification Act led to creation of CODIS. In 2000, the DNA Analysis Backlog Elimination Act authorized grants to qualified states to upload eligible DNA profiles into CODIS, and increase state-operated laboratories to carry out DNA analyses of samples from crime scenes (Menkes, 2006). In 2003, the Debbie Smith Act (a component of the 'Justice for All' Act), boosted funding for states with a severe rape kit backlogs to facilitate the accurate identification of offenders and to promote the effective administration of justice for victims of rape (Telsavaara & Arrigo, 2006). At its core, the Justice for All Act promoted the examination of untested rape kit backlogs and, at the same time, provided absolution to those who were wrongfully accused or convicted for another person's crime.

Due to the fact that law enforcement agencies mostly processed sexual assault kits where suspects had been identified, and kept those cases without a suspect backlogged, the 2003 act authorized federal John Doe DNA indictments, and thereby extended the statute of limitations for sexual abuse cases (Menkes, 2006). These indictments made it legally possible to charge an 'unknown' perpetrator, but for whom a DNA profile was developed. If a DNA match to a suspect was found in the future, that person could still be prosecuted.

The most recent effort to eliminate the sexual assault kit backlog, as well as address the needs of victims, is the Justice for Survivors of Sexual Assault Act (Kraemer, 2009) sponsored by Senator Al Franken. The proposed bill emphasized the importance of DNA evidence in solving rape cases, and attempted to supply the means to address SAK backlogs and attendant evidence problems. Congress took note of the many CODIS hits and that, despite funding from the Debbie Smith Act of 2003, there was still a major SAK backlog nationally (Kraemer, 2009). Additionally, in an amendment to the Rights of Victims and Witnesses of Crime Act of California (CA Codes Title 17 PC 680: Section 5), the timely DNA analysis of sexual assault kit evidence had been made a core public safety issue (Justia Lawyer, 2009). While NIJ has been funding programs to reduce programs to reduce backlogs since 2004, NIJ began funding the DNA Backlog Reduction Program in 2011 that enables public sector DNA laboratories both to outsource the DNA samples and increase their capacity in-house to acquire high-throughput instruments to process multiple samples at a time, introduce automated robotic systems, and adopt information management systems to track evidence and results more efficiently.

Reasons for the Los Angeles Backlog

In 2009, Human Rights Watch (HRW) attempted to describe the reasons for the Los Angeles City and County rape kit backlogs. They found that there is no specific agency in Los

Angeles that oversees rape cases; no one tracks the status, progress, and outcome of these cases. This is especially true for rape cases involving forensic evidence. Sexual assault kits are also problematic because in many jurisdictions, including Los Angeles, they were backlogged at the junction between the law enforcement agency and the crime laboratory, and not technically part of the crime laboratory's backlog, because investigators had not formally requested that they be analyzed. HRW (2009) also found that the county and city crime laboratories did not have the capacity to test all of the backlogged kits, let alone test new incoming kits from current cases. They discovered that it can take up to a year from the time testing is requested to the time a kit is analyzed and a report completed.

Summary

This review began with a discussion of the theoretical value of forensic evidence and the components of sexual assault kits. It continued with a review of studies that document victim injuries and weapons, followed by a discussion of toxicological samples, condoms and lubricants recovered in SAKs. Studies were reviewed addressing DNA analysis of evidence, the importance of post-coital interval and degradation of biological evidence and results, the use of CODIS, and the importance of victim suspect relationship. The next section addressed the ability of various information factors to predict criminal justice dispositions, including: SAK and associated evidence, injuries, weapons, victim-suspect relationships, and other factors. Literature documenting crime laboratory backlogs and untested evidence was addressed and concluded with a review of current NIJ action research and legislative efforts in this area, and the Human Rights Watch study addressing sexual assault kit backlogs in Los Angeles.

The social science and forensic science literature provides some insights into factors that influence successful forensic/sexual assault investigation and prosecution practices. The forensic

science literature is expanding in this area in recent years but is not extensive and fully integrated with the social science sexual assault literature. The forensic science literature is not complete, including how 1) investigators obtain the necessary information/evidence to make arrests, and 2) how prosecutors employ case information and scientific results in decisions to file charges, secure plea bargains, and take cases to trial. The impact of forensic evidence on sexual assault investigations depends upon the ability of researchers to track cases from their origin, through law enforcement investigation and victim examination, into the crime laboratory and, ultimately, to their disposition in the courts. Data currently maintained by the criminal justice system and crime laboratories are piecemeal and do not describe how key decision makers make choices regarding their employment of scientific evidence.

Chapter III

Project Objectives, Research Methods, and Study Samples

This chapter will summarize project objectives, methods and data collection tools used to explore and address these objectives, as well as the primary data samples drawn from crime laboratory files and related criminal justice agencies.

Project Research Objectives

The National Institute of Justice funded this project to address the following four objectives:

Objective 1— Describe and evaluate the results of new scientific tests performed by various private laboratories on backlogged sexual assault kit (SAK) evidence outsourced from the LASD and LAPD crime laboratories;

Objective 2— Review the literature of sexual assault case processing, describe the characteristics of cases leading to the backlogged sexual assault kits, and define the primary criteria used by investigators in deciding to request the analysis of the kits;

Objective 3—Determine the investigative/judicial outcomes of sexual assault investigations in: a) backlogged cases where no scientific testing was performed on SAK evidence; b) backlogged cases where testing was performed on SAK evidence; and c) the criminal justice status of current cases, before and after scientific testing was performed on the SAK evidence;

Objective 4— Identify and describe those principal case and evidence characteristics that will enable forensic laboratories to prioritize future sexual assault evidence submitted to crime laboratories by detectives.

Project Data: Backlogged and Non-Backlogged Sexual Assault Cases

SAK Backlog Sample (BLS)

The following sections summarize the various types of data collected during the Sexual Assault Kit (SAK) Backlog Project. Primary data collection focused on the contents (reports) contained in the crime laboratory files of the Los Angeles Police Department (LAPD) and Los Angeles Sheriff's Department (LASD), housed in the Hertzberg-Davis Forensic Science Center

on the campus of California State University, Los Angeles. Important data were drawn from outsourced private lab reports contained in these files describing examinations performed on backlogged sexual assault kits collected by LASD and LAPD. LAPD began the outsourcing before the LASD did, and all testing was completed for backlogged LAPD cases before the LASD cases were completed. While LAPD cases were drawn from a single municipality, LASD cases were drawn from many different municipalities within Los Angeles County, referred to as outside agencies, as well as those cases investigated by LASD itself. Since these Los Angeles County municipalities did not have their own forensic laboratories, they sent their sexual assault samples to the LASD lab for analysis.

As a rule, a sexual assault kit was placed in an agency's backlog if the kit had been collected in the course of an investigation and went untested by the crime laboratory by November 1, 2008. These backlogged cases were a non-representative set of sexual assaults where law enforcement personnel had previously decided that kit testing would not be helpful. As noted previously, the reasons why cases were backlogged were many, but the primary reasons were that investigators and/or prosecutors did not believe testing of kit evidence would assist in solving the case and achieving a conviction. In fact, many of these cases had already resulted in arrest and conviction without SAK testing. The great majority of backlogged cases had not been submitted to their respective crime laboratory, but was being held in a law enforcement property storage facility and/or freezer. Each agency, LAPD and LASD, maintained its own set of backlogged cases and case numbering system.

In order to obtain a representative case sample of backlogged cases for this research project, a random sample was selected from among all 10,895 backlogged sexual assault case files of both agencies that had been submitted to an outside testing laboratory by either the

LAPD or LASD laboratory. After obtaining the total list of cases in each laboratory's backlog file, the project staff took a 20% random sample of each list in September 2010.

After obtaining this list, a small number of cases were excluded from the sample, including: cases that were found on the backlog case list, but were actually determined to be non-backlogged. This was indicated if the file did not have a backlog grant sticker on the front of the file, and/or the file did not contain paperwork denoting it as a backlogged file, and/or the sexual assault kit was not outsourced to a private laboratory, and/or the sexual assault kit was processed within the year the crime occurred. Cases involving suspected juvenile offenders; and cases where no external contract laboratory testing was performed were also excluded. There were various reasons as to why a kit was not tested, including that the rape kit was from a suspect and not a victim (most common reason); the rape kit contained only a urine sample or a medical report; excessive PCI (time from assault to medical exam was greater than 7 days); the rape allegation was unfounded by detectives; no rape kit was booked (clothing only); or no evidence was booked under the case.

It should be noted that the official number of backlogged cases fluctuated slightly throughout the duration of the project. This was due primarily to the identification of newly discovered backlogged cases that had not been counted/registered originally, as well as the elimination of certain cases not meeting the definition of a backlogged case. Therefore, the initial backlogged population from LAPD reflected 6,157 cases, while the final number the agency reported was 6,132. Similarly, the initial backlogged population obtained from LASD included 4,694 case files, while their final reported number was 4,763 (See Table 1 below).

Table 1: Backlogged Sexual Assault Kit Case Review

	LAPD	LASD	Total
Backlogged Cases			
Total Cases	6,132	4,763	10,895
20% Random Sample	1,170	840	2,010
Coded Case Sample	1,141	807	1,948

LASD Backlog Sample

We obtained a list of all backlogged cases from LASD (N=4694), and drew a 20% random sample, resulting in a sample of 1057 case files. Cases that were removed from the sample included suspects under the age of 18 (176 cases) and cases that were non-backlogged (41 cases), resulting in a sample of 840 for LASD. Due to time constraints and our inability to locate every case file, 807 cases were ultimately coded and are included in the final analyses.

LAPD Backlog Sample

The LAPD case population consisted of 6157 backlogged cases. A 20% random sample yielded a sample size of 1219 cases. Seven LAPD cases were not tested, and therefore, were removed from our sample. Also, 45 cases from our sample consisted of suspects that were younger than 18 years of age, and were also excluded from our sample. The removal of these cases reduced the study sample to 1162. Due to time constraints and our inability to locate certain case files, 1141 cases were coded overall for the LAPD backlog group.

Table 1 shows the total sample size was reduced from 2,010 cases to 1,948 cases, with 1,141 cases selected from the LAPD files and 807 from the LASD files. Hereafter in this report, these sampled backlogged cases will be referred to as the **SAK Backlog Sample (BLS).** The timeframe for cases yielding the SAKs ranged from 1982 to 2009, with 87.6% of cases falling between 2000 and 2008.

Criminal Justice Case Dispositions

To satisfy Objective #3 (to determine investigative and judicial outcomes of case samples), we were interested in determining if the testing of SAK evidence from backlogged cases was followed by/associated with any new case dispositions (arrests, filing of charges or convictions). We also believed it would be prudent to take an additional sample of non-backlogged cases from the LAPD and LASD laboratories in the current time period to determine if the testing of sexual assault kit evidence, tested on a more timely basis, would be associated with a different set of outcomes. Unlike the backlogged sample, this sample would be more representative of all sexual assaults currently being investigated in these jurisdictions and where SAK evidence was collected; in fact, investigators had been directed to submit *all* SAKs to their local crime laboratories for immediate testing. Accordingly, the criminal justice outcomes of this sample might be superior to those of the backlogged sample..

In order to determine the association between SAK laboratory testing and criminal justice case dispositions, we compared a sample of backlogged cases (Backlogged Disposition Sample - BLDS) to a sample of non-backlogged cases (Non-Backlog Disposition Sample - NBLDS) where SAKs were tested in the home crime laboratory (not outsourced). Would there be a difference in outcomes (after testing) in the NBLDS compared with the BLDS? In order to control for differences in testing techniques employed by the outsourced and in-house laboratories, we chose the same testing date range from which the two samples would be drawn. We selected the time range of January 1, 2009 to August 1, 2010 to draw this sample, based on two criteria: First, since the backlog testing began November 1, 2008, we wanted to allow at least two months for the test results to be received back from the outsourced lab by the respective agency; accordingly, we chose January 1, 2009 as our starting point. The end date of August 1,

2010 allowed us to collect disposition data on cases up to six months after the lab results were returned (until February 1, 2011), in order to capture if there was a new or revised criminal justice dispositions. For the BLDS, the dates were based on the date that the outsourced reports were returned to LASD and LAPD laboratories. For the NBLDS, these dates were based on the date in-house LASD and LAPD crime laboratories reported the results.

While there would have been advantages to wait longer than six months to track dispositions, grant scheduling and deadlines did not permit a longer period and we concluded a six month period was reasonable. If we had been able to wait longer, additional dispositions might have resulted.

LASD Comparison Samples

We obtained a list of all non-backlogged sexual assault cases from LASD that were tested in-house between the dates of January 1, 2009 and August 1, 2010. The LASD non-backlog case population consisted of 220 cases. Of these cases, seven were found to be backlogged cases, and 18 were removed due to the suspect being under the age of 18, leaving 195 cases. In addition, project time and resource constraints prevented us from locating five more cases, leaving the project with a total of 190 cases coded in the NBLDS (See Table 2).

Table 2: Criminal Justice Disposition Sample

	LAPD	LASD	Total
Backlog (BLDS)	181	190	371
Non-Backlog (NBLDS)	181	190	371
Total	**362**	**380**	**742**

The LASD BLDS to address Objective #3 excluded cases that originated with outside (non LASD) agencies, because of problems in tracking down criminal justice case dispositions. Using

the same time range as described above, we located 577 cases, from which we randomly selected 190 cases, to match the number of non-backlogged cases described above.

LAPD Comparison Samples

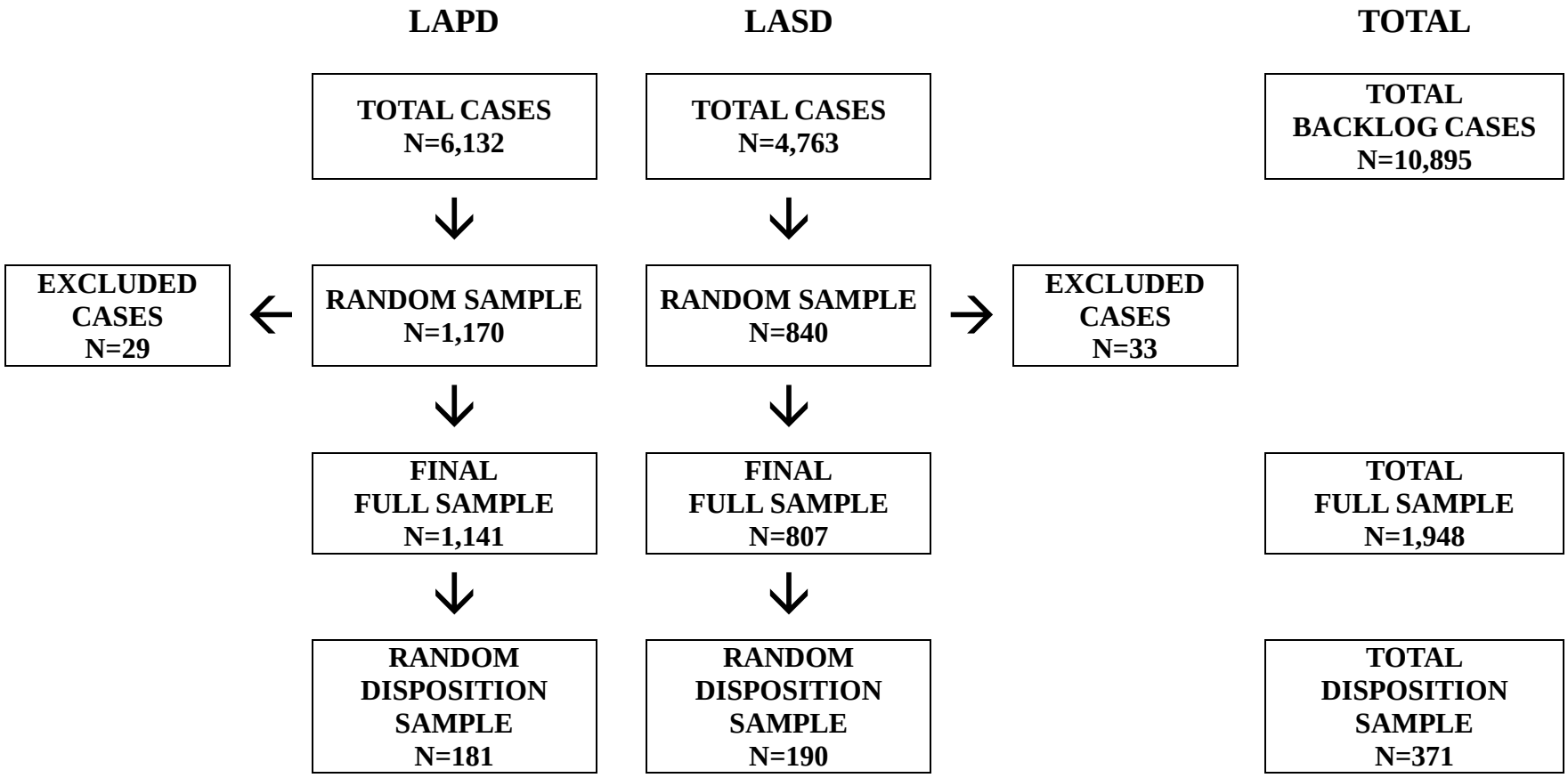
We obtained a list of all non-backlogged sexual assault cases from LAPD that were tested in-house between the dates of January 1, 2009 and August 1, 2010. The LAPD non-backlog sexual assault population consisted of 209 cases. After removing cases that were backlogged (16), and those with suspects under the age of 18 (2), the remaining list included 191 cases. Due to time and resource constraints and our inability to locate certain case files, 181 cases were coded overall for the LAPD NBLDS.

The LAPD BLDS drawn to address Objective 3 included all the cases that fell within the date range, resulting in N= 1050, from which we obtained a randomly selected sample of n=181 cases. After coding had began, it was discovered that eight cases had assailants that were younger than 18. Therefore, we randomly selected eight replacement cases that fit the same date criteria. The sample size remained the same (n=181). Consequently, we formed a Backlog Disposition Sample (BLDS) of 371 backlogged cases and a Non-Backlog Disposition Sample (NBLDS) of 371 non-backlogged cases for which we sought final criminal justice dispositions. All the above samples are described in Table 2 and case outcomes (dispositions) are discussed in a following chapter. On page 42, Figure 1 diagrams all backlog samples collected in the project.

Descriptive data for the samples addressing Objective #3 were obtained using the data collection tool described later in this chapter and contained in Appendix A, that coded for victim, suspect, crime characteristics, as well as laboratory results and CODIS information.

Outcome data for both BLDS and NBLDS were also recorded using the collection tool found in Appendix A and included: if an arrest occurred, (yes/no), date of the arrest; if the DA

Figure 1: Study Backlog Samples



filed charges (yes/no), and date of filing; if the case resulted in a conviction (yes/no), and the date of conviction; and type of adjudication (plea/trial). For cases resulting in a conviction, we recorded if there incarceration (yes/no); length of incarceration; if there was probation (yes/no); and length of probation.

This information was provided through queries to the LASD records bureau, LAPD detective division, and the Los Angeles County District Attorney's office. LAPD and LASD staff used various records/data systems to locate the needed criminal justice outcomes. Staff in those units were provided with a spreadsheet that contained the respective file numbers for cases in both NBLDS and BLDS project files, and space for recording the disposition questions noted above for each file. These were distributed and collected by the CSULA project office either via email and/or fax.

Data Collection Tools

Using these samples, we principally examined information contained in the crime laboratory records of each law enforcement agency. Resources did not permit the review of investigative and prosecutorial records in these backlogged cases. The laboratory records, however, included various documents that informed our creation of the collection tool for this project and included key descriptive, investigative, physical evidence, and analytical tests performed on the evidence. Initially, project staff reviewed a number of case files from both the Los Angeles Sheriff Department (LASD) and the Los Angeles Police Department (LAPD) to develop an understanding of the detail and completeness of information contained in various medical examination and laboratory documents. Descriptive information described the assault, the victim and assailant(s), their relationship, and the speed with which the victim reported the event to the police and presented herself to a medical center for examination. The objective was

to find key descriptive and scientific evidence information that was common to both agencies' crime laboratory files and that would describe the types of sexual assaults forming the backlog. As noted above, time and resources did not allow access to police incident reports, sexual assault investigation and arrest reports, or prosecutor files. Consequently, detailed information about the investigative procedures followed in these cases was unavailable. Future studies should include such comprehensive qualitative and quantitative data collection.

After preliminary review of the files, several attributes were identified that were subsequently included in our data collection tool, including case identifying information and victim medical report items that, unfortunately, differed substantially between the two (LASD and LAPD) agencies. An important victim examination form (OCJP) was available in the LASD files, but not the LAPD files. The victim examination form had been stored with evidence from LAPD cases in departmental freezers that was inaccessible to project researchers. The files also contained information about the post coital interval (PCI), analytical test results, the potential identification of DNA, and CODIS uploading information. (NOTE: LAPD forms contained a PCI value but LASD forms did not.) See Appendix A for the complete data collection tool.

Information Collected

- Outsourced laboratory reports - These reports were prepared by each of the private laboratories contracted by the respective agencies to examine evidence contained in the sexual assault kits, and included Bode, Orchid-Cellmark, SERI, Fairfax, Sorenson, Strand, and Marshall University. Case files contained the reports prepared by the respective private testing laboratories that were supplied to either the LASD or LAPD crime laboratories. These reports included descriptions of the submitted and examined samples and test results. There were differences in the protocols used by the private

laboratories in testing SAK evidence and one of the principal objectives of the project was to determine which method(s) yields superior results. As noted previously, Bode used a "Y" marker screening test (the test identified male DNA) while Orchid-Cellmark, SERI, Fairfax, Sorenson, and Marshall University used conventional serology (extracting and looking for spermatozoa or epithelial cells). In addition, Orchid-Cellmark had a specialized extraction process that they believed to be more efficient.

- SAK evidence and transmittal forms between law enforcement and testing laboratories, including toxicological samples.
- CODIS eligibility- included information on whether DNA test results were eligible for upload into CODIS, as well as eligibility review date. The date of completion of the eligibility review was recorded if the CODIS upload date was not available (See earlier statement of CODIS eligibility criteria.)
- CODIS match detail report - included whether the uploaded profile resulted in a CODIS match to another profile already in the CODIS system, also known as a "hit." Two kinds of hits were possible, an offender hit and/or a case-to-case hit. An offender hit describes a result where a DNA profile matches a profile of a known offender. As will be discussed in the Data Analysis chapter, an offender hit may result from a hit upon an offender arrested and convicted in the same case ('conviction match'). A case-to-case hit is a DNA profile that matches a DNA profile discovered in another case. A DNA profile can result in an offender hit, a case-to-case hit, or both (offender and case-to-case hit). It should be noted that we did not keep track of how many case-to-case hits were found per each uploaded profile, only that at least a single 'case-to-case' hit had occurred. For example, a case may have had two or more case-to-case hits, but our coding does not

reflect this information. This report can be provided from the local DNA index system (LDIS) or state DNA index system (SDIS).

- LDIS detail report- This report included the uploaded loci information for CODIS and the upload date, and reports if a full or partial profile was uploaded to CODIS based on the core STR Loci. If the uploaded profile contained 13 loci, it was considered a full profile. If an uploaded profile contained less than the 13 core loci, but more than 7 loci, it was considered a partial profile. If less than seven loci were identified, it was not considered eligible.

As noted above, the two respective agencies did not have identical information contained in each file jacket. These differences are discussed in greater detail below.

LASD Files

- OCJP (medical report) - LASD case files contained a copy of the original Office of Criminal Justice Planning (OCJP) medical report completed by medical personnel performing the sexual assault exam on the victim following the assault. The OCJP form described the age, gender and ethnicity of the victim and such self-reported information as: loss of memory/consciousness, if the victim had consensual sex prior to the incident, post-assault hygienic activities, drug/alcohol use, if penetration occurred, if oral copulation occurred, if non-genital acts occurred, if ejaculation occurred, and if contraceptive or lubricants were used, assailant characteristics (age, gender, ethnicity, relationship to victim), and case characteristics (date/time of sexual assault, physical injuries, use of weapon). The OCJP form also included various examination items (date/time of the exam, toxicological items collected, and observed injuries to the victim).

- LASD SAK Audit questionnaire- The LASD crime laboratory requested that sexual assault investigators complete an audit form/questionnaire supplying certain information on each of the backlogged cases, including: Is there a known suspect? If known suspect, was a reference sample secured? Was there an arrest? Did prosecutors file charges? If no charges were filed, was the case a DA reject? Is a jury trial pending? Was case adjudicated and what was the result? Did victim have consensual sex within five days of the sexual assault? If yes, was consensual partner reference sample obtained?
- Because these audit forms were completed prior to the testing of the SAK, the forms did not always contain dates for each of the different criminal justice outcomes, and because not all case files contained completed audit forms, this information was not an accurate record of the final outcome of the particular case, and was not recorded on our data collection forms. The 'audit' data did indicate, however, at the time the audit report was completed, that there were suspects developed in about 70% of these cases, arrests had been made in about 40%, the district attorney had filed charges in about 28% of the cases and had rejected charges in another 39%. Almost 20% of the cases had been adjudicated, leading to convictions in about 78% of these adjudications. So, information indicated that criminal justice actions had been undertaken in a sizeable number of these backlogged cases.

LAPD Files

- Serology item description notes- Since the LAPD crime laboratory did not include copies of the OCJP form in its case files, researchers attempted to collect the information contained on this form from other documents contained in the file, including the Serology Item Description Notes. The form included victim characteristics (age, and gender of

victim), assailant characteristics (number of assailants, and relationship between victim and assailant) and certain case characteristics (date/time of assault, loss of memory/consciousness). In addition, the notes contained some (victim) self-report items describing the sexual assault (whether penetration had occurred, whether oral copulation had occurred), whether the victim had consensual sex prior to the incident, post-assault hygienic activities, whether ejaculation occurred, whether contraceptive or lubricants were used, exam characteristics (date/time of exam, and inventory of samples in SAK), and urine sample receipt number. Other items included the date and identity of the outsourced laboratory where the samples were sent.

- Request for Serology/DNA Analysis form- These forms were occasionally completed by criminalists and present in the case files; however, given their infrequent presence and lack of consistent information, data collectors did not record this documentation.
- Property Report- included penal code, and the property that was /submitted/booked in the case (SAK).
- Investigative Report - a copy of the original investigative report made by the detective after the crime was reported. This document was rarely found in the file, and therefore, we were unable to rely on it for information. It included such information as the victim's age, gender, and ethnicity, as well as assailant age, gender, and ethnicity. It also included the time and date the crime occurred as well as a short statement made by the victim describing the incident.

Data Collection Issues and Study Limitations

As referred to previously, the data collection process encountered several problems. First, some files in our samples for both the backlog and non-backlog groups were not located, thus

preventing us from coding the entire samples for both LASD and LAPD. Second, some case files did not contain all the information we sought, such as laboratory reports and CODIS forms. Therefore, our data collectors employed the help of laboratory office personnel in locating these documents. Although the data collectors had success in locating a high percentage of cases, some of the cases in our sample remain incomplete due to the inability to find these documents.

In sum, the data collection approach taken had certain limitations as data relied on 1) various paper and computer based laboratory files to document test procedures and results, and law enforcement and prosecutor files to record case dispositions; 2) files were occasionally incomplete and data for key variables was missing 3) complete detective and prosecutor files associated with the kits were not reviewed; and 4) criminal justice disposition data were recorded for a smaller subsample of several hundred cases six months after testing.

Project Data: Focus Groups

Another aim of this study was to assess the primary criteria used by investigators in deciding whether to request an analysis of a sexual assault kit (Objective #2). In order to satisfy this objective, focus groups were held with LASD and LAPD sexual assault investigators, prosecutors from the LA county District Attorney's Office, and criminalists from LASD and LAPD forensic laboratories. Members of the focus groups were made by contacting key personnel in each agency, who then went on to choose relevant individuals with experience in handling sexual assault cases. The selection process led to the selection of 11 LAPD detectives who worked in its Sex Crimes Units, eight LASD detectives who either worked in the Special Victims Unit or typically investigated sexual assault cases, and six Los Angeles County Assistant District Attorneys responsible for prosecuting sexual assault cases. The criminalist focus group

included four criminalists each from the biological sections of the LASD and LAPD crime laboratories.

Table 3: Focus Group Participants

Agency/Type of Personnel	Number of Participants
LAPD Sexual Assault Investigators	11
LASD Sexual Assault Investigators	8
Los Angeles County Assistant District Attorneys	6
LAPD Criminalists (Biology Section)	4
LASD Criminalists (Biology Section)	4
Total Focus Groups Participants	**33**

Each focus group ran from an hour and a half to two hours in duration. Participants were provided with informational sheets that explained the nature of the study as well as an explanation of the topics to be discussed. The subjects were told they were free to participate (or not participate) in the focus group, they would remain anonymous, and no statements would be attributed to them by name. A CSULA note taker was present to record key observations and recommendations. Following a brief introduction of staff present, participants were asked to discuss key questions in order to elicit their perspectives on the study's main objectives:

- The value of sexual assault kits in **non-stranger** cases, where the victim knows the suspect, and where the suspect does not deny having sexual contact with the victim.
- The value of sexual assault kit evidence in **stranger** cases, including the importance of identifying semen and the suspect's DNA.
- The importance of victim characteristics (age, behavior, credibility, willingness to assist the investigation, etc) and other investigative information in determining the use of sexual assault kits.
- The importance of injuries sustained by the victim and the assailant's possible use of a weapon in determining the value of a sexual assault kit.

- The importance of having a suspect's DNA profile entered into CODIS in both stranger and non-stranger cases, in the immediate case as well as long term.

The nature of the discussions and key points were recorded by the note-taker. The responses were then summarized around the main themes that emerged during the discussion.

Summary

This study had the primary objective of evaluating the results of scientific tests performed by private laboratories on 10,895 backlogged/untested sexual assault kits (SAK) from the LASD and LAPD crime laboratories. SAK evidence testing data, victim/suspect characteristics, and related case information were collected from a 20% sample of cases using a multi-item data collection strategy. The criminal justice dispositions of a sub-sample of these backlogged cases were compared with the dispositions of a second sample of current, non-backlogged SAK cases both before and after SAK testing. In addition, researchers reviewed the sexual assault case processing literature that reviewed the role played by scientific evidence and other factors in solving and prosecuting such cases. Researchers also conducted focus groups with investigators, prosecutors, and criminalists who were engaged in the investigation of sexual assault cases and the examination of sexual assault evidence. This multi-method approach provided researchers a unique opportunity to assess the role of SAK evidence and other information in the criminal justice processing of these cases.

Chapter IV

Sexual Assault Kit (SAK) Data Analysis and Discussion

This chapter addresses the SAK Backlog Sample (BLS), including data describing the victim and assailant, the sexual assault itself, the time from report to examination of the victim, laboratory testing results, and CODIS inquiries and findings. The chapter proceeds to discuss the results of laboratory testing on the backlogged kits, including Y chromosome and conventional serological screening results, STR testing, and CODIS uploads. Next, there is an examination of dispositions of cases that had been backlogged (BLS) with cases that had not been backlogged (the NBLDS). The chapter concludes with a discussion of the missing data on key variables.

Backlog Sample (BLS) Descriptive Data

Table 4 shows the pattern of distribution of the SAKs in the Backlog Sample (BLS) outsourced to the various private testing laboratories for analysis. Bode received the majority (56.2%) of outsourced kits from the LASD and LAPD laboratories combined, and Orchid-Cellmark received the next highest percentage of cases, at 30.0%, and together the two companies received 86.2% of all kits outsourced. The LASD and LAPD crime laboratories

Table 4: Tested SAK Cases in Dataset by Laboratory

	LAPD		LASD	
	N	**%**	**N**	**%**
Bode	762	66.8	330	40.9
Fairfax	10	0.9	--	--
LASD	--	--	7	0.9
Marshall	--	--	31	3.8
Orchid-Cellmark	347	30.4	99	12.3
SERI	22	1.9	15	1.9
Sorenson	--	--	151	18.7
Strand	--	--	161	20.6
	1141	100	807	100

established contracts with the private laboratories to examine a designated number of SAKs, but the assignment of individual kits to the particular laboratories were largely random.

Practically two-thirds (63.2%) (no table) of cases in the BLS were categorized as a violation of California Penal Code 261, typically PC 261(a)(2) which designates sexual intercourse as having been "accomplished against a person's will by means of force, violence, duress, menace, or fear of immediate and unlawful bodily injury on the person." Another 15.9% of cases were classified as violations of PC 288, which includes committing lewd or lascivious acts on children under the age of 14, children of 14 or 15 when the age difference is 10 years or greater, or dependents (e.g. the elderly or infirm). Of the cases in our sample designated as PC 288 violations, 85.7% involved children 15 years old or younger.

As Table 5 shows, an overwhelming majority (93.7%) of victims were female and most assailants were male (92.4%). The average age of victims was 22.2 years (SD=12.22), with approximately 40% of victims falling below the age of 18, while over half of assailants were between the ages of 18 and 34 years old. For the LASD sample, the largest racial/ethnic group represented for both victims and assailants was Hispanic/Latino (approximately 39% for each). Caucasians made up 27.9% of victims, but only 12.3% of assailants. Less than one quarter (21.2%) of victims had engaged in consensual sex within five days of the assault, while about 35% of the LASD sample victims reported being under the influence of alcohol or drugs at the time of assault. The majority (65.3%) of cases involved assailants who were not strangers to their victims. Unfortunately, file information did not permit a more refined determination of non-stranger relationships.

Table 5: Descriptive Characteristics of Victims and Assailants N=1948

	N	%
Victim Characteristics		
Female	1826	93.7
Age		
0-13	353	18.1
14-17	432	22.2
18-20	243	12.5
21-30	448	23.0
31-40	230	11.8
41 and older	179	9.2
Race/Ethnicity (LASD Only)*		
African American	194	24.0
Caucasian	225	27.9
Hispanic/Latino	315	39.0
Consensual Sex within 5 days	412	21.2
Unknown	113	5.8
Self-Reported Intoxication (LASD Only)*	281	34.9
Unknown	91	11.3
Assailant Characteristics		
Single Assailant	1589	81.6
Unknown	120	6.2
Male	1800	92.4
Age (LASD Only)*		
Below 18	4	0.5
18-24	247	30.6
25-34	209	25.9
35-44	124	15.4
45 and older	63	7.8
Multiple Age Groups	27	3.3
Unknown	133	16.4
Race (LASD Only)*		
African American	213	26.4
Caucasian	99	12.3
Hispanic/Latino	311	38.5
Unknown	141	17.5
Non-Stranger	1273	65.3
Unknown	174	8.9

* For LASD Only, N=807

Table 6 below shows the post-coital interval (PCI), estimating the elapsed time between the sexual assault and the examination of the victim, and ranged from 0 to 202 hours, *M*=23.3, *SD*=25.89. Over half (52%) of the backlog sample consisted of PCIs of 24 hours or less, and 19.3% were six hours or less. Among the LASD sample, victims self-reported that assailants employed physical violence in 59.1% of the assaults, which most commonly involved grabbing, holding and/or pinching the victim (52.9%). Assailants rarely threatened to use or used weapons on victims (12.1%), but when they did, they most commonly used firearms (4.2%) or knives (5.8%). Almost three-quarters (71.0%) of victims sustained one or more injuries, usually bruises (35.1%) or abrasions (30.9%), with over half (52.8%) sustaining injuries to the genitalia.

Table 6: Descriptive Characteristics of Sexual Assault N=1948

	N	%
Post-Coital Interval		
0-6 hours	375	19.3
6+ - 12 hours	292	15.0
12+ - 24 hours	344	17.7
24+ - 48 hours	260	13.3
48+ - 72 hours	119	6.1
72+ or more hours	73	3.7
Unknown	485	24.9
Physical Violence (LASD Only)*	477	59.1
Grab, hold and/or pinch	427	52.9
Blows	146	18.1
Restraints	103	12.8
Physical Violence Unknown (LASD Only)*	136	16.9
Weapon (LASD Only)*	87	12.0
Unknown	141	17.5
Injuries (LASD Only)*	573	71.0
Bruising	283	35.1
Abrasions	249	30.9
Cuts	143	17.7

*For LASD Only, N=807

Table 7: Victim Self-Report of Actual and Attempted Sexual Activity N=1948

	N	%
Sexual Activity		
Vaginal Penetration	1505	77.3
Unknown	196	10.1
Anal Penetration	621	31.9
Unknown	265	13.6
Oral Copulation	767	39.4
Unknown	263	13.5
Non-Genital Acts	1133	58.2
Unknown	213	10.9
Contraceptive/Lubricant	585	29.5
Unknown	331	17.0
Ejaculation	544	27.9
Unsure	489	25.1
Unknown	492	25.3
Post-Assault Hygiene	1587	80.0
Unknown	166	8.5

Table 7 shows for both LAPD and LASD victims, vaginal penetration with the penis, a finger, or foreign object was reported to have been attempted or achieved in 77.3% of cases, while anal penetration was attempted or achieved in less than one-third (32%) of cases. Non-genital acts occurred in 58.2% of cases, and most commonly involved kissing (39.1%), fondling (14.1%) and licking (13.8%) the victim. According to victims, assailants were thought to use contraceptives or lubricants in 29.5% of cases, with male assailants using condoms during almost 11% of assaults, and victims believed assailants achieved ejaculation in 27.9% of assaults. A great majority (80%) of victims engaged in some form of post-assault hygiene. Victims usually had urinated or defecated prior to the sexual assault exam (72.7%), while approximately half had eaten, drank, gargled, rinsed, or brushed their teeth (54.9%), used a genital wipe or douche (53.9%) or changed their clothing (46.5%).

As Tables 5, 6, and 7 demonstrate, missing data was an issue for multiple variables concerning characteristics of the victims, assailants, and the nature of the sexual assault. The issue of missing data is discussed in detail in the final section of this chapter.

While very young (aged 13 and under) female victims far outnumbered very young male victims, by a ratio of over 5 to 1, a significantly higher proportion of the total male victim group itself fell in the 13 or younger age group (X^2=76.31, p ≤ .001), with 47.6% of male victims in that category versus 16.7% of all female victims. Higher proportions of females (compared to males) made up the victims in both the 14-17 and 18 and older age groups. Only 10.7% of male victims were between the ages of 14 and 17 and 41.7% were 18 and older, compared to 23.8% and 60% of female victims within those respective age ranges.

Table 8: Characteristics of Sexual Assault by Victim Age and Gender N=1759

	FEMALE					
	0-13 N=296		**14-17 N=420**		**18 and Older N=1053**	
	N	**%**	**N**	**%**	**N**	**%**
Non-Stranger	223	75.3	290	69.1	682	64.8
Vaginal Penetration	213	72.0	373	88.8	911	86.5
Anal Penetration	73	24.7	112	26.6	356	33.8
Oral Copulation	67	22.6	176	41.9	475	45.1
	MALE					
	0-13 N=57		**14-17 N=12**		**18 and Older N=47**	
	N	**%**	**N**	**%**	**N**	**%**
Non-Stranger	45	78.9	9	75.0	14	29.8
Anal Penetration	31	54.4	9	75.0	26	55.3
Oral Copulation	11	19.3	8	66.7	36	76.6

As Table 8 shows, most female victims younger than 13 knew their assailant, with approximately 75.3% of these victims assaulted by a non-stranger compared to 69.1% of victims

between the ages of 14 and 17 and 64.8% of victims 18 and older (X^2=20.78, p ≤ .001). A greater proportion of male victims 13 or younger knew their assailants; 78.9% of these victims were assaulted by non-stranger assailants, while only 29.8% of male victims 18 and older knew their assailant (X^2=37.24, p ≤ .001). Of the 51 victims (male and female) who were 13 and younger with a stranger assailant, 28 (55%) were at the upper limit of that age group (13).

It follows that the sexual act perpetrated on victims aged 13 and under was notably different depending on gender. Vaginal penetration was attempted or achieved 72.0 % of the time with very young female victims, anal penetration was attempted or achieved with only 24.7% of these victims, and oral copulation with 22.6% of cases. Conversely, anal penetration was attempted or achieved with 54.4% of male victims 13 or younger, and oral copulation committed with only 19.3% of these victims. As will be discussed later, anecdotally, sexual assault investigators and criminalists noted that the finding of any assailant body fluid (e.g., saliva) on the body regions of very young victims was indicative that activity (fondling, kissing, etc.) occurred, and often met the legal definition of a "lewd or lascivious acts."

The time it took the victim to report the offense and submit to a medical examination showed substantial differences by gender and age of the victim. As Table 9 shows, only 18.4% of female victims 13 or younger had a PCI of 6 hours or less, compared to 28.9% of victims 18 and older. In fact, both females 13 and younger and between the ages of 14 and 17 had higher average PCIs than females 18 and older. Clearly, these children and their parents or caregivers took more time (on average) to report the crime and to submit to an examination than adult victims. The PCI for females 13 or younger ranged from 0 to 195 hours, *M*=28.9, *SD*=33.77, and the PCI for females between the ages of 14 and 17 ranged from 0 to 195 hours, *M*=26.0,

SD=28.09, while the PCI for females 18 and older was substantially faster, ranging from 0 to 202 hours, *M*=20.9, *SD*=22.83 (a mean time 27.6% faster than for victims 13 and younger).

Table 9: Post-Coital Interval by Victim Age and Gender N=1450

	FEMALE (N=1375)					
	0-13		**14-17**		**18 and Older**	
	N	**%**	**N**	**%**	**N**	**%**
Post-Coital Interval						
0-6 hours	32	18.4	72	21.0	248	28.9
6+ - 12 hours	38	21.8	62	18.1	177	20.6
12+ - 24 hours	37	21.3	94	27.4	197	23.0
24+ - 48 hours	35	20.1	59	17.2	145	16.9
48+ - 72 hours	20	11.5	33	9.6	57	6.6
72+ or more hours	12	6.9	23	6.7	34	4.0
	MALE (N=75)					
	0-13		**14-17**		**18 and Older**	
	N	**%**	**N**	**%**	**N**	**%**
Post-Coital Interval						
0-6 hours	5	20.0	1	12.5	11	26.2
6+ - 12 hours	2	8.0	2	25.0	9	21.4
12+ - 24 hours	5	20.0	3	37.5	7	16.7
24+ - 48 hours	8	32.0	0	0.0	9	21.4
48+ - 72 hours	4	16.0	2	25.0	3	7.1
72+ or more hours	1	4.0	0	0.0	3	7.1

Male victims exhibited similar patterns as females; only 28% of male victims 13 and under had a PCI of 12 hours or less versus 47.6% of males 18 and older. The PCI for male victims 13 or younger ranged from 0 to 104 hours, *M*=28.3, *SD*=23.15, while male victims 18 and older had PCIs ranging from 0 to 110 hours, *M*=24.7, *SD*=28.17.

Victims whose assailants were strangers had a lower average PCI (*M*=18.15, *SD*=18.58) than victims who knew their assailant (*M*=25.63, *SD*=28.30). Within the LASD sample, African

American victims had a lower average PCI (*M*=18.6, *SD*=19.29) than Hispanic/Latino victims (*M*=25, *SD*=31.51), while Caucasian victims (*M*=21.2, *SD*=22.23) were closer to the total sample average. Victims who self-reported being intoxicated had a somewhat lower average PCI (*M*=20.7, *SD*=21.39) than those who did not report being intoxicated at the time of the assault (*M*=24.0, *SD*=29.37). The average PCI was similar for victims who, regardless of injury, sustained during the assault, with injured victims having only a slighter lower average PCI (*M*=21.96, *SD*=24.53) than non-injured victims (*M*=22.69, *SD*=28.35).

Backlog Sample (BLS) Laboratory Testing

In all, 1,891 (97%) cases (of the total sample of 1,948) were first screened for various forensic markers. DNA analysis was performed on 67.8% (1320) of cases; of these cases, approximately 10% were not previously tested for markers. Over half (60%) of the cases were tested using the Y Chromosome screening method, while 37% were tested through conventional serology; in 3% of cases, both Y Chromosome and conventional serology were used to test samples. There were an additional three cases in which there was a sole source for the cases that did not fall within at least one of the designated body sources; these cases were tested using Y Chromosome screening.

Table 10 shows there were 1,891 total cases where screening markers were performed, with samples from the vagina (1,499) and external genitalia (1,308) predominating. Looking in the far left hand Source column, values indicate that samples from more than one location may have been tested from the same case. Oral samples were examined using one or more screening tests in 750 cases. Of these 750 cases, sperm was sought in 265 cases; of those 265 cases, 113 resulted in a positive finding of sperm for a rate of success of 42.6% (It is the success rate of finding the marker, divided by attempts that is shown in table; the number of attempts is

Table 10: Positive Markers for Cases Analyzed N=1891

Source	Sperm		P30		Y Chromosome		Acid Phosphatase		Amylase		Epithelial	
	N	%*	N	%	N	%	N	%	N	%	N	%
Oral (750)	113	42.6	83	57.6	177	37.5	125	6.4	10	90.9**	8	100
External Genitalia (1308)	188	42.0	79	39.1	365	44.1	171	48.3	35	41.7	41	100
Vaginal (1499)	236	45.5	98	38.7	478	51.2	214	55.2	39	73.6	11	78.6
Rectal (884)	70	25.5	24	20.2	204	34.6	73	32.0	18	50.0	15	93.8
Dried Secretion (786)	42	16.8	6	12.0	243	50.9	19	9.9	30	46.9	166	93.3

*Positive markers out of Attempts

**The presence of amylase in saliva explains the high rate of positives markers for oral swabbings.

not included in the table.). Notably, for conventional serological markers, the highest rate of (45.5%) of detecting sperm occurred with the 236 samples identified from the vagina, and the lowest rate (16.8%) occurred with the 42 identified dried secretion samples.

The highest rate of positive P30 findings (57.6%) occurred in samples taken from the oral cavity, and the lowest rate (12.0%) from dried secretion samples. Acid phosphatase (AP) was used to presumptively detect semen the highest rate of the time (55.2%) in the 214 samples identified from the vagina. The lowest rate of body fluid (acid phosphatase) identification (9.9%) occurred from the dried secretion samples. Amylase was only detected in 10 samples from the oral cavity, but had the highest rate of positive findings from that location (90.9%), and lowest rates from external genitalia (41.7%). Epithelial cells were positively detected at a 100% rate from both the oral cavity (8 samples) and external genitalia (41 samples). Epithelial cells were detected in dried secretions in the greatest number of samples (166) and the identification rate was still high at 93.3%. Epithelial cells were not sought as often compared to other markers, but the rate of positive findings was the highest of all markers.

The Y chromosome screening method (used to detect foreign male DNA) was employed the greatest number of times (478 samples identified from the vagina and 365 samples from external genitalia), and led to the highest rates of positive screening of foreign male DNA with samples taken from the vagina (51.2%) and dried secretions (50.9%). Still, when comparing detection rate success from different body locations against conventional serological markers, Y chromosome screening was usually superior to sperm, P30, and acid phosphatase screening methods, but not as high as amylase and epithelial cells methods.

Table 11 summarizes the percent time that various positive forensic marker tests led to informative DNA/STR test results. Taking the top category of tests that screened positive for

Table 11: DNA/STR Analysis per Conventional Positive Markers

Source	Foreign DNA		Male DNA		Full Profiles		Partial Profiles	
	N	%	N	%	N	%	N	%
Sperm								
Oral (16)	6	37.5	4	25.0	2	12.5	5	31.3
External Genitalia (110)	100	90.9	97	88.2	82	74.6	26	23.6
Vaginal (190)	179	94.2	171	90.0	151	79.5	40	21.1
Rectal (41)	33	80.5	31	75.6	23	56.1	11	26.8
Dried Secretion (30)	28	93.3	27	90.0	16	53.3	15	50.0
P30								
Oral (12)	3	25.0	0	0.0	1	8.3	3	25.0
External Genitalia (58)	43	74.1	41	70.7	33	56.9	12	20.7
Vaginal (79)	65	82.3	63	79.7	52	65.8	15	18.9
Rectal (19)	11	57.9	10	52.6	7	36.8	6	31.6
Dried Secretion (5)	5	100.0	5	100.0	4	80.0	3	60.0
Acid Phosphatase								
Oral (16)	4	25.0	1	6.3	1	6.3	4	25.0
External Genitalia (82)	66	80.5	63	76.8	54	65.9	18	22.0
Vaginal (120)	109	90.8	105	87.5	96	80.0	22	18.3
Rectal (20)	13	65.0	12	60.0	9	45.0	5	25.0
Dried Secretion (10)	6	60.0	5	50.0	4	40.0	3	30.0
Amylase								
Oral (5)	0	0.0	--	--	--	--	--	--
External Genitalia (26)	15	57.7	11	42.3	10	38.5	5	19.2
Vaginal (27)	24	88.9	23	85.2	17	63.0	9	33.3
Rectal (13)	8	61.5	1	7.7	7	53.9	4	30.8
Dried Secretion (28)	25	89.3	25	89.3	15	53.6	14	50.0
Epithelial								
Oral (2)	0	0.0	--	--	--	--	--	--
External Genitalia (22)	12	54.5	12	54.5	10	45.5	4	18.2
Vaginal (7)	6	85.7	6	85.7	5	71.4	2	28.6
Rectal (7)	2	28.6	2	28.6	2	28.6	1	14.3
Dried Secretion (118)	80	67.8	60	50.9	42	35.6	49	41.5

sperm, vaginal sample swabs tested positive for sperm 190 times and from oral swabs only 16 times. These 190 positive sperm cases from the vagina yielded foreign DNA in 179 cases (94.2% of the time); in contrast, samples from the oral area that tested positive for sperm yielded DNA/STR results in just 6 cases (37.5% of the time). DNA/STR results showed male DNA was present in those samples testing positive for sperm taken from the vagina 90% of the time and oral cavity sperm yielded male DNA results only 25% of the time.

Throughout the table, positive markers found in the vagina yielded DNA/STR results the highest percent of the time, from external genitalia a slightly lower (but still substantial) percent of the time, and full and partial profiles were developed accordingly. Markers taken from the oral cavity had very poor success in yielding DNA/STR results and according profiles. P30 and acid phosphatase screening methods yielded positive DNA/STR results from external genitalia and the vagina many times and yielded DNA a moderately high percent of the time (~75% to 90%). Amylase that was detected in the vagina and dried secretions yielded positive DNA/STR results almost 90% of the time. Samples testing positive for epithelial cells had the lowest overall success in yielding DNA results (mostly in dried secretions).

For amylase and epithelial cells, it is the percent of full and partial profiles combined in dried sections that is noteworthy. For dried sections tested for different markers throughout the table, a substantially higher percent of samples yield partial profiles, sometimes equaling (or exceeding) the number and percent of full profiles. Given the high percentage of dried secretions containing saliva, we also followed up on the data in Table 10 that showed that dried secretions yielded amylase (30 cases) and yielded epithelial cells (166 cases). Those positive amylase screening tests then yielded DNA/STR results 89% of the time, yielding 15 full profiles and 14

partial profiles (Table 11). The epithelial cell markers led to identification of DNA 68% of the time, yielding 42 full profiles and 49 partial profiles.

Table 12: DNA/STR Results on Conventionally Screened Body Samples N=488

Source	Foreign DNA		Male DNA		Full Profiles		Partial Profiles	
	N	%	N	%	N	%	N	%
Oral (34)	8	23.5	4	11.8	1	2.9	8	23.5
External Genitalia (194)	137	70.6	130	67.0	102	52.6	43	22.2
Vaginal (254)	216	85.0	207	81.5	174	68.5	50	19.7
Rectal (85)	55	64.7	52	61.2	39	45.9	19	22.4
Dried Secretion (205)	152	74.4	128	62.4	81	39.5	85	41.5

Table 12 summarizes the 488 cases in which positive conventional serological methods were then tested using DNA/STR procedures for foreign DNA, male DNA, and shows the number (and percent) of time they yielded Full and Partial DNA Profiles. Reading the top row across left to right: there were 34 total DNA/STR tests performed on oral samples where conventional serological marker tests were positive; in 8 instances (23.5% of the time) foreign DNA was found, in 4 instances (11.8% of attempts) male DNA was found, in 1 case (2.9%) a full DNA profile was determined, and 8 partial profiles were found in 23.5% of cases. It is clear that oral samples yielded useful DNA results a very low percent of the time. At the other end of the extreme, samples taken from the vagina and testing positive for a conventional serological marker yielded foreign and male DNA over 80% of the time, full profiles over two-thirds of the time, and partial profiles in almost 20% of cases. DNA/STR tests performed on samples taken external genitalia, rectal and dried secretions and testing positive for conventional markers were

successful about 60% to 70% of the time, yielded full profiles 40% to 50% of the time, and partial profiles 20% to 40% of the time.

Table 13 displays the results of 757 DNA/STR tests performed where the Y chromosome screening method had tested positive for foreign male DNA. The results were comparable to tests employing conventional serology screening methods. More than double the screening tests were performed using Y chromosome testing on oral samples, but success rates in identifying foreign and male DNA then using STR analysis were less (sample size, however, was quite small). The Y chromosome technique was marginally more successful, leading to the identification of foreign DNA of samples taken from the external genitalia, vagina, and dried secretions, but less successful for rectal samples. The same pattern was evident in identifying male DNA. The Y chromosome technique was slightly more successful in leading to full profiles in external genitalia and dried secretion samples, but somewhat less successful developing full profiles from vaginal and rectal samples. Success in developing partial profiles was mixed as well; Y chromosome techniques had greater success with external genitalia and vaginal samples, but less success with rectal and dried secretion samples.

Table 13: DNA/STR Results on Y Chromosome Screened Body Samples N=757

Source	Foreign DNA		Male DNA		Full Profiles		Partial Profiles	
	N	%	N	%	N	%	N	%
Oral (82)	12	14.6	6	7.3	4	4.9	8	9.8
External Genitalia (282)	216	76.6	194	68.8	155	60.0	74	26.2
Vaginal (333)	296	88.9	275	82.6	220	66.1	83	24.9
Rectal (157)	91	58.0	83	52.9	68	43.3	25	15.9
Dried Secretion (275)	215	78.2	192	69.8	135	49.1	95	34.5

Table 14 presents data that combines the results for both conventional serology and Y chromosome screening techniques, and shows the rates for developing foreign DNA, male DNA, and full profiles are greatest for samples taken from the vagina, and least successful for samples taken from the oral cavity. Samples taken from the external genitalia and dried secretions have moderately good success, but rectal samples are generally less successful. The reader will note the data contained in Tables 12 and 13 do not necessarily add to the data in Table 14 because some cases included more than one type of screening method.

Table 14: DNA/STR Results on Total Body Samples N=1284

Source	Foreign DNA		Male DNA		Full Profiles		Partial Profiles	
	N	%	N	%	N	%	N	%
Oral (131)	23	17.6	12	9.2	7	5.3	17	13.0
External Genitalia (508)	369	72.6	339	66.7	271	53.3	123	24.2
Vaginal (630)	538	85.4	505	80.2	413	65.6	144	22.9
Rectal (264)	157	59.5	146	55.3	118	44.7	48	18.2
Dried Secretion (509)	390	76.6	340	66.8	226	44.4	196	38.5

Tables 15 - 16 provide various data on the entry of DNA Profiles into the CODIS database and corresponding results. First, Table 15 displays how PCI is related to the success of finding foreign DNA and uploading DNA profiles into CODIS, using both conventional serological and Y chromosome techniques. The success at finding foreign DNA descends as PCI increases for both conventional and Y chromosome techniques for up to 72 hours, but Y chromosome screening has greater success after 24 hours and up to 72 hours. In terms of CODIS Uploads, conventional serology has slightly greater success up to 12 hours, but for 12+ hours and upwards, the Y chromosome technique appears to have the advantage.

Table 15: DNA/STR Results and CODIS Uploads by Conventional/Y Chromosome Screening per Post-Coital Intervals

	Conventional			
Hours	**Foreign DNA N=363**		**CODIS Upload N=344**	
	N	**%**	**N**	**%**
0 – 6 (96)	85	88.5	60	65.2
6+ - 12 (88)	77	87.5	53	65.4
12+ - 24 (90)	76	84.4	50	56.8
24+ - 48 (58)	41	70.7	28	50.9
48+ - 72 (19)	10	52.6	7	38.9
72+ or more (12)	6	50.0	5	50.0
	Y Chromosome			
Hours	**Foreign DNA N=612**		**CODIS Upload N=592**	
	N	**%**	**N**	**%**
0 – 6 (179)	156	87.2	108	62.4
6+ - 12 (133)	121	91.0	74	57.8
12+ - 24 (146)	125	85.6	91	63.6
24+ - 48 (94)	78	83.0	50	54.3
48+ - 72 (37)	27	73.0	17	50.0
72+ or more (23)	18	78.3	12	54.5

DNA testing was performed on about two-thirds of kits examined (in both the BLS and NBLDS), foreign DNA was detected in slightly more than half the samples, and CODIS uploads occurred in slightly more one-third. Hits occurred in 17.8% of the 1,948 cases, and in 49.6% of the uploads, in the backlog sample; hits occurred in 14.8% of the 371 cases, and 39.0% of the uploads, from the non-backlog sample.. The following paragraph and table address the number and variety of these hits in more detail.

Table 16 shows the total (left-hand column) and various types of hits for the backlog (BLS) and non-backlog samples (NBLDS) resulting from CODIS uploads. First, under Offender

Hits, the DNA profile derived from the SAK may have matched that of a previously unknown suspect ("cold hit") or a named suspect ("warm hit"), or have matched the profile of the person arrested and/or convicted *of the very crime* from which the forensic sample originated ("conviction hit"). In the latter situation, the individual's profile was in the database as a result of that person's arrest and/or conviction for the sexual assault from which the matching sample originated. The right hand side of the table enumerates *case-to-case hits,* illustrating the percent time an uploaded DNA profile from the SAK matched that of a DNA profile from another case (sexual assault or otherwise) previously entered into CODIS. In some of these matches the sexual assault kit sample matched that of a forensic DNA sample collected in another case *and* that of a person in the database (Known Offender column); in others, it only matched a sample recovered from another case, but the offender was not identified (Unknown Offender column).

Table 16: CODIS Hit Type for Backlog and Non-Backlog Samples

	OFFENDER HITS				CASE-TO-CASE HITS			
	COLD/WARM		CONVICTION MATCH		KNOWN OFFENDER		UNKNOWN OFFENDER	
	N	%	N	%	N	%	N	%
Backlog (Hits)								
Total (347)	230	66.3	90	25.9	20	5.8	7	2.0
LAPD (220)	136	61.8	64	29.0	17	7.7	3	1.4
LASD (127)	94	74.0	26	20.5	3	2.4	4	3.2
Non-Backlog (Hits)								
Total (55)	40	72.7	3	5.5	2	3.6	10	18.2
LAPD (38)	24	63.2	3	7.9	2	5.3	9	23.7
LASD (17)	16	94.1	0	0.0	0	0.0	1	5.9

As noted earlier, hits (of all varieties) in the BLS occurred in about half (49.6%) of the uploads,with the rate of hits comparable for the two agencies. The hit rate in the NBLS was less,

averaging about 39.0% for both agencies due largely to the fact that only about six months had elapsed between completion of the analysis and tabulation of hits. There were almost twelve times as many offender hits as there were cases-to-case hits in the BLS, with most being of the 'cold/warm' variety (discussed in detail below). The ratio of offender hits to case-to-case hits was much less for the non-backlog sample (a ratio of about 3.6 to 1).

The hit data we obtained did not differentiate between 'warm' (investigators had a named suspect) and 'cold' (the offender was unknown) hits. We did know from case files, however, if the alleged assailant was a stranger or a non-stranger to the victim. For the 230 cold/warm hits, 64% were from cases where the suspect was a non-stranger, 30% where the suspect was a stranger, and 6% unknown relationships. From these data, we inferred most of the offender hits (64%) were 'warm' (named suspect), and only about 30% were stranger hits we inferred to be 'cold.' For the remaining cases, the hit type was unknown. For the 'cold/warm' offender hits in the NBLDS, about the same percentage (46%) involved stranger as they did non-strangers (47.5%), and were therefore evenly distributed between cold and warm hits. The higher percentage of cold hits is probably due to the fact that many of the older, stranger cases had been previously examined and were no longer part of the BLS. For the moment, we skip over the 'conviction matches' to the case-to-case hits. Only 7.8% of the hits in the BLS were case-to-case hits; about three-quarters of which (74%) were also linked to known offenders (see above definition). The reader will note the nature of case-to-case hits in the NBLDS were different and most were of the unknown offender variety.

Informal discussions with criminalists and investigators during the study indicated that many of the DNA profiles resulting in offender hits were potentially hitting upon profiles collected from individuals *who had been arrested and convicted in the present case*. Because a

substantial percentage of cases in our sample involved non-strangers that resulted in the arrest and conviction of the defendant, these were not 'cold' hits but hits where the suspect was known and his DNA was already included in CODIS. In the backlogged cases, the testing of the sexual assault kit resulted in a DNA profile that was entered into CODIS, which subsequently hit upon the preexisting DNA profile of the defendant in that particular case. (These 'conviction matches' could actually be considered a type of 'warm' hit noted previously since they also involved matches with offenders who had been previously identified).

California has laws dating back to the 1998 DNA Act (§ 295, subd. (b)(2)) that mandated the collection of DNA from individuals convicted of sex offenses and other serious crimes and entry of the DNA profile into CODIS. Proposition 69, passed on November 2, 2004, provided that adults arrested on or after November 3, 2004 for murder, voluntary manslaughter, a felony PC 290 sex offense, or an attempt to commit one of those crimes were subject to DNA collection. As of January 1, 2009, adults arrested for <u>any</u> felony offense are subject to DNA collection and entry into CODIS.*

For our purposes, the LASD and LAPD crime laboratories could tell us those cases in our samples where 'hits' were the result of these 'conviction matches'. For both agencies, 90 (25.9%) of all hits in the BLS were 'conviction matches'. A higher percentage of LAPD hits were conviction matches (29.0%) than for LASD (20.5%). Consequently, in between 20 - 30%

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* The reader should also be aware that the constitutionality of Proposition 69 is in question. On August 4, 2011, the California Court of Appeals, First District, Division 2, ruled the collection of DNA, absent a 'judicial determination of probable cause to believe the defendant committed the offense for which he was arrested' was a violation of the Fourth Amendment of the United States Constitution and reversed a defendant's conviction. (People v. Buza, Cal: Court of Appeals, 1st Appellate Dist., 2nd Div., 2011). If a higher court were to affirm this ruling it would presumably focus on collection of DNA from arrestees and would not affect one of the other principal thrusts of Proposition 69, which was to expand the collection of DNA from convicted defendants.

of the hits resulting from our BLS, the suspect was known, had been arrested and convicted in this same sexual assault, and his DNA entered into CODIS. The DNA profile developed from evidence in the sexual assault kit essentially 'duplicated' the DNA that had already been entered into CODIS by virtue of a prior conviction. The DNA profile from the backlogged kit, therefore, did not contribute a new name or DNA profile that was not otherwise included in CODIS. The number and percent of 'conviction matches' in the NBLDS were far lower, and none of the 16 hits in the NBLDS for LASD were conviction matches. The much lower percentage of conviction matches for the NBLDS for both agencies reflects the fact these were recent cases and the sufficient time had not elapsed for the justice system to process/adjudicate the defendant .

The overall 'case-to-case hit' rate was three times higher for the NBLDS than for the BLS, particularly involving unknown offenders. This was primarily the result of a higher percent of unknown offender case-to-case hits in the NBLDS, compared with known offender case-to case hits. We believe this is due to the fact that a higher percentage of these cases involved strangers to begin with, and that less time had passed to allow for these cases to be linked to a known offender. Due to the greater passage of time in the backlog sample, new laws widening the net of offenders for which DNA samples were collected, and offenders having more time to commit additional crimes would have increased the likelihood they would have been associated with a case.

Table 17 details the number and type of full and partial DNA profiles that were uploaded to CODIS. In the far left-hand column, the numbers in parentheses indicate the total number of full (numerator) and partial (denominator) profiles developed for the BLS and NBLDS kits. Reading the top row, in the BLS, there were a total of 804 full profiles and 477 partial profiles

developed; single full profiles constituted 71.0% of all the profiles uploaded, and single partial profiles made up 21.2% of the uploaded profiles. Multiple full and partial profiles made up just 2.4% and 0.6 % of the uploaded profiles respectively. Moving to the NBLDS, there were a total of 155 full profiles and 102 partial profiles developed. Of these profiles, 72.3% of total profiles uploaded were single full profiles and 14.2% were single partial profiles. Multiple full (3.2%) and multiple partial (0.9%) profiles made up the remaining uploaded profiles.

Table 17: Full and Partial DNA Profiles Uploaded to CODIS

	Single Full Profiles		Multiple Full Profiles		Single Partial Profiles		Multiple Partial Profiles	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Backlog (BLS)								
Total (804/477)	571	71.0	19	2.4	101	21.2	3	0.6
LAPD (517/288)	365	70.6	10	3.5	57	19.8	2	0.7
LASD (287/189)	206	71.8	9	4.8	44	23.3	1	0.5
Non-Backlog(NBLDS)								
Total (155/102)	112	72.3	5	3.2	22	14.2	1	0.9
LAPD (89/54)	68	76.4	3	3.4	13	24.1	--	--
LASD (66/48)	44	66.7	2	3.0	9	18.8	1	2.1

There were only five cases in which both full and partial profiles were uploaded; for those five cases, three had offender only hits.

Criminal Justice Disposition Testing

The reader will recall that one of the objectives of the study was to examine the dispositions of cases that had been backlogged with another sample of cases that had not been backlogged. Resources did not permit tracking the entire backlog sample, so we took a random 'disposition' subsample (BLDS). First of all, Table 18 shows that the characteristics of the total

backlog sample (BLS) were very similar to the backlog disposition subsample (BLDS) and not significantly different along key characteristics. Both samples show a clear majority of female victims (about 94% of victims) who were assaulted by single assailants (between 81.6% and 83.3%), a majority of whom were known to their victims (65.3% in the BLS and 66.3% in the

Table 18: Backlog Cases: A Comparison of Population and Sample Characteristics

	Total Sample N=1948		**Disposition Sample N=371**		
	N	**%**	**N**	**%**	X^2
Female Victim	1826	93.7	350	94.3	.140
Victim Race (LASD Only) ±					3.201
African American	194	24.0	38	21.0	
Caucasian	225	27.9	65	35.9	
Hispanic/Latino	315	39.0	72	39.8	
Victim Intoxication (LASD Only) ±	281	34.8	71	37.4	.976
Victim Injury (LASD Only) ±	573	71.0	139	73.2	.000
Single Assailant	1589	81.6	309	83.3	1.183
Non-stranger Assailant	1273	65.3	246	66.3	.215
Y Chromosome	1139	60.1	210	58.5	.338
DNA Testing	1320	67.8	240	64.7	.099
CODIS Uploads	699	35.9	141	38.0	.443

± For LASD Only, Total Sample N=807; Disposition Sample N=190
*$p \leq .05$

BLDS). Victim ages for the two samples were comparable (t=-.557, p>.05) and, on average, only slightly above 22 years of age. A slightly higher percent of victims' self-reported alcohol/drug use in the BLDS (37.4%) than in the BLS (34.8%). Y Chromosome testing was employed for testing markers in approximately 60% of cases, while DNA testing was performed in over two-thirds of cases, for both samples.

Next, the BLDS was compared with the Non-Backlog Disposition Sample (NBLDS) (Table 19). Both samples were similar, being composed primarily of female victims who were of

a comparable average age of about 22 (t=-.406, p>.05) and had been assaulted by a single assailant. DNA testing was performed on 68.9% of the BLDS compared with 64.7% of the NBLDS. Two substantial differences were noted: the higher rate of victims' self-reporting alcohol/drug use in the NBLDS (32.5%) compared with the BLDS (21.3%), and the percent of victims who were injured in the NBLDS (80.0%) compared with the BLDS (73.2%). Only the latter difference, however, was statistically significant. If cases where victims sustain injuries are more likely to be investigated, then it follows those cases would have a higher chance of having been investigated and therefore would not have been included in the backlog.

Table 19: Backlog and Non-Backlog Criminal Justice Disposition Samples

	Backlog (BLDS) N=371		**Non-Backlog(NBLDS) N=371**		
	N	**%**	**N**	**%**	X^2
Female Victim	350	94.3	339	91.4	.137
Victim Race (LASD Only) ±					
African American	38	21.0	40	26.1	5.740
Caucasian	65	35.9	38	24.8	
Hispanic/Latino	72	39.8	75	49.0	
Victim Intoxication (LASD Only)±	79	21.3	120	32.5	.990
Victim Injury (LASD Only)±	139	73.2	152	80.0	4.380*
Single Assailant	309	83.3	309	83.3	1.183
Non-stranger Assailant	246	66.3	208	56.1	7.912**
Y Chromosome	209	56.3	2	0.5	286.941***
DNA Testing	255	68.9	240	64.7	2.258
CODIS Uploads	141	38.0	139	37.5	.007

± For LASD Only, N=190
*p≤.05, **p≤.01, ***p≤.001

Significant differences were also found as to whether or not the assailant was known to the victim; the BLDS had a significantly higher percent (66.3%) of cases in which there was a non-stranger assailant compared to the NBLDS (56.1%). This 10% difference may be attributed

to the fact that the NBLDS is representative of the current laboratory caseload where laboratory policy is to test all kits. The BLDS consisted of cases where investigators (and prosecutors) had decided not to request laboratory testing because the case contained problematic features, often the result of the victim having a prior relationship with the assailant with attendant questions of consent, and DNA testing was predicted not likely to be helpful. Consequently, over the time period when the backlog grew, the few SAKs that were tested (and not placed in the backlog) were primarily stranger assaults and those where investigators thought the SAK might be helpful. It should be noted that testing of SAKs in-house by the LAPD and LASD crime laboratories did not employ Y chromosome screening (except in two instances), hence the highly significant difference in testing rates.

Tables 20 and 21 examine the number and percent of criminal justice dispositions that occurred for the non-backlog and backlog samples prior to and after the SAK was examined. Attention will be first paid to the sample of 371 cases in the Backlog Sample (BLDS). Of the 371cases, 147 (39.6%) resulted in arrest, 81 (21.8%) resulted in charges being filed, and 65 (17.5%) resulted in conviction. In fact, 55% of the arrests resulted in the filing of charges, and 80% of the filings resulted in convictions. All of the 147 arrests occurred before the SAK testing took place. The lower right hand quadrant of Table 20 shows no arrests, one filing, and two convictions occurred after testing. These latter, post-testing, actions involved two separate cases. The first case involved both a filing and a conviction after testing, and the second case involved only a conviction after kit testing. In both cases, the testing of the kits appears to have been of questionable relevance to the disposition. In one case, despite testing positive for sperm on rectal and dried secretion samples, DNA testing was not conducted. For the other case, Y

Chromosome testing found positive markers on several samples, yet no foreign DNA was found when the samples were tested using STR.

Table 20: Pre and Post SAK Testing Criminal Justice Dispositions

	Criminal Justice Outcome Prior to SAK Test		Criminal Justice Outcome After SAK Test	
	N	**%**	**N**	**%**
Non-Backlog (NBLDS) (371)				
Arrests	130	35.0	8	2.2
Charges Filed	81	21.8	19	5.1
Convictions	22	5.9	42	11.3
Backlog (BLDS) (371)				
Arrests	147	39.6	--	--
Charges Filed	81	21.8	1	.3
Convictions	65	17.5	2	.5

For the Non-Backlog Disposition Sample (NBLDS) of 371 cases, 130 (35.0%) resulted in arrest, 81 (21.8%) in charges being filed, and 22 (5.9%) in convictions before SAK testing took place. Eight arrests (2.2%), 19 filings (5.1%), and 42 convictions (11.3%) occurred after testing. For the NBLDS, the vast majority of arrests (94.2%) and most filing of charges (81%) occurred prior to testing; however, nearly 66% of convictions occurred after the kits had been tested. The percent of tests occurring prior to conviction represents a major difference between the BLDS and the NBLDS.

Table 21 provides a breakdown of the DNA testing performed on the 69 cases in the upper right quadrant of Table 20 where criminal justice dispositions occurred after SAK testing was performed. Foreign DNA was found in all (8) arrests, in 63.2% of the cases where charges

were filed, and in 73.8% of cases that resulted in conviction. Foreign DNA was not found in one of the convictions, and no DNA tests were performed in 7 (36.8%) of the cases where charges were filed, and in 10 (23.8%) of the cases resulting in convictions. While foreign DNA was found in most of the cases resulting in charging and conviction, no DNA tests were performed in between a quarter and a third of these successful prosecutions.

Table 21: NBLDS: Foreign DNA in Case Dispositions after SAK Testing

	Foreign DNA Found		Foreign DNA Not Found		No DNA Test	
	N	%	N	%		
Arrests	8	100	--	--		
Charges Filed	12	63.2	--	--	7	36.8
Convictions	31	73.8	1	2.4	10	23.8

More than 90% (92.5%) of convictions secured prior to testing in the BLDS were achieved through plea bargaining, while the two convictions secured after testing occurred through trial, while 100% of convictions occurring before testing in the NBLDS were through plea bargaining and 89.2% of convictions secured after testing were by plea bargain. While this difference is not statistically significant, it shows that the testing of samples occurs more often with cases going to trial. This could mean either that testing was done because the case was going to trial, or that cases with tested SAKs were then more likely to go to trial.

In the BLDS, all but two cases where conviction occurred (96.4%) resulted in a sentence of incarceration (no table included for these data). Of these cases, approximately 42% of sentences were for one year or less, while 35.6% of sentences ranged from 2 to 5 years. Thirty-nine percent of cases leading to conviction also included some period of probation, with a single case in which probation was the sole sentence.

For the NBLDS, all but four cases where conviction occurred (93.0%) resulted in incarceration – a rate very comparable to the BLDS. For the NBLDS where sentences were awarded prior to DNA test results, the rate of incarceration was 95.2% and for sentences issued after receiving DNA results, the rate of incarceration was 91%. Accordingly, DNA test results did not seem to influence the incarceration decision.

In terms of the length of sentence in the NBLDS, the severity of sentences was a bit harsher when DNA results were present. Sentences for periods less than one year were comparable (about one-third of cases) for cases with and without DNA testing. At the higher end, however, the percent of cases where defendants received sentences in the 6-20 year range were more than double (46.7% vs. 20.0%) for cases with DNA test results compared with those without DNA test results. These higher end sentencing differences were not statistically significant, however. More than a quarter (28.4%) of cases resulting in convictions also included sentences of probation, including four cases in which probation was the sole sentence.

Binary logistic regression was used to test whether significant differences existed between the backlog and non-backlog samples, as well as to determine what case characteristics were predictive of positive criminal justice outcomes. The outcomes were simple dichotomous variables coded 0=No, 1=Yes for each outcome (arrest, charges filed, conviction) that were tested separately. To test for any differences between the backlog and non-backlog samples, a dummy variable was created in which backlog cases were coded as 0 and non-backlog cases coded as 1. Apart from victim age, which was kept as raw age scores, dummy coding was used for all other variables in the model with 0=No and 1=Yes for the following: Female Victim, Black Victim, Hispanic Victim, White Victim, Victim Intoxication, Single Assailant, Stranger Assailant, and Victim Injury. Given the amount of missing data for the LAPD cases concerning the

characteristics to be used in the model, the decision was made to only use the LASD cases from both samples. It should be noted, however, that all regression models were first run using the entire disposition sample and that the findings for the entire sample were comparable to the findings for the LASD only sample.

Table 22: Logistic Regression of Criminal Justice Outcomes by Case Characteristics

	Arrest		**Charges Filed**		**Conviction**	
	B	***Exp(B)***	***B***	***Exp(B)***	***B***	***Exp(B)***
Backlog	-.209	.811	.081	1.085	.008	1.008
Victim Age	.010	1.010	.005	1.005	-.003	.997
Victim Gender	-.957	.384	-1.327	.265	-1.033	.356
Black Victim	-.621	.538	-1.302	.272	-1.302	.272
Hispanic Victim	-.276	.759	-.994	.370	-.662	.516
White Victim	-.799	.450	-1.348	.260	-.842	.431
Victim Intoxication	-.600*	.549	-.788**	.455	-.770*	.463
Single Assailant	.072	1.075	.580	1.787	.187	1.206
Stranger Assailant	-1.231***	2.92	-1.462***	.232	-1.313**	.269
Victim Injury	.234	1.264	.127	1.135	-.038	.963

*p≤.05, **p≤01, ***p≤.001

Table 22 presents the results of the logistic regression analysis for each criminal justice outcome. No significant differences were found between the backlog and non-backlog samples for any of the three dispositions; victim age, gender, race, injury, and whether or not there was more than one assailant was also not related to dispositions. Two variables, however, were consistently predictive of achieving each of the criminal justice dispositions: victim intoxication and if the assailant was known to the victim. Cases in which victims had self-reported alcohol or drug use at the time of the assault were less likely to result in the arrests of, charges being filed against, and conviction of the assailants. Similarly, but exhibiting an even greater probability,

was the decreased likelihood of achieving arrests, having charges filed, and convictions when the assailant was a stranger to the victim. The victim self-reporting alcohol or drug use may be interpreted by investigators as reducing the legitimacy and credibility of the victim. Even with the problems associated with victims having a prior relationship with the alleged assailant, knowing the identity of the assailant still exerted a powerful and positive influence over decisions to arrest, file charges and achieve convictions. Surprisingly, victim injury did not emerge as a significant predictor variable for dispositions as noted in prior sexual assault studies.

Of primary concern to our project is the failure to find a significant difference between the backlogged and non-backlogged samples. Given that there were virtually no dispositions (only 2 of 371 cases) that occurred after kit testing for the backlogged sample, we would have expected to find a greater likelihood for arrests, charges, and convictions for the non-backlogged sample where DNA results were available in a majority of cases *prior* to these dispositions. This, however, was not the case. This finding may be due to the relatively small number of dispositions in the sample and the even smaller number of cases where testing yielded foreign DNA prior to dispositions. Ultimately, this finding does not necessarily mean that DNA results do not have a role to play in achieving dispositions, but clearly there are sexual assault cases where other evidentiary factors are sufficient to achieve successful case outcomes without requiring DNA results.

Stranger and Non-Stranger Cases

Given that non-stranger offenses were found to have a greater probability of resulting in arrests, charges being filed, and convictions, a closer look at the characteristics of non-stranger and stranger offenses is warranted. Such an examination indicates there are substantial differences between non-stranger and stranger offenses in this study in terms of characteristics of

the offenses, frequency of use of DNA evidence, and criminal justice outcomes. Table 23 displays several key variable frequencies for the total disposition sample, distinguished by the relationship between the assailant and the victim. Then, the next two tables further examine these differences within the two disposition samples (BLDS and NBLDS).

Table 23: Outcomes per Victim-Assailant Relationship for Total Disposition Sample

	Non-Stranger N=454		**Stranger N=214**	
	N	**%**	**N**	**%**
Victim Intoxication*	87	34.5	45	50.6
Physical Violence*	134	53.2	62	69.7
Victim Injury*	190	75.4	73	82.0
Vaginal Penetration	362	79.7	164	76.6
Anal Penetration	156	34.4	69	32.2
Oral Copulation	194	42.7	95	44.4
Non-Genital Acts	297	65.4	119	55.6
CODIS Upload	153	33.7	108	50.5
Arrest	217	47.8	43	20.1
Charges Filed	144	31.7	24	11.2
Conviction	108	23.8	13	6.1

* For LASD Only, Non-Stranger N=252; Stranger N=89

The average age of non-stranger victims was 20.9 (*SD*=12.63), while the average age of stranger victims were substantially older at 27.4 (*SD*=13.93). Table 23 shows that victims of stranger offenses were subjected to higher rates of injury and violence, while non-stranger victims experienced higher rates of non-genital acts. The lower mean age of non-stranger victims is at least partly attributable to the greater likelihood of more youthful victims (many 13 years and younger) knowing their assailants and no doubt extends to the finding of higher rates of non-genital acts being conducted. A higher percent of stranger victims also self-reported

intoxication compared with non-stranger victims, and the average PCI for non-stranger victims was 26.7 hours (*SD*=28.8), while the mean PCI for stranger victims was 17.4 (*SD*=23.79). Stranger victims reported more quickly, by more than a third. Therefore, in terms of a composite profile, stranger victims were older, injured more often, and presented themselves for examination much quicker, but they were also more often compromised (intoxicated) at the time of the assault.

Partly as a result of the faster reporting and examination, the stranger victim investigations experienced successful CODIS uploads at a higher rate than non-stranger investigations. The higher CODIS upload rates may also indicate that investigators were more inclined to classify the alleged sexual assault as a crime (a requirement for uploading). The lower rows of the table break down criminal justice processing rates by victim/suspect relationship and substantial differences are apparent. The arrest, charging and conviction rates for non-stranger crimes are substantially higher than for stranger crimes. We would expect arrest rates to be higher for crimes involving non-strangers, but charging and conviction rates are typically higher for crimes involving strangers. This is not the case in this sample. The rates at which arrests are charged, and charged offenses result in convictions, continue to be higher for non-stranger sexual assaults.

We next examined if these stranger/non-stranger trends were consistent for both the backlog sample (BLDS) and the non-backlog sample (NBLDS). At base, rates were similar except for the criminal justice dispositions of stranger cases in the NBLDS. First, looking at the BLDS sample (Table 24), while the age disparity between stranger and non-stranger victims is less pronounced (the average age of the non-stranger victim was 21.9 (*SD*=12.99), while the average age for stranger victims was 24.9 (*SD*=10.88)), most other means and frequencies were

similar. The average PCI for non-stranger victims was 27.5 hours (*SD*=29.99), while the average PCI of stranger victims was 15.8 (*SD*=19.57). The victim intoxication difference also remains pronounced. The difference in rates of CODIS uploads is not quite as great. The criminal justice processing rate differences are even greater, however, with much higher arrest, charging and conviction rates for the non-stranger cases. The substantial reduction in processing rates for stranger sexual assaults in the backlog case sample may reflect the fact that the more 'prosecutable' cases were pursued (and tested) at the time, and those cases remaining in the SAK backlog were simply not as strong.

Table 24: Outcomes per Victim-Assailant Relationship for BLDS

	Non-Stranger N=246		**Stranger N=91**	
	N	**%**	**N**	**%**
Victim Intoxication*	48	35.3	23	52.3
Physical Violence*	80	58.8	29	65.9
Victim Injury*	101	74.3	33	75.0
Vaginal Penetration	205	83.3	67	73.6
Anal Penetration	82	33.3	33	36.3
Oral Copulation	100	40.7	37	40.7
Non-Genital Acts	159	64.6	51	56.0
CODIS Upload	87	35.4	43	47.3
Arrest	122	49.6	12	13.2
Charges Filed	70	28.5	5	5.5
Conviction	56	22.8	4	4.4

* For LASD Only, Non-Stranger N=136; Stranger N=44

The next table (Table 25) distinguishes non-stranger and stranger data for the non-backlog sample (NBLDS). The age disparity is more pronounced; the average non-stranger victim age was 19.6 (*SD*=12.08), while the average age for stranger victims was 29.2 (*SD*=15.61)

– practically a ten-year difference. The violence and injury rate differences were also greater. The average PCI for non-stranger victims was 25.8 hours (*SD*=27.36), while the average PCI of stranger victims was 18.64 (*SD*=26.56). The CODIS upload rate difference (more than 20 percentage points) is much greater for the NBLDS. This suggests a higher percentage of the stranger cases were classified as actual crimes in the NBLDS (where forensic testing was performed currently) than the BLDS where forensic testing occurred long after the incident.

Table 25: Outcomes per Victim-Assailant Relationship for NBLDS

	Non-Stranger N=208		**Stranger N=123**	
	N	**%**	**N**	**%**
Victim Intoxication*	39	33.6	22	48.9
Physical Violence*	54	46.6	33	73.3
Victim Injury*	89	76.7	40	88.9
Vaginal Penetration	157	75.5	97	78.9
Anal Penetration	74	35.6	36	29.3
Oral Copulation	94	45.2	58	47.2
Non-Genital Acts	138	66.3	68	55.3
CODIS Upload	66	31.7	65	52.8
Arrest	95	45.7	31	25.2
Charges Filed	74	35.6	19	15.4
Conviction	52	25.0	9	7.3

* For LASD Only, Non-Stranger N=116; Stranger N=45

Examination of the criminal justice processing rates shows major differences between the BLDS and the NBLDS. While cases with a non-stranger assailant were comparable between the BLDS and NBLDS, examination of the criminal justice processing of cases with a stranger assailant showed significant differences at each level of disposition. Stranger cases in the NBLDS had a significantly greater arrest rate (X^2=4.70, $p \leq .05$) than such cases in the BLDS,

with the rate practically double (25.2% compared with 13.2%). The charging rate for cases in the NBLDS was 15.4%, triple the rate for the BLDS at 5.5% (X^2=5.20, $p \leq .05$), while conviction rates were also significantly greater (X^2=5.01, $p \leq .05$). One cannot forget, however, that even though prosecution rates were significantly higher in the NBLDS compared with the BLDS, the rates for stranger cases were far below the mean rates for non-stranger cases.

We next examined the frequency that DNA was used in the above cases, referencing the values included in Table 21 that tracked the appearance of foreign DNA in dispositions occurring after SAK testing (cases where the DNA might have affected case outcome). Only about 30% of the foreign DNA found in testing taking place prior to dispositions occurred in stranger cases, which is proportional to the percentage of stranger cases in the overall sample. However, foreign DNA was found in both non-stranger and stranger cases at increasingly higher rates as cases proceeded through the criminal justice process. The percent of foreign DNA in non-stranger cases increased from 4.2% of arrest cases, to 9.5% of filed cases, and 46% of convictions. On the other hand, foreign DNA was identified in stranger cases *prior to* 12.9% of arrests, 26.3% of filings, and 66.7% of convictions. In sum, stranger cases are resolved and prosecuted at significantly higher rates in the NBLDS compared with the BLDS. Although non-stranger cases in the NBLDS also resulted in a greater percentage of arrests, charges, and convictions than stranger cases, foreign DNA was present in higher percentages of stranger cases and at progressively higher rates as cases advanced through the system.

While we lacked the time and resources to review the investigator case files of all the above cases, we concluded that the higher arrest, charging and conviction rates for the NBLDS stranger cases vs. the BLDS stranger cases was a reflection of two primary factors: 1) the BLDS was a biased sample that excluded the more solvable stranger cases that were investigated and

DNA tested years ago, leaving more problematic and challenging cases; and 2) the passage of time and increased attention given to sexual assault investigations in the current day resulted in increased solution and prosecution efforts in the NBLDS. We also believe that the identification of foreign DNA in such cases as they proceeded through the criminal justice process contributed to the higher rates at the arrest, charging and adjudication/conviction levels.

Prediction of DNA Profiles/CODIS Uploads and the Problem of Missing Data

We were also interested to see which of different variables collected might aid in predicting if SAK evidence would lead to the development of Full DNA Profiles and CODIS Uploads. Previously in this report we have examined samples taken from different locations of the body, and different analysis techniques, and whether they led to DNA Profiles and CODIS uploads. We have also shown that shorter PCIs result in greater rates of developing DNA profiles and that lead to higher rates of CODIS uploads. To further explore what factors ultimately predict yielding full DNA profiles and upload of those profiles into CODIS, we proposed to look at four other variables alongside body samples, testing type (conventional serology vs. Y Chromosome screening), and PCI:

1. Did the victim have consensual sex within 5 days of the assault? (Yes response will result in more positive outcomes regarding yielding DNA profiles, but less favorable outcomes as to CODIS uploads)
2. Did the victim report that ejaculation occurred? (Yes response will result in more positive outcomes as to DNA profiles and CODIS uploads)
3. Did the victim report that assailant used a condom? (No response will result in more positive outcomes as to DNA profiles and CODIS uploads)

4. Did victim engage in any post assault hygienic activities? (No response will result in more positive outcomes as to DNA profiles and CODIS uploads)

Table 26 shows the frequencies for the outcomes of interest (DNA profiles and CODIS uploads) per PCI and the four variables of interest listed above. For PCI, the table shows there were 375 cases where the PCI was 0-6 hours, and 203 (54.1%) of them yielded a Full DNA

Table 26: Potential Predictors for Achieving DNA Profiles and CODIS Uploads

	Full DNA Profile		CODIS Upload	
	N	**%**	**N**	**%**
Post-Coital Interval				
0 – 6 (375)	203	54.1	175	46.7
6+ - 12 (292)	163	55.8	134	45.9
12+ - 24 (344)	160	46.5	146	42.4
24+ - 48 (260)	96	36.9	80	30.8
48+ - 72 (119)	21	17.6	24	20.2
72+ or more (73)	14	19.2	17	23.3
Missing (485)	147	30.3	121	24.9
Consensual Sex				
Yes (412)	234	56.8	120	29.1
No (1423)	536	37.7	558	40.2
Missing (113)	34	30.1	21	18.6
Ejaculation				
Yes (544)	304	55.9	270	49.6
No (423)	128	30.3	110	26.0
Unsure (489)	250	51.1	210	42.9
Missing (492)	122	24.8	109	22.2
Condom Use				
Yes (210)	86	41.0	70	33.3
No (1104)	492	44.6	448	40.6
Unsure (297)	137	46.1	107	36.0
Missing (331)	88	26.6	74	22.4
Post-Assault Hygiene				

Yes (1588)	668	42.1	582	36.7
No (194)	94	48.5	89	45.9
Missing (166)	42	25.3	28	16.9

Profile and 175 (46.7%) of them resulted in a CODIS Upload. The rate diminishes to 17.6% and 20.2% for the 48+ -72 hours PCI time interval. The remaining four variables are worth noting as well**.** For example, for Consensual Sex, the percent of cases leading to a Full DNA Profile is 37.7% for cases where victims answered No to that question, and 56.8% of cases where the victim reported Yes. This is what we would predict. The table also shows a reversal of the percent of cases leading to a CODIS upload (29.1% of Yes responses leading to an Upload and 40.2% of cases where the victim answered No). This reflects the fact that having DNA present from a consensual partner does not lead to higher rates of CODIS Uploads because DNA resulting from consensual sex would not be uploaded.

For ejaculation, Table 26 shows that in cases where the victim answered Yes to that question, 55.9% of cases led to a DNA Profile; where the victim reported No, only 30.3% of cases led to DNA Profiles. Cases where the victim responded Yes to this question also reported higher percents of CODIS Uploads (49.6% to 26.0%). For condom use, we hypothesized that a victim answering No to that question leads to higher Full DNA Profiles and it does (slightly) (44.6% to 41.0%) and for CODIS uploads (40.6% to 33.3%). For post assault hygiene, a higher percent (48.5%) of cases where the victim reported not engaging in hygienic procedures, but 42.1% to those cases where she did. The difference in percentages is even higher (45.9% to 36.7%) for CODIS Uploads.

These bivariate relationships looked to be promising for construction of a multivariate model to predict DNA profile and CODIS upload success. However, the number of cases with missing values for key variables loomed large and eventually led to the conclusion such a model was untenable. As Tables 6 and 7 previously showed, two variables (PCI and Ejaculation) each

have approximately 25% missing values, while the variable Condom Use is missing 39.5% of responses. Table 23 indicates that at least a quarter of the cases for which these variables had missing values yielded DNA profiles and at least 20% resulted in DNA profiles being uploaded to CODIS.

Unquestionably, the most critical of these variables that needed to be retained for use in a predictive model examining testing types of body samples is PCI. The most common formula for determining PCI is the time elapsed between the assault start date and time, and the exam end date and time. As Table 27 shows, almost 20% of the data required for calculating assault start date and time were missing, while the majority of the data for assault end date and time were also missing. Because over half of the values were missing for exam end date and time, the decision was made to calculate the PCI using the exam start date and time, but even here 10% of dates/times were missing. Consequently, one-quarter of cases could not have the PCI calculated.

Table 27: Missing Data on Variables for Calculating Post-Coital Interval

	N	%
Assault		
Start Date	117	6.0
Start Time	381	19.6
End Date	1326	66.8
End Time	1391	71.4
Exam		
Start Date	100	5.1
Start Time	200	10.3
End Date	1107	56.8
End Time	1150	59.0

In addition, while the LAPD cases had a previously calculated PCI value on a form in the laboratory case file, this value was missing for almost half (47.3%) of their cases. Furthermore, we concluded there was a lack of consistency in the way these values had been calculated, by

checking them with other date and time data in the file explained above. Consequently, we concluded we could not use the pre-calculated PCI values in the place of the date and time calculation approach for any of the cases in which missing data were present.

Although we believe the missing values needed for calculating the PCI were randomly distributed, further examination indicated that a significant difference existed between cases where we could calculate a PCI and those where data was missing on the outcome of extracting a DNA profile. To this end, we determined that the use of statistical techniques to produce missing values (e.g. mean substitution) would not be appropriate and that we could not proceed with the regression model.

Chapter V

Focus Groups Narrative

We held a total of four focus groups during the study in order to gain the perspectives of the crime laboratory, investigator and prosecutor regarding the sexual assault kit backlog problem in the City and County of Los Angeles.

LAPD and LASD Detectives

Two separate focus groups were held to examine law enforcement perspectives. The first focus group consisted of eleven Los Angeles Police Department detectives who primarily work in Sex Crimes Units with both adult and child victims. The second focus group consisted of eight Los Angeles Sheriff's Department detectives who worked either with the Special Victims Bureau or were primarily responsible for handling sexual assault cases. Several themes emerged from both focus groups regarding the use and practice of DNA testing of evidence derived from the backlogged sexual assault kits.

The first theme concerned the utility of DNA testing, with most agreeing that testing can yield evidence critical for a case; as one detective stated, "DNA is a tool and it's an effective tool." While a suspect can be arrested solely through an alleged victim's accusation, use of DNA to corroborate victim accounts was acknowledged as a potential key to ultimately "make cases" where little or no other evidence exists because "we have to convince a DA that there's a 96% chance of winning." This was considered particularly true of family-based or non-stranger cases of sexual assault which, prior to DNA testing, prosecutors seldom pursued. DNA results were further considered important in the context of jury trials when cases involved unemotional victims whom the jury might perceive as not acting appropriately. While detectives stressed that

all evidence was important, although "a kit is a part, always a part, but it's just one part of a case", it had the additional benefit of being used as leverage in convincing some defendants to plead guilty, whether the kit had been tested or not.

The detectives were mindful of the need to detain suspects prior to DNA identification; DNA testing might "take us where we don't want to go, but we have to" in terms of potentially exonerating suspects who are innocent. Prior to passage of Proposition 69, many detectives were more concerned with the immediate value of DNA testing: "We're thinking this case, this case only." However, with the advent of CODIS, they now acknowledge the long-term benefit of collecting victim/casework DNA and suspected assailant DNA and how such evidence can help to identify serial offenders. While most detectives participating in the focus groups had yet to find CODIS valuable for linking together cases they had been involved with, LAPD detectives cited the "Grim Sleeper" serial murders as a recent example where DNA testing was key to linking decades old cases to a single offender. Investigators acknowledged the CODIS database "needs to grow" and become more of a "workable database" in order for it to be a more useful investigative tool, while some expressed concerns that current policy might result in innocent suspects being put into the database. It should be noted, however, that the criminalists who participated in a separate focus group were very mindful of the requirement that only the DNA profiles of those who had been arrested may be placed into CODIS.

The next theme concerned use of discretion; current LAPD and LASD policy dictates that detectives must submit requests for DNA testing of all sexual assault kits obtained, effectively removing the detectives' discretion in this area. While detectives clearly perceived DNA testing to be valuable, they were less supportive of the necessity for testing all sexual assault kits and there was concern that current policy was an "overreaction" on the part of their

agencies to the problem of the sexual assault kit backlog. Such procedures may result in "bum rushing these current cases because we're trying to cover ourselves." The primary concern in this area stemmed from testing cases that had already been unfounded or, from either the viewpoint of police or district attorneys, "the ones that are going nowhere" (e.g. consensual underage sex, rapes involving prostitutes). Some saw testing of all kits perhaps as ideal, but most questioned the wisdom of doing so when resources (time and manpower) were limited and felt testing of cases that cannot result in prosecution was counterproductive: "Are we doing it for the right reasons? The right reasons are getting the 'perps' off the street." Equally important, they felt it was delaying the testing of kits for what they considered more important cases and that it ultimately amounted to poor case management when caseloads were already heavy: "we're drowning, to be honest, we're being killed."

LAPD detectives believed the current policy permitted some discretion, which was a system for giving a case a priority and further requesting expedited analyses. Most felt 'testing all kits' was acceptable provided that cases they deemed as having higher priority were tested in the timeliest fashion. Clearly, both LAPD and LASD detectives felt that their expertise in handling such cases (e.g. "we're supposedly the experts", "we know if it's a garbage case", "any of us worth our salt can just tell") should afford them the right to use their discretion in deciding which cases should be given priority testing. However, confusion appeared to exist about whether the LAPD detectives themselves actually had discretion to assign cases a priority, with such prioritization occurring only after detectives had submitted requests for testing to the laboratory.

Communication with the analysts responsible for testing the kits was also seen as being important: "DNA is a tool, but you still have to investigate." The request forms allow detectives

to direct the laboratory to specific components of the sexual assault kit that are the most likely locations for yielding DNA. While indicating this on the submission form did not preclude the need for additional communication with analysts, some detectives conceded that they did not always speak with the analysts or only followed up on the cases they considered as "going somewhere." Noting the difficulty at times of understanding the scientific terminology supplied in laboratory reports, improved communications with the criminalist was also seen as desirable for fuller comprehension of results. Communication with sexual assault victims about the progress of investigations is important and may include information about the status of CODIS inquiries and hits. It is important that law enforcement agencies maintain contact and coordinate any information they share with sexual assault victims.

A final theme that emerged was additional pressures placed on the detectives by the expectations of the community and district attorneys. Some of this pressure was seen as being specifically connected to seeking expedited analyses of kits connected to cases that alarmed the public the most (usually stranger cases), hence underscoring the desire of detectives to have more discretion in relation to assigning priority to certain cases. There was also the issue of suspects in stranger cases who were identified via SNAP (expedited kits sent to the Cal DOJ Forensic Laboratory in Sacramento, CA); district attorneys typically require a confirmation DNA sample be taken from the suspect before filing charges. This can lead to delays in acquiring arrest warrants when the suspect cannot be located. Detectives find this requirement problematic because investigators believe they have identified the correct suspect and they should be allowed to make the arrest without first obtaining the reference sample. Time delays in obtaining the sample and having it tested can result in suspects skipping town and avoiding arrest.

Deputy District Attorneys

Another focus group consisted of six deputy district attorneys, all of whom were responsible for handling sex crime cases within Los Angeles. The district attorneys mirrored the detectives in their belief of the importance of DNA testing for the successful prosecution of certain cases, and that it was "vital...period" for its corroborative value in meeting the necessary legal standards of evidence and supporting the credibility of the victim. However, some felt that the length of time and cost of DNA testing was prohibitive and most agreed testing was not strictly necessary if other corroborative evidence (e.g. admissions, injuries) was available: "In the perfect world, test it all, but we can't." The decision to test kits was seen as being "all fact driven on your case" so that it was difficult to apply one standard (i.e., sexual kit testing is mandatory) to what evidence was required to file charges in a sexual assault case. So, even though corroboration of victim statements and victim credibility are key criteria in deciding whether or not to charge a suspect, one cannot say that DNA results are absolutely mandatory in every case. The deputy district attorneys expressed strong support for SAK testing where it was vital to establish that a crime even occurred and the identity of the suspect. As with the detectives, the district attorneys did not feel that all cases warranted testing, and that the "backlog was probably not due to we didn't care", but because the suspect's identity was not an issue or it was a "consent" case, where both individuals were underage. The district attorneys believed a system of laboratory testing priorities needed to be established, both in terms of which kits will be tested, as well as *what evidence* in the kits needed to be tested.

Delays in testing were acknowledged beyond decisions to forego testing of kits. Regarding the assertion of LAPD detectives that district attorneys would not file charges without

a confirmation sample on SNAP hits, this was confirmed as policy because a "cold hit" was only investigative evidence and not proof beyond a reasonable doubt, as required for conviction, so that a new reference sample was necessary. On new cases, however, the district attorneys indicated they were willing to file cases when DNA testing had yet to be completed in order to keep suspects in custody. Typically, testing is not completed subsequent to the preliminary hearing, which was not considered a problem except in stranger cases where the victim was unable to identify a suspect. While simply being able to have testing completed prior to trial (indicated as occurring on average two to three months after the preliminary hearing) was tolerable in many cases, the benefit of early testing and confirmation of the presence of the suspect's DNA was undoubtedly seen as obtaining "leverage" for securing guilty pleas and avoiding trial whenever possible.

Some deputy district attorneys suggested that mandating detectives to request, and crime laboratories to test, *all* sexual assault kits caused unnecessary delays. Such a practice was contrary to detectives' general belief in their judgment to direct the testing of collected evidence on a case-by-case basis. The district attorneys, however, did not believe that detectives necessarily always knew what *components* of the sexual assault kit would be most useful to a case. The attorneys cited the laboratory policy to stop testing once DNA had been identified as reason to maintain good relations and communication with the laboratories to facilitate additional testing when considered necessary. Being knowledgeable of the different types of DNA testing and costs associated with those tests was seen as being important and "frugality" in terms of the types of tests being asked for, particularly in light of the presence of other types of evidence, was considered to be appreciated by laboratories.

Law enforcement policies requiring the testing of all sexual assault kits were seen as being driven by community perceptions: "The community doesn't understand, sees it as violating a victim's rights when it's not tested." Such expectations have further been compounded by exposure to erroneous understanding of DNA testing as seen on television shows and that follows district attorneys into the courtroom: "Juries expect it, they're going to wonder why when the kit isn't tested." This state of affairs causes the district attorneys to feel it necessary to make special explanations during voir dire or during the trial itself as to why DNA testing has not been conducted. Ultimately, it was considered that educating potential jurors as to "what science can and cannot do" was vital because of "unrealistic expectations on their part" formed by watching CSI-based television shows.

LAPD and LASD Criminalists

A final focus group was held to examine the views of eight criminalists working for the LAPD and LASD crime laboratories. The criminalists had a clear view of their role as being to work cases and have them adjudicated: "We want to solve crimes." But it was a role they considered complicated by their parent agencies' new policies to test all sexual assault kits, which they regarded as having turned their agencies' missions into getting profiles uploaded into CODIS "regardless of case status" or whether the suspect already had a profile uploaded. While they acknowledged the long-term benefits that could be gained from CODIS, they noted that most of the hits resulting from the backlogged cases were for defendants who had already been convicted and that, to their knowledge, none of the hits had led to a defendant being exonerated.

If the detectives were dissatisfied that the examination of all sexual assault kits eliminated their discretion, the criminalists were even more so (e.g. "we don't get to triage, we get told what to do", "we just do what comes in the door"). Criminalists joined with detectives

and prosecutors in expressing the view that some cases were being tested unnecessarily and that laboratory resources could be used more efficiently if they were devoted to more important, high priority cases. This would include sexual assaults, committed by strangers and other assailants, where investigators had concluded a crime had taken place. As a consequence, the criminalists complained that they were "almost not able to keep up." While the criminalists from one laboratory noted that their agency hired new criminalists "like crazy", this fact was mitigated by their inability to train new criminalists on DNA procedures quickly enough, thereby limiting their usefulness in helping to process cases and they felt the agency was "throwing people and money at the problem at a rate we can't handle." The response to the backlog of sexual assault kits of requiring all kits to be tested was regarded more as crisis management; it was observed that strategic planning was required to address the issue on a long-term basis.

The criminalists generally felt detectives investigating the cases were capable of deciding whether or not the kits should be tested based on their knowledge and experience in working these types of cases? Communication between the criminalists and detectives was often described as being problematic; they noted that some detectives "feel we work for them" and "don't want to understand so much as they want to direct." Experiences with detectives varied among the criminalists. Some detectives were considered to have a lack of understanding both as to the resources (time and cost) required for testing and the science involved (e.g. "they have no connection to the science"), while others found the detectives open to understanding the limitations of resources and scientific findings when the criminalists took the time to explain these things to them.

The point was also stressed that sexual assault cases were not the only types of cases for which the criminalists had evidence to analyze and that the emphasis on testing all sexual assault

kits had the potential to lead to a backlog on other types of cases, particularly property crimes. In fact, some criminalists felt that in some cases evidence from property crimes actually deserved greater attention (e.g. “this is scientifically where we should be putting our energies”) because they perceived property crimes to be an indicator for future rapists and there was a need to “get them off the street *before* they rape”, as well as citing the higher rate of CODIS hits for property crimes (estimated by the criminalists to be about a 70% hit rate).

Forensic nurses were considered important by criminalists for their role in testifying in court about the sexual assault examinations they conduct and explaining the nature of injuries sustained by victims (although detectives had complained that it could be “horrible” (difficult) to get the nurses to court. In fact, all three groups-- detectives, deputy district attorneys, and criminalists -- considered sexual assault nurses very important in communicating information to fact-finders about medical examinations of victims and injuries they may have sustained. The quality of forensic nurses was seen to vary according to multiple factors including pay, policy, and training.

Summary

The consensus of practitioners – detectives, criminalists and prosecutors – was that mandatory testing of all sexual assault kits was unnecessary. All parties felt the testing of kits could be critical in selected cases but that testing of every kit was not prudent use of limited scientific resources. Practitioners believed that informed professional judgment, coupled with adequate laboratory and information resources, could identify those cases meriting examination and would provide the criminal justice process with the information needed to prosecute sexual assault cases.

Chapter VI
Conclusions, Research Needs, and Policy Recommendations

This research project had four primary objectives: To evaluate scientific test results performed on untested/backlogged sexual assault kits; to review the pertinent sexual assault literature; to determine the criminal justice outcomes of cases with delayed sexual assault kit testing, immediate testing, and no testing; and, lastly, to identify factors to help prioritize the testing of sexual assault evidence in the future. The study addressed a growing problem facing law enforcement agencies and forensic laboratories in the nation, and provides information about scientific test results that can be derived from such kits and used in the investigation and prosecution of these crimes. Study Findings are organized by the four project objectives and Overall Recommendations are included at the close of this chapter:

Objective 1— Describe and evaluate the results of new scientific tests performed by various private laboratories on backlogged sexual assault kit (SAK) evidence outsourced from the LASD and LAPD crime laboratories.

Findings:

1. The random sample of backlogged SAK cases yielded the following composite statistics:

    - 93.7% of victims were female, 92.4% of assailants were male; mean age of victims 22.2 years, and 39% were Latino.
    - 65.3% of cases involved non-strangers, and over three-quarters of female and male victims 13 years and under knew their assailant.
    - 34.9% of victims reported they were under the influence of alcohol or drugs at time of assault.
    - 71.0% reported being injured, 77.3% were vaginally penetrated, 27.9% thought the assailant ejaculated, 80% engaged in post-assault hygiene.
    - Average post-coital interval (PCI) was 23.3 hours; PCIs of victims 13 years and under, and those knowing their assailant were, on average, significantly longer.

2. Testing results varied by area of the body where the sample was taken, post-coital interval, case characteristics, and laboratory testing approaches:

- 97% of cases were screened for markers, and samples from the vaginal area tested positive for markers (overall) the highest percent of time.
- The Y chromosome screening technique yielded positive markers most often when the samples were taken from vaginal and external genitalia area and from dried secretions.
- The highest success rates of detecting foreign and male DNA were from samples taken from the vagina and external genitalia that had yielded positive markers for sperm and acid phosphatase.
- Oral and rectal samples generally yielded the poorest DNA results.
- Y chromosome and conventional serology screening techniques had comparable success rates in leading to positive STR results. However, the Y chromosome screening technique was more successful in detecting foreign and male DNA in samples taken from the vaginal and external genitalia areas and dried secretions.
- In developing full and partial profiles, the Y chromosome screening technique was superior with samples from external genitalia, and conventional serology techniques with samples from the rectal area; success in samples taken from the oral and vaginal areas and from dried secretions was mixed (see Table 17)
- Post-Coital Interval (PCI) was associated with superior laboratory results; although missing data prevented multivariate statistical analysis; as PCI increased, the success rate in finding foreign DNA and executing CODIS Uploads decreased.
- Conventional serological techniques were slightly better in cases with a PCI of six hours or less; but the Y chromosome screening method generally gave better success for samples when the PCI was greater than six hours, and particularly for PCIs of 24+ hours

3. CODIS Uploads and hit rates occur:

- Uploads occurred an average of 35.9% of the time for backlogged samples
- Single full (71.0%) and partial (21.2%) uploads made up the great majority of uploads to CODIS from the backlogged sample; multiple full and partial profiles made up 3.0%.
- Offender and case-to-case hits occurred in about half (49.6%) of the backlogged sample uploads; cold/warm hits occurred in about two-thirds of all hits and most of those occurred where the assailant was a non-stranger to the victim
- Case-to-case hits occurred in less than 8% of all hits and most of them also linked an offender to one or more cases
- Between 20% - 30% of the hits resulted from cases where the suspect had been arrested and convicted in this same sexual assault, and his DNA previously entered into CODIS. The DNA profile developed from evidence in the sexual assault kit essentially 'duplicated' the DNA that had already been entered into CODIS by virtue of a prior conviction. The DNA profile from the backlogged kit, therefore, did not contribute a new name, identity or DNA profile that was not otherwise included in CODIS.

Objective 2— Review the literature of sexual assault case processing, describe the characteristics of cases leading to the backlogged sexual assault kits, and define the primary criteria used by investigators in deciding to request the analysis of the sexual assault kits analysis of the kits;

Findings:

1. The social science and forensic science literature provides insights into factors that influence successful forensic/sexual assault investigation and prosecution practices. The forensic science literature has been expanding into this area in recent years but is not yet well defined and fully integrated into the social science sexual assault literature.

2. The literature on sexual assault kit **backlogs** and **untested evidence** is one area in particular that is growing and provides new insight into laboratory and investigation practices.

3. The literature does not address forensic evidence, reflecting how 1) investigators obtain the necessary information/evidence to make arrests, and 2) how prosecutors employ case information and scientific results in decisions to file charges, secure plea bargains, and take cases to trial. Similarly, data do not detail the effects of scientific information at trial, the expectations of fact-finders, and the relative importance of scientific information in achieving convictions/acquittals, plea bargains and sentences

4. There is little literature examining CODIS hit inquiries and practices; more detailed data are needed to describe and understand the process whereby DNA profiles lead to successful CODIS hits – both offender and case-to-case hits. Forensic crime laboratories and law enforcement agencies also must strive to identify CODIS 'conviction matches' from all CODIS hits. The former do little to expand the investigative power and potential of CODIS.

5. The impact of forensic evidence on sexual assault investigations will depend upon the ability of researchers to track cases from their origin, through law enforcement investigation and victim examination, to the crime laboratory, and to final case dispositions in the courts. Data maintained currently by the criminal justice system and crime laboratories are piecemeal and greatly inhibit comprehensive research. No data are maintained on how key decision makers make choices regarding their employment of scientific evidence in arriving at decisions.

6. A theme emerging from several studies of physical evidence utilization in recent years is the available evidence that is collected but not forwarded to forensic laboratories for examination. Sometimes such 'negative' decisions (and the reasons for them) are as important to document as ones that result in scientific examinations. The crisis that has emerged in sexual assault kit testing might have been averted had the reasons employed by detectives not asking for testing of kits had been recorded, tabulated, and reviewed. As it was, agencies had weak evidence to support choices that may have been correct (to not examine backlogged SAKs), but appeared indefensible to the public at large. As caseloads of forensic crime laboratories continue to mount and laboratories employ priority schemes that identify which evidence should and should not receive examination, such documentation will be valuable.

Objective 3—Determine the investigative/judicial outcomes of sexual assault investigations in: a) backlogged cases where no scientific testing was performed on SAK evidence; b) backlogged cases where testing <u>was</u> performed on SAK evidence; and c) the criminal justice status of current cases, before and after scientific testing was performed on the SAK evidence;

Findings

1. Backlogged cases were those where investigators in prior years had determined that SAK testing would not benefit the case. It was not surprisingly, therefore, that the new round of testing backlogged SAKs resulted in few immediate case effects. No new arrests occurred after testing of kits, one new filing and two convictions occurred, but laboratory results were not of assistance in such cases.

2. In terms of a composite profile of all cases sampled in this study, those involving 'stranger' victims were older, injured more often, and presented themselves for examination much quicker, but they were also more often compromised (intoxicated by alcohol or drugs) at the time of the assault.

3. The primary benefits of backlog testing were long-term and resulted from CODIS entry and offender and case-to-case hits; most hits were 'offender based' and not 'case-to-case' and resulted from non-stranger cases. Future hits should also occur as a result of new entry of DNA profiles of defendants not already in CODIS.

4. There were indications that a substantial percentage of CODIS offender hits resulting from testing of the Los Angeles SAKs were *conviction* matches of defendants already entered into CODIS.

4. Non-backlog testing of SAKs yielded more short-term benefits, taking place prior to new filings and adjudications.

5. Logistic regression analyses revealed that the only predictors of arrest, filing and conviction were victim/suspect relationship and the victim self-reporting use of alcohol and drugs. Regression analyses, however, failed to find any significant case adjudication effects for DNA testing when it occurred prior to arrest, filing or conviction.

6. Most sexual assault cases in the present sample that were adjudicated were resolved through plea bargains. The identification of foreign DNA in the non-backlogged sample contributed to the higher rates of arrest, charging and conviction as cases moved through the criminal justice system. Sentences of adjudicated defendants had more severe (longer) incarceration sentences in cases with DNA test results.

Objective 4— Identify and describe those principal case and evidence characteristics that will enable forensic laboratories to prioritize future sexual assault evidence submitted to crime laboratories by detectives.

Findings:

1. We were unable to develop a multivariate model that predicted successful DNA profiles and CODIS uploads due to missing data.

2. Table 26 showed through bivariate analyses that post-coital interval (PCI) was linked to DNA profiles and CODIS Uploads, but so were other variables, including: if there was reported recent consensual sex, ejaculation, condom use, and post assault hygienic activity.

3. Recovery of samples from different areas of the body also provided insight as to the likelihood that a

sample yields a DNA profile.

4. Much of the needed data to predict DNA testing outcomes is collected at the time of victim medical examination and from the sexual assault investigator's report describing the victim/assailant relationship and other case parameters. It is essential that crime laboratories collaborate with these medical and police agencies to insure reliable data are collected and made available to the forensic testing laboratory for review prior to analysis of the SAK.

Overall Recommendations:

1. Future testing of all backlogged SAK files is not recommended. The testing of such kits in other jurisdictions should not commence until the goals of affected agencies are clear, agencies are familiar with the criminal justice status of cases in the backlog, and local agencies are able to distinguish CODIS offender hits on the same case from new 'cold' hits. Unsolved stranger cases should be the focus, to include entry of the offenders' DNA profiles into CODIS. There is little need for SAK testing in known offender cases where the assailant does not deny intercourse, and where the offender has been arrested and his DNA already taken and profile entered into CODIS.

2. Local SAK advisory committees, composed of law enforcement, medical and forensic representatives, should be formed for two primary purposes: 1) to develop criteria to judge the priority of cases submitted for laboratory testing, and 2) to develop information factors that agencies will agree to record to be entered into newly created or expanded local forensic sexual assault databases.

3. Crime laboratories are in need of various types of investigative and medical information in order to begin their analyses of sexual assault kit evidence. Laboratories should routinely receive and review investigator case files, medical victim examination reports, and CODIS status information before commencing their examination procedures. Also:

> a. Post-Coital Interval (PCI) is a key factor in predicting hits and is unknown (25%+) in an unacceptably high percentage of cases.
> b. Data from the sexual assault victim examination reports (areas penetrated, possible ejaculation, use of condom, etc) yield results useful to criminalists examining sexual assault evidence in the forensic laboratory.
> c. Samples from very young victims yield valuable information on biological secretions left on regions of the body that can help inform analytical procedures.

4. The long term effects of SAK testing are also reliant on more detailed information being available on CODIS hits that differentiate true cold hits from 'conviction match' hits that occur where the offender's profile is 're-identified' in the immediate case.

5. Better cost benefit models need to be constructed from the above data files and those that accurately gauge the costs of various forensic/DNA testing protocols.

6. Sexual assault victims should be encouraged to respond to a medical facility as quickly as possible after the assault to speed the preservation, rapid recovery and analysis of scientific evidence.

7. All associated criminal justice agencies should share and compile data at key decision points and work toward the development of more comprehensive databases and models that can predict successful case outcomes. Sexual assault databases, or additional new fields in existing data bases, are needed that maintain offense characteristics, investigator files, victim sexual examination, laboratory results, and prosecutor information. The effects of forensic DNA testing on sexual assaults cannot be accurately estimated until there are better data maintained by all the various agencies in the criminal justice system handling sexual assault cases, and consolidated into a single forensic sexual assault database.

8. A range of quantitative and qualitative data are needed from investigators and prosecutors, in particular, to determine the value of scientific evidence in securing arrests, filings, convictions, and sentencing. The quantitative data would collect basic discrete factors on every sexual assault case, its investigation, prosecution, adjudication and sentencing. Qualitative data would include the persuasiveness of various factors that influenced arrest, charging, plea bargaining, trial verdict (including interviews with jurors after verdict), and sentencing. These qualitative data would be primarily beneficial in helping to explain outcomes in specific jurisdictions.

9. Better information is also needed on the sizable percentage of cases where the victim knows the assailant (intimate, family member, dating, work-related, or casual relationship), scientific results, and the role played by scientific evidence in case outcome.

10. All the above data will lead to better published research in the sexual assault investigation literature. Laboratory, investigator, victim examination, and prosecutor data are keys to the development of this literature.

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APPENDIX A

NIJ Project No. 2006-DN-BX-0094
LAPD/LASD Sexual Assault Kit Backlog Collection Form (3/10/2010)

Q1. PROJECT CASE #: _____		
Q2. Is the case file	☐ Backlog ☐ Non-Backlog	
CASE IDENTIFYING INFORMATION		
Q3. Agency:	☐ LAPD 1 ☐ LASD 2	☐ Outside Agency 3

Q4. Agency Case Number:	DR# (LAPD Only): _____ URN# (LASD Only):_____	
OCJP ITEMS		
Q5. Victim age:	____ unknown 9999	
Q6. Victim Gender:	☐ Female 1	☐ Male 2 ☐ Unknown 77
Q7. Victim Race/Ethnicity: Q7A. If the victim's race/ethnicity is other, what is it?	☐ African-American 1 ☐ Asian-American 2 ☐ Caucasian 3	☐ Hispanic/Latino 4 ☐ Native American 5 ☐ Other:_____ 6 ☐ Unknown 77
Q8-Q8D. Date range and time range of exam of victim:	___/___/___ @ ___ (hrs) **to** ___/___/___ @ ___ (hrs)	
Q9. Date of report to law enforcement agency:	___/___/___	
Q10. Time of the report to law enforcement agency:	_____	
Q11. Was the reported date/time to law enforcement unknown:	☐ No 0 ☐ Yes 0	
Q12. Did the victim have consensual sex within 5 days of the assault?	☐ No 0 ☐ Yes, unspecified 1 ☐ Yes, anal 2	☐ Yes, vaginal 3 ☐ Yes, oral 4 ☐ Unknown 77
Q13. If yes, has a consensual partner reference been obtained?	☐ No 0 ☐ Yes 1	☐ Unknown 77 ☐ N/A 88
Q14. Did the victim self report alcohol/drug use?	☐ No 0 ☐ Yes, voluntary 1 ☐ Yes, involuntary 2	☐ Yes, voluntary and involuntary 3 ☐ Unknown 77
Q15. Type of **Voluntary** self reported alcohol/drug use? Each variable: No 0 Yes 1 Q15E. If the victim self-reported voluntary use of other substances, what was the other substance?	☐ Q15A. Alcohol ☐ Q15B. Marijuana	☐ Q15C. Other ☐ Q15D. Unknown
Q16. Type of **Involuntary** self reported alcohol/drug use? Each variable: No 0 Yes 1 Q16E. If the victim self-reported involuntary use of other substances, what was the other substance?	☐ Q16A. Alcohol ☐ Q16B. Marijuana	☐ Q16C. Other ☐ Q16D. Unknown
Q17. Did the victim engage in any post-assault hygienic activities? Each variable: No 0 Yes 1 Q17J. If the victim engaged in other post-assault hygienic activities, what were they?	☐ Q17A. No ☐ Q17B. Urination/Defecation ☐ Q17C. Genital wipe/Douche ☐ Q17D. Removed/Inserted tampon ☐ Q17E. Changed clothing	☐ Q17F. Wash/Bath/Shower ☐ Q17G. Eat/Drink/Gargle/Rinse/ Brush teeth ☐ Q17H. Other ☐ Q17I. Unknown
Q18. Loss of memory?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q19. Lapse of consciousness?	☐ No 0 ☐ Yes 1	☐ Unknown 77

Q20-Q20D. Date range and time range of assault:	___/___/___ @ ___ (hrs) **to** ___/___/___ @ ___ (hrs)	
Q21. Number of assailants:	☐ Unknown 77 ☐ Known - # ___	
Q22. Assailant(s) age:	☐ Q22A. How many were 18-24 ☐ Q22B. How many were 25-34 ☐ Q22C. How many were 35-44 ☐ Q22D. How many were 45-54	☐ Q22E. How many were 55 and older ☐ Q22F. How many were under 18 ☐ Q22G. How many were unknown age
Q23. Assailant(s) gender:	☐ Q23A. How many were female ☐ Q23B. How many were male	☐ Q23C. How many were unknown age
Q24. Assailant(s) Race/Ethnicity:	☐ Q24A. How many were African-American ☐ Q24B. How many were Asian-American ☐ Q24C. How many were Caucasian	☐ Q24D. How many were Hispanic/Latino ☐ Q24E. How many were Native American ☐ Q24F. How many were Other ☐ Q24G. How many were Unknown
Q25. Relationship of assailant(s) to victim:	☐ Q25A. How many were Strangers ☐ Q25B. How many were Non-strangers	☐ Q25C. How many were unknown relationship
Q26. If the assailant was a stranger, is there a suspect?	☐ No 0 ☐ Yes 1	☐ Unknown 77 ☐ N/A 88
Q27. Was physical violence threatened and/or used?	☐ No 0 ☐ Yes, threaten only 1	☐ Yes, used 2 ☐ Unknown 77
Q28. If physical violence was used, check the types of physical violence: Each variable: No 0 Yes 1 Q28I. If the assailant used other physical violence, what was it?	☐ Q28A. Blows ☐ Q28B. Grab/hold/pinch ☐ Q28C. Restraints ☐ Q28D. Choke/strangle	☐ Q28E. Burns ☐ Q28F. Other ☐ Q28G. Unknown ☐ Q28H. N/A
Q29. Was a weapon used?	☐ No 0 ☐ Yes, threaten only 1	☐ Yes, used 2 ☐ Unknown 77
Q30. Type of weapon used: Each variable: No 0 Yes 1 Q30H. If other weapon was used by the assailant, what was it?	☐ Q30A. Firearm ☐ Q30B. Knife/Sharp object ☐ Q30C. Blunt object	☐ Q30D. Body part ☐ Q30E. Other ☐ Q30F. Unknown ☐ Q30G. N/A
Q31. Did the victim self report penetration of vagina? Each variable: No 0 Yes 1 Q31N. If the victim reported attempted or successful object-vaginal penetration, what was the object?	☐ Q31A. No ☐ Q31B. Unspecified, yes ☐ Q31C. Penis, yes ☐ Q31D. Penis, attempted ☐ Q31E. Penis, unsure ☐ Q31F. Finger, yes	☐ Q31G. Finger, attempted ☐ Q31H. Finger, unsure ☐ Q31I. Object, yes ☐ Q31J. Object, attempted ☐ Q31K. Object, unsure ☐ Q31L. Unknown ☐ Q31M. NA

Q32. Did the victim self report penetration of anus? Each variable: No 0 Yes 1 Q32M. If the victim reported attempted or successful object-anal penetration, what was the object?		☐ Q32A. No ☐ Q32B. Unspecified, yes ☐ Q32C. Penis, yes ☐ Q32D. Penis, attempted ☐ Q32E. Penis, unsure ☐ Q32F. Finger, yes	☐ Q32G. Finger, attempted ☐ Q32H. Finger, unsure ☐ Q32I. Object, yes ☐ Q32J. Object, attempted ☐ Q32K. Object, unsure ☐ Q32L. Unknown
Q33. Did the victim self report oral copulation? Each variable: No 0 Yes 1	☐ Q33A. No ☐ Q33B. Unspecified- victim to assailant, yes ☐ Q33C. Unspecified- victim to assailant, attempted ☐ Q33D. Unspecified- victim to assailant, unsure ☐ Q33E. Unspecified- assailant to victim, yes ☐ Q33F. Unspecified- assailant to victim, attempted ☐ Q33G. Unspecified- assailant to victim, unsure	☐ Q33H. Anus- victim to assailant, yes ☐ Q33I. Anus- victim to assailant, attempted ☐ Q33J. Anus- victim to assailant, unsure ☐ Q33K. Anus- assailant to victim, yes ☐ Q33L. Anus- assailant to victim, attempted ☐ Q33M. Anus- assailant to victim, unsure	☐ Q33N. Genitals- victim to assailant, yes ☐ Q33O. Genitals- victim to assailant, attempted ☐ Q33P. Genitals- victim to assailant, unsure ☐ Q33Q. Genitals- assailant to victim, yes ☐ Q33R. Genitals- assailant to victim, attempted ☐ Q33S. Genitals- assailant to victim, unsure ☐ Q33T. Unknown
Q34. Did the victim self report non genital acts? Each variable: No 0 Yes 1		☐ Q34Q. No ☐ Q34B. Licking, yes ☐ Q34C. Licking, attempted ☐ Q34D. Licking, unsure ☐ Q34E. Kissing yes ☐ Q34F. Kissing, attempted ☐ Q34G. Kissing, unsure ☐ Q34H. Suction, yes ☐ Q34I. Suction, attempted	☐ Q34J. Suction, unsure ☐ Q34K. Biting, yes ☐ Q34L. Biting, attempted ☐ Q34M. Biting, unsure ☐ Q34N. Fondling, yes ☐ Q34O. Fondling, attempted ☐ Q34P. Fondling, unsure ☐ Q34Q. Unknown
Q35. Did the victim self report other acts? Q35A. Please list:_____		☐ No 0 ☐ Yes 1 ☐ Attempted 2	☐ Unsure 3 ☐ Unknown 77 ☐ N/A 88
Q36. Did the victim self-report that ejaculation occurred?		☐ No 0 ☐ Yes 1	☐ Unsure 2 ☐ Unknown 77
Q37. If yes, please check all the places where the victim reported ejaculation took place: Each variable: No 0 Yes 1 Q37J. If the victim reported that ejaculation occurred in other places, where were they?		☐ Q37A. Mouth ☐ Q37B. Vagina ☐ Q37C. Anus/Rectum ☐ Q37D. Body surface	☐ Q37E. On clothing ☐ Q37F. On bedding ☐ Q37G. Other ☐ Q37H. Unknown ☐ Q37I. N/A
Q38. Did the victim self-report that contraceptives or lubricant were used by the assailant? Each variable: No 0 Yes 1		☐ Q38A. No ☐ Q38B. Foam, yes ☐ Q38C. Foam, unsure ☐ Q38D. Jelly, yes ☐ Q38E. Jelly, unsure	☐ Q38F. Lubricant, yes ☐ Q38G. Lubricant, unsure ☐ Q38H. Condom, yes ☐ Q38I. Condom, unsure ☐ Q38J. Unknown
Q39. Were there injuries to the victim? (Check all the apply) **(FROM OCJP ONLY)** Each variable: No 0 Yes 1 Q39I. If the examiner found other injuries to the victim, where were they?		☐ Q39A. No ☐ Q39B. Yes- Head/neck ☐ Q39C. Yes- Chest/Abdomen/ Back	☐ Q39D. Yes- Limbs/hands/feet ☐ Q39E. Yes- Genitalia ☐ Q39F. Yes- other ☐ Q39G. Unknown ☐ Q39H. NA

Q40. If there were injuries, types of injuries: (check all that apply) **(FROM OCJP ONLY)** Each variable: No 0 Yes 1 Q40J. If the examiner found other injury type, what was it?	☐ Q40A. Abrasion ☐ Q40B. Bite ☐ Q40C. Bruise ☐ Q40D. Burn ☐ Q40E. Cut	☐ Q40F. Gun shot ☐ Q40G. Suction ☐ Q40H. Other: ☐ Q40I. N/A
Q41. Was a toxicology sample taken?	☐ No 0 ☐ Yes 1	☐ Unknown 77

Q42. If yes, from where was the sample taken? Each variable: No 0 Yes 1	☐ Q42A. Blood	☐ Q42B. Urine	☐ Q42C. N/A	☐ Q42D. Unknown

Q43. Were there physical findings of the assault? **(FROM OCJP ONLY)**	☐ No, consistent with history (victim statement) 0 ☐ No, inconsistent with history (victim statement) 1 ☐ No, limited history 2 ☐ Yes, consistent with history (victim statement) 3	☐ Yes, inconsistent with history (victim statement) 4 ☐ Yes, limited history 5 ☐ Inconclusive 6 ☐ Unknown 77 ☐ N/A 88

NON OCJP ITEMS

Q44. List the penal codes associated with this assault:	Q44A. Charge code:_____ Q44B. Charge code:_____ Q44C. Charge code:_____	
Q45. Post-Coital interval (PCI) in hours: **(LAPD ONLY)**	_____	☐ Unknown 9999

LABORATORY INFORMATION

Q46. Laboratory Name:	☐ Bode 0 ☐ Orchid-Cellmark 1 ☐ SERI 2 ☐ Fairfax 3 ☐ Sorenson 4	☐ Strand 5 ☐ LAPD 6 ☐ LASD 7 ☐ Marshall Univ 8 ☐ None 9
Q47. Date kit was sent to the laboratory:	___/___/___	
Q48. Date of laboratory results:	___/___/___	
Q49.Samples analyzed: Each variable: No 0 Yes 1	☐ Q49A. Oral ☐ Q49B. External Genitalia ☐ Q49C. Vaginal ☐ Q49D. Vaginal Lavage ☐ Q49E. Pubic combings	☐ Q49F. Rectal ☐ Q49G. Dried Secretions ☐ Q49H. Other 1:_____ ☐ Q49I. Other 2:_____ ☐ Q49J. Other 3: _____

Q50. Check off all results that apply in each box: (which markers were detected from each source)

	Markers detected:					
Source:	Sperm	P30	Amylase	Y-Chromosome	Acid Phosphatase	Epithelial
Q50A-Q50E. Oral	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50F-50K. External Genitalia	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2

Q50L-50Q. Vaginal	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50R-50W. Vaginal Lavage	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50X-50CC. Pubic combings	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50DD- 50II. Rectal	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50JJ-50OO. Dried Secretions	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50PP-50VV. Other: _____	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50WW-50CCC. Other: _____	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2
Q50DDD-50JJJ. Other: _____	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2	☐ Pos 1 ☐ Neg 0 ☐ Inc 2

Q51. Was a DNA analysis performed?	☐ No 0 ☐ Yes 1	☐ Unknown 77

Q52. STR Analysis results: (Only fill in when DNA analysis was performed)

	DNA Results		
Source:	Foreign DNA	Male (M) or Female (F) of Foreign DNA and how many profiles for each	Full (F) or Partial (P) profile, and how many of each
Q52. Oral	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52A. M (# __) ☐ Q52B. F (# __) ☐ Q52C. Unknown (# __)	☐ Q52D. F (# __) ☐ Q52E. P (# __)
Q52F. External Genitalia	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52G. M (# __) ☐ Q52H. F (# __) ☐ Q52I. Unknown (# __)	☐ Q52J. F (# __) ☐ Q52K. P (# __)
Q52L. Vaginal	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52M. M (# __) ☐ Q52N. F (# __) ☐ Q52O. Unknown (# __)	☐ Q52P. F (# __) ☐ Q52Q. P (# __)
Q52R. Vaginal Lavage	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52S. M (# __) ☐ Q52T. F (# __) ☐ Q52U. Unknown (# __)	☐ Q52V. F (# __) ☐ Q52W. P (# __)

Q52X. Pubic combings	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52Y. M (# __) ☐ Q52Z. F (# __) ☐ Q52AAUnknown (# __)	☐ Q52BB. F (# __) ☐ Q52CC. P (# __)
Q52DD. Rectal	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52EE. M (# __) ☐ Q52FF. F (# __) ☐ Q52GG. Unknown (# __)	☐ Q52HH. F (# __) ☐ Q52II. P (# __)
Q52JJ. Dried Secretions	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52KK. M (# __) ☐ Q52LL. F (# __) ☐ Q52MM. Unknown (# __)	☐ Q52NN. F (# __) ☐ Q52OO. P (# __)
Q52PP. Other 1: Q52VV:_____	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52QQ. M (# __) ☐ Q52RR. F (# __) ☐ Q52SS. Unknown (# __)	☐ Q52TT. F (# __) ☐ Q52VV. P (# __)
Q52WW. Other 2: Q52CCC:_____	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52XX. M (# __) ☐ Q52YY. F (# __) ☐ Q52ZZ. Unknown (# __)	☐ Q52AAA. F (# __) ☐ Q52BBB. P (# __)
Q52DDD. Other 3: Q52JJJ:_____	☐ No 0 ☐ Yes 1 ☐ Unknown 77	☐ Q52EEE. M (# __) ☐ Q52FFF. F (# __) ☐ Q52GGG. Unknown (# __)	☐ Q52HHH. F (# __) ☐ Q52III. P (# __)

CODIS INFORMATION

Q53. Was the DNA profile eligible for CODIS entry?	☐ No 0 ☐ Yes 1 ☐ Pending 2	☐ Unknown 77 ☐ N/A 88
Q54. Date of CODIS upload:	☐ ___/___/_____	
Q55. If CODIS upload date is not available, date of completion of the CODIS eligibility review:	___/___/_____	
Q56. Was there a CODIS hit? (Only answer if CODIS was uploaded)	☐ No 0 ☐ Yes 1	☐ Unknown 77 ☐ N/A 88
Q57. If so, was it case-to-case or offender hit?	☐ Case-to-case 0 ☐ Offender 1	☐ Case-to-case and offender 3 ☐ NA 88
Q58. Date of match CODIS hit	___/___/_____	
Q59. Uploaded profiles and indicate how many profiles	☐ Q59. Full (# __) NA 88	
	☐ Q59A. Partial (# __) NA 88	
Q60. If partial profile was uploaded, how many loci were found?	_____	☐ N/A 88
Q61. Notes	_____ _____	
Q62. Was there an arrest?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q63. Arrest date:	___/___/_____	

Q64. Was there a DA filing?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q65. DA filing date:	___/___/_____	
Q66. Was there a conviction?	☐ No 0 ☐ Yes 1	☐ Unknown 77 ☐ N/A 88
Q67. Conviction date:	___/___/_____	
Q68. Type of adjudication	☐ Plea 0 ☐ Trial 1	☐ Unknown 77
Q69. Did the adjudication result in incarceration?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q70. Length of incarceration?	_____ (In months or years)	
Q71. Did the adjudication result in probation?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q72. Length of probation?	_____ (In months or years)	
Q73. Other adjudication info:	_____ _____	