FORENSIC SCIENCE AND THE COURTS:

The Uses and Effects of Scientific Evidence in Criminal Case Processing

by

Joseph L. Peterson
John P. Ryan
Pauline J. Houlden
Steven Mihajlovic

Final Report

January 1986

This research has been supported under a grant from the National Institute of Justice. Points of view or opinions are those of the authors and do not necessarily represent the official policies of the National Institute of Justice.

NIJ GRANT: 82-IJ-CX-0064

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

Chapter VIII: CONVICTION: THE INFLUENCE OF FORENSIC EVIDENCE, OTHER TYPES OF EVIDENCE AND EXTRA-LEGAL FACTORS (continued)

FIGURES AND TABLES

FIGURES AND TABLES (Continued)

FIGURES AND TABLES (Continued)

FIGURES AND TABLES (Continued)

FIGURES AND TABLES (Continued)

ACKNOWLEDGMENTS

We wish to acknowledge the assistance of many persons who supported our project over the past three years. As is always the case in a field study such as this one, we are indebted to officials within the operating agencies in our study sites who permitted us access to their files and assisted us in gathering the desired information. We feel very fortunate to have selected the study sites that we did for we received complete cooperation from all concerned agencies.

In Chicago, we thank Presiding Criminal Court Judge Richard Fitzgerald and the many judges of the Cook County Circuit Court for permitting us to visit their courtrooms and to administer exit surveys to jurors. We also are indebted to Cook County State's Attorney Richard Daley, First Assistant William Kunkle and Mr. Joseph Bessette for assisting us in our review of their case files. We thank, too, Chicago Police Superintendent Fred Rice, Deputy Superintendent Matt Rodriguez, and numerous personnel within the Department's criminalistics laboratory. In particular, we thank the former and current directors of the crime laboratory, Mr. Marshall Considine and Dr. Paul Gall.

In Peoria, IL, we are grateful to State's Attorney John Barra and members of his staff. We are also appreciative of the assistance provided by Superintendent Salvatore Pisano and Sergeant Peter Gerontes of the Peoria Police Department. Mr. Joseph Bubonic of the State of Illinois Bureau of Scientific Services Forensic Laboratory in Morton, IL, also lended us valuable assistance.

Mr. Albert Reiderer, District Attorney of Jackson County, MO, his First Assistant, Robert Dakopolis, and Ms. Jane Pickett, records coor-

dinator, were extremely helpful in collecting information in our Kansas City location. We thank, too, the staff of the Kansas City Police Department: Chief Norman Caron, Major William Moulder and Mr. Gary Howell, director of the crime laboratory.

In Alameda County, CA, we received complete cooperation from District Attorney John Meehan , Chief Assistant Richard Iglehart, and Assistant District Attorney Donald Ingraham. The Oakland Police Department was very helpful and we thank Chief George Hart and Ms. Jan Bashinski, director of the criminalistics laboratory. We also thank Mr. Robert Cooper of the Alameda County Criminalistics Laboratory for his assistance.

We are grateful for the help provided by prosecutorial, police and laboratory personnel throughout the State of Connecticut. New Haven State's Attorney Arnold Markle and Litchfield State's Attorney Dennis Santore coordinated our access to relevant case files. We thank, too, Dr. Henry Lee, Chief Forensic Scientist of the Connecticut State Police Laboratory for his valuable assistance.

Our project advisory panel met with us periodically and provided excellent advice and counsel. Members of the advisory group included Judge Stephen Schiller of the Cook County Circuit Court; Dr. Peter Nardulli, Professor of Political Science at the University of Illinois, Champaign; Mr. Douglas Lucas, Director of the Forensic Sciences Laboratory in Toronto, Canada; and Mr. Marshall Hartman, Director of the National Defender Institute in Evanston, IL. We also thank Mr. James Gramenos of the Cook County Public Defender's Office for the time and effort he devoted to the project.

We relied upon several field consultants and data collectors in our field locations: Mr. Craig Ganda, Ms. Judith Gerontes and Ms. Sheryl Krueger in Peoria, IL; Mr. Robert Moulder in Kansas City, MO; Dr. John Thornton, Ms. Debra Duncan van der Wal, and Ms. Denise Torrisi in Oakland, CA; and Dr. Robert Gaensslen, Mr. Thomas Murray and Mr. Thomas Beecher in Litchfield and New Haven, CT.

Mr. George Shollenberger, our NIJ grant monitor, provided us with continuing assistance and guidance from the perspective of the funding agency. We, also, want to thank the dozens of trial attorneys in the various study locations who agreed to be interviewed and who provided us with important insights from their perspectives. The members of the felony trial division of the Cook County, IL, State's Attorney's Office were particularly generous with their time by completing our hypothetical case scenarios.

Our project staff in Chicago performed admirably. In particular, we wish to thank Ms. Carole Gielarowski, Ms. F. Desiree Boyd, Ms. Melissa Smrz and Ms. Yvonne Smith. Yvonne carried the burden of manuscript entry and modification and deserves special thanks. Professors James Osterburg, Joseph Nicol, Wayne Kerstetter, Herbert Hamilton, John Vidmar and Doug Thomson and other associates of the Center for Research in Law and Justice provided many helpful criticisms and suggestions.

We hope the deficiencies in this report are minor, but for these we accept full responsibility.

Executive Summary

This study seeks to describe the uses and effects of physical (scientific) evidence in the charging, plea negotiation, trial and sentencing stages of the criminal justice process. Specifically, the project had four principal objectives:

- To develop a state-of-the-art profile of the nation's crime laboratories, collecting information on their resources, policies and scope of operations.
- To estimate the rates of usage of different kinds of scientific evidence in criminal offenses and if these rates have changed in recent years.
- To estimate the effects of forensic evidence on the disposition of felony defendants.
- To develop an understanding of how forensic evidence is perceived and employed by prosecutors and defense attorneys in their handling of criminal court cases.

Approach

We approached this examination of forensic evidence usage and impact from a number of different perspectives, employing a variety of data gathering strategies. In order to establish rates of usage of scientific evidence and to determine the effects of this evidence on case outcome, we took a random sampling of felony case filings in six jurisdictions across the country: Chicago and Peoria, Illinois; Kansas City, Missouri; Oakland, California; and New Haven and Litchfield, Connecticut. These samples were taken from three years: 1976, 1978 and 1981. To obtain an up-to-date profile of the scope and sophistication of forensic science (criminalistics) laboratory services, we conducted a mail survey of all crime laboratories in the United States. To accomplish the goal of determining trial attorneys' perceptions of the importance of forensic evidence, relative to other types of evidence that could be presented in court, we interviewed prosecutors and defense attorneys in all study sites. We also distributed hypothetical cases to prosecutors in the felony trial division of the state's attorney's office in Chicago to test in a more controlled manner the relative effects of eyewitnesses, confessions, tangible and scientific evidence on criminal case processing. And, lastly, to develop a better understanding of the impact of various types of evidence in the courtroom, we surveyed several hundred jurors who had just returned verdicts in felony trials.

Forensic Evidence Usage

There are more than 300 crime laboratories across the United States, most situated within police agencies. According to their own report, the bulk of casework in these laboratories is not evidence related to personal or property crimes, but the identification of drugs and narcotics and the determination of alcohol content of samples obtained from suspected drunk drivers. Nationwide, only about one-quarter of crime laboratory caseloads are violent and property crime related.

One of the major objectives of this study was to determine rates of usage of various types of forensic evidence in six selected judicial systems. To achieve this, we relied principally upon a three year (1975-78-81) random sample of prosecutor case files in each of the jurisdictions. In this sample of files, we searched for the presence of laboratory reports and found such reports in about one-quarter to one-third of case files.

The appearance of such reports, however, varies widely as a function of offense type. Virtually all murder and drug prosecution files have laboratory reports, but only 10 to 20% of attempt murders/aggravated batteries do. Robberies seldom have scientific evidence (less than 20%), while burglaries have scientific reports as often as one-third the time. Laboratory input to rape prosecutions varies widely, from as high as 70% in one jurisdiction to as low as 30% in another. Variations in rates of usage across classes of crimes is largely a function of the seriousness of the offense, the types of evidence which may result from those crimes, the information which may be derived from the evidence via scientific analysis, and how prosecutors and the court view the importance of the evidence in proving the elements of the offense. Variations across study sites within the same offense category are primarily functions of local law enforcement priorities and resources and the qualifications of both scientific and legal personnel.

The five categories of scientific evidence which appear most frequently are (in this order) drugs, fingerprints, firearms, blood and bloodstains and semen. This pattern of usage suggests that laboratories are most likely to be asked to analyze evidence that is mandatory for prosecution of a case. Specifically, laboratories are most commonly requested to identify suspected controlled substances. In a related manner, laboratories are also commonly requested to find the presence of semen in samples taken from victims of alleged rape, in order to establish that sexual intercourse did occur. Another major priority is requesting laboratories to examine evidence which can <u>conclusively</u> link the defendant with a crime, as with fingerprints or firearms. From a prosecutor's standpoint, there is less interest in evidence whose analysis may only partially (or probabilistically) link a defendant with a crime, for example bloodstains, hair or other trace evidence. Our interviews with prosecutors also indicate that they place great value on forms of evidence with which jurors are familiar (such as fingerprints) and about which experts can deliver clear and unequivocal statements.

Laboratory directors generally concur with the priorities of prosecutors and cite drugs, fingerprints and firearms as the most influential of all forms of regularly examined evidence. They are more dubious, as are prosecutors, about the significance of trace evidence which may be collected in an investigation. Correlatively, laboratory scientists believe their examinations of evidence to have their greatest impact in drug and homicide prosecutions. Forensic scientists also believe their examinations to have substantial impact in rapes, while prosecutors are more tentative about the value of physical evidence in such cases.

Our review of prosecutor files indicates that laboratories have regular success in chemically identifying suspected drugs (90% or more of the time). Finding semen presents a more difficult challenge but, nevertheless, laboratories locate it in samples from alleged victims of rape from 50 to 75% of the time. Laboratories are able to link defendants and crimes through the analysis of firearms and fingerprints more than half the time. The analysis of bloodstain evidence serves to associate the defendant and the crime about 20 - 50% of the time.

Although we frequently read or hear about the importance of more esoteric forms of evidence (e.g., hairs, fibers, glass, paint, soil, etc.) in accounts of celebrated crimes, our research shows they rarely appear in cases routinely processed through the criminal courts. This is both a function of the infrequency with which such evidence is recovered from the scenes of crimes and analyzed in the laboratory as well as the more limited information which examiners may extract from it. The low rates of usage are the result of a host of factors, but particularly: insufficient crime scene and laboratory resources to collect and examine the evidence; mandatory analysis of suspected controlled substances in any drug prosecution which has the effect of displacing other types of evidence which prosecutors perceive to be nonessential to their case; prosecutorial and related legal personnel who are unfamiliar/uncomfortable with scientific evidence; and an overloaded judicial system in which key actors (such as prosecutors) elect not to employ the full range of scientific services because they are perceived to be costly and an impediment to the rapid disposition of cases.

We also attempted to determine if there were any clear trends in the rates of usage of scientific evidence. With the nationwide increase in the number of laboratories, the greater sophistication of techniques and instruments within the laboratories and a judicial system growing more receptive to this type of information, we might expect to find an increase in utilization. This, however, is not the case. Rates are fairly steady across offense types and jurisdictions. If anything, it appears that drugs occupy an even larger share of the forensic evidence "pie" in 1981 than they did in 1975. Implicit in such a trend, of course, is that there is now less non drug-related forensic evidence being examined and used in personal and property crimes than there was in the mid-1970s.

Charging and Mode of Disposition

Although our case file analysis does not permit us to examine the movement of cases from the time of arrest to the point of charging, we did learn how scientists and prosecutors view the importance of forensic evidence in making charging decisions via interviews and our hypothetical case analysis. In addition, an earlier companion project completed by the authors (Peterson et al., 1984) found that charges are generally more likely to be filed for arrests where physical evidence is collected and examined than cases without such scientific evidence.

Laboratory directors think forensic evidence is of moderate importance in decisions to charge defendants with a crime (less important than its use in verifying statements of witnesses, but more important than providing investigative leads to detectives). Prosecutors think forensic evidence relatively unimportant in decisions to charge, relying instead on statements of eyewitnesses. The classic exception to this would be the necessity of having a laboratory analysis in charging a defendant with drug possession. One of the primary reasons prosecutors note that forensic evidence is not normally considered in decisions to charge is that laboratory results typically are not available at the time these decisions have to be made. Realistically, then, if forensic science laboratories are to make a greater impact at this stage of the justice process, resources would have to be expanded to enable them to examine evidence and report results in a much shorter time frame.

We also examined the charging decision via our hypothetical case review. The hypothetical cases varied in the strength of forensic and tangible evidence, if the defendant was identified by an eyewitness, and if the defendant confessed to the crime. Each prosecutor was asked to indicate the most likely path of disposition for each case, beginning at the point of charging and extending through sentencing.

At the point of charging, it is in the <u>absence</u> or <u>weakness</u> of several forms of evidence (including the forensic) where prosecutors think charges would be declined. In the hypothetical attempt murder, for example, it is only where the defendant fails to confess to the crime, there are no eyewitnesses <u>and</u> no forensic evidence that prosecutors predict they would not bring charges against the defendant. For rapes, it is where tangible and forensic evidence only weakly associate the defendant with the offense that they are unlikely to charge.

The analysis of our hypothetical cases also provides insight to the method of case disposition. Likelihood of trial, for example, for both the attempt murder and robbery cases is affected by an interaction of eyewitness identification and presence/ absence of forensic evidence. In both crimes, it is in the <u>absence</u> of <u>both</u> types of evidence where prosecutors expect the case to be more likely resolved by a plea. In general, then, it is the absence of more than one type of evidence which increases the likelihood of a plea, but only up to a point. If the evidence becomes so weak in a case that the defense perceives there to be a good chance of winning (acquittal) they will insist the case be taken to trial.

Conviction

On average, our sample of prosecutor files revealed that 70 to 80% of cases result in conviction, usually through a plea to the top charge. Typically, only 5 to 10% of cases are resolved at trial. Chicago is an exception where about 30% of cases go to trial. Due to the high rates of conviction for cases sampled in this study, we are unable to account for much variation in conviction/nonconviction. Admissions and incriminating statements (made by about one-third of defendants) are the most consistently important class of evidence in explaining conviction. The availability of tangible evidence, something physical like stolen poperty (but not scientifically analyzed) associating the defendant with the crime (more than half the sampled cases had one or more such items) was also important in a majority of the sites. Forensic evidence was a statistically significant, main predictor in only one of the study locations: Peoria. Here we found that the mere presence of a laboratory report increased the likelihood of conviction by 16 percentage points; the introduction of a laboratory report <u>associating</u> the defendant with the crime, however, has an even greater effect, increasing the probability of conviction by 36 percentage points. Forensic evidence interacted with other evidentiary variables in Kansas City and New Haven to produce a significant effect on case outcome. In New Haven, the effect of the forensic variables hinges on the seriousness of the offense, but in Kansas City it is where the defendant refuses to make a statement to authorities that the absence of a lab report significantly reduces conviction rate.

When we aggregate offenses of a similar nature, we find forensic evidence has its greatest main effect on the conviction of defendants charged with murder, burglary and theft. The presence of any type of laboratory report increases the rate of conviction for burglaries, while lab reports associating the defendant with the crime prove to be significant in murders and thefts. For rapes, the absence of a laboratory report leads to significantly lower conviction rates where defendants have also offered alibis to law enforcement officials.

In our hypothetical cases, we find generally that prosecutors expect a very high proportion of cases to result in conviction. We are able to identify significant explanatory variables for rape and attempt murder cases. Both rapes and attempt murders are expected to result in conviction less often when there is no eyewitness identification or weak tangible evidence and no confession. For the attempt murder it also appeared that conviction was expected to be less likely: 1) in the absence of a confession and when forensic evidence weakly associates the defendant with the offense, and 2) when both the tangible and forensic evidence weakly associate the defendant with the offense. Again we note that prosecutors appear to think in terms of the absence of evidence which may weaken their cases and lead to acquittal. The presence of forensic evidence, regardless of the certainty with which it connects the defendant with the crime, is predicted to result in higher rates of conviction.

The outcomes of the hypothetical case decisions are in agreement with our case file sample and our interviews with prosecutors in two basic respects. First, the perception of prosecutors that most cases will result in conviction is in fundamental agreement with our case sample. Secondly, it is when cases either lack evidence and have two or more forms of weak evidence, including forensic, that prosecutors reduce their expectations for conviction.

Charge Reduction

Defendants are convicted of reduced charges in about 20% of prosecutions. Using this as our dependent variable, we find that the absence of a prior criminal record, a prior relationship between the defendant and victim, and cases resolved by pleas all lead to convictions on a reduced charge.

Only in Oakland does the presence of a laboratory report associating the defendant with the crime significantly increase the rate of conviction to the top charge. In the only jurisdiction (Kansas City) where a forensic variable interacts with another evidence variable, it is where the defendant issues a statement (alibi) which weakens the prosecutor's case that a forensic report associating the defendant with the crime increases the likelihood of a conviction to the top charge.

Our offense specific analysis shows that forensic evidence exerts a singular main effect only in the crime of burglary, where laboratory reports are associated with convictions to the top charge. In several other offense categories, the presence of a laboratory report acts in combination with an incriminating statement to lead to convictions to the top charge.

Our hypothetical data are not dissimilar from these case file results. There is, however, only one offense category (burglary) where data permitted an analysis of this variable. Results generally showed the frequently noted disjunctive rule: the absence of different forms of evidence or the finding of only tentative forensic evidence in a distant location lead prosecutors to predict the defendant would plea to a reduced charge. When the defendant denies committing the crime, when there are no eyewitnesses and when forensic evidence is either recovered in a distant location or only tentatively associates the defendant with the crime scene, chances that the case will be pled to a lesser charge were increased.

Sentencing

Nonevidentiary factors predominately explain the nature and severity of sanctions given convicted defendants. The more serious the crime, the presence of a prior record and being convicted of the original charge all are associated with sentences of incarceration. Typically, no evidentiary factors influence the decision to incarcerate the defendant. The presence of forensic evidence, however, proves to be an important predictor in two sites (New Haven and Chicago), where the laboratory report leads to higher rates of incarceration. In these and two additional jurisdictions, forensic laboratory reports are also associated with higher rates of incarceration, depending upon the seriousness of the offense in question. In the aggregated offense analysis, similar factors are important predictors of sentence severity. Forensic evidence is a factor in the sentencing of defendants who are convicted of attempt murder/aggravated battery and robbery. As before, the presence of laboratory reports is associated with higher rates of incarceration.

The hypothetical case file data provide no additional insight. Such a high percentage of prosecutors thought convicted defendants would be sentenced to prison that no analysis was possible of factors influencing the decision of whether or not to award a prison sentence to convicted felons.

Our examination of length of sentence finds that seriousness of the offense and being convicted of the original charge are the key predictors. Surprisingly, the presence/absence of forensic laboratory reports is associated with the length of sentences in four of the five study sites. In Chicago, it is the <u>absence</u> of laboratory reports which is associated with a <u>reduction</u> in length of sentence by as much as 30 months.

The aggregated offense analysis finds that forensic evidence registers its major impact for the crimes of attempt murder/aggravated battery, rape, robbery and burglary. Longer sentences are given defendants where laboratory reports are present. In two offense categories (robbery and theft) the presence of an associative laboratory finding has an even greater effect on sentence length under conditions where defendant statements are absent or constitute a plausible alibi.

For our hypothetical case data, we are able to conduct analyses for three offense types: attempt murder, robbery and burglary. No evidentiary factors emerge as predictive of length of sentence for attempt murders. For the robbery and burglary offenses, as in our earlier analyses, it is the absence of evidentiary factors which are related to sentence length. In robbery, it is where defendants fail to confess to the crime, and the tangible and forensic evidence only weakly associate the defendant with the offense or there is a lack of a confession, eyewitness identification and weak tangible evidence that prosecutors expect a reduction in sentence length (of about three years). For defendants convicted of burglary, it is in the absence of a confession, forensic evidence and an eyewitness identification that prosecutors expect sentence length to be shorter than usual (by about 2 years).

Across charge reduction, conviction and sentencing stages there is a shift from general reliance on defendant background characteristics to evidentiary factors and back to defendant background characteristics. One variable that does not fit this trend is forensic evidence. It exerts stronger influence in more jurisdictions in predicting the length of the sentence than it does in explaining whether a case will lead to a conviction or if the defendant will be convicted of the original charge. It may be that forensic evidence serves as particularly convincing corroboration of the prosecution's case, reduces any shread of doubt in the judge's mind concerning the defendant's guilt and frees the sentencing judge to give the defendant the maximum prison term.

It is interesting that forensic scientists themselves believe forensic evidence to have its least impact at the point of sentencing. We should remember that scientists usually do not receive feedback from the courts about the outcomes of the cases in which their examiners testify, not to mention the great majority of cases where experts don't testify and the reports alone serve as the scientific evidence. Our data indicate that laboratories seldom receive any form of feedback in this latter group of cases.

Trial

Directors of crime laboratories estimate that their examiners testify in court in less than 10% of the cases they examine. Consequently, it is principally the reports themselves which usually convey scientific information to various users in the criminal justice system. Despite the infrequency with which examiners testify in court, laboratory examiners believe their examinations have their greatest impact at the trial stage. Prosecutors too, share the opinion that juries are particularly impressed by forensic evidence. They believe that juries "love to play detective" and that physical evidence adds to the credibility of the prosecutor's case. Indeed, prosecutors admit they sometimes fear going into a trial without forensic evidence if they think the jury will expect it. In such situations, prosecutors will go to great lengths to explain why they are not introducing physical evidence. Consistent with this, our survey of jurors immediately after their discharge from service in criminal cases, indicates they believe forensic experts are the most persuasive of all witnesses who appear before them.

Laboratory examiners believe police investigators and prosecutors have the best understanding of scientific evidence, and that judges and defense attorneys have a moderately good understanding. They believe police officers, administrators and jurors to have the poorest. Prosecutors believe that most jurors are quite capable of understanding any scientific evidence presented to them. Prosecutors will add, however, that it is they who are critical to the comprehensibility of forensic evidence. In other words, the prosecutor must serve to interpret the scientific testimony into terms easily understood by a lay jury.

Jurors indicated to us they believed they understood the scientific and physical evidence presented to them at least as well as, and commonly better than, other evidence in the case. About one-quarter of the citizens who had served on juries which were presented with scientific evidence believed that had such evidence been absent, they would have changed their verdict--from guilty to not guilty.

Prosecutors indicate that they think judges are more experienced and better prepared to consider complex scientific testimony than a jury. They expect that if forensic testimony is to be a critical component in their case and the defense likely to attack the forensic expert, that the defense would likely demand a jury trial.

Our multivariate analysis of trial verdict shows two factors to be significant predictors: as police officers' testimony becomes more persuasive and as jurors' understanding of physical evidence improves, jurors are more inclined to find the defendant guilty. The ease with which jurors reach their verdicts is influenced by a different set of factors. As crime laboratory examiners become more persuasive in their testimony, jurors find their decisions easier; however, it is where jurors find the defendant's testimony less persuasive that they have an easier time making up their minds.

Our discussions with defense attorneys elicited a variety of tactics they use to challenge forensic evidence, ranging from efforts to have the evidence ruled inadmissible (on search and seizure or chain of custody grounds) to attacks on the expert's qualification or intense cross-examination of the expert's conclusions. Usually, however, defense counsel attempt to "explain away" the physical evidence by supplying a reasonable and lawful explanation for its presence. If the above tactics cannot be used, defense counsel will usually stipulate to the evidence and attempt to draw as little attention to it as possible. Contrary to a commonly expressed attitude that defense attorneys distrust the analyses and testimony of "prosecution" experts, defense counsel we interviewed are basically satisfied with the competence and nonpartisanship of forensic scientists with whom they have contact.

The final chapter summarizes the major findings of the report and discusses several key policy questions addressed by the research.

Why haven't the rates of usage of forensic evidence increased?

This condition is explained not only by the minimal resources devoted to forensic laboratories but also by the complexity of the criminal justice process and the numerous decision makers (police investigators, evidence technicians, prosecutors) outside the province of the laboratory who determine if scientific evidence will and will not be used. The high drug caseloads coupled with the perception by prosecutors that scientific resources should be used sparingly also contribute to this condition.

Why does forensic evidence have impact in some jurisdictions but not others?

This, also, is a complex question, since the effectiveness or impact of such information hinges upon the actions of many actors in the judicial process. This study was faced with high conviction rates in most jurisdictions which made it particularly difficult to explain the (small) variations in case outcome. We did find, however, that in those jurisdictions where forensic evidence emerged as a significant predictor of conviction and charge reduction, laboratories were more successful in providing scientific results of greater certainty and specifity. At the point of sentencing, the importance of forensic evidence which links the defendant to the crime is less important than the offering of any kind of laboratory report.

What motivates the prosecutor to use forensic evidence?

This is an important question for it also affects the rates of utilization of scientific evidence. It appears that some prosecutors take more of a reactive stance with respect to this kind of evidence than a proactive one. In other words, forensic evidence is used more to avoid the prospect of losing an otherwise strong case, rather than for what it may contribute to the winning of a case having marginal evidence to begin with.

Where should law enforcement agencies concentrate their resources?

It becomes clear that scientific evidence is not the single most important determinant in predicting if a case will result in a conviction. In fact, it is the statements of defendants which stand out as the best predictor. Nevertheless, law enforcement agencies should place comparable emphasis on laboratory procedures to derive detailed information from physical evidence as they do to gather it in the first place. Efforts must also be made by police, prosecutors and defense attorneys to increase their understanding of forensic results and to take a more rational approach to its use in the adjudication of criminal cases.

CHAPTER I

THE ROLE OF EVIDENCE IN THE ADJUDICATION OF CRIMINAL CASES: A BRIEF REVIEW OF THE LITERATURE

Introduction

Law school courses in criminal evidence presume the preeminence of evidence in determining the outcomes of cases, at least in the adjudication of guilt or innocence. Legal realists, and their modern day social science adherents, by contrast, emphasize "extra-legal" -- sociological, demographic, political -- considerations in the disposition of cases. Somewhere between these two extremes likely lies reality. Evidence plays an important, but far from exclusive, role in the determination of a defendant's guilt or innocence and sentence. But this summary evaluation itself is vague. Where between the two polar views does truth actually lie? And of particular interest to this research project, what is the "value" or effect of scientific (forensic) evidence as opposed to other types of evidence, such as complainant and eyewitness testimony, recovered property, incriminating statements or confessions by the defendant, or police reconstruction of the crime? This study seeks to assess the unique contribution of forensic evidence to the charging, plea negotiation, trial, and sentencing stages of criminal case adjudication.

What Role For Evidence?

Evidence could be expected to be the supreme predictor of case processing. The legal community has declared that evidence should be the key determinant of trial outcomes; consequently, the opportunities for extraneous or "extra-legal" considerations to affect decisions are carefully limited by rules of evidence which judges enforce, by careful scrutiny and selection of jurors (voir dire) and by appellate review. Yet the role of evidence in the decision of whether to charge, its importance in plea negotiations, or the assessment of appropriate punishment is left to the discretion of the decisionmaker. The legal community clearly expects that evidence should play some role in all these decisions, but how much weight may be given to nonevidentiary factors (e.g. defendant and witness demographics) is ambiguous.

What role does evidence play in the prosecutor's decision to charge a suspect with a crime? There are two, somewhat competing perspectives. One school of thought views the prosecutor's decision as highly discretionary (e.g., Cole, 1970; Miller 1970). Many people are arrested by the police; based upon facts gathered by the police most of these could be charged. Yet the majority are not charged. Community politics, prosecutorial priorities in other crime areas, negative victim stereotypes (Stanko, 1981), victim/witness characteristics (Williams, 1978) or conflicts with the police lead prosecutors to ignore the evidence and dismiss cases. According to this view, evidence is necessary, but not sufficient for a case to be charged. A second perspective views the state of the evidence as the controlling, if not exclusive, force in the prosecutor's charging decision (e.g. Bernstein, Kelley & Doyle, 1977; Jacoby, 1982). Boland et al. (1983:8) examined reasons why prosecutors rejected felony arrests and found that "witness problems and evidence-related deficiencies accounted for half or more of the rejections at screening." She, also, found that witness and evidence reasons account for the majority of nolles and dismissals <u>after</u> charges were filed. Boland, also, determined that witness problems are much more common in prosecuting crimes against persons than crimes against property (where evidence problems are more likely to appear).

The charge/no charge decision will vary, however, from jurisdiction to jurisdiction on the basis of office policies. In some jurisdictions, prosecutors may typically charge provided there is sufficient evidence to meet a "probable cause" standard (i.e., survive screening by a grand jury or preliminary hearing). In other jurisdictions, prosecutors may adopt a stricter standard, choosing to charge only cases that are "trial worthy" -- winnable if pressed to trial (Jacoby, 1982). Similarly, when prosecutors were asked to indicate whether hypothetical cases would be accepted for prosecution (Jacoby, 1982) analysis confirmed the importance of the evidence associated with a case. Charging decisions were found to be primarily determined by the legal-evidentiary strength of the case, specifically, whether constitutional rights were violated during the arrest (thereby rendering evidence legally inadmissible). Whether there was corroboration by two or more police witnesses, and whether property was found in the possession of the defendant. A prior relationship between the victim and defendant (also considered a legal evidentiary factor) decreased the probability that a case would be charged. Charging decisions were secondarily affected by the seriousness of the offense, with more serious crimes more likely to be charged. In sum, according to this view evidence is necessary and some degree of evidence will be sufficient for a case to be charged.

Both perspectives regard some level of evidence as crucial to initiate a prosecutorial decision to charge. But, neither has provided any insight into the relative value of different kinds of evidence in the charging decision. We know neither the kinds of evidence prosecutors depend upon to charge, nor the kinds of evidence prosecutors pursue, once charges are filed.

The role of evidence in plea negotiations is also uncertain. Much of the uncertainty can be attributed to the inconsistent, varying character of plea discussions themselves. In Prairie City (a pseudonym for a small city in Illinois), Neubauer (1974:210-11) reports:

> Plea bargaining centers first of all on guilt adjudication. That is, the lawyers analyze what can be legally proven about what the suspect did .... In reading (other) studies, one gains the impression that the lawyers seldom discuss the legal guilt or innocence of a suspect. That is not the case in Prairie City ... (where) plea bargaining is best viewed as a mini-trial where the two professionals analyze what the likely jury verdict would be.

As Neubauer accurately points out, other studies of plea bargaining --before and after his 1974 study -- have emphasized the sentencing aspects of the attorneys' discussions. Newman (1966) portrays plea discussions as an "auction" over sentence. Rosett and Cressey (1975) emphasize that plea sessions focus on sentence because there is more likely to be agreement about disposition than about "oft-ambiguous facts." Heumann (1977), too, emphasizes negotiations over sentence, but largely because experienced defense attorneys believe that most cases (perhaps as high as 90%) are without any legal defenses i.e., "born dead." In the terminology of the public defenders studied by Mather

(1974), most, but not all, cases are "dead bang" cases where the strength of the prosecutor's evidence is overwhelming.

Can we therefore assume that evidence plays little or no role in plea bargaining, merely because it isn't discussed (much or at all) in plea conferences? The lack of dispute over evidence, or the choice by courtroom actors to avoid talking about evidence, does not necessarily imply a trivial level of influence. Indeed, quite the opposite may be true. The impact of the evidence may be so clear that neither prosecution nor defense feels the need to discuss it.

McDonald et al. (1979) published a review of factors considered by prosecutors in offering a plea bargain: caseload, criminality of the defendant, personal attorney attributes, mitigating circumstances and strength of the case. They also presented prosecutors with the opportunity to select categories of information relevant to a plea bargaining decision. Strength of the case was the most important determinant, which included: the basic facts of the case, available evidence, effectiveness of witnesses at trial, the defendant's account of the incident and propriety of police conduct at and after arrest. Lagoy et al. (1976) also found state's attorneys deciding whether to offer a plea bargain, very concerned with the evidence associated with a case.

Eisenstein and Jacob (1977) attempted to assess the impact of evidence on actual case outcomes in three cities -- Chicago, Baltimore, and Detroit. They found strength of evidence to be associated with likelihood of conviction and sentence imposed. They acknowledge, however, the crudeness of their measures of evidence. Furthermore, their analysis aggregates various types of evidence and precludes assessment of the impact of scientific or any other type of evidence.

Feeney, Dill and Weiss' (1983) study of robbery and burglary arrests in San Diego and Jacksonville found evidence to be the most important factor in predicting conviction. Of evidence factors, a witness identification of the defendant was the most important variable in explaining conviction for San Diego robberies while victim-witness problems were most important in Jacksonville. Uncooperativeness of the victim and confession by the defendant were the most important factors in explaining burglary convictions. Though achieving a high level of explanation of case outcome, Feeney et al employed 90-100 factors in their multiple regression analyses, leading to considerable collinearity among their independent variables.

In sum, we have little agreement about the importance of evidence, and know little about the importance of various kinds of evidence for the decision to seek or accept a plea. What weight do prosecutors and defense attorneys assign to various kinds of evidence in the plea negotiations process? Are these "weights" based upon their own values about evidence or their perceptions about how jurors would likely evaluate such evidence?

It was earlier noted that the role of evidence has at least been clearly established by the legal profession for the trial process. It is to be the primary consideration. But how important is the consideration of the facts (i.e., the evidence) of a case? Kalven and Zeisel (1966), in their landmark study of jury behavior, conclude that most (about 75%) juries in criminal cases follow the evidence presented, and reach verdicts identical to those of law-trained judges (i.e., consistent with the evidence). Where juries depart from the evidence, the cause is likely to be sympathy for particular types of defendants, unpopular laws (e.g., gambling), or a belief that the punishment prescribed by law is too severe for the circumstances of the alleged offense. But these "departures" -- which usually tilt toward defendant leniency -- are just that, departures or exceptions from a general pattern of jury behavior that is guided by consideration of the evidence.

More recent studies of jury behavior have focused on the "exceptions" -- the role that extra-legal or nonevidentiary factors play in jurors' verdicts. One area of study has been the attitudes and background characteristics of jurors themselves (e.g., Mills and Bohannon, 1980; Adler, 1973). The effects of education, age, race, and gender of the juror on verdicts have been most frequently explored, but the results are far from conclusive. Women and blacks have sometimes been found to be slightly less likely to convict than males and whites, but the differences are neither large nor consistent from study to study, nor sometimes, from one offense type to another in the same study. In sum, available research suggests that evidence is as important in determining trial outcome as the legal community would hope it would be. Yet even here we know little about the relative importance of different types of evidence. Forst's (1977) investigation of felony and serious misdemeanor arrests in Washington, D.C. found that certain police activities and types of evidence increase the likelihood of a conviction. These behaviors include: locating two or more witnesses to the crime, making prompt arrests (within 24 hours of the commission of the offense) and locating tangible evidence. Defense attorneys often believe that jurors (and judges) are unduly swayed by expert testimony of forensic scientists -- testimony which the defense feels particularly illequipped to challenge (Keefe, 1978). Eyewitness testimony is alleged to be either invincible or more easily destroyed than any other type of evidence. But an empirical assessment of the weight that jurors assign to various types evidence of evidence has not been conducted.

The role of evidence at each of the many disposition points of case processing is generally unspecified and unknown. The relative impact of different types of evidence is all but unexplored. It is the intent of this research to clarify the contribution of scientific and other types of evidence at the many stages of case processing.

Types of Evidence: A Breakdown

The particular interest of this research is the impact of scientific or forensic evidence. We define this as evidence analyzed by a laboratory (including such evidence as fingerprints, blood, seminal fluid, hair, glass, etc.).

A second type of evidence commonly associated with, but distinct from, forensic evidence is "physical" or "tangible" evidence -- e.g., stolen property, articles of clothing, etc. What distinguishes this from forensic evidence is the absence of a laboratory analysis and an expert prepared to interpret and testify to the scientific results. Stolen property, or clothing, typically is used to associate the defendant with the crime by means of size, name tags, other marks of identification, etc. The utility of "tangible" evidence is striking. According to Forst (1977:42):

> When tangible evidence, such as stolen property and weapons, is recovered by the police, the number of convictions per 100 arrests was 60 percent higher for robberies, 25 percent higher for other violent crimes, and 36 percent higher for nonviolent property crimes.

Feeney et al (1983:151) found weapons were recovered as evidence in about half of the robbery arrests. Recovered stolen property was available in about one-quarter of arrests for both robbery and burglary. Cars (license plate numbers or vehicle descriptions) were available in about 20% of robbery arrests but less than 10% of burglary arrests. Defendant's clothing was available as evidence in about 10-15% of robberies and tended to increase conviction rates. Clothing evidence was not a factor in burglary prosecutions. These various forms of tangible evidence were of only marginal significance in predicting conviction.

Other types of evidence are clearly distinct from physical evidence. These include: (1)The testimony or statement of arresting police officers, (2)the testimony or statement of a complainant, (3) eyewitness identifications, (4)the statements of accomplices (turned state's evidence), (5)the statements or testimony of family and friends of defendant and victim, and (6)confessions or alibis by the defendant. In an analysis of the frequency of such evidence in trials, Kalven and Zeisel (1966:142-43) found certain types of evidence (e.g., police testimony) virtually always presented, but the frequency of other types of evidence dependent upon the type of case. Eyewitnesses, for example, commonly testified in murder trials (44%), but rarely in rape trials (4%). A complaining witness almost always appeared in rape and assault trials (97% and 94%, respectively), but seldom in drug trials (17%). Confessions were frequent in murder trials (43%), but less so in other cases. Evidence from accomplices was not uncommon in burglary trials (24%), but rare in other cases.

Forensic Evidence

Given its physical and sometimes mathematical basis, scientific evidence is thought to be intrinsically more reliable than other forms of evidence, such as eyewitness accounts and statements taken from defendants. Scientific evidence first appeared in courts of law in this country in the early part of the twentieth century, followed by an increasingly wide acceptance of physical evidence as a means for resolving legal disputes. Many jurists, including Supreme Court Justice Arthur Goldberg, played important roles in this development:

> We have learned the lesson of history, ancient and modern, that a system of criminal law enforcement which comes to depend on the "confession" will, in the long run, be less reliable and more subject to abuse than a system which depends on extrinsic evidence independently secured through skillful investigation. <u>Escobedo v. Illinois</u>, 378 U.S. 478, 488 (1964).

It is the real, tangible quality of physical evidence, coupled with the precision and accuracy of the measurements performed on it, that gives it the weight it has come to command in court.

> This is evidence that does not forget. It is not absent because human witnesses are. <u>It is factual evidence</u>. Physical evidence cannot be wrong; it cannot perjure itself; it cannot be wholly absent. Only its interpretation can err. Only human failure to find it, study and understand it, can diminish its value (Kirk, 1953:4).

Physical evidence, it is said, is not subject to poor eyesight, imperfect memory or the trauma associated with a criminal act which compromises the reliability of statements from the victim or witnesses to a crime. Just as our society has grown increasingly dependent on advancements in science and technology to speed communications, process information, control disease, and defend our nation, our judicial process has become more reliant upon sophisticated tests and measurements to elucidate the evidence associated with criminal acts.

> More and more, the solution of major crime will hinge upon the discovery (of physical evidence) at crime scenes and subsequent scientific laboratory analysis of latent fingerprints, weapons, footprints, hairs, fibers, blood and similar traces (President's Crime Commission, 1967:51).

Scientific evidence is also awarded special consideration because of the presumed impartiality and objectivity of the forensic expert who examines and interprets the evidence. Forensic science codes of ethics require experts to remain neutral and to take a nonpartisan position with respect to the interpretation of their findings and to assume, as their primary charge, the education of the triers of fact (AAFS Code of Ethics, 1984). In contrast to the advocates in a judicial contest, whose foremost aim is "winning the case," the scientist's goal is the "pursuit of truth" through the application of the scientific method (Curry, 1965:5).

The Development of Forensic Laboratories

Beginning in about 1930 and extending to the late 1960's, forensic services expanded slowly but steadily in this country. Forensic laboratories often times were established in a city or state after a major crime of violence went unsolved, or in the aftermath of an inquiry into police mishandling of an investigation (Fong, 1969). As such, most early crime laboratories came into existence independently from one another and not as a part of a coordinated system (Benson et al., 1970). Criteria adopted for hiring personnel, procedures used in examining evidence and measures taken to assure quality control were unique to each laboratory. This explains, in large measure, the lack of consistency among the nation's crime laboratories in terms of standards, procedures and the quality of results reported (Peterson _et al_., 1978). Although about one hundred crime laboratories were in existence in the United States in 1967 (Joseph, 1968), the number rapidly expanded (to about 300) in the decade from 1970 to 1980. This was largely the result of four factors:

- o The increase in the rate of drug abuse in the United States and the influx of drugs and narcotics requiring identification into crime laboratories.
- o U.S. Supreme Court decisions curbing police investigation and interrogation practices, coupled with special crime panels calling upon the police and the entire criminal justice system to become more professional and scientific in their efforts to control crime.
- o A rapidly rising rate of violent crime in the nation's urban areas, beginning in the mid 1960s and extending well into the 1970s.
- o The creation of the Law Enforcement Assistance Administration and the availability of millions of dollars of federal funds to state and local governments to expand existing and to build new facilities.

Despite federal funding, the expansion of forensic laboratories proceeded without national direction or planning. The newly formed laboratories, as well as the older facilities, continued to suffer from lack of coordination, the absence of uniform standards and procedures to guide the analysis and interpretation of evidence, and the nonexistence of management reporting systems to permit the assessment of the effects of scientific evidence in solving crimes, prosecuting offenders and insuring a high quality of justice.

The standard for admission of scientific evidence in court has changed little over the past sixty years. Frye v. United States 293 Fed 1013 (1923) which requires a technique "to have gained general acceptance in the particular field in which it belongs" before it may be admitted in a court of law is still the landmark ruling. Excluding scientific techniques from judicial proceedings which did not meet this "general acceptance" standard was the courts way of insuring that neither the judiciary nor lay jurors would be exposed to scientific results which may be unreliable.

There are indications, however, that courts have begun to relax the conservative criteria of the Frye test and to permit the introduction of more novel scientific techniques (Giannelli, 1980). With few exceptions (the polygraph and voice spectrograph notably among them) most courts have come to accept new techniques as they have been developed. Included here would be the use of electrophoresis to characterize the genetic markers of blood and semen, the scanning electron microscope to analyze gunshot residue from the hands of suspected shooters, or the gas chromatograph-mass spectrometer to determine the place of origin of dangerous drugs or narcotics. In reality, then, the courts present few barriers to the introduction of most forms of physical evidence and analytical testing and have come to expect scientific analyses of evidence in certain offenses (murder, rape and arson for example) which further promotes its usage.

Empirical Research into the Utilization of Scientific Evidence

Given the increase in the number of crime laboratories, scientific personnel and sophisticated techniques for examining evidence, one might expect that a sizeable percentage of cases would involve forensic evidence. In addition, the favor with which forensic analyses and testimony are received by judicial fact-finders should promote its utilization. Surveys of judges and attorneys, for example, find overwhelming support for the increased use of science in the courtroom. Schroeder (1977) concludes:

> Of those law persons using the forensic sciences, over 90% desire greater utilization of the forensic sciences personnel because of their superior credibility in legal decision making (Schroeder, 1971: ix).

Similarly, a study of laboratory, police and judicial officials in the state of New York found overwhelming (87%) support for the increased use of physical evidence in the future (Peterson et al., 1977). Nonetheless, evaluations of actual rates of usage of scientific evidence find its presence to be a rather uncommon occurrence in the judicial process.

Parker's (1963) survey of forensic laboratories revealed fewer than 1% of the total criminal violations at the local level to receive a forensic laboratory examination. Later studies (e.g. Joseph, 1968; Benson, 1970; Rogers, 1970; Parker and Peterson, 1972; Parker and Gurgin, 1972), have revealed similar results. As Benson (1970) stated:

> The involvement of the crime laboratory in the total body of crime has been so miniscule as to preclude judgment as to the impact of criminalistics on the criminal justice system (1970:27).

Of the relatively few cases that receive forensic examination Parker and Gurgin (1972) concluded that drug possession charges received a disproportionate amount of laboratory resources and attention. Ward's (1970) national study of police criminal investigation units also found that the analysis of drug and narcotic evidence had "displaced" the examination of physical evidence in such crimes as burglary and robbery.

We likewise know something about the frequency of forensic evidence in various types of cases (Peterson et al., 1984). It is more likely to be available and used in murder, rape, and drug cases compared with, say, burglary, theft, robbery or assault cases. This is partly due to conservation of limited laboratory resources for more serious cases or crimes in which (like drugs) the laboratory evidence is indispensible to obtaining a conviction. But this is also substantially a function of the (lesser) likelihood of forensic evidence being available in such crimes as theft, where there is less interaction between the offender and his victim or surroundings.

Empirical studies of the use of scientific evidence in court are very few in number. Kalven and Zeisel's (1966) study, The American Jury, included a brief overview of the use of expert witnesses at trial. No experts appeared in about three-quarters of criminal trials studied and in only 3% of trials did both sides employ an expert. Prosecutors used experts four times as often as defense attorneys.

Further indication of the limited use of forensic evidence in court was found in Lassers's (1967) survey of capital cases before the Illinois Supreme Court. Lassers concluded that there was an inordinate reliance on confessions and witness testimony at the expense of scientific evidence.

> We think our study shows an incredible lag in the employment of modern methods. The prosecution does use scientific evidence in upwards of 25% of all cases, but it relies almost exclusively on three forms of such evidence, the newest of which is 40 years old: firearms identification (so-called "ballistics"), blood typing, and fingerprint comparison (Lassers, 1967:310).

Access by the Defense

Another continuing problem concerning the use and effects of forensic evidence is its availability to the defense. Most police crime laboratories do not permit the analysis of evidence on behalf of the defendant. Usually only through discovery motions filed with the court is the defendant allowed to review the results of laboratory testing of evidence prior to trial. One noted criminal defense attorney has commented that being located within a police organization leads the crime laboratory:

> to ignore or relegate as insignificant any evidence that is not consistent with the police theory of a particular suspect's involvement in the crime under investigation. (Keefe, 1978:47).

Inasmuch as most (>80%) criminal defendants are indigent, it is a rare occasion that a criminal defense lawyer will employ the services of a private forensic expert. While the lack of financial resources stands as the primary reason scientific experts fail to appear in behalf of criminal defendants, the scarcity of independent forensic examiners and the discomfort attorneys experience when dealing with scientists are additional reasons (Decker, 1982). As a result, defense attorneys will usually either attempt to have the evidence suppressed at a pre-trial hearing on illegal search and seizure or faulty chain of custody grounds, or try to draw as little attention as possible to the scientific findings by conceding the results and arguing its presence can be explained in lawful ways.

The Effectiveness of Scientific Evidence in the Judicial System

Although the consideration of forensic analyses may be relatively uncommon in the judicial system, when such analyses are present, they may exert a tremendous impact on case disposition. For instance, many practitioners and legal scholars share the belief that scientific evidence has a major influence on the decisions of lay jurors (Imwinkelreid, 1981:37):

> Scientific evidence impresses lay jurors. They tend to assume it is more accurate and objective than lay testimony. A juror who thinks of scientific evidence visualizes instruments capable of amazingly precise measurement, of findings arrived at by dispassionate scientific tests. In short, in the mind of the typical lay juror, a scientific witness has a special aura of credibility.

There is, however, relatively little empirical evaluation of the effects of forensic evidence.

Calspan Corporation (Rosenthal and Travnicek, 1974), under an LEAA grant, attempted to determine the effectiveness of criminalistics operations at the police and court levels. Due to disparate and nonsystematic recordkeeping practices in the study sites, Calspan was unable to formulate many, empirically based conclusions. They found no documentation which indicated that prosecutors relied upon the results of scientific testing in their decision to charge suspects or, for that matter, to dismiss charges once filed. In the cases studied, a forensic scientist never appeared before a Grand Jury; however, laboratory results may have been relayed verbally through an investigator or prosecutor. Calspan did find, though, that physical evidence was occasionally instrumental in inducing guilty pleas from defendants and that tangible evidence seemed to be a factor in securing pleas to the original as opposed to a reduced charge. However, since the researchers were unable to control for other evidence or extra-legal factors in the cases reviewed, the results must be viewed cautiously.

At trial, Calspan found scientific evidence presented in about half of the cases where physical evidence had been examined in the laboratory. The physical evidence was reported (by the prosecutor) to be decisive in about 40% of these trials and corroborative of other evidence in another 40%. Defense expert witnesses rebutted the scientific evidence presented by the prosecution in about 10% of the cases where the evidence was actually used in court.

Feeney et al (1983) found that fingerprint evidence was matched with the defendant in about 1% of robbery and 2% of burglary arrests. All burglaries with fingerprint matches (4) resulted in convictions in both jurisdictions studied.

Peterson, Mihajlovic and Gilliland (1984) recently published a study in which the objective was to determine the role of forensic science services in police investigations. Data were gathered from a random sample of about 2,700 police files in four jurisdictions. Cases were stratified according to the presence/absence of laboratory analyzed evidence. While this study focused on the effects of physical evidence on police investigations, researchers tracked cases to their final disposition in the courts. They recorded the initial and final charges filed against the defendant, the mode of disposition of the case (plea, trial, dismissal), if the case resulted in a conviction or acquittal, and the sentence given the defendant.

Some of the relevant findings of this research are:

- Offenses with scientifically analyzed evidence had higher rates of police clearance and arrest than offenses without such evidence.
- Arrests with scientifically analyzed evidence led to higher rates of prosecutorial charging than cases without such evidence.
- Cases with physical evidence were more often disposed at trial than cases without such evidence. Also, as the specificity of the laboratory findings increased (linking an offender with a crime) the greater was the likelihood the case would go to trial.
- Higher rates of dismissal occurred for cases where laboratory results <u>dis</u>sociated the offender with the scene or victim.
- Higher rates of conviction resulted in cases with laboratory analyzed evidence; of these cases, the highest rates of conviction resulted where laboratory tests were definitive and linked the defendant with the crime.

Saks and Van Duizend (1983) sought to describe the problems which arise at the trial level when litigators attempt to use scientific and technical evidence. Based upon a review of the literature, selected case studies and various other interviews, the authors proposed possible solutions and avenues of future research. Although admittedly a qualitative and, in many respects, subjective review of cases and practices employed, the research presents the attitudes and opinions of various court actors about the value of forensic evidence in cases as they progress from the pre-trial level, through the trial, and into the appeal stage.

Summary

In conclusion there are different types of evidence which can be operationally defined, and type of evidence is correlated, rather strongly, with type of case (crime). The circumstances of crimes, and the elements needed to prove crimes vary. As a consequence, so do the types of evidence that are likely to be available and that may be presented in court. Accordingly, any analysis of the role of evidence in criminal adjudication must be sensitive to these differences.

The literature in the forensic sciences is characterized by three central themes:

- Given its scientific, objective qualities, most criminal justice authorities have called for greater reliance on physical evidence and expansion of forensic facilities.
- Rates of usage of forensic evidence have been shown to be very minimal, but with the tripling of crime laboratory resources nationally there is reason to believe that these rates have increased.
- Very few studies have been published which describe the effects of scientific evidence at the court level; the reasons for this absence seem to be due princpally to the infrequency with which this evidence is used and research designs which fail to distinguish forensic testimony and reports from other forms of evidence.

CHAPTER II

GOALS AND METHODS

Project Goals

Just how important is scientific evidence in the charging, determination of guilt or innocence, and sentencing stages of the judicial process? As the preceding chapter indicates, we know very little about the use and effects of scientific evidence on the prosecution and defense of criminal cases. Studies of physical and scientific evidence have determined that it is rarely available; however, these studies have focused on police investigation practices. No such inquiries have been published which examined patterns of usage at the court level. Consequently, a primary focus of the present study is a determination of the rate of utilization of forensic evidence in court and an assessment of whether that rate has, as implied by the criminal justice literature, increased in recent years. What kinds of physical evidence are routinely examined in forensic laboratories and for which types of prosecuted offenses? In order to provide a more complete understanding of the use of forensic evidence, the current report also presents the results of a survey of the nation's crime laboratories. It details information about their resources, policies and scope of operations.

The effect of forensic evidence appears to be to increase rates of arrest, charging and conviction. Its effect on mode of disposition (e.g., plea vs. trial) and sentencing is unclear. The secondary aim of this study, therefore, is to ascertain the relative impact of forensic evidence, and the relative effects of various types of forensic evidence, on charging, disposition and sentencing decisions. In examining the relative effect of forensic evidence we consider the opinions of jurors and prosecutors.

Methodology

Utilization of Forensic Evidence

In order to assess the rate of utilization of forensic evidence, and to determine whether that rate has increased in recent years, we required information about the presence or absence of forensic evidence in a random sample of all criminal cases charged in several years, in several jurisdictions. We selected the years 1975, 1978 and 1981. Data from these years avoided elections, were still fairly accessible and yet were likely to have reached a final disposition before we began data collection in 1983.

We selected the six jurisdictions of: Peoria, Illinois; Chicago, Illinois; Kansas City, Missouri; Oakland, California; and New Haven and Litchfield, Connecticut. The first four of these jurisdictions were participants in an earlier study of police use of forensic evidence (Peterson et al., 1984). Continuation of our research in the four original sites enabled us to examine the process of scientific evidence utilization from the point at which evidence is gathered by the police at the crime scene, through its analysis in the laboratory, to its ultimate usage in the courts. The Connecticut jurisdictions were added to achieve greater geographical, organizational and caseload diversity.

These sites span the continuum from very large jurisdictions (Chicago) to small cities and towns (Peoria and Litchfield). These jurisdictions also reflect attendant differences in crime rates, numbers of available law enforcement personnel and volume of caseflow through their respective court systems. The laboratories selected also represent different organizational structures for the delivery of scientific services: municipal (Chicago and Oakland); regional (Kansas City and Peoria (Morton); and a centralized state facility (Connecticut). Geographically, the sites are distributed throughout the western, central plains and eastern sectors of the country. Resource (grant) limitations precluded the addition of any more sites for study. (See Chapter III for additional information about each study jurisdiction.)

In sum, we believe these jurisdictions provide an accurate portrayal of rates of usage of forensic evidence across America. Yet because they differ on so many dimensions, the cause of differences in rates of utilization cannot always be precisely identified. Some readers may wish that we had chosen "matched sites," that differed on only one, or two, known dimensions. Matched cities, unfortunately, do not exist. And making a choice of the one or two characteristics to match locations in the absence of information about the important determinants of forensic evidence utilization, was an impossibly difficult decision. Selecting a broad range of cities seemed the best research strategy for answering the question of whether rates of forensic evidence utilization differ under any circumstances or increased from 1975 to 1981, in any kind of locale.

For information about the frequency of utilization of forensic evidence in the court adjudication of a case, we might have gathered information from either court or prosecutorial files. Prosecutor case files, however, represent the single most complete source of information about evidence used in a prosecution, socio-demographic characteristics of the defendant and "system processing" characteristics of the case; i.e., manner of disposition, conviction status and sentence. For the purpose of this study we made the assumption that if scientific information were used in a prosecution, the case file should contain a copy of pertinent forensic laboratory report(s). We recognize that such an assumption may lead to the incorrect categorization of cases in which a prosecutor has had verbal contact with a laboratory examiner, but a laboratory report was never produced. It is our understanding, though, that such an occurrence is rare; particularly in cases where the scientific results are pivotal in deciding case outcome.

Further information about the utilization of forensic evidence was provided by a survey of the nation's crime laboratories. Among the items surveyed were types of physical evidence routinely examined and the frequency with which scientists testified at trial. This latter issue was explored in greater depth in three of our study sites where records permitted us to determine which cases resulting in trial included the appearance of a crime laboratory expert witness.

In addition, at the conclusion of a sample of 31 jury trials in Chicago, individual jurors were requested to complete a brief questionnaire assessing the various types of evidence presented in the trial. Questions focused on types of evidence introduced during the trial, and on the credibility and comprehensibility of various forms of evidence and testimony presented. These data provide a special focus on trial cases, prosecutions most likely to receive the time, resources and energies of crime laboratories.

Relative Impact of Forensic Evidence

The second major focus of the grant was the assessment of the relative impact of forensic evidence. We sought to ascertain the impact of various types of evidentiary and nonevidentiary case characteristics in a variety of ways. First, we conducted interviews with prosecuting and defense attorneys and crime laboratory personnel. Data were gathered with respect to charging, plea negotiations and problems associated with presenting or interpreting such evidence at jury and bench trials.

Second, we collected detailed information about the attributes of the cases examined in our 1981 sample. Detailed information about all varieties of evidence -- forensic, tangible, eyewitness, complainant, police, accomplices, etc. -- was collected. These data permit us to assess systematically the impact of various types of evidence on cases that result in pleas and cases that result in trials.

Third, we administered hypothetical cases to prosecutors in Chicago. Hypothetical cases were developed for several different crimes (attempt murder, rape, robbery, burglary) and strength of the various types of evidence was varied in a factorial design for each crime type. Prosecutors were asked to indicate: the likely charges filed, if there were sufficient evidence to prove probable cause, likely mode of disposition (plea, trial, or dismissal), likely case outcome (conviction, acquittal), and likely sentence if the defendant were convicted. Table 2.1 summarizes the various types of data collected and the stage or stages of criminal case adjudication addressed by each type of data.

Table 2.1 Types of Data Collected*

Method	Stage of Adjudication			
	Charging	Plea	Trial	Sentence
Defendant-Based Case File Analysis	--	X	X	X
Interviews with Key Actors	X	X	X	X
Hypothetical Case Scenarios	X	X	X	X
Jury Exit Questionnaires	--	--	X	--

* (X) Indicates data were collected that addressed particular stage of adjudication.

(--) Indicates data do not address this stage of adjudication.

Report Organization

The remainder of the report is divided into the following chapters:

Chapter III Study Site Descriptions

A brief overview of the crime laboratories and court systems in each of the six study jurisdictions is provided. Particular attention is paid to the relationship between the crime laboratory and prosecutor's office in each site.

Chapter IV Rates of Utilization of Forensic Evidence

Chapter IV is devoted to a review of the rates of usage of various forms of forensic evidence in the years 1975, 1978, and 1981. The types of evidence associated with particular offense categories and the results of testing of different forms of forensic evidence are reviewed.

Chapter V Survey of the Nation's Criminalistics Laboratories

The results from a national survey of crime laboratories is discussed, which helps to place into context the findings of rates of utilization of evidence in each of the study locations.

Chapter VI The Trial Attorney's Perspective

This chapter presents the results of interviews with prosecutors and defense attorneys in study jurisdictions about the importance of forensic evidence in case processing decisions.

Chapter VII Juror Perceptions of Evidence

This chapter presents the results of questionnaires completed by jurors in Chicago, Illinois. Citizens discharged from jury service were asked to evaluate the evidence they had heard and how it had affected the decision they rendered.

Chapter VIII Conviction

This chapter examines the dispositions of defendants charged with felonies in the study sites in the year 1981. It identifies those evidentiary and extra-legal factors which appear to influence case outcome.

Chapter IX Charge Reduction and Sentence

The analysis of case file data presented in the previous chapter is extended to include a discussion of those factors associated with charge reduction, whether convicted defendants are sentenced to a prison term, and the length of time defendants are to be incarcerated.

Chapter X Prosecutors' Assessment of Hypothetical Cases

Data about the relative importance of various types of evidence generated via a set of hypothetical cases administered to prosecutors in the Cook County (IL) State's Attorney's office are presented.

Chapter XI Summary and Policy Implications

This chapter summarizes the major findings of the research and attempts to integrate the results obtained through the project's various data gathering approaches.

CHAPTER III

STUDY SITE DESCRIPTIONS

Introduction

This chapter provides background information about the court systems and crime laboratories in each of the six studied jurisdictions. The basic structure of the criminal courts and the flow of cases through the judicial system in each jurisdiction is described. The crime scene investigation and crime laboratory units in the various study locations are also discussed, including their physical and human resources, examination capabilities and caseloads. In addition, for each jurisdiction the relationship between the crime laboratory and the court system is described, with a focus on laboratory-prosecutor relations and factors which influence decisions to examine evidence and introduce scientific findings in courts of law.

Chicago/Cook County

The criminal justice system in Chicago is best characterized as a megasystem. The system encompasses all of Cook County (population 5.2 million), including both the city of Chicago (where 65% of the county's serious crimes occur) and many of its suburbs. Cook County had 17,818 felony case filings in 1981, reflecting an incremental increase in filings from earlier years. There are approximately 175 judges in the circuit, 50 of whom hear criminal cases; the state's attorney's office has about 400 attorneys, 175 of whom prosecute criminal cases. There are approximately 150 public defenders and numerous private defense attorneys who represent clients charged with crimes. See Table 3.1 for an enumeration of general judicial system characteristics for the various study sites.

Structure of the Courts and Judiciary

Illinois has a unified court system, wherein the processing of all civil and criminal cases occurs within one administrative unit --the circuit courts. There are 21 circuits in Illinois. Cook County comprises one entire circuit. Within the Cook County Circuit there are criminal and civil divisions of the court and even specialized subdivisions. Within the criminal division of the circuit court, for example, there are misdemeanor courts, narcotics courts, preliminary hearing courts, general felony courts, and repeat offender courts, among others.

Circuit judges throughout Illinois are selected by partisan election, in which candidates nominated by their party run in the general election under their party designation. There are also a significant number of associate judges who are not elected, but appointed by circuit judges from a pool of applicants. These associate judges primarily staff misdemeanor courts.

Once elected, Cook County Circuit Judges are assigned by the Chief Judge of the circuit to a particular division. There has been a tendency to assign new judges to the criminal division. Nevertheless, the relative lack of judicial turnover and the infrequent rotation of judicial assignments at the time of this research insured a criminal bench with considerable tenure.

Table 3.1

Criminal Justice System Characteristics of Study Jurisdictions (1981)

	JURISDICTION					
ATTRIBUTE	Chicago Cook County	Peoria Peoria County	Kan City Jackson County	Oakland Alameda County	Litch-field	New Haven
County Pop.	5.2 mil	199,000	634,000	1.1 mil	156,769	761,337
Felony Cases Filed	17,818	1,176	3,452	6,456	150*	1,000*
Prosecutors	400	7	35	35	3	12
Public Defenders	150	6 (P.T.)	13	20	2	5
Judges (general jurisdiction)	175	15	18	31	2	5
Court System	Unified	Unified	Two-tiered (Assoc/circ)	Two-tiered (Muni/Sup)	Two (PtAB)	Two (AB)
Principal Chrgng Method	Prelim Hring	Grand Jury	Prelim Hring	Prelim Hring	Grand Jury	Grand Jury
Trial Rate (% of Dispositions)						
Jury	4%	7%	5%	3%	1%	4%
Bench	32%	4%	2%	1%	0%	1%

* Cases filed in Part A Courts only.

Caseflow

Not all felony arrests by the police result in the filing of charges. In the mid-1970s, the Cook County State's Attorney's Office introduced a system of felony case screening ("felony review") to determine whether and at what level -- felony or misdemeanor -- felony arrests should be charged. The result has been a much greater emphasis on "trial sufficiency" rather than "legal sufficiency" in the charging decision (Jacoby, 1982). Still, cases charged by the prosecutor must survive a preliminary hearing, which typically is not waived. Cases may also proceed by way of grand jury indictment, rather than a prosecutor's filing of an information, but only a minority of cases actually do so. Political cases, conspiracy or white-collar crimes, other highly visible cases, or in some instances, cases previously dismissed at the preliminary hearing, might proceed by indictment.

Once cases survive these screening stages, a plea or trial (only occasionally, dismissal) will result. Guilty pleas, as in most jurisdictions, account for the bulk of the dispositions, though there are also a substantial percentage of bench trials. The jury trial rate has typically hovered at or below 5% of felony case filings annually. In raw numbers, though, there are typically 500 or more jury trials per year, approximately 10 per criminal court judge. Correlatively, there are 3,000 or more bench trials annually, or about 60 per criminal court judge. The substantial acquittal rate at bench trials (about 50%) suggests that these trials are not merely "slow pleas" (Mather, 1974).

Upon conviction, defendants are sentenced within the guidelines of recent Illinois legislation providing for quasi-determinate sentencing.

If sent to prison, defendants are sentenced to a fixed term of years, but within rather broad statutory guidelines such as 6-30 years for rape or 4-15 years for residential burglary. Presentence investigations are common and cannot be waived unless the sentence is agreed to by all parties in the case and approved by the judge.

Crime Scene and Crime Laboratory Services

The Chicago Police Department's Criminalistics Laboratory has responsiblity for examining physical evidence gathered from victims, suspects and crime scenes originating in the city of Chicago. This laboratory is the second oldest crime laboratory in the nation having been established in 1930 in the aftermath of the St. Valentine's Day Massacre. Organizationally, the crime laboratory is located within the police department's Bureau of Technical Services, but for years prior to this had been located within the Bureau of Investigation. Chicago's is the only laboratory within the jurisdictions studied that is administered by a nonforensically trained police official.

Physical evidence normally is routed into the crime laboratory via a member of Chicago's 95 officer crime scene unit. (For all practical purposes, laboratory examiners never gather evidence from the field.) This function is housed (organizationally) within the crime laboratory and is divided into two principal divisions: the evidence technician unit, which provides coverage to property crime scenes and less serious crimes throughout the six major geographical areas of the city; and a 30 member, centralized mobile unit which handles the evidence and scenes of suspicious and violent deaths and other major crimes.

The evidence technician unit is also responsible for a range of other miscellaneous, technical activities: photographing the scenes of traffic accidents and lineups; administering breathalyzer tests to suspected drunk drivers in district police stations; transporting rape kits and other evidence from hospitals and the morgue to the crime laboratory. This unit responds to the scenes of about 40,000 crime scenes in a typical year.

The laboratory itself received about 26,000 cases for examination in 1981 (see Table 3.2). Depending upon the types of materials gathered, the evidence is channeled to one or more of the five principal divisions within the laboratory: microanalysis, firearms, toolmarks, questioned documents, and chemistry. There are approximately 50 scientific examiners in the laboratory. Drugs consititute about 40% of the laboratory's caseload, with another 20% of cases directed to the microanalysis section which handles all blood, semen and trace evidence examinations. The firearms section examined about 2,000 fired evidence cases and checked an additional 18,000 confiscated weapons in 1981.

Evidence Priorities

Not all evidence collected from the field and submitted to the crime laboratory is examined. Generally, evidence submissions have increased substantially in recent years, but without a commensurate increase in laboratory resources. As a result, some examinations of evidence will be deferred, only partially completed, and in some cases never completed depending upon the type of evidence submitted and its centrality to the pending investigation or prosecution. On the other

Table 3.2

Crime Laboratory
Study Site Characteristics (1981)

	JURISDICTION				
ATTRIBUTE	Chicago	Peoria (Morton)	Kan City	Oakland	CT* Meriden
Year Established	1930	1972	1938	1944	1941
Jurisdiction Served	Munic (Chgo)	Region (State)	Region (Munic)	Munic (Oakland)	State (Cntrl)
Population Served	3.0 mil	1,062,000	1,200,000	347,000	3.1 mil
Annual Budget	$1.3 mil	NA	$801,000	$321,000	$1.0 mil
Budget/ Capita	$.43	-	$.67	$.93	$.29
Law Enforcement Agencies Served	1	400	80	1	231
Part I Crimes in Juris. Served	173,316 (city)	19,086 (Peoria SMSA)	102,367 (K.C. SMSA)	44,678 (city)	182,823 (state)
Part I Crimes/ 100,000 Pop. Served	5,752	5,200	7,754	12,848	5,837
Laboratory Examiners	50	8	14	6	11
Part I Crimes/ Lab Examiner	3,466	2,386	7,312	2,141	16,620
Total Lab Caseload	26,000	3,238	6,909	2,340	1,541
Personal	12%	14%	15%	10%	38%
Property	45%	9%	16%	33%	62%
Drugs	39%	67%	25%	40%	0%**
DWI	4%	0%	0%	17%	0%
Other	0%	10%	43%	0%	0%
Total Cases/ Lab Examiner	520	405	493	390	140

---

*Functioned as State Identification Bureau until 1979, during which time criminalistics cases were submitted to the FBI laboratory.

**Drugs examined by separate state agency.

hand, there are sections of the Chicago laboratory where practically all submissions receive a prompt examination - namely firearms, toolmarks, questioned documents and drugs.

For drug cases, the analysis must be completed in time for the preliminary hearing so that the defendant may be charged. It is in the microanalysis section where a substantial percentage of submissions go unexamined. About 30% of burglary and robbery evidence is not analyzed nor is 50% of evidence collected from assaults. Although all rape kit evidence receives a preliminary evaluation and assessment, only about 5% of cases are fully examined and reported. On the other hand, more than 95% of biological/trace evidence from homicide/death investigations receives an examination.1

All other factors being equal, evidence coming into a section of the laboratory is examined in the order in which it is submitted. There are many other factors which modify this principle, such as the seriousness of the particular offense, the availability of suspects and standards with which the evidence may be compared, the perishability of the evidence, the scientist's own assessment of the evidence and its potential for yielding useful information, and demands applied by the court prosecutor. This latter factor merits elaboration.

Judicial/Prosecutor Priorities

In recent years, the Chicago laboratory has found it increasingly difficult to keep up with the influx of evidence submitted for evaluation to the point where a growing percentage of cases are not evaluated unless a prosecutor requests it. Ideally, evidence should be evaluated as an investigation proceeds so that a detective may utilize such scientific results in making decisions to pursue or arrest certain suspects. As evidence becomes backlogged in the laboratory, greater time elapses between the submission of the evidence and its analysis, and reports are prepared principally for the benefit of the prosecutor and the court. As backlogged evidence continues to mount, prosecutors may find themselves without a laboratory report as they approach a trial date; In such cases it will be the prosecutor who specifically requests an analysis. It is estimated that as many as three-quarters of the requests for analyses made to the microanalysis section of the Chicago crime laboratory are made by prosecutors.

Assistant State's Attorneys in Cook County may choose <u>not</u> to request an analysis of evidence where it is likely the case will result in a plea of guilty or where they believe the analysis unimportant to their case. Such a latter decision constitutes a risk, of course, but one which Assistant State's Attorneys feel required to invoke given the press of cases and the resource limitations of the laboratory. The decision to introduce forensic evidence and testimony in a case has additional implications in that it usually means the officer who collected the evidence must be called to testify as well. This creates added scheduling problems and can serve to slow down the movement of a case.

Evidence such as drugs have a much faster turn around time since the analysis must be completed in time for the preliminary hearing. Even with drugs, however, laboratory supervisors scan court docket sheets to see which cases are scheduled for court action and, consequently, which should receive top piority. Without a laboratory report available in drug prosecutions, the judge will likely dismiss the case.

Communication of Results

Laboratory reports are transmitted by police department courier to case investigators and state's attorneys. Reports will be made available to defense counsel upon filing of the appropriate discovery motion with the court. Examiners contact with defense attorneys is minimal and is usually regulated by the State's Attorneys Office. The crime laboratory does offer special training sessions for public defenders which are well received. Nevertheless, most public defenders view the laboratory as being aligned with the prosecution and examiners not fully accessible.

Lab examiners testify at trials infrequently, which is a further consequence of the high volume of cases faced both by forensic scientists and prosecutors (see Chapter VI). In most pleas and trials, then, the laboratory report serves as the analyst's "testimony" where the report is read into the record by the state's attorney and is stipulated by the defense attorney. Where examiners are asked to testify, they will usually consult with an assistant state's attorney prior to trial to review the evidence and laboratory results and the line of questioning to be followed.

Overall, then, the relationship between the Chicago crime laboratory and the criminal courts is principally defined by contacts between the lab and the State's Attorney's Office. State's attorneys specializing in the prosecution of particular offense types (drugs, homicides, etc.) may have quite different perceptions of forensic evidence and the crime laboratory depending upon the section with which they have regular contact. Overall, the laboratory generally enjoys a good reputation among state's attorneys, although some are quick to point out that results may not be "state-of-the-art," given the long standing resource limitations of the laboratory.

Peoria County

The criminal justice system in Peoria County, Illinois is a segment of the five-county, Tenth Judicial Circuit in central Illinois. With a population of approximately 200,000, Peoria County is by far the busiest local court in the predominantly rural circuit and houses its administrative office. There were 1,176 felony cases handled in Peoria County courts in 1981 (See Table 3.1). There are 15 full-time judges in Peoria County and a total of 21 throughout the entire circuit. The state's attorney's office has six lawyers serving as felony assistants. The state's attorney occasionally tries cases, usually those involving major crimes. Six assistant (part-time) public defenders are assigned to the felony courts.

Structure of the Courts and Judiciary

The Tenth Judicial Circuit is one of 21 circuits in the state's unified court system. Tazewell, Stark, Marshall and Putnam counties join Peoria County in forming the single circuit. In the Tenth Circuit, six of the judges are elected as "resident" judges from their home counties -- two from Peoria County and one from each of the other four counties. The remaining circuit judges are elected on a circuitwide basis. Resident judges are not required to sit in their home counties and judges in the Tenth Circuit are often rotated between courtroom assignments in different counties. The majority of the judges sit in Peoria County. The 11 Associate Circuit judges, who have full constitutional jurisdiction, are selected by the full Circuit judges from a list of applicants. While circuit judges are elected for a six-year term, retention of associate judges is determined by the Circuit judges on a quadrennial basis.

Caseflow

Not all felony arrests by police result in formal charges. A vigorous screening process instituted by the state's attorney's office culls out cases with weak evidence and other shortcomings. The remaining cases are passed to a grand jury, which considers the evidence and decides whether to indict a defendant. Peoria County uses the grand jury in nearly all felony cases, rarely resorting to preliminary hearings. Prosecutors feel the weekly grand jury sessions are a more efficient way to determine which cases to bind over to felony court.

Cases that survive the screening process are set on the trial docket of one of the two felony courts. Some will be dismissed by the state, others will be reduced to misdemeanor charges but more than half of the indictments will result in felony convictions. The majority of the convictions --nearly 90 percent -- result from plea agreements. Peoria County prosecutors have written guidelines to make the agreements more uniform. Judges rarely participate in plea negotiations in Peoria County, except to ratify agreements negotiated by the prosecutor and defense attorney. Three-quarters of the trials are before juries. In 1981, about two-thirds of the felony convictions resulted in prison or jail sentences for the convicted defendants. As noted in the Cook County description, convicted defendants are sentenced using a quasi-determinate system recently enacted by the Illinois State Legislature.

Historically, delays have been a problem in Illinois courts, and Peoria County is no exception. However, increased computerization and an emphasis on reducing the backlog of cases have considerably sped up the adjudication process.

Crime Scene and Crime Laboratory Services

The Peoria Police Department has a crime scene unit (CSU) of six officers (including one sergeant), and is located within the department's general services division. This unit was expanded and upgraded in the delivery of crime scene services in the 1970's. The crime scene unit investigated the scenes of about 2,700 crimes in 1981, most of which were burglaries.

In addition to crime scene work, the CSU also takes and develops photographs of crime scenes and accidents; classifies and files fingerprints; searches these files and compares fingerprint cards with latent prints developed at crime scenes; and transports physical evidence to the Illinois Bureau of Scientific Services Laboratory in Morton, Illinois. Peoria is the only jurisdiction in the study in which the CSU officers conduct their own searches of departmental fingerprint files.

The Morton laboratory is about ten miles to the east of Peoria and in 1981 employed a total of eight scientific examiners (See Table 3.2). This regional laboratory is part of the larger State of Illinois Scientific Services System comprised of eight forensic laboratories distributed throughout the state. The system consists of seven operational labs with the eighth a group of coordinators who staff the training and applications laboratory. The Morton laboratory has capabilities in drug chemistry, bloodstains, hairs and fibers, firearms and toolmarks, arson accelerants, paint analysis, latent fingerprints and the polygraph (See Table III.1 in the Appendix for detailed capabilities). The laboratory examined a total of 3,238 cases in 1981, with the Peoria Police Department submitting 331 of these cases. Dangerous drugs constitute more than sixty percent of the crime laboratory's caseload.

Evidence Priorities

Practically all physical evidence submitted by the Peoria Police Department to the Morton laboratory receives an examination. This is a reflection of two key factors: moderate caseload levels in the laboratory and evidence screening procedures followed by the police department's crime scene unit. Caseloads within the Morton laboratory, although by no means minimal, are less than the national average (see Chapter V).

The crime scene unit of the Peoria Police Department is a small (6 member), well-trained and highly motivated group of evidence technicians. In comparison to other crime scene units, the Peoria unit excercises greater discretion at scenes of crimes in selecting evidence for preservation and will screen the evidence again before it is submitted to the Morton laboratory for analysis. As a consequence, Morton laboratory scientists examine a higher proportion of submitted evidence than in other jurisdictions (Peterson et al., 1984:112).

The crime scene unit also collects and identifies all fingerprints originating in Peoria city cases, and is responsible for all crime scene photographs. Fingerprints constitute a major portion of the evidence and photos routinely used in Peoria County prosecutions which is a reflection of their satisfaction with the impact of these items. The Morton facility is generally able to respond to evidence on a "first come, first served" basis, keeping in mind the other general priority considerations noted earlier. The laboratory issues written guidelines to all submitting law enforcement agencies concerning how evidence is to be collected, packaged and marked, and conditions which have to be met for an analysis be initiated. For example, a crime scene bloodstain will not be analyzed unless blood samples are also submitted from victims and suspects.

Prosecutor Priorities

As a result of the Morton laboratory's timeliness in examining evidence and supplying results, prosecutors are seldom faced with having to request examinations themselves. Still, the rapid pace of justice in Peoria County (30 days elapsed time between first court appearance and trial date) keeps pressure on the lab for a quick turnaround. Continuances are sometimes needed to accommodate the laboratory in completing their examinations of evidence.

The Assistant State's Attorneys express confidence in the results emanating from the laboratory and satisfaction that all appropriate tests have been conducted. The positive perceptions of Assistant State's Attorneys in Peoria is further buttressed by their good relationships with the Peoria Police Department's Crime Scene Unit which, in addition to their crime scene work, regularly testify to their fingerprint identifications, physical comparisons of evidence and crime scene photographs.

Communication of Results

Crime laboratory reports are directed to the appropriate investigator in charge of the case and the State's Attorneys Office. Prosecutors seldom expect or rely on scientific reports at the point of charging except for cases of drug possession. The small size of the crime laboratory and state's attorneys' staffs promotes personalized attention and diminishment of tensions which are sometimes found in larger jurisdictions.

Peoria County cases which result in trial are distinguishable in that a high fraction of them involve testimony of a laboratory expert (see Chapter VI). Face-to-face contacts between the prosecutor and the lab scientist are the norm before trial during which time the scientist's findings are discussed and the prosecutor's line of questioning is reviewed.

Local public defenders also express confidence in the objectivity and accuracy of results from the Morton laboratory. They also believe the Assistant State's Attorneys will not purposefully mislead the court with respect to the integrity of the forensic evidence. Defense attorneys report having free and open access to prosecutor files, including all reports pertaining to physical evidence. They also have access to laboratory examiners who will openly discuss their results.

Kansas City/Jackson County, Missouri

Kansas City, Missouri spreads over parts of three counties, each with its own circuit court divisions. The majority (63%) of felony and misdemeanor cases originating in Kansas City are filed in Jackson County, with the remaining being filed in Platte (17%) and Clay Counties. The cases sampled for the study were selected from the Jackson County Prosecutor's Office's 3,452 felony filings in 1981. Nearly 80% of the cases filed by Jackson County prosecutors originate in Kansas City. There are approximately 18 general jurisdiction trial court judges in Jackson County, 35 assistant district attorneys and 13 assistant public defenders.

Structure of the Courts

Missouri is divided into 44 Judicial Districts. Jackson County is the 16th Judicial District. Missouri has a two-tiered court system composed of associate circuit and circuit courts. Associate circuit courts have jurisdiction over felonies prior to the filing of the prosecutor's information (i.e., preliminary matters). There are eight divisions of the Associate Circuit Court in Jackson County which attend to preliminary hearings. The Circuit Court is divided into 19 divisions, of which five hear criminal cases.

Missouri has a "merit retention" system for appointing and retaining circuit court judges. Judges are appointed by the Governor, upon recommendations by a Judicial Panel. Periodically the voters within each judicial district vote to continue or end a judge's tenure.

Caseflow

The courts of Jackson County suffer from the same lack of resources as the courts in most metropolitan areas. The efficient use of these limited resources consequently requires careful evaluation of each arrest case. The number of cases that qualify for the filing of state charges is reduced by a Pre-trial Division and Suspended Imposition of Sentence program. Non-violent first offenders, who qualify, have arrest records purged upon successful completion of the program.

The Jackson County Prosecutor's Office was presented with 6,504 arrests in 1983. In 2,302 cases, the filing of charges was declined, resulting in a total of 4,202 cases filed. Of that total, 1,506 were bound over for trial by an Associate Circuit Court Judge. There were 198 grand jury indictments. Of the 1,704 cases bound over for trial, 336 cases were dismissed by the state and 1,017 guilty pleas were entered. There was a total of 163 trials, of which 101 resulted in guilty verdicts.

The Missouri Legislature passed into law in 1977 (taking effect Jan. 1, 1979) a revised criminal code. The code divides felonies into four classes (A,B,C and D), and misdemeanors into three classes (A,B and C). The provisions on sentencing in the code (Chapters 557-561) set out the possible penalties that can be imposed for each class of offense.

Class A felonies are punishable by 10-30 years or life imprisonment in the Division of Corrections; Class B felonies, 5-15 years in state prison; Class C, 2-7 years; and Class D, 2-5 years.

> Every sentence to the Division of Corrections includes a prison term and a conditional release term. Thus, a person sentenced to a 10 year term will, unless paroled earlier, serve 7 years and then be on conditional release for 3 years. The restrictions and control over a person on conditional release are the same as for a person on parole. The result is that there is no more "flat time" and every person coming out of the Division of Corrections will be under supervision.

The code specifies certain basic crimes, such as burglary in the second degree, which then become burglary in the first degree if certain aggravating circumstances are present. Burglary in the second degree is a Class C felony while burglary in the first degree is a Class B felony. Robbery in the second degree is a Class B felony while robbery in the first degree is a Class A felony.

Crime Scene and Criminalistics Services

The criminalistics division of the Kansas City Police Department is divided into three primary units: polygraph, crime scene investigation and regional crime laboratory. The 22 officers in the crime scene unit serve the three principal geographic areas of the city and processed 4,768 crime scenes in 1981. The police department emphasizes the investigative role of these officers, in addition to their routine evidence collection responsibilities. The stated goal of the unit is to investigate the scenes of all major crimes. District patrol officers search for latent fingerprints at the scenes of routine property crimes.

The regional criminalistics laboratory, located in Independence, Missouri from its inception in 1973 to 1983, has recently moved to a downtown, Kansas City location. In addition to providing scientific services to the Kansas City Police Department, the laboratory also examines evidence for about 80 surrounding police agencies on a fee basis. The laboratory has 13 scientific examiners. The primary scientific sections of the crime laboratory are: trace evidence and serology; firearms and toolmarks; and chemistry/instrumentation. The laboratory processed a total of 6,909 cases in 1981, about 80% of which were submitted by the Kansas City Police Department. Drugs and narcotics composed about 25% of this total caseload, which is low by national standards. More than 40% of its caseload falls in non part I crime categories which is exceptionally high. The Kansas City Regional Laboratory uses a case management information system which permits the laboratory to summarize and analyze caseload trends to a greater extent than most crime laboratories in the nation.

Evidence Priorities

More than 90% of homicide, drug and narcotic, and fraud/counterfeit cases submitted to the laboratory are examined. Fifty percent or more of aggravated assaults, arsons and rapes are examined, but slightly fewer than half of the robberies. Only about one-quarter of the evidence in burglaries receives an examination.

The Kansas City Regional Laboratory uses a system in which the various section supervisors review incoming evidence. This individual then contacts a supervising detective to determine what priority the investigative division has given the case. In this way, the assessment of the evidence by the examiner concerning what is scientifically possible is integrated with the knowledge the investigator has about the case. The scientist and investigator then agree upon priorities assigned to cases and the examiner reviews the evidence in that order.

The laboratory also issues guidelines to police investigators and prosecutors concerning other requirements which must be satisfied before they embark on a series of examinations. For example, in the crimes of burglary, robbery and aggravated assault, there must be suspects identified before they will attempt an examination. Such a requirement is of marginal relevance to prosecutors since their caseload virtually always involves crimes with suspects or defendants.

Prosecutor Priorities

Given the laboratory's policy of attempting to keep its examinations current with ongoing investigations of crimes, results are generally available to prosecutors as they prepare cases. Decisions to charge defendants will be deferred in certain crimes -- drugs (always), arsons, rapes -- until results are received from the lab. Prosecutors in Jackson County state they are inclined to wait to enter into plea negotiations with defendants until they receive the results of laboratory testing.

Original charges are frequently reduced in the course of plea bargaining in Jackson County and the failure to find evidence to associate the defendant with the crime is thought by prosecutors to be a factor in such decisions.

Communication of Results

Staffing patterns in both the prosecutor's office and the crime laboratory are stable and the relationship between scientific and legal staffs is professional, yet friendly. Training seminars are offered periodically by laboratory staff for attorneys which further enhances prosecutor's comfort with individual examiners and knowledge of the evidence itself. In preparation for a recent major murder prosecution which hinged almost exclusively on physical evidence, scientific staff and prosecutors engaged in a mock trial before a "jury" of private citizens to register their reactions to the available evidence.

Reports issued by the crime laboratory are directed to the relevant police investigator and the prosecutor in charge of the case. Prosecutors may also telephone laboratory examiners to learn of preliminary findings before a case report is prepared or to resolve other questions. Unlike some other prosecutor offices in our study, the Jackson County office will customarily mail copies of laboratory reports directly to defense attorneys without waiting for a court order. Prosecutors will usually confer with experts in person before trial unless they are familiar with the scientist and the evidence from previous prosecutions. Only a small percentage (<10%) of cases go to trial in Jackson County, and of these only about one in ten (see Chapter VI) have an expert testify.

Oakland/Alameda County, California

Alameda County is situated in Central California, on the east side of San Francisco Bay. Alameda County has a population of approximately 1.2 million people. Oakland is the largest city in the county, with about 350,000 persons, and is responsible for almost half the 109,418 index crimes reported to Alameda County law enforcement agencies in 1981. The city of Oakland is responsible for an even higher (60%) percentage of crimes against persons committed in the county.

The court system in Alameda County has the fourth largest volume of cases in the state. Data indicate that 6,456 felony complaints were filed with the Alameda County Municipal Courts in 1981 of which 3,468 were referred to the Superior Court. The county has 31 sitting judges in its Superior Court Division and 31 municipal judges, 14 of whom are assigned to the Oakland-Piedmont district. The District Attorney's office employs 133 prosecuting attorneys and the Public Defender's office has a staff of 98 attorneys.

Structure of the Courts

California employs a two-tiered system of municipal and superior courts. The municipal courts are courts of original jurisdiction for misdemeanor matters and conduct preliminary hearings on felony matters. Felony trials are conducted only by the superior courts, although in some instances a muncicipal court may accept a plea of guilty to a felony charge with the superior court involved only to the extent of certifying the plea and the sentence.

Although municipal court judges are elected, partisan politics are ordinarily not a deciding factor. Superior court judges are appointed by the Governor and serve for life unless challenged. If challenged, they must stand for election at the next general election. Appointments to the Superior court bench generally reflect the political attitudes of the Governor. Subsequent challenges of conservative judges are quite rare; challenges of liberal judges are not common, but neither are they altogether rare. Nevertheless, there is a relative lack of judicial turnover which ensures a criminal bench with considerable tenure and stability.

Superior court judges rotate between civil, criminal, and probate matters, frequently serving in one capacity for several years before rotating to another service. The majority of the superior court judges are assigned to hear criminal matters.

Caseflow

Two avenues exist for bringing criminal charges against defendants in Alameda County. The less frequently invoked avenue, limited to felonies, is by indictment. The District Attorney can convene a grand jury which will hear testimony. Upon the return of an indictment, the case will be set for trial in superior court. No preliminary hearing will be held, and the defendant will not have an opportunity to cross-examine prosecution witnesses until the time of trial.

The much more frequently used avenue is for the District Attorney, at the request of the investigating agency, to issue a criminal complaint. The District Attorney exercises discretion in whether to issue a criminal complaint, and frequently the criterion is "trial sufficiency" rather than "legal sufficiency." Upon the issuance of a complaint, a preliminary hearing is held at the municipal court level. If the judge of the municipal court believes that a crime has in fact been committed and that there is probable cause to believe that the defendant has committed it, the defendant will be bound over for trial in superior court. At the time of the preliminary hearing, the defendant may cross-examine witnesses and present evidence or testimony in his or her own behalf. It is virtually unheard of for the defendant to waive the preliminary hearing. It is also quite rare for the defense to present evidence at the time of the preliminary hearing.

The municipal courts in Alameda County resolve approximately half of all felonies brought before them, typically via dismissals or reductions to misdemeanors. Occasionally, pleas to felonies are entered but these cases are then bound over to the Alameda Superior Court for certification and sentencing.

More than 80% of the 3,468 felony filings brought before the Superior Court were disposed of through guilty pleas and only 5% were adjudicated at trial. Eighty percent of the 146 cases which went to trial were tried before a jury. Of the 2,759 defendants convicted in Superior Court <u>99%</u> were convicted of felonies. Thus, once a defendant is bound over to Superior Court the odds of a charge being reduced to a misdemeanor are remote.

Upon conviction, defendants are sentenced in accordance with the California Penal Code which provides for determinate sentencing "fixed by statute in proportion to the seriousness of the offense." Thus although sentences are uniform for like crimes, the system allows broad judicial discretion. For example, burglary in the first degree (burglary of an inhabited dwelling house in the night time) is punishable by imprisonment for 2, 4 or 6 years. Burglary in the second degree is punishable by imprisonment in the county jail not exceeding 1 year or in the state prison. Presentence reports by the probation department are the norm.

Crime Scene and Criminalistics Services

The Oakland Police Department's crime scene investigation function is based within the department's patrol division. Twelve officers staff this unit and when not examining crime scenes, are expected to perform general patrol activities. Given the high number of index crimes (44,678) committed in Oakland, the crime scene officers face the heaviest burden of all study sites in terms of crime scenes requiring investigation. The police department has no published guidelines as to when technicians are to be summoned to crime scenes other than 'serious' offenss where physical evidence is thought to be present.

The Oakland crime laboratory, founded in 1944, is the smallest of all study site laboratories with five scientists and two fingerprint examiners. Firearms and toolmarks, trace/serology and chemistry (drugs) constitute the primary units of the laboratory. The Oakland laboratory is unique from other studied jurisdictions in that scientific personnel regularly rotate case examination responsibilities to distribute the drug and narcotic workload. The laboratory handled approximately 2,340 cases in 1981, with the great majority of these cases being in the areas of fingerprints, drugs and narcotics.

Evidence Priorities

The Oakland crime laboratory examines all drug and latent fingerprint cases which they are specifically requested to examine; but this represents only about 60% of suspected drug evidence seized and 40% of the latent fingerprints actually retrieved from the field. Only about 60% of other general criminalistics and serology cases receive an examination. When the fraction of evidence examined is considered by offense type, we see that about 90% of homicides receive an examination, and three-quarters of rapes. Virtually all the evidence submitted from burglaries is examined but this is comprised almost exclusively of fingerprints.

As noted in the earlier study report Forensic Evidence and the Police, of cases the Oakland laboratory decides to review, only a fraction of collected evidence is actually examined. About one-third of the various types of evidence submitted to the laboratory for analysis are actually examined. This is the lowest ratio of all our study sites (Peterson, et al., 1984:111), and is primarily a reflection of the limited scientific resources in the Oakland laboratory.

Oakland has developed an explicit set of guidelines to determine the priority given to cases and evidence submitted for analysis. The laboratory will give top priority to what are termed "emergency" cases. These cases include particularly serious offenses, those with perishable evidence, cases involving suspects being held in custody pending a laboratory test (as with narcotics), and cases where evidence is "essential to the prosecution of the case." Other "serious" personal crimes will then receive priority, particularly where laboratory results are thought to have the potential of assisting in an investigation.

Decisions to examine cases not falling into one of the above categories will be based on the perishability of the evidence and the order in which the requests are received by the laboratory. It appears that cases labelled "emergency" by virtue of a request by a prosecutor have assumed a prominent position in the overall decision process.

Prosecutor Priorities

The relationship between the district attorney's office and the Oakland crime laboratory is a good one, based upon stable staffing patterns and years of cooperative relations. As suggested above, a substantial percentage of examinations in the laboratory are keyed by requests from the district attorney's office.

Prosecuting attorneys are sensitive to the resource limitations of the laboratory and will first ask an examiner if useful findings might likely result from an analysis before making an official request. These prosecutorial requests are also generally confined to cases which have a high likelihood of resulting in a trial. Were it not for the extremely high percentage of felony filings resulting in guilty pleas (85% plus) the laboratory would be unable to respond to prosecution case demands. As it is, prosecutors are occasionally critical of the "weeks or months" it may take to obtain a lab report and are vocal in the need for added resources to be directed toward the laboratory.

Communication of Results

Case reports are routinely transmitted to police investigators and assistant district attorneys. Since such a small percentage of cases go to trial, the appearance of examiners in court is not a regular occurrence. Still, the staff of the Oakland laboratory has an excellent reputation among prosecutors who do not hesitate to request experts to testify in the very serious cases which result in trial. The Oakland laboratory practices an open policy with respect to sharing reports and information with defense attorneys and their experts. The laboratory enjoys a good reputation among the defense bar, which expresses confidence in the quality of results and nonpartisanship of examiners.

New Haven/Litchfield, Connecticut

The state of Connecticut has six counties and thirteen judicial districts. The state criminal courts handle approximately 120,000 cases a year. There are 13 states attorneys (one for each judicial district), about 115 full-time deputies and assistants, and 15-20 part-time prosecutors. (State's attorneys are appointed by the judges of the superior court -- the only state in the union to do so.) There are, excluding probate court judges, 130 superior court judges in the state. Judges are appointed by gubernatorial nomination and consent of the legislature. The Chief Justice of the Supreme Court has overall responsibility for the judicial department; the Adminstrator of the state's courts (a superior court judge) reports directly to the Chief Justice.

Structure of the Courts

The criminal courts of original jurisdiction in Connecticut have been unified into a single level, known as the superior court. There are a variety of divisions, however, including juvenile court, and the so-called "part A" and "part B" courts. The distinction between part A and part B courts varies in different areas of the state, but is based upon the maximum penalty that can be assessed for the offense in question (expressed in terms of years in the state prison). Part B courts are the "lower" courts and are sometimes called "G.A." courts (for "Geographical Area"). Part A courts handle cases which carry higher maximum penalties, and are sometimes called "J.D." courts (for "Judicial District"). The majority of Part B courts have 10 year maximum sentence cut-offs for their cases; two have 5 years; and a few have 20 years.

The New Haven judicial district encompasses 13 cities and towns, including the City of New Haven. Twelve prosecutors staff the Part A court in New Haven, including the state's attorney. Four are assigned to the "career criminal" program. The Part B court in New Haven has 6 full-time, 4 "per-diem" and 1 part-time prosecutors. Four additional full-time and 1 part-time prosecutors staff the Part B courts in West Haven and Meriden. A substantial fraction of the cases in the district originate from the city of New Haven. Approximately 20,000 cases enter the Part B court each year. About 5% of the cases entering the system are transferred to and handled in Part A.

The Litchfield judicial district serves Litchfield County, the northwestern-most county in the state. This county emcompasses a rural area which has many small towns and villages. Besides the state's attorney, there are three assistant state's attorneys in this judicial district, one working in Part A and two working in Part B. The Part B court functions in four different towns, very like a "circuit" court. Of the 4,000 or so cases reaching the superior court per year, 100-200 are transferred to Part A.

Caseflow

Throughout the state, cases enter the judicial system through the Part B court. Most jurisdictions have an assistant (or deputy) state's attorney who takes responsibility for screening the cases. He/she may work in close collaboration with the police. This individual also determines the charges that will be filed against defendants. Those cases in which the charges carry a higher penalty than is handled by the particular Part B court are transferred to the Part A court. It is difficult to present a clear description of the transfers from B to A courts, because the system has been altered periodicaly since its inception in 1978. In particular, the maximum penalty cutoff points for the Part B courts have been changed a number of times. It appears that about 5% of the cases entering the superior court are ultimately transferred to Part A (at least in the New Haven and Litchfield judicial districts).

About 95% of defendants entering the system are convicted on one or more counts. The relationship between the crime(s) of which defendants are convicted and the original charges is complex, and depends on the type of case and the jurisdiction. The majority of cases (in excess of 90%) are disposed of by plea.

Of the cases that are tried, bench trials are more common in Part B than Part A courts. This pattern appears to be characteristic of most judicial districts. It has to do in part with the types of cases handled by the Part B courts (traffic infractions, motor vehicle accidents, etc.), and is partly because points of law become more significant in some of these cases than a determination of the facts.

Sentencing in the state's courts is determinate. No particular guidelines appear to be followed, apart from the statutes. Superior court judges will accept sentence recommendations, and usually follow them.

Crime Scene and Criminalistics Services

Most of the thirteen municipalities in the New Haven Judicial District with police departments also have identification or evidence technician specialists who search scenes of crimes for physical evidence. In addition, these "I.D" officers in the New Haven Police Department also take and develop photographs and perform comparisons of fingerprints, tool and firearms evidence and other "impression" evidence.

Evidence which is collected and which cannot be analyzed or handled by the local "I.D." units is transmitted to one of two forensic science laboratories in the state (not including the Medical Examiner's Office, which is called in for cases of suspicious or violent death). The State Police Laboratory in Meriden receives much of the evidence from major crimes, but does not handle drug or blood alcohol evidence. All such evidence, including some traditional criminalistics evidence, is sent to the State Toxicology Laboratory in Hartford.

If a major crime occurs in towns other than the City of New Haven (such as Litchfield), the State Police will usually be contacted and will send out one of its major crime squads to take responsibility for the crime scene. There are several of these units in the State, corresponding to different State Police districts. All evidence recovered by a State Police major crime squad is submitted to the Meriden State Police laboratory.

The State Police Laboratory has undergone a dramatic transformation, beginning in about 1979. Prior to that time, the state facility was headed by a police officer and performed no wet chemical or instrumental (criminalistics) analyses of evidence, confining its examinations to fingerprints, firearms and toolmarks, and photography. All other evidence (e.g., bloodstains, semen, hair, paint, fibers, etc.) was routed to the FBI Laboratory in Washington, D.C. A new laboratory director was appointed in 1979 who possessed both scientific and law enforcement credentials. Within two years, the staff grew to 8 civilian and 13 sworn (police) examiners, and within the past four years has grown still more to its current level of 22 civilians and 9 sworn officers. In 1981 this laboratory handled a total of 1,541 cases and examined 184,147 individual items of evidence. Approximately 20% of the case submissions to the State Laboratory is attributable to the cities and towns comprising the New Haven Judicial District.

The State Toxicology Laboratory in Hartford maintains a staff of about 30 examiners, only three of whom are court qualified, the remainder are classified as "technicians." This laboratory performs all drug and blood alcohol testing in the State, plus some of the toxicology testing in questioned death cases for the medical examiner's office.

They also examine arson and sexual assault-related evidence as well as occasional trace evidence for other types of offenses.

Evidence Priorities

Practically all cases with evidence submitted to the State Police Laboratory in Meriden receive an examination. This can be attributed to a lighter than average caseload which, in turn, is a reflection of the fact that this facility examines no drugs and narcotics (which are handled by the state toxicology laboratory). It should also be remembered that in 1981, the enhanced capabilities of the Meriden laboratory had been in effect for only about two years. In addition, many local jurisdictions in Connecticut continue to perform their own fingerprint, firearms and physical matching examinations which also reduces the flow of cases into the centralized laboratory.

Lower caseloads allow this laboratory to keep its examinations of evidence current with ongoing police investigations. This also reflects the stated policy of the laboratory administration which is to engage in examinations of evidence to benefit law enforcement agencies throughout the state. It is still a regular practice, however, for examiners to screen incoming evidence and conduct full-scale analyses on only selected materials gathered from the field. As is the case with other crime laboratories, this is a function of scientists' assessment of the evidence submitted, the availability of standards from suspects and the needs of a particular investigation.

Prosecution Priorities

Customarily, then, it is the patrol or crime scene officer who initiates the examination of the evidence with its submission to the laboratory. Seldom do prosecutors set the evidence review process into motion, nor do they ask that specific tests or comparisons be undertaken. There are, of course, exceptions to this pattern when prosecutors approach a court date and find their file lacking a lab report and contact the laboratory to prompt an examination. Prosecutors may also have questions or specific reasons for asking the laboratory to perform added examinations.

It is the practice in both New Haven and Litchfield for assistant state's attorneys to confer with laboratory scientists prior to trial. The New Haven office has the reputation for being more aggressive than other jurisdictions and will frequently visit the laboratory to review the evidence and the findings of the examiner. Attorneys in both offices express great confidence in the quality and completeness of scientific results produced by this laboratory and the testimony offered by examiners in court. Attorneys are sometimes critical of local police departments which conduct their own "forensic" examinations and prefer they be handled by the Meriden facility.

Communication of Results

Reports of examinations are routinely distributed to submitting law enforcement agencies and the appropriate state's attorney's office. The New Haven state's attorney's office employs an investigator whose job it is to seek out the physical clues and to be sure appropriate laboratory examinations have been completed. The Meriden laboratory is also notable in that it maintains an open policy with respect to its interactions with defense attorneys. Laboratory staff are not required to obtain permission from law enforcement or prosecutorial officials before they discuss results with defense attorneys. State's attorneys will be informed of such contacts, however, and may elect to be present at conferences or where defense counsel bring in their own experts to review the evidence.

Although a centralized, state facility, Meriden forensic scientists testify in a substantial fraction of cases which proceed to trial and where laboratory analyses have been performed. The Meriden laboratory director estimates examiners testify in 20% of cases examined, which is the highest of all jurisdictions studied. The State is small enough geographically that travel time does not represent a major impediment to scientists summoned to a local jurisdiction. Prosecutors seem pleased to have a State forensic laboratory of their own (rather than having to depend upon the FBI Laboratory) and wish to exercise their perogative at every opportunity to use this resource to its fullest extent.

NOTE

1. The reader is referred to Chapter IV of the report <u>Forensic Evidence and the Police</u> (Peterson et al., 1984) for a full discussion of such evidence examination practices.

CHAPTER IV

RATES OF UTILIZATION OF FORENSIC EVIDENCE 1975-1981

Introduction

This chapter introduces our analysis of the prosecutor case file data. For the examination of rates of utilization of forensic evidence, a sample of prosecutor case files in 1975, 1978 and 1981 in each of the six sites was gleaned for information on:

- o Type of offense charged
- o Presence/absence of a laboratory report in the case file
- o Nature of physical evidence collected
- o Results of laboratory testing (associative, dissociative, identification)
- o Appearance of expert at trial

Method of Approach

Data from a random sample of felony case filings were expected to help achieve two of the primary aims of the study: to establish rates of usage of scientific evidence and to determine the effects of this evidence on case outcome. Given these dual objectives, we required a data source that contained information about the evidence gathered by police, the outcome of laboratory reports, defendant characteristics, and a reliable record of case disposition.

Prosecutor case files represented the single most complete source of information about evidence used in a prosecution, socio-demographic characteristics of the defendant and "system processing" characteristics of the case; i.e., manner of disposition, conviction status and sentence. For the purpose of this study we made the assumption that if scientific information were to be used in a prosecution, the case file should contain a copy of pertinent forensic laboratory report(s). We recognize that such an assumption may lead to the incorrect categorization of cases where a prosecutor has had verbal contact with a laboratory examiner but a laboratory report was never produced. It is our understanding, though, that such an occurrence is rare; particularly in cases where the scientific results are pivotal in deciding case outcome.

After consultation with study sites, and consideration of time and resource constraints, we decided to select a random sample of prosecutor case files from three calendar years: 1975, 1978 and 1981. The year 1975 represented the earliest year for all six study jurisdictions where crime laboratory, police and prosecutor records were still intact and accessible; 1981 served as the most recent year for which final case disposition data were available (data were collected from these case files in the spring and summer of 1983).

With minor exceptions, cases were drawn from files where felony charges had been brought against a defendant <u>and</u> the charges had been sustained at an initial judicial (probable cause) screening. As a result, cases in which police had made a felony arrest and the prosecutor declined to file charges, or where the preliminary hearing judge had dismissed the case for lack of probable cause, are not included in the sample.

The decision to sample cases at this stage and not, for example, at the point of police arrest, was made after visits to our various study locations and discussions among the project staff and advisory committee. We were influenced by the fact that ours was a study of forensic evidence in court and not one of police evidence gathering or case preparation practices. We were also familiar with the problems of tracking cases between the point of arrest and prosecutorial charging; e.g., the police and prosecutor usually employ different case numbering and filing systems in logging cases. This particular problem is further exacerbated by the fact that felony courts usually have county-wide jurisdiction and may receive arrest cases from several different police agencies. Tracking only cases from a particular police agency would have given us an incomplete picture of the criminal courts in most of our study jurisdictions.

We were also encouraged to construct our sample from cases that had survived a preliminary hearing by our desire to obtain a sufficiently large number of cases which utilized forensic evidence. Previous researchers, such as Rosenthal and Travnecik (1974), were less than successful in measuring the impact of scientific evidence due to the small percentage of police cases in which such evidence is collected and examined. We knew, too, that there is a significant reduction in cases when prosecutors screen arrests and we were concerned that if we sampled cases prior to a preliminary hearing that our sample of cases with forensic evidence would become so small as to preclude any meaningful analysis. For the years 1975 and 1978, we set a sample size goal of 500 case files in each study site. For the year 1981, we doubled this number and set out to examine 1,000 randomly drawn felony cases in each location. We estimated that the 500 case level would be sufficient to assess rates of usage of evidence, but that it would be insufficient to assess the relative impact of the scientific information. Such sample sizes could not be achieved in some jurisdictions. We had to examine the entire population of felony case filings in New Haven and Litchfield, Connecticut for more than a single year to even approach our 1,000 case objective. In our other locations, we had more than enough case files to reach the goal of 1,000 sampled cases.

Computer generated random numbers were used to select the files that would be reviewed. Different sets of random numbers were needed for each jurisdiction, of course, not only because of differing case numbering systems but also due to variances in total caseload size. For example, in Chicago we had to select our sample from about 10,000 case filings for 1981, which necessitated a 10% sample; in Peoria, where about 2,000 cases were filed, we took a 50% sample. We selected simple random samples to avoid the introduction of uncontrollable biases or the creation of a set of files which were not truly reflective of cases prosecuted in the various jurisdictions studied.

The unit of analysis in our study is the defendant charged with one or more felony crimes. As such, if a single incident resulted in the arrest and charging of three defendants, we tracked only one (randomly selected) defendant. If more than a single defendant were cited in the indictment or information, our data collectors would either flip a coin or roll a die to select which defendant to track.

The Cases

Table 4.1 shows the types of offenses included in each of our samples drawn from calender year 1981 in the six jurisdictions. violent offenses (murder, attempt murder, rape and robbery) constitute a larger

Table 4.1

Offenses Sampled in Six Study Sites
(1981)

Offense	City Chicago n=990	 Oakland n=955	 Kansas City n=894	 Peoria n=1057	 New Haven n=442	 Litchfield n=234
Murder	6%	2%	2%	1%	4%	0%
Att. Murder/ Agg. Asslt	8%	8%	5%	12%	4%	0%
Rape/Sex Asslt	5%	5%	5%	2%	16%	15%
Robbery	17%	15%	15%	5%	26%	5%
Burglary	14%	25%	26%	21%	8%	27%
Theft/Fraud	19%	19%	30%	25%	6%	14%
Drugs	13%	11%	7%	11%	13%	10%
Other	19%	15%	10%	25%	18%	26%

share of the felony cases prosecuted in New Haven (50%), Chicago (36%) and Oakland (31%) than in Kansas City (27%), Litchfield (24%) and Peoria (19%). The two Connecticut locations distinguish themselves with a higher than average percentage of rapes (around 15%), compared to about 5% or less for the other jurisdictions.

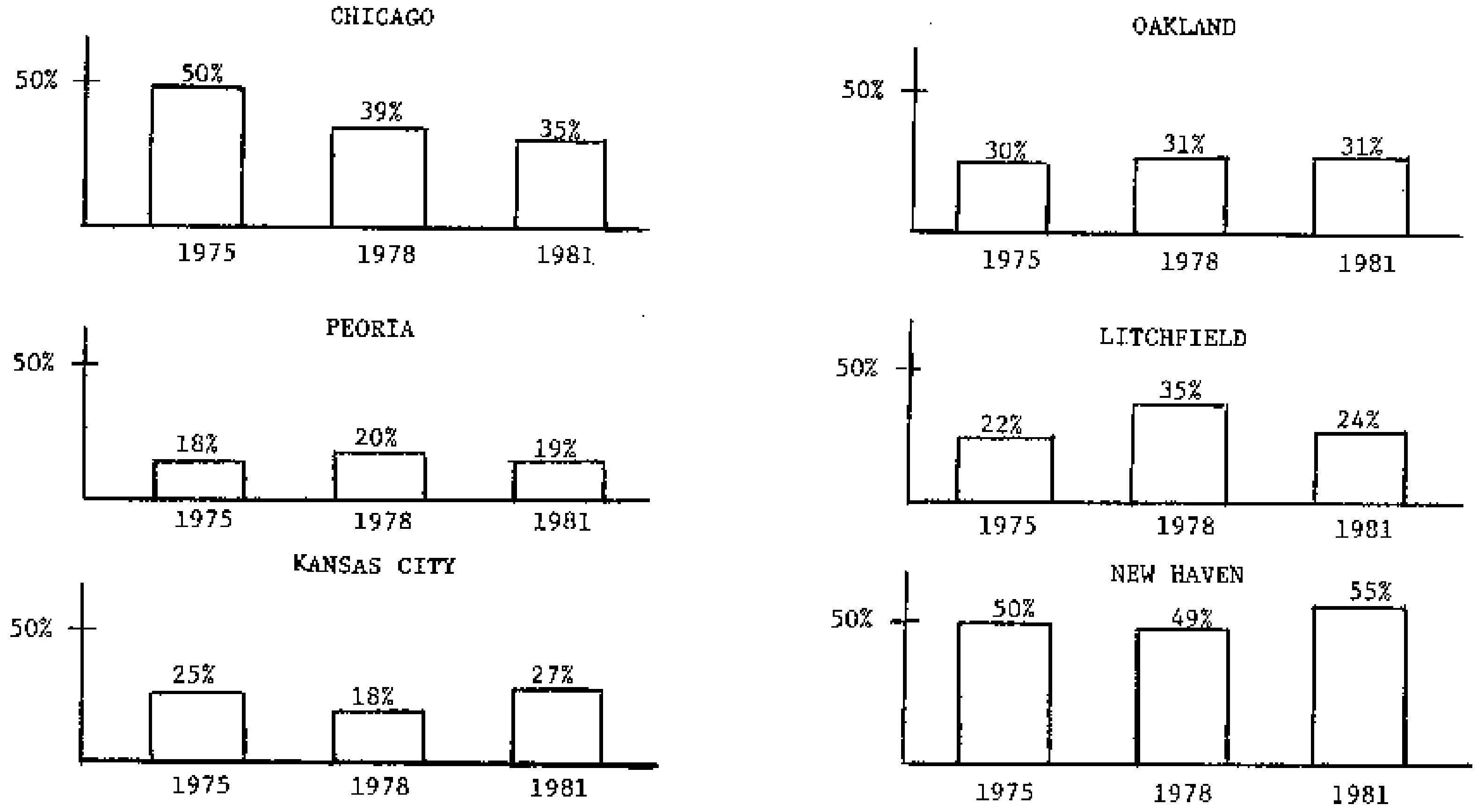
New Haven also has a substantially greater percentage of robberies (26%) than the remaining jurisdictions. Kansas City has the greatest percentage of burglaries and thefts (57%). Chicago and New Haven have the highest percentage of drug offense prosecutions (13%).

Figure 4.1 displays the percent of violent offenses in each of the six sites for the three years 1975, 1978 and 1981. For five of the cities, the fraction of violent offenses is steady over this time period. For Peoria, about one-fifth of charged felonies are violent crimes. For Kansas City and Litchfield the percent violent crime is roughly one-quarter. In Oakland and New Haven the percentages are roughly one-third and one-half, respectively. In Chicago, however, the fraction of charges which are violent crimes dropped from 50% in 1975 to 35% in 1981, representing a 30% reduction.

Not surprisingly, the injuries sustained by the victims of these crimes were sufficiently serious to merit notation in the police report 37% of the time in New Haven, 26% of the time in Chicago and 21% of the time in Oakland. These are the jurisdictions in which violent crimes comprise the largest share of the total caseload. Weapons are involved in almost half (49%) of the New Haven offenses and more than one-third (38% and 34% respectively) of charged offenses in Chicago and Oakland. Firearms are present in 21% of New Haven crimes, 18% of Chicago offenses and 14% of Oakland crimes. Guns or other weapons are actually <u>used</u> in

Figure 4.1

PERCENT VIOLENT OFFENSES IN STUDY SAMPLE: 1975-1978-1981



VIOLENT OFFENSES INCLUDES MURDER, ATTEMPTED MURDER, AGGRAVATED ASSAULT-BATTERY, RAPE, ARMED ROBBERY, ROBBERY

23% of the Chicago cases, 20% of New Haven charges and 17% of the Oakland crimes.

In our subsequent analyses of case outcome and sentencing, we have created a new variable (seriousness) which incorporates these indications of injury, presence and use of weapons/guns and offense type (violent or property) into a nine-level ordinal scale. As would be expected, the three jurisdictions having the greatest number of "serious" offenses are, once again, New Haven, Chicago, and Oakland. Defendants were charged with additional, or lesser included offenses, in one-quarter (Kansas City) to one-half (Litchfield) of cases in the various locations.

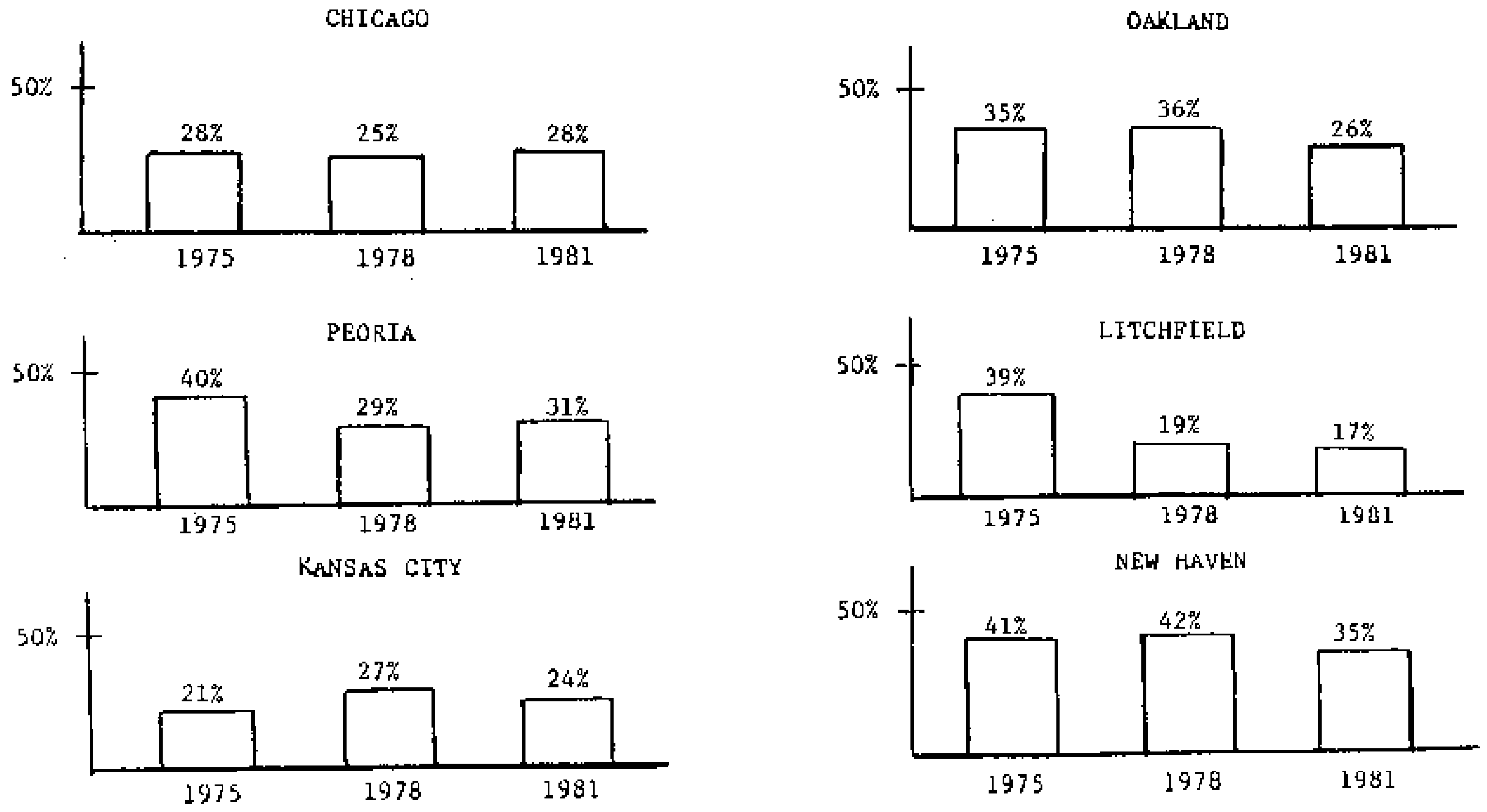
The reader is referred to Appendix IV (Prosecutor Case File Characteristics) for a more complete overview of defendant, evidentiary and system processing characteristics of our case sample. We are now ready to review the variables pertaining to the forensic evidence in the sampled cases.

Overall Rates of Usage of Forensic Evidence

Figure 4.2 shows the percentage of felony cases filed where a forensic laboratory report is present in the case jacket. We should acknowledge that the appearance of a laboratory report in the file does not necessarily indicate that the information contained in the report was a factor in determining case outcome. Nonetheless, if a laboratory report is absent from a case file, there is reasonable certainty that scientific data did not play a significant role in the deliberations of the prosecutor or the outcome of the case.

Figure 4.2

PERCENT FELONY CASES FILED WITH FORENSIC LABORATORY REPORT



A city by city comparison reveals that the rates of laboratory report presence are fairly consistent across years and across cities. In New Haven, laboratory reports are present in about 40% of cases. In Chicago and Peoria, close to thirty percent of the cases contain laboratory reports. The higher rate for Peoria in 1975 is a reflection of an increased drug caseload in that year -- cases which _must_ have a laboratory report to proceed. The same is true for Litchfield, where in 1975 laboratory reports are present in close to 40% of case files. For the other two time periods, the rates are 19% and 17%, respectively. Kansas City, on average, has laboratory reports in about one-quarter of the case files. Over one-third of Oakland's cases have laboratory reports in 1975 and 1978, but this drops to 26 percent in 1981. Peoria and New Haven consistently have the highest rates of usage of forensic evidence, hovering around 30 to 40% of prosecutions. Overall, then, the trend is for laboratory reports to accompany from one-quarter to one-third of felony cases that have survived initial screening. There has been no increase in the fraction of cases with laboratory reports from 1975 to 1981; in fact, in three of the six jurisdictions studied, the rates in 1981 are _lower_ than in the two previous years studied.

Rates of Usage of Forensic Evidence by Crime Type

When the presence of a laboratory report is considered by crime type, we find considerable differences among crimes and across years (Table 4.2). Thus, considering only the 1981 data, we see that some crime types--murders and drug cases--practically always have a laboratory report. (For murders, this would include both crime laboratory

Table 4.2

Rates of Usage of Scientific Evidence by Offense Category over 1975-1981 (Percentages)

	City/Year																	
	Chicago			Peoria			Kan City			Oakland			Litch			New Haven		
Offense	75	78	81	75	78	81	75	78	81	75	78	81	75	78	81	75	78	81
Murder	94	87	90	100	100	100	100	100	94	100	92	90	100	100	--	100	100	100
Att Murd/ Agg Batt	14	09	10	04	11	10	27	05	19	13	11	09	16	13	00	19	36	20
Rape	82	64	78	38	24	53	25	60	51	61	45	46	24	24	14	33	36	31
Robbery	05	03	02	04	19	22	19	08	10	07	16	11	15	12	08	12	13	17
Burglary	15	12	13	25	35	31	16	25	19	30	35	21	11	02	10	35	43	40
Theft	17	02	05	04	14	17	08	13	09	22	13	05	33	14	03	08	17	00
Drugs	94	90	97	96	81	93	97	100	98	98	100	98	97	86	87	98	100	97

reports as well as autopsy and toxicology results from the medical examiner/coroner's office). While other crimes--theft and burglary--are rarely associated with forensic analyses. Generally speaking, after murder and drug cases, Laboratory reports are next most likely for rapes. They are present in from 14% (Litchfield) to 78% (Chicago) of the rape files. Overall, laboratory reports are present next most frequently for burglary prosecutions, ranging from a high of 40% of burglary files in New Haven to a low of 13% of burglary files in Chicago. Forensic evidence reports are next most common in robberies. In Peoria, about 22% of robbery prosecutions have a forensic laboratory report; in New Haven about 17%. Kansas City, Litchfield and Oakland have laboratory reports present in about 10% of robbery cases, but Chicago has laboratory reports for robberies only about 2% of the time. Attempted murders and aggravated assaults are comparable to robberies, with laboratory reports present about 10% to 20% of the time. Kansas City and New Haven are the jurisdictions where laboratory reports are present most frequently in assaults and attempted murders.

Over the 1975-1981 period, the percent of murders and drug cases accompanied by laboratory reports remains consistent at 90 to 100% of murder case files. The rate of laboratory reports for attempted murder/aggravated battery cases, is generally declining (except for Peoria and New Haven).

There is no clear pattern to rates of forensic evidence analyses in rape cases. In Chicago and New Haven there is really no change, in Peoria and Kansas City rates have increased and in Oakland and Litchfield, declined. A possible explanation, that sites with initially low rates of forensic evidence examination in rape cases would be the ones most likely to show an increase (a result of increased knowledge about the value of forensic evidence in rape prosecutions) was not supported. Some initially low rate locations did increase their use of scientific evidence, but others did not change, or even reduced their frequency of usage. Peoria is the only jurisdiction where there is a marked increase in laboratory reports in robbery cases. The rates of frequency of scientific evidence in burglaries are somewhat steady over the three sampled years in each of the study sites although there is a decline in Oakland. With respect to theft, most jurisdictions show a reduction in forensic evidence examination. Peoria is noteworthy in once again showing an increase in rate of usage of forensic evidence. Peoria is the only jurisdiction where the rate of forensic evidence usage has actually increased in more than one offense category over the 1975-1981 period.

Our survey of laboratory directors reveals that their perceptions of the importance of forensic evidence in deciding the outcomes of various offense types generally parallels these frequencies (Table 4.3). Drug offenses, murders and rapes are thought to be those offense categories where forensic evidence is of greatest importance. Forensic evidence in burglaries is thought to be of moderate importance, while scientific evidence in aggravated assaults, robberies and thefts is considered least important. These attitudes reflect the usage statistics summarized in Table 4.2.

Table 4.3

IMPORTANCE OF FORENSIC EVIDENCE IN DECIDING THE OUTCOMES OF SPECIFIC OFFENSES
(n = 245)

Crime Type	Importance of Forensic Evidence (mean value)*
Drug-related	3.8
Homicide	3.4
Rape	3.3
Hit and Run	3.0
Arson	2.8
Burglary	2.6
Aggravated Assault	2.4
Robbery	2.3
Larceny	2.0

* Ratings of importance ranged from (1) minimal to (4) essential.

Rates of Usage of Specific Types of Forensic Evidence

We also tabulated the frequency of occurrence of specific evidence types in major offense categories. These data are displayed in their entirety in Appendix IV (see Tables IV.6-IV.10). The data are summarized in Table 4.4. Only those forensic evidence categories which are present in 10% or more of selected offense types are included. Each "+" indicates the presence of an evidence type in an offense category (10% or more of the time) in a jurisdiction. Fingerprints, for example, are present 10% or more of the time in murder prosecutions in five jurisdictions, but for rapes in only one jurisdiction (Peoria). Fingerprints appear most often in burglaries; in 34% of such prosecutions in New Haven, 25% of cases in Peoria, and 17% in Oakland.

As for blood and bloodstain evidence, it is found most consistently in murder prosecutions -- in about half the cases in Peoria, Kansas City and New Haven. Blood test results are found next most often in rape prosecutions, where blood is drawn from the victim and suspect for the purpose of comparing the blood group of the semen donor and the semen evidence found in the victim. Bloodstains may, also, be used as evidence (to a lesser extent) where the victim and/or suspect are injured in the course of the criminal act.

Firearms evidence is analyzed next most frequently, usually in murder and attempted murder/aggravated battery cases. Firearms evidence is examined and reported in about three of four murder prosecutions in Peoria and Kansas City, but in only one-quarter or less of such cases in Chicago and Oakland. In the attempt murder/aggravated battery prosecutions, firearms are examined far less often -- in only about 10% of

Table 4.4

Frequency of Occurrence of
Scientific Evidence by Offense Type*

Evidence Type	Murder	Att Murd/ Agg Batt	Rape	Robbery	Burglary
Fingerprints	+++++	+	+	+	+++++
Blood	+++++	+	+++		
Firearms	+++++	++			
Semen			+++++		
Hair	++		++++		
Impressions/ Imprints	+				

* Each (+) represents one city where evidence category present at least 10% of time

cases in Chicago and Kansas City, and less than that in the other jurisdictions.

Semen evidence is usually only reported in rape prosecutions, ranging from a high of about three-quarters of cases in Chicago to about one-quarter of cases in New Haven and Litchfield. Hair evidence, also, is predominant in rapes, although to a far lesser extent than semen. It is analyzed in about one-third of rape prosecutions in Peoria and Kansas City. Kansas City is also distinctive in that hair is examined and reported in about one-third of its murder prosecutions, placing it far above other jurisdictions studied.

Impression and imprint evidence is the only other evidence type to appear in 10% or more of any jurisdiction's prosecutions. It is in Peoria where this type of evidence appears in half (three) of its six murder prosecutions.

Changes in Rates of Usage of Specific Types of Forensic Evidence

Tables 4.5 through 4.16 tabulate the five categories of scientific evidence categories most frequently examined and described in the laboratory reports present in the case files. The first table for each site gives the percent of time that the laboratory report(s) found in the case file included results of an examination of that substance. The second table displays the results of testing performed on the evidence itemized in the first table. For all of the jurisdictions, controlled substances and fingerprints are the predominant evidence categories. The results are broken into six categories, ranging from those which associate (link) the defendant with the crime, to ones which contribute no useful information to the case (inconclusive). The reader is referred to Appendix XII.2 for a more detailed discussion of these categories.

The increased presence of drug evidence noted in the first tables for each site also explains the increase from 1975 to 1981 in the percentage of "positive identifications". The end result of most drug examinations is an identification of a controlled substance.

For Chicago, the general trend in evidence categories is an increase in drug analyses -- the rate in 1981 (52%) is almost double the level (29%) in 1975 (Table 4.5). In addition, three other major evidence categories, fingerprints, firearms and blood, have <u>decreased</u> over the same three year period. Fingerprints, for example, are reported as examined in 28% of case files in 1975, but in only 11% of case files in 1981. With respect to the results of testing performed on the evidence, Table 4.6 indicates that the most common outcome is an identification of a controlled substance. The "association" category, where evidence serves to link a defendant with a crime scene or victim, shows about a 50% decline from 1975 to 1981. Again, this reflects a reduced caseload of violent offenses coupled with an increase in drug evidence being scientifically examined.

For Peoria, Table 4.7 shows that drugs and fingerprints comprise a substantial portion of the evidence examined. Drug evidence shows a substantial decline from 1975 to 1978, and remains at about the same level in 1981. On the whole, more firearms, semen and blood evidence is being reported to prosecutors in 1981 than in 1978, but the numbers are still quite small when compared with the drug and fingerprint categories. Table 4.8 demonstrates that the frequency of reports resulting in

Table 4.5

Chicago
Top Five Evidence Categories Examined in Cases Having Laboratory Reports

Evidence Category	Physical Evidence Examined 1975 N = 131	 1978 N = 114	 1981 N = 273
Drugs	29%	41%	52%
Fingerprints	28%	12%	11%
Firearms	13%	9%	7%
Semen	18%	18%	14%
Blood	9%	6%	5%

Table 4.6

Results of Laboratory Testing

Results	Percent of All Lab Results 1975	 1978	 1981
Associates	25%	17%	11%
Fails to Associate	2%	3%	4%
Positive Identification	54%	63%	66%
Negative Identification	5%	4%	7%
Reconstruction	5%	11%	8%
Inconclusive	9%	3%	3%

Table 4.7

Peoria
Top Five Evidence Categories Examined in Cases Having Laboratory Reports

	Physical Evidence Examined		
Evidence Category	1975 N = 192	1978 N = 131	1981 N = 337
Drugs	77%	44%	51%
Fingerprints	35%	48%	35%
Firearms	18%	5%	11%
Semen	1%	1%	4%
Blood	4%	5%	6%

Table 4.8

Results of Laboratory Testing

	Percent of All Lab Results		
Results	1975	1978	1981
Associates	15%	36%	30%
Fails to Associate	4%	11%	14%
Positive Identification	62%	40%	46%
Negative Identification	17%	7%	7%
Reconstruction	2%	2%	2%
Inconclusive	0%	5%	2%

associations doubled from 1975 to 1981. Results which failed to find an association between the suspect and the crime more than tripled from 1975 to 1981. The rate of positive identifications declines in this period, paralleling the overall decline of drug prosecutions.

Tables 4.9 and 4.10 show that the patterns of evidence utilization in Kansas City resemble those in Peoria and Chicago. Drugs and fingerprints make up about 70% of the types of forensic evidence found in the sampled cases. We do find, however, that the percent of cases with drug evidence is considerably less than the rates in the two Illinois jurisdictions. This reflects the smaller percentage of drug prosecutions in Kansas City compared with the other jurisdictions. The rate at which firearms, semen and blood evidence is analyzed equals or exceeds the rates in Peoria and Chicago. Table 6.8 indicates that the nature of laboratory results remains somewhat stable over the period examined, with slightly less than half the results falling into the "positive identification" category and about one-third in the "associates" classification.

In Oakland (see Tables 4.11 and 4.12) the physical evidence examined and reported in prosecutor case files is consistent across the three years. Drugs and fingerprints are, again, the two most frequent evidence categories, constituting about three-quarters of the evidence examined and reported. There is also a decline in the analysis of firearms evidence from 9% of evidence reported in 1975 to 3% in 1981. Table 4.12 reveals that the nature and distribution of laboratory results has changed little in the three years sampled.

Tables 4.13 and 4.14 show the patterns of evidence utilization for the jurisdiction of Litchfield, Connecticut. Drugs and fingerprints

Table 4.9

Kansas City
Top Five Evidence Categories Examined in Cases Having Laboratory Reports

Evidence Category	Physical Evidence Examined 1975 N = 99	 1978 N = 141	 1981 N = 210
Drugs	38%	35%	34%
Fingerprints	35%	48%	35%
Firearms	18%	5%	11%
Semen	3%	6%	13%
Blood	15%	9%	10%

Table 4.10

Results of Laboratory Testing

Results	Percent of All Lab Results 1975	 1978	 1981
Associates	36%	30%	32%
Fails to Associate	0%	9%	4%
Positive Identification	43%	44%	47%
Negative Identification	1%	3%	5%
Reconstruction	8%	1%	3%
Inconclusive	11%	13%	9%

Table 4.11

Oakland
Top Five Evidence Categories Examined in Cases Having Laboratory Reports

Evidence Category	Physical Evidence Examined 1975 N = 177	1978 N = 198	1981 N = 246
Drugs	42%	49%	46%
Fingerprints	27%	33%	30%
Firearms	9%	5%	3%
Semen	7%	7%	9%
Blood	3%	3%	4%

Table 4.12

Results of Laboratory Testing

Results	Percent of All Lab Results 1975	1978	1981
Associates	33%	29%	29%
Fails to Associate	3%	7%	6%
Positive Identification	51%	56%	56%
Negative Identification	1%	3%	5%
Reconstruction	6%	3%	2%
Inconclusive	6%	2%	2%

Table 4.13

Litchfield
Top Five Evidence Categories Examined in Cases Having Laboratory Reports

Evidence Category	Physical Evidence Examined 1975 N = 105	 1978 N = 39	 1981 N = 39
Drugs	72%	33%	56%
Fingerprints	13%	28%	10%
Firearms	3%	8%	3%
Semen	5%	21%	23%
Blood	2%	5%	13%

Table 4.14

Results of Laboratory Testing

Results	Percent of All Lab Results 1975	 1978	 1981
Associates	10%	28%	8%
Fails to Associate	10%	8%	10%
Positive Identification	74%	46%	64%
Negative Identification	1%	8%	3%
Reconstruction	1%	8%	10%
Inconclusive	5%	3%	5%

make up about 85% of the forensic evidence reported in the sampled cases in 1975. For the other years sampled, this percentage drops to less than two-thirds. Blood and semen reports are present at a much higher rate in 1981 than in the preceding years. Laboratory results remain relatively stable over the years examined, with two-thirds to three-quarters of the results falling into the "positive identification" category and about 10% in the "associates" category (for 1975 and 1981). However, it should be emphasized that we are dealing with very small sample sizes in Litchfield and this greatly limits any inferences.

In New Haven (Tables 4.15 and 4.16), drugs and fingerprints comprise a majority of the forensic evidence types found in the case files. However, the percentage of cases with drug evidence drops from about 55% of cases in 1975 and 1978 to 39% in 1981. This is correlated with a significant <u>increase</u> in laboratory reports of semen, firearms and blood. This is reflected in laboratory testing results where "associations" have increased from 29% to 41% while "positive identifications" have declined due to a reduced drug caseload.

In summary, it appears that drugs and fingerprints make up 60% to 80% of the forensic evidence described in the laboratory reports found in prosecutor case files. The other three most frequent evidence categories (firearms, blood and semen) occur far less often and have generally <u>decreased</u>, when 1981 levels are compared with 1975 levels. The results of laboratory testing have followed a similar pattern over the years sampled, with "positive identifications" and "associations" making up the majority of results.

It is interesting to compare these rates of usage with the importance assigned various categories of evidence by laboratory directors.

Table 4.15

New Haven
Top Five Evidence Categories Examined in Cases Having Laboratory Reports

Evidence Category	Physical Evidence Examined 1975 N = 150	 1978 N = 132	 1981 N = 153
Drugs	55%	53%	39%
Fingerprints	20%	23%	20%
Firearms	5%	10%	17%
Semen	7%	9%	14%
Blood	5%*	1%	14%

Table 4.16

Results of Laboratory Testing

Results	Percent of All Lab Results 1975	 1978	 1981
Associates	29%	25%	41%
Fails to Associate	5%	9%	5%
Positive Identification	53%	55%	40%
Negative Identification	3%	1%	1%
Reconstruction	3%	2%	6%
Inconclusive	7%	9%	9%

* For 1975, the category is toolmarks.

Table 4.17 displays the rankings given various evidence types by heads of laboratories included in our national survey (see Chapter V). Laboratory directors generally agree that drugs and fingerprints are most important categories of evidence followed by firearms/toolmarks and the grouping of physiological fluids.

Tables 4.18 through 4.23 summarize the results of laboratory testing for each site on an evidence specific basis. The number in parentheses beneath the percentages in the tables corresponds to the number of times the particular evidence category was examined in a given year. Given the infrequency with which some evidence categories appear, percentages are presented only when five or more items of physical evidence are examined and reported.

Table 4.18 presents the evidence specific results for Chicago. Suspected drugs are identified in practically every case where they are examined. Firearms evidence results in associative findings a higher percentage of the time than the other evidence categories, although there is a decline in the most recent year surveyed. Fingerprint evidence results in an association about one-third of the time in 1975 and 1981, but about two-thirds of the time in 1978. The rates of associative results in the bloodstain evidence have steadily increased from 1975 to 1981. Twenty-three percent of the results of laboratory testing result in an association in the most recent time period. The rate of identification for semen is about 60% for the last two years of the sample. This represents a reduction from the 83% rate of positive identifications in 1975.

Table 4.19 indicates that the rate of identification of suspected drugs in Peoria is very high across all years surveyed. Although the

Table 4.17

IMPORTANCE OF FORENSIC EVIDENCE TYPES IN DECIDING THE OUTCOME OF CRIMINAL CASES
(n = 241)

Evidence Category	Importance of Specific Evidence Categories (mean value)*
Drugs	3.8
Fingerprints	3.6
Firearms	3.5
Toolmarks	3.0
Bloodstains (grouping)	3.0
Accelerants	2.6
Explosives	2.5
Fibers	2.4
Paint	2.5
Hair	2.2
Glass	2.1
Bloodstains (patterns)	2.1
Soil	1.7

* Ratings of importance ranged from (1) minimal to (4) essential.

Table 4.18

Chicago

Evidence Specific Laboratory Results by Year

Evidence Category/ Result	Year Offense Charged		
	1975	1978	1981
Drugs			
Positive Ident.	95% (38)	100% (47)	99% (142)
Fingerprints			
Association	31% (36)	64% (14)	39% (39)
Firearms			
Association	70% (17)	80% (10)	50% (20)
Bloodstains			
Association	8% (12)	14% (7)	23% (13)
Semen			
Positive Ident.	83%	60%	58%
Association	4%	5%	5%
	(24)	(20)	(38)

Table 4.19

Peoria

Evidence Specific Laboratory Results by Year

Evidence Category/ Result	Year Offense Charged		
	1975	1978	1981
Drugs			
Positive Ident.	79%	85%	89%
	(148)	(58)	(167)
Fingerprints			
Association	68%	66%	50%
	(28)	(56)	(113)
Firearms			
Association	67%	29%	67%
	(6)	(7)	(18)
Bloodstains			
Association	86%	57%	39%
	(7)	(7)	(18)
Semen			
Positive Ident.	--	--	77%
Association	--	--	69%
			(13)

rate of associations for the fingerprint evidence drops a bit in 1981, it still stands at the 50% level. For firearms and bloodstains, there are so few cases with these types of evidence in 1975 and 1978 that the rates cannot be considered reliable. In 1981, the firearms results show an association about two-thirds of the time, and bloodstains about 40% of the time. The semen evidence category is noteworthy not because of the rate of positive identifications as much as for the high rate of associative findings. This indicates that the laboratory not only is identifying semen, but is also determining the presence of various blood group substances which can serve as a linkage between the suspected offender and the victim of the rape. Peoria has the highest rate of associative semen evidence of all the jurisdictions studied.

For Kansas City (Table 4.20), almost every suspected drug analysis reveals the presence of a controlled substance. Fingerprints associate the defendant with the crime about three-quarters of the time in 1975 and two-thirds of the time in 1981. Firearms evidence reveals an association about one-quarter of the time in 1981; the higher percentage (43%) in 1978 should be discounted due to the small sample size. The sample sizes for bloodstain evidence are small in 1975 and 1978, but in 1981 reveal an association about one-fourth of the time bloodstain evidence is examined and reported. Positive identifications of semen occur about half the time in 1978 and 1981.

We find very high rates of positive drug identification in Oakland (Table 4.21) across all three years. Fingerprint associations are among the highest of all jurisdictions, yielding a positive association from 65% to 75% of the time. Although the numbers are very small for firearms and bloodstain evidence, it appears that the rates of association

Table 4.20

Kansas City

Evidence Specific Laboratory Results by Year

Evidence Category/ Result	Year Offense Charged		
	1975	1978	1981
Drugs			
Positive Ident.	92% (38)	98% (50)	99% (72)
Fingerprints			
Association	74% (35)	54% (67)	66% (74)
Firearms			
Association	22% (18)	43% (7)	26% (23)
Bloodstains			
Association	7% (15)	0% (12)	24% (21)
Semen			
Positive Ident.	--	44%	52%
Association	--	0%	0%
		(9)	(27)

Table 4.21

Oakland

Evidence Specific Laboratory Results by Year

Evidence Category/ Result	Year Offense Charged 1975	1978	1981
Drugs			
Positive Ident.	100%	97%	99%
	(75)	(97)	(112)
Fingerprints			
Association	75%	65%	65%
	(48)	(65)	(74)
Firearms			
Association	38%	67%	63%
	(16)	(9)	(8)
Bloodstains			
Association	20%	33%	54%
	(5)	(6)	(11)
Semen			
Positive Ident.	75%	46%	46%
Association	8%	15%	9%
	(12)	(13)	(22)

have increased over time. About half the semen testing results are positive in years 1978 and 1981, but associations occur in only about 10% of cases.

For Litchfield (Table 4.22), identification of suspected drugs is very high across all years surveyed. Sample sizes for other specific types of evidence are too small to make firm statements. Table 4.23 shows that for New Haven, practically every drug analysis reveals that the substance was controlled. Higher rates of analysis for semen, firearms and blood evidence in 1981 are reflected in the highest rates of associations across all six sites. Firearms results show an association about three-quarters of the time, bloodstains 86% of the time and semen two-thirds of the time.

Summary

Violent crimes comprise a minority of the total prosecutor caseload in five of the six jurisdictions studied in this research (New Haven is the one exception). Seventy percent of the violent crimes charged in five jurisdictions are robberies, aggravated assaults and attempted murders (rapes are predominant in the sixth site -- Litchfield). Forensic laboratory reports are found in from one-quarter to one-third of the prosecutor case files. Looking at specific crimes reveals that laboratory reports are present in practically all murder and controlled substance cases and, in descending order, to a lesser extent in rapes, burglaries, robberies, and attempt murders/aggravated assaults and theft. Peoria is the only jurisdiction where rate of usage of forensic evidence has increased in more than one offense category over the 1975-

Table 4.22

Litchfield

Evidence Specific Laboratory Results by Year

Evidence Category/ Result	Year Offense Charged 1975	1978	1981
Drugs			
Positive Ident.	99% (76)	92% (13)	100% (22)
Fingerprints			
Association	21% (14)	36% (11)	--
Firearms			
Association	--	--	--
Bloodstains			
Association	--	--	20% (5)
Semen			
Positive Ident.	40%	100%	33%
Association	20% (5)	0% (8)	11% (9)

Table 4.23

New Haven

Evidence Specific Laboratory Results by Year

Evidence Category/ Result	Year Offense Charged 1975	1978	1981
Drugs			
Positive Ident.	95%	100%	97%
	(83)	(70)	(59)
Fingerprints			
Association	63%	30%	47%
	(30)	(30)	(30)
Firearms			
Association	100%	92%	77%
	(7)	(13)	(26)
Bloodstains			
Association	--	--	86%
			(21)
Semen			
Positive Ident.	80%	83%	75%
Association	60%	75%	67%
	(10)	(12)	(21)

1981 period. For the jurisdictions studied, controlled substances and fingerprints are the predominant evidence categories examined. They comprise 60% to 80% of the forensic evidence described in laboratory reports. The other three most frequent evidence categories (firearms, blood and semen) occur far less often, and have generally decreased in frequency when 1981 is compared to 1975. Finally, identification of substances and "associations" comprise the majority of laboratory results.

CHAPTER V

SURVEY OF THE NATION'S CRIMINALISTICS LABORATORIES

Introduction

Earlier research has revealed both low rates of utilization of forensic evidence (Parker, 1963; Lassers, 1967; Benson et al., 1970; Parker and Peterson, 1972) and severe resource limitations within crime laboratories (Joseph, 1967; Benson et al., 1970). One may safely infer that these low rates of usage are attributable, in some measure, to a scarcity of facilities, inadequate equipment and the lack of qualified personnel. We know, too, that federal, state and local governments have allocated substantial funds to correct these conditions, starting in the early 1970's.

In an effort to obtain an up-to-date profile of the scope and sophistication of criminalistics laboratory services, and to place the capabilities of the laboratories in our study into general context, we conducted a survey of all identifiable crime laboratories in the United States. The survey instrument (Appendix XII.1) was designed to gather information about the services offered by these laboratories, areas where they devote their resources, personnel and equipment capabilities, research priorities, as well as their perceptions of the value of scientific evidence in resolving offenses at different stages of the criminal justice process.

This chapter presents some of the results of that survey pertaining to resources and service patterns.1 Data gathered which describes laboratory directors' perceptions of the value of different types of forensic examinations are integrated into the second half of this report addressing the effects of scientific evidence. We believe this general overview of crime laboratory capabilities and the comparison of our selected study sites to the survey results, will help us to note the generality and restrictions of the data we gathered in the case file analyses.

Method

A listing of all public and private crime laboratories in the United States which regularly examine physical evidence in criminal cases and supply technical reports and expert testimony to courts of law was compiled. We then obtained mailing lists from such organizations as the American Society of Crime Laboratory Directors and the Forensic Sciences Foundation, and mailed a copy of our list of crime labs to primary crime laboratory facilities in each of the fifty states. We asked each recipient to make additions, deletions and corrections to our intial listing of crime labs. The revisions resulted in a final list of 319 federal, state, regional and local crime laboratory facilities.

Each of these laboratories was mailed a copy of the questionnaire. The first mailing resulted in a return of 190 questionnaires; second and third mailings to nonrespondents yielded 70 additional questionnaires. Three questionnaires were returned blank. Our overall response rate was 82% with a total of 257 usable questionnaires.

Origin and Placement of Laboratories

Year Established

The oldest crime laboratory in the United States was established in 1923 and the most recent one in 1982 (see Figure 5.1). Fifty-five percent (n=240) of all laboratories were established in the ten year period from 1968 to 1978. U.S. Supreme Court decisions restricting police interrogation practices, the President's 1967 Crime Commission Report and admonishments to police to place greater reliance on physical evidence, the creation of the Law Enforcement Assistance Administration (LEAA) and the availability of federal monies, the drug abuse explosion, and the upsurge in violent crime are all factors which surely stimulated the growth of laboratories during this period. Of the five crime laboratories involved in our study, three were established prior to 1945 (Chicago, Kansas City and Oakland), one was founded in 1974 (Morton), while Connecticut's was radically expanded and upgraded in 1979.

Organizational Placement

Seventy-nine percent of all laboratories responding to our survey are located within law enforcement/public safety agencies. The remaining laboratories are distributed throughout such agencies as medical examiner's offices, prosecutor's offices, scientific/public health agencies and other public or private institutions. All crime laboratories in our study are units of law enforcement agencies. Four of the five are headed by civilian scientists, while the fifth (Chicago) is headed by a police officer.

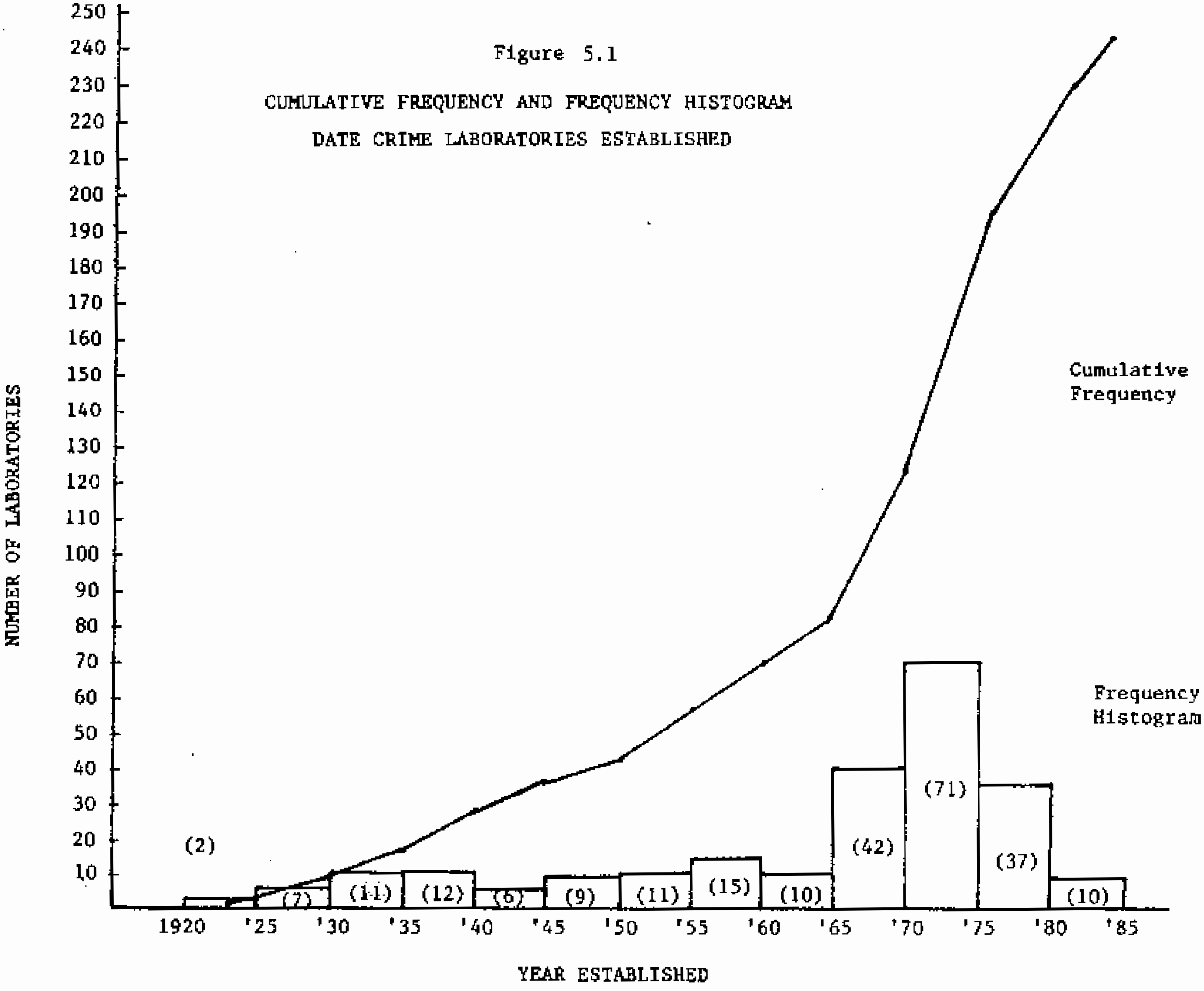


Figure 5.1

CUMULATIVE FREQUENCY AND FREQUENCY HISTOGRAM

DATE CRIME LABORATORIES ESTABLISHED

Service Policies and Practices

Laboratories were asked to report the type of jurisdiction they primarily serve (see Table 5.1). Apart from the federal laboratories, which constituted 9% of respondents and the independent laboratories which composed 3% of the respondents, the remaining laboratories are almost evenly divided between state facilities (46%) and local operations (42%). Within the state category, we find twice as many satellite laboratories (30%) as main facilities (16%). At the local level the number of laboratories are almost equally divided among municipal (14%), county (15%) and regional (13%) operations. As described in detail in Chapter III, two of our study laboratories serve municipalities (Oakland and Chicago), two are regional (Morton and Kansas City), and one is a centralized state facility (Connecticut).

Availability of Services to Various Users

This section summarizes the results of a series of questions designed to determine the extent to which the services of laboratories are available to various parties. Responses indicated that:

- Fifty-seven percent of the responding laboratories will only examine evidence submitted by law enforcement officials.

Table 5.2 shows that state and federal laboratories examine evidence for non-law enforcement officials at a significantly lower rate than other types of laboratories. Four of the five laboratories in the present study (Connecticut being the exception) will conduct analyses of evidence submitted by non-law enforcement officials.

Table 5.1

JURISDICTION SERVED
(n = 255)

Type of Jurisdiction	Percent
State/Satellite	30%
State/Main Facility	16%
County	15%
Municipal	14%
Regional	13%
Federal	9%
Other (private, etc.)	3%

* Percentages may not add to 100% due to rounding.

Table 5.2

POLICY OF EXAMINING EVIDENCE FOR NON-LAW ENFORCEMENT OFFICIALS
BY TYPE OF JURISDICTION SERVED
(n = 255)

Jurisdiction Served	Percent Which Examine Evidence Submitted by Non-Law Enforcement Officials
Municipal	51%
County	54%
Regional	52%
State/Main Facility	40%
State/Satellite	30%
Federal	36%
Other (private, etc.)	88%

- Seventy-eight percent of laboratories will not allow their facilities/equipment to be used by private examiners in analyzing physical evidence.

No significant organizational differences are found among laboratories which permit their facilities to be used by private examiners and those that do not. Three of the five laboratories in our study (Morton, Kansas City and Connecticut) will permit such analyses, but only when ordered to do so by the court.

- Twenty-two percent of the laboratories allow their examiners to engage in private <u>criminal</u> casework or consultations.

When controlling for type of jurisdiction served, major differences emerge. State-satellite and federal laboratories permit their examiners to do private criminal casework at a significantly <u>lower</u> level (13% and 5%, respectively) than other laboratory types (about 25% of these labs allow examiners to take on private criminal cases). Kansas City, Peoria and Connecticut will allow their examiners to engage in private criminal case work, with certain restrictions; Oakland and Chicago do not.

- Sixty-two percent of the laboratories permit their examiners to be involved in private <u>civil</u> casework or consultations.

Further breakdowns show that there are large differences when controlling for jurisdiction. Federal laboratories allow their examiners to be involved in civil casework only 18% of the time while municipal laboratories allow private civil casework close to 75% of the time. Four of the five laboratories in this study, Oakland being the exception, allow their examiners to engage in civil case work.

- Thirty percent of the laboratories will analyze non-criminal evidence samples (pollutants, pesticides, etc.) upon request.

A breakdown by organization reveals that county and regional laboratories are more likely to analyze non-criminal evidence samples than other types of laboratories. Only one laboratory in the current study, Kansas City, will accommodate such non-criminal requests, but only on a case by case basis.

In sum, then, our study site laboratories generally are more accessible facilities than our national sample and have more liberal policies with respect to the acceptance of evidence and the sharing of their expertise with non-law enforcement parties.

Laboratory Budgets

Laboratories were asked to report their total annual budgets for the years 1977 and 1982. Federal laboratories were excluded from this budgetary analysis. Of laboratories answering this question, approximately two-thirds are positioned within law enforcement agencies. The results of the 81 state and local laboratories responding to this question are presented in Table 5.3. The average annual budget for these laboratories rose from about $544,000 in 1977 to more than $900,000 in 1982; this represents an increase of approximately 67%. The budgets for our study site laboratories averaged $1.37 million in in 1977 and $1.81 million in 1982, a 32% increase. Kansas City's budget increased the most (147%) over this five year period, and Chicago's the least (20% increase).

Table 5.3

COMPARISON OF LABORATORY BUDGETS
1977 and 1982*

Budget	1977 (n = 81)	1982 (n = 81)
Total Budgets	$44,100,190	$73,549,150
Mean Budget	$544,450	$908,010
% Increase	---	67%

* This table includes only those (non-federal) laboratories that were in operation during the five year period from 1977 to 1982, and reported their budgets on the survey instrument.

Number of Personnel in Laboratories

Slightly more than 3,000 scientific personnel are employed in the 257 laboratories responding to the questionnaire. The mean number of personnel per laboratory is 11.7, and the median is 6. In other words, 50% of the laboratories have 6 or fewer scientific personnel, and 25% of responding laboratories have 3 or fewer personnel.

The average number of scientific examiners in state (main) facilities is 19; an average of 18 examiners are employed in each federal facility. State satellite, county and municipal laboratories average 10, 11 and 14 examiners, respectively. While regional laboratories, with 7 employees, average the fewest number of scientific personnel. The mean number of examiners in our five study laboratories is 18, ranging from Chicago's laboratory which employs 50 examiners to Oakland's which employs only 6.

When we compare the total number of personnel employed nationally in 1982 (3,010) with 1977 (2,033) there has been about a 50% increase. Virtually all of this increase is attributable to the number of new laboratories created in the period 1977-1982, since the average number of personnel per laboratory has remained at 12 (Table 5.4). Table 5.4 provides averages of scientific examiners by jurisdiction for 1977 and 1982. Municipal and regional laboratories have added, on average, about one new examiner per laboratory in this five year period. There have been major shifts in personnel allocations in state systems, though, with state main facilities increasing their scientific staff by an average of 18%, while the average number of staff in satellite facilities has been reduced by one-third. This latter "decline" is illusory since it is primarily a reflection of brand new satellite facilities being formed with small initial staffs.

Table 5.4

AVERAGE NUMBER OF SCIENTIFIC PERSONNEL PER LABORATORY BY TYPE OF JURISDICTION SERVED (1977 and 1982)

Type of Jurisdiction	Mean Number of Scientists (1977)	Mean Number of Scientists (1982)
Municipal	13	14
County	8	11
Regional	6	7
State/Main	16	19
State/Satellite	15	10
Federal	11	18
Mean	12	12

For our study sites, Morton (Peoria) has experienced a 100% increase in staffing (from 6 to 12) in that five year period;while Chicago and Connecticut experienced 37% and 44% increases respectively. Kansas City and Oakland each added one scientist each.

Case Examination Practices

Table 5.5 displays the types of evidence examined in laboratories. Almost all responding laboratories examine drug evidence (93%). Over three-fourths of the laboratories examine semen, bloodstains, fibers, hairs, accelerants, paint and toolmarks. Over one-half of the laboratories examine firearms, glass, alcohol, explosives and fingerprints. Less than one-half of the laboratories examine documents, gunshot residue/powder patterns, voiceprints, toxicological samples or conduct polygraph examinations. The five crime laboratories in the present study are all "full-service" laboratories and examine practically all forms of evidence listed above (see Table III.1 in the Appendix). They are typical in that most do not examine toxicological samples, nor possess voiceprint and polygraph capabilities. The majority analyze gunshot residue samples and examine questioned documents.

Laboratory Caseloads

Laboratories were asked to estimate their caseloads for calendar year 1982. Five major categories of work were specified in the questionnaire; analysis of evidence derived from: 1) violent crimes; 2) property crimes; 3) drug offenses; 4) driving while intoxicated cases

Table 5.5

PERCENT OF LABORATORIES WHICH EXAMINE VARIOUS CATEGORIES OF PHYSICAL EVIDENCE

(n = 257)

Type of Evidence	Percent of Laboratories Examining This Type of Evidence
Drugs	93%
Semen	81%
Bloodstains	81%
Fibers	79%
Hairs	79%
Accelerants	76%
Paint	79%
Toolmarks	75%
Firearms	73%
Glass	70%
Alcohol	67%
Explosives	61%
Fingerprints	62%
Documents	45%
Gunshot Residue/Powder Patterns	43%
Toxicology	42%
Polygraph	30%
Voiceprints	5%

and 5) other. Table 5.6 presents these caseload data broken out by type of crime category and jurisdiction served. It can be seen that, overall, drug and driving while intoxicated (DWI) cases account for close to two-thirds (64%) of total caseloads. Violent and property crimes constitute 12% and 15% of the caseloads respectively.

Breaking caseloads out by specific jurisdiction reveals some interesting patterns. While the violent crime caseload for regional, state-main and state-satellite laboratories is very close to the overall average (12%), the violent crime caseload for <u>municipal</u> laboratories is significantly higher than average. This is not the case for the municipalities of Oakland and Chicago, which have violent crime caseloads very close to the national average. Municipal laboratories serve major urban areas which have the highest concentration of violent crime. At the other extreme, the violent crime caseloads for county and federal laboratories are substantially lower than the mean. The lower percentage of violent crime-related evidence in federal laboratories is a reflection of the several Drug Enforcement Adminstration (DEA) laboratories in this sample which examine drug evidence exclusively. County facilities serve more rural and suburban communities where violent crime is less. Our most rural community (Morton) also has the highest drug caseload, amounting to 67% of all cases examined. The property crime caseloads for municipal and federal laboratories make up about one-fourth of their total caseloads. This higher than average percentage of property crime-related evidence corresponds with substantially lower than average DWI related submissions (none in federal laboratories) in these types of facilities. This relationship tends to hold for the two municipal laboratories included in our study (Oakland and Chicago), except that Oakland has a higher than average DWI caseload.

Table 5.6

BREAKOUT OF CASELOAD BY JURISDICTION SERVED
(n = 1,123,149)

Evidence Examined From Different Crime Categories	Percent Caseload by Jurisdiction						
	Muni	Co	Reg	St-M*	St-Sat*	Fed	Overall
	(values expressed in percentages)						
Violent Crime	18	6	13	11	11	7	12
Property Crime	25	6	10	11	13	24	15
Drugs	32	40	41	40	51	55	41
DWI	20	36	15	34	18	0	23
Other**	5	12	21	4	8	14	9
Total	100	100	100	100	100	100	100

* State-Main (St-M) and State-Satellite (St-Sat) facilities.

** Includes hit-and-run, documents, carrying concealed weapon, toxicology samples, civil cases.

Drug cases account for the largest percentage (41%) of all laboratories' caseloads. The federal laboratories and state-satellite laboratories responding to the questionnaire have the highest percentage of drugs -- in excess of 50%. The high percentage of drugs for federal laboratories is a reflection of the many DEA laboratories responding to our survey. With respect to state-satellite laboratories, many came into existence during the 1970's primarily to respond to the need of medium to small sized communities experiencing a dramatic increase in the drug abuse problem. DWI cases also constitute a major portion of crime laboratory caseloads, with county and state-main facilities having the highest percentage (36% and 34% respectively) of such cases. When drug and DWI cases are combined we see that practically three-fourths of state-main laboratory and county caseloads fall into this category. Our main state facility (Connecticut) does not fit this mold in that it examines <u>no</u> drug or DWI cases. Such cases are examined by a separate state agency in Connecticut.

We, also, computed the ratio of cases examined per scientist for the laboratories responding to the questionnaire. These cases/examiner values are displayed in Table 5.7, broken out by jurisdiction served. We see that across the nation, laboratories analyze approximately 433 cases per examiner per year. Municipal and county laboratories have the highest ratio of cases per examiner. The lowest caseloads are found in federal and main state facilities.

For our study site laboratories Chicago (520 cases/examiner) and Kansas City (493 cases/examiner) have the highest cases per examiner ratios and Connecticut (140 cases/examiner) the lowest (See Table 3.2, Chapter III). Compared with the national averages of comparable labora-

Table 5.7

CASES PER EXAMINER BY TYPE OF JURISDICTION SERVED (1982)

Type of Jurisdiction	Mean Number Cases Examined (1977)	Mean Number Cases/Examiner (1982)
Municipal	651	4786
County	502	3676
Regional	422	2459
State/Main	322	5194
State/Satellite	454	3038
Federal	200	1821
Mean	433	3466

tories (based on type of jurisdiction served) all of our study site locations (with the exception of Kansas City) have slightly lower case loads per examiner.

Technological Innovations and Research

Laboratories were asked to specify the most significant scientific/technological advances in the criminalistics field in the past five years. The most frequent three responses were: (1) serology (which was mentioned by 60% of the respondents); (2) computers, and related innovations (14%); and (3) laser applications to fingerprints (7%). Clearly, laboratories believe the advances in serology (bloodstains, semen, etc.) have been most important. Our individual study sites are in agreement with this evaluation. In answer to the question about the area in which there is the greatest need for further research, 28% of the laboratories, again, indicated serology; 15% mentioned trace analysis (paint, glass, fibers, etc.); and 13% cited individualization of hair. Once again, our laboratories support such recommendations. Other responses varied over a wide range of categories.

Summary

While it is clear that the rapid expansion of criminalistics laboratory facilities of the 1970's has subsided, the increase in the number of scientific personnel in these laboratories (50% over the past five years) and their budgets (an increase of 67% in this same period) has continued. Our study sites are not substantially different in these respects. The two to one ratio of nonsworn to sworn staff has remained relatively constant.

Crime laboratories are customarily positioned within police agencies and usually restrict their services to law enforcement clients. They do little casework for private individuals, and only about one-third will analyze noncriminal evidence samples. Overall, approximately two-thirds of the caseloads of laboratories are in the offense areas of drugs and driving while intoxicated; accordingly, only about one-third are in the personal and property crime areas. Once again, the majority of the study sites selected for this research are similar in that they, too, must contend with high drug caseloads.

Laboratories were also asked about their involvement in research and to identify areas meriting future study. Respondents believe that the most significant advancements in criminalistics research in the past five years have been in the field of serology. When asked where they thought research was needed most urgently in the future, the reply was, once again, serology. The laboratories also indicated that research was needed in trace evidence, and in particular, hair. The laboratories, themselves, engage in little research, with less than 5% of staff time devoted to this activity.

NOTE

1. For a complete discussion of these survey data, see: Peterson et al., (1985) "The Capabilities, Uses and Effects of the Nation's Criminalistics Laboratories," <u>Journal of Forensic Sciences</u>, Vol. 30, No. 1, 10-23.

CHAPTER VI

IMPACT OF FORENSIC EVIDENCE FROM THE TRIAL ATTORNEY'S PERSPECTIVE

Introduction

A second major objective of this research project was the determination of the relative impact of forensic evidence on the adjudication of criminal cases. To explore this issue we gathered data from five sources: 1) interviews with prosecutors and defense attorneys in the six locales we were examining in depth; 2) a questionnaire distributed to jurors in Chicago after they had reached a verdict; 3) the survey of crime laboratory directors; 4) the in-depth study of 1981 case files in the six study sites and 5) hypothetical cases administered to prosecutors in Chicago. Chapters VI through X present the data gathered by each of these research strategies. Chapter XI integrates these findings and discusses several policy implications.

Our interviews lasted 30 to 45 minutes and followed a prepared list of questions. To ease comparison of this interview data with that presented in other chapters information has been organized according to stages of case disposition.

Charging

Generally, prosecutors expressed the expectation that forensic evidence would be relatively unimportant in influencing the decision of whether and how to charge a case. There seems to be a heavy reliance upon eyewitness identifications and statements (often by police officers) as the basis for charging decisions. The credibility and reliability of the eyewitness shape the prosecutor's decisions. Prosecutors indicated they would rarely file charges against a defendant if _all_ they had was physical evidence. At this stage of the judicial process, physical evidence is largely _corroborative_ and never the _sine qua non_ of the charging decision. Although a prosecutor would usually know whether any physical evidence had been collected (by examining the police report), laboratory results are not typically available at the time that the charging decision has to be made.

There are however, well known exceptions to this rule. First, there is the relatively rare case where a detailed investigation has resulted in the identification of a suspect, the issuance of an arrest warrant, and the apprehension of the defendant. In this situation, where forensic evidence has assisted in identifying the defendant or establishing the elements of a crime, the evidence will be available to the prosecutor at the time of the charging decision.

The second exception is drug or narcotic cases. These crimes are defined by the results of laboratory analyses and cannot be carried forward without them, so prosecutors will not charge without the forensic evidence. In more than one jurisdiction, that evidence needs only to be a "field test kit" analysis conducted by a police officer which presumptively identifies the substance. In other jurisdictions, defendants charged with routine drug offenses may be released after arrest, until the analyses can be completed and charges filed. In Chicago, a full laboratory analysis is required at the preliminary hearing to establish probable cause for drug cases. Presumptive tests are not accepted at this stage. In addition, the severity of the charge (sale versus simple possession) may rest upon a laboratory analysis which determines the purity and quantity of the substance in question. Field test results are considered insufficient to define the nature of a case.

The third exception are rape cases where there is either a question about whether intercourse actually occurred or the victim's identification of the assailant. In the former situation, the finding of semen may be critical to the prosecutors' decision to charge; in the latter, the discovery of blood group substances in the semen consistent with the defendant's would be important. Some laboratories, as a rule, do not perform blood grouping tests on semen and consequently, such a contingency is not a factor in decisions to charge. In other locales where the crime laboratory does perform blood grouping tests on semen, it may take days or weeks to supply the findings to the prosecutor; as a result, these tests will usually have little effect on the charging decision. Although most prosecutors will say that if the issue in a rape case is one of consent ("yes, there was intercourse, but she was willing") the finding of semen may be irrelevant. However, the finding of blood, hair, bruises or broken objects supporting the victim's assertion that she was forced to engage in intercourse may be very important in a prosecutor's charging decision.

Finally, decisions to file arson charges may also turn on the laboratory testing of fire debris and the identification of flammable liquids or combustibles. While such an analysis is not absolutely essential for supporting a charge of arson, it can certainly be persuasive in showing a fire was intentionally set, and not accidental.

Plea Disposition

We asked prosecutors if the lab report was sought and used in plea negotiations. Differences in response emerged as a function of how readily forensic analyses are performed in a jurisdiction. In Chicago, where laboratory resources are limited, prosecutors indicated that if they thought they could get a plea without a laboratory work-up, they would not request one. Indeed, limitations on lab testing in Chicago and Oakland meant that certain analyses are not conducted unless a case is going to go to trial. Some prosecutors are critical of such deferrals of laboratory work-ups and characterize it as "laziness" or "incompetence" of the attorney. Defense attorneys often believe the prosecution "too reluctant" to request analyses, particularly if the prosecutor suspects the tests might exonerate the defendant. Whatever the reason, results are commonly unavailable to the prosecutor (or the defense) at the time decisions to offer a charge reduction or sentence recommendation in exchange for a plea of guilty need to be made. Where laboratory analyses are more readily available, prosecutors indicated that they would want to consider possible laboratory reports before entering plea negotiations. In Kansas City, prosecutors noted they would delay the initiation of plea negotiations until they received copies of the laboratory report. Such evidence can help to establish a strong, initial position for the prosecutor before entering negotiations.

As for the impact of forensic evidence on plea negotiations, prosecutors reminded us that the decision to offer a charge reduction or sentence recommendation is determined by the overall case. In making the decision to offer a plea, prosecutors said that they considered a variety of factors: availabilty of witnesses, skill of the defendant's lawyer and his/her reputation for going to trial, the defendant's prior record and public reaction, if any, to the case, as well as the strength of evidence associated with the case. Since forensic evidence is part of the case, it has an impact, but its impact depends upon the other attributes of the case. Generally, however, if there is forensic evidence that strongly associates the defendant with the crime, prosecutors are less inclined to offer a plea bargain. One prosecutor noted:

> Can I get a conviction on this case? Am I going to tie up a courtroom for three weeks and still lose the case? ...one thing that you will consider is the physical evidence, and whether it supports your case. And if you have it you don't have to rush to bargain the case away.

Strongly associative forensic evidence may lead the defense attorney to persuade his client to enter a quick plea of guilty. There is little hope that the prosecutor will offer any concessions. A quick plea to the charge--an admission of one's guilt to the judge--is the only hope for a reduction in sentence.

The impact of the forensic evidence depends, however, on the extent to which its analysis associates the defendant with the offense and the extent to which it can be explained away. If, for example, fingerprints have been collected and identified as those of the defendant, and the defendant has no reason for being at the scene of the crime, there is little the defense can do. If, however, the suspect claims legitimate access to the scene of a crime, the identification of a fingerprint may have little value. Similarly, if blood stains have been analyzed and identified as belonging to a particular blood group, the defense will underscore the possibility that they belong to someone other than the defendant. The same would be true with other "nonconclusive" forms of physical evidence as hair, fibers, glass or paint. Such forensic evidence will be less effective in eliciting a guilty plea to the original charge.

Pre-trial Discovery

Pre-trial discovery is the basic procedure employed by defendants to gain access to reports, documents and related evidence possessed by the prosecution. It is now a well-established procedure in all the sites we studied for laboratory reports to be made available to defense counsel, upon their request. If the case fails to go to trial, these reports usually serve as the principal source of scientific information used in the plea negotiations process. While generally the discovery process proceeds smoothly, there are occasional problems.

For example, the law is unclear whether a scientist's bench notes are discoverable. Although not readily turned over to defense counsel, if pursued, the judge will normally order the prosecutor to supply a copy to the defense. An additional problem noted by one defense attorney is the "loss" or "misplacement" of reports in complex cases. The attorney remarked that he doubted it was "a coincidence that the reports that seem to get lost (prior to trial) are the ones that are most damaging to us." There also seemed to be confusion about "reverse discovery", which enables the prosecutor to gain access to reports in the hands of the defense. Although it differs from jurisdiction to jurisdiction, it appears that judges may order it, if the prosecution possessed the evidence in the first place, and was required to turn it and accompanying reports over to defense who then had further examinations performed on it. Such a possibility will deter some defense counsel from seeking their own expert for a second opinion about the evidence. Confirmation of the prosecution's experts' findings by a defense expert is expected to be particularly devasting to a case.

Defense counsel are also sometimes reluctant to pursue an area, such as scientific evidence, too aggressively prior to trial for fear that it will "tip their hand" to the prosecution about their principal defense strategy. Other attorneys assert such an explanation is merely an excuse for not being as well prepared as one should be to defend a client.

In our study sites defense counsel indicated to us that they found laboratory examiners "accessible" for asking questions about reports. However, they noted that if their questions began to go beyond clarification of a point, that examiners might not cooperate unless the prosecutor gives his permission to do so.

Trial

We inquired into prosecutors' beliefs about judge and jury responses to the presentation of forensic evidence at trial. Before discussing these results, we first present data which indicate the fraction of trials in which forensic experts actually testify.

Trials and Expert Testimony

Although data are not available for all years nor all jurisdictions, we are able to report the frequency that experts from the Chicago, Peoria and Kansas City crime laboratories testified in court in the year 1981.(1) The cases included in this discussion are those cases constituting our prosecutor case file sample which were resolved at trial (see Chapter IV).

There are few trends which carry over from jurisdiction to jurisdiction; murder cases, for example, are *not* uniformly the type of case where experts testify most regularly (See Table 6.1). The base value for these tabulations is the total number of trials for each offense category in our sample. (The value in parentheses in each cell represents the number of those particular sampled offenses resulting in a trial.) Upper and lower percentages in each cell represent the following: the top value is the percent of trials where one or more examiners testify; the bottom value is the percent of cases resulting in a trial and where evidence is examined that a scientist also testifies in court. For example, in burglary cases in Kansas City, examiners testify in 9% of all burglary cases which go to trial but in 33% of such trials where evidence is examined.

All of the Peoria murder prosecutions going to trial (4) result in examiners testifying, while only 4% of the 47 Chicago murder prosecutions have expert testimony. In Peoria, 12% of the attempt murder/aggravated battery prosecutions going to trial have experts testify; in these trial cases, where scientific evidence is examined, an expert testifies in three-quarters of cases. In Chicago, none of the 49

Table 6.1
Trials and Testimony
(Percentages)

	City		
Crime Type	Peoria	Chicago	Kan City
Murder	100/100 (4)	4/5 (47)	17/17 (6)
Att. Murder/ Agg. Bat.	12/75 (26)	0/0 (49)	25/100 (4)
Rape	50/100 (2)	12/15 (25)	27/50 (7)
Burglary	22/40 (9)	0/0 (38)	9/33 (11)
Theft	5/50 (19)	0/0 (47)	0/0 (10)
Robbery	14/50 (7)	0/0 (67)	7/50 (14)
Drugs	71/71 (7)	0/0 (27)	25/25 (4)

attempt murder/aggravated battery prosecutions going to trial have a crime laboratory expert testify.

Except for Chicago there are very few rapes which are resolved at trial. In the 25 rape trials in Chicago, 3 (12%) result in expert testimony. Almost one-quarter of Peoria burglary trials have expert testimony, but none of Chicago's do. In Kansas City, only 9% of burglary trials involve expert testimony, but of these trials where the laboratory examines evidence, 33% result in expert testimony. Expert testimony in theft cases seldom occurs: in only 5% of the trials in Peoria, but none of the trials in Chicago or Kansas City. Though few in number, robbery prosecutions have a slightly higher rate of expert testimony in Peoria and Kansas City, but in none of the Chicago trials. As we observed in the crime of burglary, where evidence is examined in robberies which go to trial, the likelihood of expert testimony increases several fold.

Data are not available for the appearance of examiners in drug prosecutions in Chicago. Though drug trials are infrequent in Peoria and Kansas City, we see that drug chemists appear in 5 of 7 of such trials in Peoria, but only 1 of 4 drug trials in Kansas City.

If we aggregate all offense types within each jurisdiction, we find that crime laboratory experts testify in 23% of the 74 trials in Peoria, 13% of the 56 trials in Kansas City and only 2% of the 273 trials in Chicago. But since rates of testifying vary markedly by offense type and jurisdiction, it is very difficult to generalize. It is apparent, though, that it is far more likely that an expert will testify in a trial in a less populous jurisdiction like Peoria than in a populous one like Chicago, where expert testimony is a rarity for any type of trial.

While it is difficult to pinpoint the particular factors influencing these widely different rates, they are probably related to the volume of cases which faces both laboratory and prosecutor's offices in the different jurisdictions. From a laboratory perspective in Chicago, time in court is time away from the bench where evidence backlog is a chronic problem; the prosecutor also has a high volume of cases demanding attention and he must do all he can to expedite caseflow. Calling experts to testify during trials slows down this process and means associated police personnel who handled the evidence will have to be called also. It is far more expeditious, but possibly not as effective, to introduce the laboratory report (with the concurrence of the court and defense counsel) summarizing the expert's findings.

Judicial Evaluation

Except for Chicago, nearly all the trials that occur in our study jurisdictions are jury trials, not bench trials. Thus, prosecutors could make few remarks about judicial responses to forensic evidence and experts presented, but those that did noted some interesting differences in the presentation of physical evidence at bench and jury trials. Presentation of scientific results to a judge is more streamlined than to a jury. If the judge is familiar with the expert and the evidence to be presented, he/she will usually waive the qualifying of the expert witness and agree to a stipulation of the laboratory results. The expert is not required to testify. Experts are not used to try to impress judges, who are more sensitive to such factors as the need for speed and economy in presenting the state's case. Still one attorney warned that prosecutors should not downplay forensic evidence simply because the case is being heard by a judge. He believed a judge will take the state's case "more seriously" if the prosecutor presents physical evidence.

When experts are called, there is the belief that judges may be more discriminating and critical of forensic testimony than a jury would be. Compared with a "novice" juror, experienced judges will have had the opportunity to hear numerous experts testify on previous occasions. Such repeated exposures enable judges to evaluate better the strength of the evidence and the testimony of an expert. In fact, some prosecutors noted that certain judges can become quite critical of laboratory personnel and urge that they become "more prompt and more professional".

If an attack of forensic evidence is a key element of the defense's overall trial strategy, then defense attorneys believe, strategically, the case should be tried before a jury. Judges are not thought to be as persuaded by intense cross examinations of forensic experts as are juries where only one confused or doubting juror can result in a mistrial.

Jury Evaluation

Prosecutors are unshaking in their belief that juries are very impressed by physical evidence. One prosecutor remarked:

> The more physical evidence the better. I like physical evidence no matter what kind of case it is. Juries like physical evidence. Testimonial evidence goes through their fingers. Physical evidence does not. Physical evidence can approach the senses of the jury other than the sense of hearing. I want the jury to use all of their senses, not just one or two. If the jury can see a .44 Magnum, they get a much better feeling for what a .44

> Magnum is all about than if they simply hear someone talking about it.

There is the belief that juries "love to play detective" and physical evidence fulfills that desire. The impact of physical evidence on a jury may be summed up by the following four points:

- o Forensic evidence is interesting and helps to "jazz things up" (largely because it makes the trial seem more like a television show).
- o The evidence is physically present for the jurors to see and evaluate for themselves.(2) And further, this evidence can be taken back into the jury room.
- o The evidence is not subject to human emotion and is therefore less likely to be distorted. Eyewitnessess can be inaccurate and testimony may be wrong, but jurors regard physical evidence as trustworthy. One prosecutor commented that if he had to choose between presenting a fingerprint and an eyewitness statement to a jury, he would always go with the fingerprint.
- o Prosecutors also believe that physical evidence can help "anchor" their case, by shoring up the testimony of other witnesses and, rightly or wrongly, adding credibility to the entire case. This can relieve some of the burden felt by juries in making the decision of guilt or innocence.

Forensic evidence can be a two-edged sword, however, in that juries sometimes expect too much from the forensic evidence. "We fight T.V. all the time... Quincy has given us a bad run," remarked one prosecutor. Juries may be disappointed that the forensic evidence did not yield more conclusive information and surmise that the prosecution has failed to make its case. Prosecutors are most concerned, however, about cases in which forensic evidence is absent. As one assistant district attorney noted:

> I haven't had juries hang up because they had it (physical evidence), but I have had juries hang up because there hasn't been any physical evidence when they felt that there should be.

If a case is lacking physical evidence prosecutors sometimes feel obligated to call police officers or forensic experts to the witness stand to explain why it is absent. In one murder trial before a jury, investigators were called to testify to explain the absence of fingerprints from a motel room where the victim's body was found. The experts testified that the absence of prints was an indication the room had been "wiped clean" of <u>all</u> prints, not just those of the accused. The employment of proper procedures by crime scene investigators, also, can be critically important:

> If I have a fingerprint, that's fine. If I don't have a fingerprint then that's not so fine. But if no one even bothered to look for a fingerprint, then that's where you suffer.

Jury Comprehension

Prosecutors are of the belief that juries are quite capable of understanding physical and scientific evidence. As will be explained in the next chapter, the empirical data we gathered from actual jurors supports this belief. Nonetheless, the comprehensibility of an expert's testimony is not simply a function of the scientist's forensic (speaking) skills, but also of the preparation and skill of the prosecutor:

> The question of comprehensibility is intricate, but isn't really a problem. As a prosecutor, I have to understand it (the forensic evidence); then it is my responsibility to see to it that the jury understands it. Of course, if the expert can get his point across to the jury, that facilitates the process.

Prosecutors believe that juries are more comfortable with forms of physical evidence familiar to them (such as fingerprints) and, similarly, evidence where an expert can make an unequivocable statement of certainty: "The defendant, and no other person, left the fingerprint at the crime scene."

Prosecutors perceive jurors to be less comfortable with evidence, such as hair, where the testimony of experts is, of necessity, more subjective and less absolute. There is, also, concern about the comprehensibilty of bloodstains and other biological evidence where results are customarily presented in probabilistic terms. That is, the expert can <u>never</u> state, unequivocally, that a bloodstain was shed by a particular person; only that the questioned stain and the blood of the accused contain the same types of genetic markers and these are present in "x" percent of the population.

Prosecutors noted, too, that if the presentation of scientific evidence is too technical or equivocal and the defense introduces its own expert who offers a different interpretation of the data, that the forensic evidence may become totally obfuscated. In such a situation, prosecutors would anticipate jurors possibly disregarding the scientific evidence altogether and basing their decision on other factors in the case.

Defense Challenges

We inquired into how often and under what circumstances defense attorneys challenge the forensic evidence. The first opportunity arises during pre-trial evidentiary hearings where defense counsel may attempt to have physical evidence ruled inadmissible on the grounds that it is, 1) the product of an illegal search and seizure; or 2) that there has been a break in the chain of custody of the evidence. Prosecutors and defense attorneys, alike, agree such attempts are rarely successful.

Table 6.2 displays our data from the prosecutor case file sample describing the frequency with which defense counsel file motions to suppress physical evidence in the hands of the prosecution and their success in having it excluded. Defense counsel <u>file</u> such motions from a high of 26% of cases in New Haven to a low of 3% of cases in Kansas City. Such filings are successful, i.e., the evidence is excluded, in an extremely small percentage of the time -- from 2% of cases in Chicago to 0% of cases in Kansas City and Litchfield. These results are tempered by the fact that the result of the motions to suppress could not be determined from the case files in from about one-half to two-thirds of the cases where motions were filed.

A second opportunity to challenge forensic evidence occurs at trial. The defense attorney can challenge the competency of the expert witness when the trial court makes its review of the witness's qualifications. Customarily, defense attorneys do not employ this strategy with most examiners from the crime laboratory since these experts' credentials have already been accepted by the trial court on previous occasions.

The defense may challenge the forensic evidence by introducing its own expert, but this is rarely done.

> ...we can't afford it. And if our client is telling us in confidence that he did it, then we can't really justify spending a lot of money challenging something that we know is probably true.

The typical $500/day for testimony and $150/hour for examinations means that most public defender office's budgets cannot withstand such

Table 6.2
MOTIONS TO SUPPRESS EVIDENCE*
(in percent of all cases sampled)

	Jurisdiction					
Motion to Suppress	Chicago n=998	Oakland n=955	Kan City n=894	Peoria n=1057	New Haven n=442	Litch n=234
Yes	11	13	3	5	26	7
Granted	(2)	(1)	(0)	(1)	(1)	(0)
Not Granted	(5)	(5)	(0)	(2)	(8)	(3)
Unknown	(3)	(7)	(2)	(3)	(17)	(4)
No	89	87	97	95	74	93

*columns may not add to 100% due to rounding errors expenses - except under the most extraordinary conditions. Public defenders have the option of going before the court to petition for a special budgetary allowance to permit such testing, but most judges are not inclined to grant such requests.

Most defense challenges occur by means of cross-examination of the prosecution forensic expert. During cross-examination the defense may attempt to obfuscate the issues, and make the analysis seem extremely complex. Defense counsel will imply that no one can trust or really understand tests of such complexity. Prosecutors respond with a redirect examination to clarify the situation. As one defense attorney stated, he tries to "accentuate the inherent limitations of probabalisitic evidence." Prosecutors generally feel that these defense tactics are unsuccessful. If, however, the forensic evidence involves an interpretation of forensic evidence, rather than simply an analysis of a substance, the cross-examination may be used successfully to introduce other points of view and alternative explanations. In this situation, the defense simply tries to explain away the physical evidence. As a prosecutor noted:

> The defense doesn't dispute the facts of the physical evidence, but attempts to explain why the fingerprint was there or how the blood could have gotten on the shirt....

Former prosecutors are thought to be the best in conducting this type of cross-examination since they have past experience with the crime lab and understand how other interpretations are indeed possible.

A final method used by the defense to reduce the impact of forensic evidence is to have it admitted through stipulation. Using this procedure, the court will accept the laboratory report as the evidence and an expert will not testify. Lacking the drama of an expert testifying on the witness stand, it draws less attention to the scientific evidence. Defense counsel say such a technique can weaken the prosecution's case, particularly where the state's remaining key witnesses are of questionable moral character and lack credibility.

Whether or not to stipulate to laboratory reports is an interesting tactical contest between prosecutor and defense attorney. If laboratory results are highly incriminating, then the defense will prefer they be admitted through stipulation and hopefully have less impact on the jury. The prosecution must decide how crucial this evidence is to his/her case and if the appearance of the expert is worth the time, resources and effort. If the evidence is moderately or marginally incriminating, then the prosecution will usually prefer it be entered through a stipulation. The defense attorney must decide if he can score added points with a jury by having the expert testify and attacking the testimony before the jury.

We asked various defense counsel in our study sites if they personally questioned the accuracy of forensic analyses presented by prosecutors in their jurisdiction. Practically all defense attorneys, public and private, said they were satisfied that the results presented by the local crime laboratories were accurate and the examiners impartial.

Effectiveness of Experts

Prosecutors universally declared that the effectiveness of a forensic expert depends on their skill in questioning the witness. They thought that unless a prosecutor understands the forensic evidence, he/she cannot know how to incorporate it into the prosecution's case, cannot know the questions to ask to bring out the testimony effectively and understandably and cannot protect or re-establish the expert's testimony in the re-direct. One prosecutor remarked that: "If there was something that I didn't understand, then probably the jury wouldn't understand it either, and only after talking to the criminalist for hours and hours [did] I begin to really understand what was going on." While prosecutors usually see it as their responsibility to prepare the expert for court, they say the scientist also has the responsibility to avoid too much technical jargon and to reduce complex facts to simple, understandable terms.

Pre-trial conferences between prosecutors and scientists are a common method employed to achieve better understanding of the evidence. Our survey of crime laboratories found such face-to-face meetings occur in slightly more than half the cases where an expert testifies. Where the prosecutor is unfamiliar with the expert, a particular technique or form of evidence, he/she is likely to visit the scientist in his/her own laboratory. More commonly, though, conferences will be held over the telephone or in in the corridors of the courthouse, minutes before an expert is scheduled to testify. Whatever the nature of the meeting, the purpose is the same: to ensure that the scientist will be presenting the expected results and will be able to explain the results in a way that is understandable to the jury.

Prosecutors judged that the following attributes increased the effectiveness of an expert witness:

o Examiners need good scientific credentials, which includes appropriate education, training, and publications.

- Examiners should appear comfortable while testifying. Jurors may confuse anxiety with uncertainty about their testimony.

- Experts should deliver their testimony in a straightforward, unemotional and confident manner. They must also dress professionally, employ everyday language (while avoiding technical jargon) and direct their testimony to the jury.

- Their testimony should be based upon sound scientific procedures, as substantiated by complete written reports and a documented chain of evidence.

- They should be willing to give an opinion about the significance of their analyses. They should not volunteer testimony, but only respond to questions asked of them.

- Examiners should not argue with defense counsel, but permit the prosecutor to address any apparent inconsistencies in the evidence during re-direct examination.

There also is consensus among the criminal defense bar that other attributes influence the effectiveness of an expert witness:

> a lot of it turns on things that it shouldn't turn on...the personality of the expert...how good he looks to the jury. If the guy looks good and sounds good and talks to them in a language they can understand, they will be impressed by him.

There is little doubt that defense counsel feel at a disadvantage when it comes to using scientific results, and are somewhat embittered by the willingness of juries to accept the prosecution's expert testimony on such a superficial basis as the expert's appearance or convincing manner. Nonetheless, the impact of the expert's style can be turned occasionally to the advantage of the defense.

> I have seen juries disregard the testimony of a qualified expert who was probably correct because the expert was a jerk on the stand. He used big words and was generally an ass. They can turn a jury off and when the jury is turned off the ears go off and the minds go off and they will ignore whatever the guy says.

Overall Evaluation of Forensic Evidence

The importance attached to forensic evidence varies as a function of type of case, type of evidence and individual prosecutor's perspective. Forensic evidence is regarded as more important, and is more likely to be gathered and analyzed, in violent crimes than property crimes. Yet its importance even in violent crimes is affected by other aspects of the case. For instance in a rape case, if the defense is going to revolve around the issue of consent, the availability of forensic evidence has little value. Forensic evidence is also regarded as more important if the analysis conclusively associates the defendant with the offense. Thus, fingerprints are more highly regarded than blood group analyses. Finally, prosecutors seem to divide into two groups in their personal evaluation of forensic evidence. Those in the first group remark that they are always delighted with forensic evidence. They find other types of evidence, at some level, open to question or suspicion, but forensic evidence is "always trustworthy." Those in the second group are less enamoured of forensic evidence. In their opinion it acts as corroboration for other types of evidence. It is the glue that binds other evidence together, not the keystone of the case. Overall, forensic evidence is regarded as as important as any other type of evidence, and by some individuals and in some situations, as more important than any other.

NOTES

1. Save for Kansas City and the Peoria (Morton) laboratories which, with the assistance of a computerized management information system, record and tabulate the appearance of its examiners in court, most jurisdictions do not keep such information in a readily accessible form. One must consult the laboratory case file, in which a notation may be made when an examiner actually testifies in court. Other times, the examiner him or herself may be consulted and asked to recall if he/she testified in a particular case.

2. A corollary to this is the belief that evidence which involves pictures or charts is the most effective of all.

CHAPTER VII

IMPACT OF FORENSIC EVIDENCE FROM THE JUROR'S PERSPECTIVE

Introduction

Both the directors of crime laboratories and trial attorneys informed us that forensic evidence was particularly important in affecting the disposition of a criminal case at the trial stage of the criminal justice process. As an examination of Table 7.1 shows, laboratory directors responding to our survey informed us that forensic evidence was most important at trial and in corroborating the involvement of suspects in crimes. The similar views of trial attorneys were presented in the preceding chapter. Despite this perceived importance of forensic evidence at trial, little is known about how well jurors understand forensic evidence, how they incorporate forensic evidence into their decisionmaking or the weight it receives compared to other types of evidence presented at trial.

Responses to our survey and interviews suggest that crime laboratory directors may be less positive about jurors' comprehension of forensic evidence than are prosecuting attorneys. As noted in the previous chapter, prosecutors thought highly of the ability of the jury to understand and utilize forensic evidence. As Table 7.2 demonstrates, however, forensic examiners rate jurors as having only a "fair" understanding of the significance of laboratory results. All other criminal justice system personnel, except for police officers and administrators, are rated as having a better understanding of such materials. In this

Table 7.1

IMPORTANCE OF FORENSIC EVIDENCE IN THE CRIMINAL JUSTICE PROCESS
(n = 256)

Stage in Criminal Justice Process	Importance of Forensic Evidence (mean value)*
Determining if crime has been committed	2.3
Providing investigative leads	2.6
Corroborating involvement of suspects	3.0
Verifying statements of victims/ suspects/witnesses	2.8
Deciding to charge a suspect	2.7
Deciding to grant bail, pretrial release	1.5
Plea bargaining	2.4
Trial	3.2
Sentencing	1.7

* Ratings of importance ranged from (1) minimal to (4) essential.

Table 7.2

USER UNDERSTANDING OF SIGNIFICANCE
OF LABORATORY RESULTS
(n = 253)

User	Understanding the Significance of Laboratory Results (mean value)*
Police Investigators	2.2
Prosecutors	2.2
Defense Attorneys	2.5
Judges	2.5
Police Officers	3.0
Police Administrators	3.1
Jurors	3.1

* Ratings ranged from (1) very good understanding to (5) very poor understanding.

chapter we present data gathered from jurors themselves about their perceptions of their understanding and utilization of forensic and other types of evidence.

Method of Approach

The Chief Judge of the Criminal Courts in Cook County, Illinois gave us permission to undertake an examination of the impact of forensic evidence on juror decision making. We were allowed to ask jurors to complete questionnaires (see Appendix XII.4) at the close of trials and after they had been discharged by the trial court judge. Because of Cook County's "one-day, one-trial" policy, jurors are not required to sit for more than one trial at any one time. Jurors not impaneled to hear a case are also discharged at the end of one day.

Each of the thirty criminal court judges sitting in the main criminal courts complex was contacted as we received notification he or she was about to begin a jury trial. We asked permission of the judge, and often prosecutor and defense attorney, to administer the questionnaires to the jurors at the close of the trial. With few exceptions, most judges and attorneys were agreeable to our plan. Wherever possible, a member of the project staff would sit through the trial and the presentation of evidence by the prosecution and defense. Staff limitations and logistical problems (two trials proceeding simultaneously) oftentimes prevented us from achieving this objective, however. Following the delivery and acceptance of the jury's verdict, the judge would introduce a member of our research staff. The staff member would ask the jurors to take a few moments to complete the brief, anonymous questionnaire, to seal it in an envelope and drop it in a box on their way out of the courtroom.

Jurors were also given the option of taking the questionnaire home with them and mailing it back in a postage paid envelope. Jurors were more prone to elect this option after protracted deliberations or if they reached their verdict late in the evening.

The Cases

In all, we distributed the questionnaires to 372 jurors in 31 felony trials. We received back 290 completed questionnaires, which represents a response rate of approximately 78%. About 80% of the questionnaires were completed by the jurors in the courtroom and 20% were completed outside the courtroom and returned through the mail. In all, we contacted jurors in 11 murders cases, 7 attempted murders, 3 rapes/deviate sexual assaults, 4 armed robberies, 2 sale of controlled substances, 1 burglary, 2 attempted arsons and 1 unlawful use of weapons. The above mentioned categories are the most serious of one or more charges leveled against the defendant. Table 7.3 summarizes the number of questionnaires returned, broken down by crime type and outcome.

As Table 7.3 indicates, the great majority of defendants (81%) were found guilty. In the 25 cases where defendants were found guilty, 24 of them were found guilty of the most serious offense with which they were charged.

Concerning the jurors themselves, 54% were female and 46% male. Approximately 28% of the jurors fell within the 18-29 age range; 20%

Table 7.3

Juror Responses: Offense Case Outcome

Most Serious Offense Charged	Number of Trials	Convictions/ Non-Convictions	Number of Juror Resp.	% of Total
(1) Murder	11	9/2	98	34%
(2) Attempt Murder	7	6/1	70	24%
(3) Armed Robbery	4	4/0	37	13%
(4) Rape/Dev Sex Asslt	3	2/1	32	11%
(5) Cntrlled Substnce	2	1/1	18	6%
(6) Attempt Arson	2	1/1	18	6%
(7) UUW	1	1/0	11	4%
(8) Burglary	1	1/0	5	2%
Total	31	25/6	290	100%

were between the ages of 30 and 39; 16% from 40 to 49; 29% from 50 to 64 7% were 65 or older. In other words, about half of our juror sample was under the age of 40. This is the extent of personal data we were able to collect about jurors. The unit of analysis employed in this chapter is the individual juror.

Comprehension of Forensic Evidence

In order to assess whether jurors understood the forensic evidence presented, we first had to ascertain whether some type of physical evidence (e.g., fingerprints, weapons, photographs, bloodstains, chemical analyses, etc.) had been introduced at trial. About 93% of the jurors responded in the affirmative, citing most often the introduction of photos, followed by weapons related evidence (guns, bullets, knives), biological evidence (bloodstains, semen) and chemical-related evidence (drugs, accelerants). Consistent with the low success rate in Chicago in being able to use fingerprints to associate a defendant with an offense (see Chapter IV), fingerprint evidence was not introduced in any of the trials.

Jurors were asked how well they understood the physical evidence compared to other types of evidence. Thirty-one percent reported they understood it better than other evidence, 65% percent said they understood it about as well as the other evidence, and only 4% said they understood the physical evidence less well than other types of evidence. When the results of this question about juror understanding of physical evidence are cross-tablulated by the types of forensic evidence introduced, we find that jurors seem to have a better than average understanding of biological evidence (bloodstains, semen) and a poorer than average understanding of chemical evidence (drugs, flammables).

Relative Importance of Forensic Evidence

We utilized several approaches to try to understand the weight given to forensic evidence by jurors. First, we directly asked how much (if at all) the physical evidence was discussed during jury deliberations. Forty percent reported they discussed the physical evidence a substantial portion of the time. Thirty-four percent reported discussing it a moderate portion, 26% a minimal portion of the time, and one juror believed it had not been discussed at all.

Second, we asked jurors whether, if no forensic evidence had been introduced, they would have reached the same verdict. Three-quarters said the verdict would have been the same. One-quarter would have changed. We inquired what the different verdict would have been and practically all responses (24) indicated that there would have been a change from a guilty to a not guilty verdict. One respondent thought it might have resulted in a hung jury, and another that it would have resulted in a guilty verdict to a lesser charge.

Third, we asked if there was a single piece of evidence which persuaded the jurors in finding the defendant guilty or not guilty. Thirty-eight percent responded that there was. Of those who responded that there was a key piece of evidence, 26% believed this evidence to be a witness to the crime who testified during the trial. The next most frequently cited form of key evidence was a tangible object (mentioned by 22% of respondents), followed by a confession or admission made by the defendant (19%) and lastly, some form of forensic evidence (noted by 16% of the jurors responding to the question).

Approximately 62% of respondents believed there to be several forms of evidence essential to persuading them to make their decision. Jurors were asked to list up to three types of evidence that they judged critical to their decision. Seventy-two percent mentioned witnesses, 54% cited some form of tangible evidence, 27% mentioned forensic evidence and 16% a confession or admission by the defendant. There are few fundamental differences from the singular responses noted above. While witnesses and incriminating statements predominated as the most frequently mentioned type of evidence in murders, tangible and forensic evidence were regarded as the most persuasive evidence by more jurors in rape cases.

Fourth, jurors were asked if there was some information not presented at the trial that would have helped them make their decision. About half the respondents said that there was. Of this half replying "yes", 27% cited evidence which the defense failed to produce, e.g., testimony from corroborating witnesses or statements from accomplices, evidence of mitigating circumstances, or the fact that the defendant failed to testify in his own behalf. Another 53% of the jurors cited deficiencies in the prosecutor's case; e.g., many felt the witnesses were inadequate and believed more, or better witnesses would have strengthened the prosecutor's case. The largest single category of desired evidence related to weapons; jurors wished that prosecution or defense had introduced a weapon, proof of ownership of a firearm or presented other "ballistics" related evidence. Other jurors desired a more detailed investigation and an overall "better" prosecution of the case. Some jurors wished that they could have known the defendant's prior criminal record. Other jurors asked for "more witnesses" without specifying for which side they were needed.

The impression of the relative importance of forensic evidence which emerges from these four questions is that forensic evidence receives serious consideration from jurors but is not usually the key evidence. (If it is the key evidence, this is most likely to occur in a rape case.) Its presence in a case usually acts to assist in ensuring a conviction. Nonetheless, for approximately 25% of criminal cases, forensic evidence is perceived to be crucial to conviction.

Witnesses and Their Persuasiveness

Our survey of the nation's crime laboratories included questions about the fraction of cases for which forensic evidence is examined in which scientific personnel testify in court. Results indicated that, on average examiners testify in 8% of drug cases and 10% of criminalistics cases for which evidence had been examined. Thus, the appearance of the forensic examiner in court is a relatively rare occurrence. As noted in the preceding chapter, an appearance is most likely to be associated with a jury trial.

A crime lab examiner testified in 6 of the 11 murder trials, 2 of the 7 attempted murders, 2 of the 3 rapes, none of the armed robberies, all of the controlled substance and arson cases, but not in the burglary.

In cases where they did testify, the crime laboratory examiner and the coroner/pathologist were most persuasive of all witnesses evaluated.

Both types of forensic expert witnesses were ranked "highly persuasive" by about 60% of the respondents. Victims of crimes were considered to be the next most persuasive, ranked highly persuasive by 40% of jurors, followed by eyewitnesses (36%) police officers (30%) and, lastly, defendants, who were thought to be highly persuasive by only 8% of the responding jurors. The defendant's testimony was ranked "not at all persusasive" by one-third of the jurors. Fewer than 1% of the respondents evaluated crime lab examiners' testimony as "not at all persuasive".

Multivariate Analysis of Selected Dependent Variables

We were interested to determine if forensic evidence--either the presence or absence of a particular type of scientific evidence, the appearance and persuasiveness of an expert witness, or its understanding by jurors--influenced the outcomes of jury trials and the ease or difficulty with which jurors reached their verdicts. In addition to these forensic variables we also controlled for the persuasiveness of other witnesses, offense type, if single or multiple charges had been filed, and the age and gender of the respondent. We employed stepwise logistic regression analysis which is well-suited to a multivariate analysis with a binary dependent variable such as we have here: conviction (yes, no) and nature of the trial verdict decision (easy, difficult). The reader is referred to Chapters VIII and IX for a more detailed discussion of the logistic regression analysis procedure.

Table 7.4 presents the results of the analyses. Only two factors emerge as significant predictors of trial verdict: persuasiveness of

Table 7.4

Trial Outcome: Verdict and Ease/Difficulty of Decision
Logistic Regression
(log odds)

Independent Variables	Dependent Variables	
	Verdict (guilty/not guilty)	Ease/Difficulty of Verdict
Persuasiveness of Police Officer	.39**	--
Persuasiveness of Crime Lab Examiner	--	.21**
Persuasiveness of Defendant	--	-.42**
Understanding of Physical Evidence	1.27**	--
Age of Juror	--	-.26*
Gender of Juror	--	.78*
Predicted Probabilities	72%	71%
Model Chi Square	19.91**	30.69**
N	213	208

* Significant at .05; ** Significant at .01

police officers' testimony and the jurors' understanding of the physical evidence presented at trial. Employing these two variables enables one to correctly predict the verdicts of 72% of the respondents. The ease or difficulty with which jurors reached their decisions was influenced by a completely different set of variables. As the persuasiveness of the crime lab examiner increased, jurors found their decisions to be easier. However, as the defendant's testimony became more persuasive, jurors had greater difficulty in reaching a verdict. In addition, younger, female jurors tended to have more difficulty in making decisions than older, males.

Although the conclusions which may be drawn from this limited sample of jury trials are preliminary, some interesting theories may be proposed. First, with respect to trial verdict, it would appear that juror <u>understanding</u> of the forensic evidence is quite important. It is noteworthy that it is this particular forensic variable which emerges and not ones addressing the persuasiveness of the expert witness, nor those addressing evidence <u>type</u> (e.g., bloodstains or firearms). Interviews with prosecutors and surveys of crime laboratory examiners also brought out this point. As noted earlier, prosecutors think jurors are capable of understanding scientific evidence but that a heavy burden resides with the prosecutor in explaining such evidence. In the introduction to this chapter we reported that crime laboratory directors believe jurors <u>not</u> particularly capable of understanding complex scientific testimony.

With respect to the ease or difficulty of the jurors' decisions, it is the persuasiveness of the crime laboratory examiner which is the only significant variable among the many potential forensic factors which enters into the equation. The fact that the more persuasive the expert, the easier the decision, makes intuitive sense. It also suggests that while comprehension of the evidence may influence the ultimate trial decision (as it should!) the quality of persuasiveness is a secondary factor which only influences the ease with which jurors reach their ultimate decision.

Summary

Witnesses (all types) proved to be the most persuasive form of evidence cited by jurors in making their decisions. Tangible (nonscientific) evidence was ranked next most frequently and confessions and forensic evidence followed. Jurors who heard rape cases ranked forensic and tangible evidence more persuasive than jurors who sat in judgment of defendants charged with other crimes. Crime lab examiners and pathologists were ranked as the most persuasive of all witnesses who testified; the least persuasive witnesses were the defendants themselves.

Jurors were exposed to a wide array of physical evidence types in the trials, most often citing the presentation of photographs, firearms related evidence and biological materials. This evidence was also discussed a substantial portion of the time in jury deliberations. About one-third of the jurors said they understood the physical evidence better than other forms of evidence presented at the trial. A quarter of the jurors said that had this physical evidence not been presented they would have changed their guilty verdicts to not guilty verdicts.

The multivariate analyses of trial verdict and the ease or difficulty with which jurors reached their decisions shed additional light on the importance of forensic evidence and witnesses who may have testified during the trial. The better jurors understood the forensic evidence, the greater tendency they had to find the defendant guilty. This decision was made easier by the appearance of an expert witness who was highly persuasive.

CHAPTER VIII

CONVICTION: THE INFLUENCE OF FORENSIC EVIDENCE, OTHER TYPES OF EVIDENCE AND EXTRA-LEGAL FACTORS

Introduction

In this chapter we examine the effect of forensic and tangible evidence upon the likelihood of conviction while controlling for a range of other evidentiary and extra-legal variables. Our data bases are the case files of individual defendants in Chicago, Oakland (CA), Kansas City, Peoria (IL) and New Haven (CT) for the calender year 1981. In the analyses to follow, we utilize both bivariate and multivariate statistical techniques to describe the relationships among variables.

Our focus is upon conviction. Was the defendant convicted of some crime or not? We do not concern ourselves in this chapter with plea bargaining, charge reductions, and so forth (see following chapter). If the defendant was convicted on any charge, it is a conviction. If the defendant had all of his/her charges dismissed <u>or</u> was acquitted of all charges at a trial, it is <u>not</u> a conviction.1 Thus, the key variable of attention is a simple dichotomy -- convicted/not convicted. This distinction is the most critical one for defendants, of course, since only those defendants actually convicted can be formally punished.2

Conviction is the "normal" outcome in most criminal courts, especially felony courts. Our sites are no exception. In all locales, at least two-thirds of the sampled defendants were convicted. The figures approach a 90% conviction rate in Oakland (88%) and New Haven (86%) and a three-fourths conviction rate in Chicago (74%) and Peoria (73%). Only in Kansas City (67%) and Litchfield (66%) is the rate of conviction as "low" as two-thirds.

The conviction rates vary across our sites both because of differing court structures and varying philosophies about early case screening (see Chapter III). In Oakland, for example, many defendants charged with lesser felonies (e.g., property crimes) are adjudicated -- and fairly often dismissed -- in the lower (municipal) courts, thereby reserving Superior Court for the most serious cases and defendants. This is <u>not</u> the practice in Chicago or Peoria, since Illinois has a unified trial court structure. Thus, statements cannot be made about the <u>overall</u> conviction-proneness of our sites, because our samples of defendants reflect those varying court structures and philosophies of case screening.

What we can, and will, do in this chapter is examine the contribution of physical evidence (both forensic and tangible), and a range of other evidentiary and extra-legal factors toward conviction. Does forensic evidence -- evidence scientifically examined by a crime laboratory -- make a discernible difference in the conviction rate? What difference does tangible evidence (such as proceeds of the crime or physical evidence not scientifically examined) make? Although the clear emphasis in this chapter will be on forensic evidence, we are also interested in seeing: 1) the contribution of forensic evidence vis-a-vis other kinds of evidence in their influence on case outcome and 2) if the contribution of forensic evidence hinges upon the presence or absence of other forms of evidence -- witnesses, confessions -- or extra-legal factors -- age, race, or gender of the defendant -- in its effect on the convict/no convict decision.

Our multivariate analyses address the relative contribution of each of these variables toward conviction, identifying which are the most important in attaining a conviction. In all analyses, our interest is the identification of patterns of associations between independent variables and likelihood of conviction across most or all of our sites. In essence, this striving for generality is the purpose behind a broad-based, multi-site research study.

We have excluded the Litchfield, Connecticut site from the multivariate analysis discussion. Only 17% (40) of the 234 cases we reviewed in Litchfield in 1981 possessed laboratory reports. Of these 40 reports only 3 (8%) resulted in an association between offender and crime. As a result, forensic evidence registered no statistical impact in our various analyses.

Forensic Evidence and Conviction

The availability of forensic evidence depends upon its collection by crime scene technicians and analysis by a crime laboratory. As Chapter IV indicated, only one-quarter to one-third of cases actually have forensic evidence which is scientifically analyzed. For this group of cases -- i.e., ones having a laboratory report -- the conviction rate is typically not significantly higher or different than cases without forensic evidence. Only in Peoria do cases having a laboratory report result in more convictions (78% versus 71%, p=.04).

Nonetheless, forensic evidence has the potential to contribute significantly toward establishing the guilt or innocence of individual defendants through the specific results of crime laboratory analyses.

At its strongest, forensic evidence can conclusively associate a defendant with a crime scene and/or victim. This is the case, for instance, with fingerprint or ballistics analyses. Many forms of forensic evidence may only tentatively associate a defendant with a crime -- as where the blood of the defendant is found to be "consistent with" a bloodstain found at the scene of a crime. Forensic evidence can also yield identifications -- such as of drugs, semen, or volatile liquids -- or otherwise facilitate a reconstruction of the crime or crime scene. Finally, such evidence will occasionally exonerate or cast doubt on the guilt of a defendant, when laboratory results are inconclusive, fail to associate or possibly dissociate the defendant with the crime. Conviction rates for each of these three types of results and for cases without evidence scientifically examined are presented in Table 8.1.3

There is a pattern: in most sites, the conviction rate tends to be higher when forensic evidence has "associated" the defendant with the offense. That is, when forensic evidence links the defendant -- conclusively or probabilistically -- with the crime, the likelihood of conviction is highest. Peoria is a prototype of this description. Conviction rates do not vary significantly among the other categories, but in the "association" category, conviction is fully ten percentage points or more higher. These differences in Peoria are statistically significant (p=.02). Chicago mirrors Peoria almost exactly, except that the differences in Chicago are not statistically significant, because there are so few forensic associations (29 in Chicago, compared with 98 in Peoria). Oakland and New Haven also follow the pattern of the Illinois jurisdictions, but the increases in convictions in the "association" category (3-4%) are not large enough to be statistically significant. In Kansas

Table 8.1

Forensic Evidence and Conviction

Results of Laboratory Testing	Chicago	Oakland	Kansas City	Peoria	New Haven
Association	83%*	93%	72%	86%	89%
Identification/ Reconstruction	74%	89%	72%	75%	86%
No Evidence Examined	77%	89%	67%	71%	85%
Failure to Associate	75%	87%	46%**	73%	75%
X	N/S	N/S	7.2	9.5	N/S
P			.06	.02	
N	917	946	889	1052	440

* Only 29 cases

** Only 26 cases

City, however, a different pattern emerges. The "failure to associate" category has many fewer convictions (46%) than any of the other categories, indicating that in Kansas City -- though not elsewhere -- defendants are sometimes the beneficiaries of laboratory tests that fail to link them with the crime. Differences between no forensic evidence and positive results (including associations) in Kansas City, however, are minimal, albeit in the expected directions (67% versus 72%). The totality of these differences across categories in Kansas City approaches statistical significance (p=.06).

In sum, this look at the data indicates a small association between forensic evidence and the likelihood of conviction. In particular, conviction appears more likely when forensic evidence associates a defendant with a crime scene or victim. The differences, however, are rarely large and sometimes fail to reach statistical significance.

Tangible Evidence and Conviction

Tangible evidence, too, has the potential to establish a defendant's guilt or innocence. Various forms of such evidence -- proceeds of the crime, articles of clothing, weapons or other belongings -- can link a defendant with a crime scene and/or victim. Indeed, other research has found some forms of this evidence to lead to conviction (see Forst, 1977). Conviction rates for cases with no tangible evidence, evidence that "tentatively" associates defendant and crime scene/victim, and evidence that "conclusively" associates defendant and crime scene/victim are presented in Table 8.2.

Table 8.2

Tangible Evidence and Conviction

Tangible Evidence	Chicago	Oakland	Kansas City	Peoria	New Haven*
Conclusive Association	83%	92%	77%	89%	--
Tentative Association	78%	91%	64%	90%	--
No Association/ No Evidence	73%	88%	57%	71%	--
X	10.4	4.0	35.7	17.4	--
P	.006	.14	.001	.001	--
N	922	953	889	1055	--

* Data unavailable in New Haven.

The findings are striking and unambiguous. In all but one site (Oakland), there is a sizeable and statistically significant relationship in the expected direction. Cases with tangible evidence linking defendant and crime are much more likely to result in conviction. The relationship is perfectly linear in Chicago (p=.006) and Kansas City (p=.001): conclusive associations are better than tentative associations which, in turn, are better than no such evidence. In two sites -- Peoria (p=.001) and Kansas City (p=.001) -- the difference is 20 percentage points across categories; in Chicago, 10 points. Again, though, in Oakland there is little difference because virtually all sampled defendants are convicted.4

Other Evidence, Extralegal Factors and Conviction

May we now say that we understand the relationship between forensic and tangible evidence and conviction? Not at all, for cases processed through the criminal courts possess a variety of other evidentiary characteristics which may also help establish the guilt or innocence of a defendant. These would include witnesses, statements by the defendant regarding the crime, the presence of a prior relationship between the defendant and victim, the circumstances surrounding the defendant's apprehension, and so forth. In addition to evidentiary considerations, extra-legal factors have also been found to influence the adjudication of criminal cases (for an early review, see Hagan, 1974). Though unrelated to the facts of the case and often clearly improper to consider, a number of such variables have been found related either to sentence severity, likelihood of conviction, or both. These include type of defense attorney, prior criminal record, and defendant characteristics such as age, race, and gender.

This section describes each of these factors briefly and the manner in which information gleaned from the case files was coded for subsequent analysis. The reader may wish to consult the survey instrument used to code case file information which is included in Appendix XII.2 to this report. Also, similar to the cross tabulations of forensic and tangible evidence and conviction presented in the preceding section, contingency tables were constructed for these other variables as well. These variables are discussed in detail and the results of their cross tabulation with case outcome are contained in Appendix VIII.

A number of these variables proved to be significant factors in and of themselves and in combination with the forensic evidence when we conducted our multivariate analyses of conviction. Those variables which emerged are:

- <ins>Seriousness of the Incident</ins> - This variable incorporated such factors as the offense type (personal or property), the extent of injury to the victim, and the presence/use of a weapon.

- <ins>Defendant Statements</ins> - Many defendants make statements to the police or prosecutor, ranging from alibis or exculpatory remarks to incriminating statements or outright confessions.

- <ins>Witnesses</ins> - Witnesses represent a form of evidence presumed to be persuasive to legal decision makers. Their ability to recount the alleged crime and to identify the defendant are presumed crucial.4

- The Arrest - This variable represents if the defendant was apprehended at or near the crime scene. We would expect that when defendants are arrested close to the scene of the crime the likelihood of conviction would be greater.

- Prior Relationship Between Victim and Defendant - Previous research has shown that lower conviction rates are the norm in cases where the defendant and victim knew one another prior to the crime.

- Prior Record - Defendants with long records of arrest and conviction are not usually viewed as "worthy" of any breaks, such as a dismissal of charges, even in the face of weak evidence. Though often times the prior record of a defendant will not emerge at trial, it is likely a central issue during plea negotiations.5

- Demographic Characteristics of the Defendant - The age, sex and race of the defendants were also controlled.

Multivariate Analysis of Conviction

To understand better the relationships among these factors and, therefore, to assess the individual impact of forensic evidence and other variables upon conviction, we undertook a multivariate analysis of the case file data for each jurisdiction. Through this form of analysis, the influence of each factor upon conviction can be assessed controlling for other independent variables. In particular, we can examine whether any relationships between forensic evidence and conviction (Table 8.1) withstand controls for other variables. Prior to the multivariate analyses we tested for muticollinearity among all independent variables (and their interactions).6 This form of analysis also enables us to determine if forensic evidence acts in combination with other evidentiary or extra-legal factors in affecting case outcome. In order to test for such interactions we have recoded many of the previously described independent variables into dichotomies to facilitate the analysis.

We have chosen to utilize stepwise logistic regression analysis, a statistical technique well-suited to address the questions posed above.7 This technique permits a relatively precise estimate of the effect of each independent variable upon a dichotomous dependent variable (conviction), controlling for all other measured independent variables. In the analyses to follow, we present data not only for the total sample of cases within each site but also for specific offense types aggregated across all jurisdictions.

All Cases

Table 8.3 presents the results of stepwise logistic regression analysis for the total sample of cases within each site. Variables which satisfied the $p< .05$ test of significance are included in the

Table 8.3

Conviction: Stepwise Logistic Regression by Site
(Log Odds)

	All Cases				
	Chicago	Oakland	Kansas City	Peoria	New Haven
Conviction Rate	79%	91%	69%	77%	87%
Defendant's Statements	-.51** (IEV3)	-.45** (IEV1)	-.36** (IEV2) -.62** (IEV3)	-.28** (IEV1) -.46** (IEV3)	-.77** (IEV1)
Defendant's Age	-.02*	-.03*	--	-.02**	--
Tangible Evidence	.36** (TEV1)	--	.47** (TEV1)	.81** (TEV1)	--
Forensic Evidence	--	--	.22* (FEV1 IEV1)	.33*(a) .57**(b)	.02* (FEV1 SER2)
Prior Relationship	--	--	-.73**	-.39*	--
Arrested At/Near Crime Scene	--	--	.48**	.46**	--
Seriousness	-.01** (SER2)	--	--	-.10* (SER1)	-- --
Prior Record	--	--	-.26**	--	--
Eyewitnesses	--	--	--	.76**	--
Predicted Probabilities	62%	60%	68%	69%	63%
Model Chi Square	33.31**	16.87**	88.95**	87.43**	16.08**
N	719	774	762	909	310

** Significant at .01

* Significant at .05

(a) FEV1

(b) FEV2

model. We choose to present all such significant variables (versus a more parsimonious model) since the purpose of our study is to estimate the relative effects of forensic and other related evidentiary/extralegal factors on case processing decisions.

The coefficients in the table are the logarithm of the net increase/decrease in odds of conviction contributed by particular variables. The variables we have examined are not particularly successful in explaining case outcome, as indicated by the modest percentage of outcomes which are correctly predicted.8 The variables included in the Kansas City and Peoria models perform best, correctly predicting 68% and 69% of the outcomes respectively.9 Generally speaking, the more variables which enter the equation, the better the predictive power of the given model.

There are three variables which stand out from among the many examined, in that they prove to be significant predictors of conviction in three or more locations. Two of these variables describe evidentiary characteristics of a case, while the third is a defendant characteristic.

Age of the Defendant - Age is the only demographic characteristic which proves to be a statistically significant predictor of case outcome. In fact, the age of the defendant was of importance in three separate sites: Chicago, Oakland and Peoria. In all of these sites, younger defendants are more likely to be convicted (indicated by a minus sign in front of the coefficients).

Incriminating Statements - Our preliminary (bivariate) examination of the defendant statements variable and conviction rate revealed their relationship to be nonlinear (see Appendix VIII). That is, rates of conviction do not uniformly rise among the various jurisdictions as defendant statements become more incriminating. As a result, and to accommodate subsequent tests for interactions, the original four-level variable was recoded into three dichotomies, contrasting:

- Cases where the defendant made a damaging statement or an outright confession with those cases where the defendant either made no statement or offered an alibi (IEV1);

- Cases where the defendant offered an alibi with those where the defendant made no statement at all (damaging statements and confession were coded as missing) (IEV2); and

- Cases where the defendant actually confessed to the crime with those where he/she made only a damaging statement (IEV3); here, cases where the defendant made no statements or offered an alibi were coded as missing.

This recoding enabled us to contrast what we thought were the most interesting situations involving defendant statements and made the task of building interaction terms into our overall equation much more manageable.

We found that for the cities of Oakland, Peoria and New Haven, IEV1 proved to be significant at the .01 level. That is, cases where the defendant uttered statements or made an outright confession were significantly more likely to result in a conviction than cases where the defendant made no statement or offered an alibi.

IEV3 also proved to be a significant predictor in three jurisdictions (Chicago, Kansas City and Peoria) indicating that cases involving an outright confession are significantly more likely to result in a conviction than cases where only a damaging statement is offered. IEV2, which distinguishes alibis from situations where the defendant makes no statement is significant only in Kansas City. Cases where the defendant offers an alibi are associated with lower rates of conviction compared with cases where the defendant makes no statement at all.

Tangible Evidence - This variable, also, proved not to have a linear relationship with the conviction rate across all our selected jurisdictions (although it did in Chicago and Kansas City). Consequently, to accommodate such nonlinear relationships and to facilitate our search for possible interactions between forensic and tangible evidence, we dichotomized the variable in two different ways, contrasting:

- Cases where tangible evidence either tentatively or conclusively associated the defendant and the crime with those where no tangible evidence at all was recovered (TEV1); and

- Cases where the tangible evidence conclusively associated the defendant and the crime with those where it only tentatively associated the defendant with the crime (TEV2). Cases without tangible evidence were classified as missing.

Tangible evidence proved to be a significant predictor in three jurisdictions (Chicago, Kansas City and Peoria). Having tangible evidence which tentatively or conclusively associates the defendant with the crime (TEV1) is significantly more important in predicting case outcome than cases where none at all is present in three locations - Chicago, Kansas City and Peoria.

The distinction between tentatively and conclusively associating tangible evidence (TEV2) proved not to be significant.

Three other variables -- prior relationship between suspect and victim, being arrested at or near the crime scene and crime seriousness -- emerge in two cities and in the expected direction. Conviction rates are lower in offenses where the defendant and victim have a prior relationship, while being arrested at or near the scene increases the likelihood of conviction. In Peoria, more serious offenses result in lower rates of conviction in a linear fashion (SER1). In Chicago, cases at both ends of the seriousness continuum (the most and least serious cases) result in lower rates of conviction (SER2). (See the subsequent section on "Forensic Interactions" later in the chapter for a more complete discussion of our various transformations of the seriousness variable.) No other evidentiary, extra-legal or demographic variables emerge as significant predictors in more than a single jurisdiction, and therefore lack generalizability.

Forensic Evidence

We found that the forensic evidence variable emerged by itself as a significant predictor in only one jurisdiction - Peoria. However, the forensic variable did interact with variables in two other cities to have an effect on case outcome. In order to discuss the influence of forensic evidence and its interaction with other variables we need to present a short discussion of how the original four-level forensic variable was recoded.

The reader will recall that our initial bivariate analysis of forensic evidence and case outcome determined that the relationship between the two was not linear. Lacking such a linear relationship, we believe there to be two other basic questions about the relationship between forensic evidence and case outcome which are worthy of exploring: the first is the effect on having _any_ kind of forensic laboratory report in a case versus having none at all; the second is the effect of having forensic evidence which _associates_ the defendant with the crime versus cases where evidence is analyzed but yields no such conclusion. In the latter situation material may be identified or classified in some fashion, but does not lead to a conclusion concerning a linkage between the defendant and the crime. The former dichotomy (lab report vs. no lab report) was labelled FEV1 and the latter (association vs. no association) was labelled FEV2. Tests showed these two dichotomous variables not to be collinear with one another or with forensic interaction terms described in the next section.

The reader will recall that although there tended to be a general pattern for conviction rates to be higher when the forensic evidence links the defendant with the crime, the only city where this bivariate relationship was significant (at the .05 level) was in Peoria (Kansas City was very close at .06). Consequently, it is not surprising to find that Peoria is the only city where forensic evidence withstands the controls for all other variables. In fact, _both_ relationships -- FEV1 and FEV2 -- proved to be significant while controlling for other factors.

Forensic Interactions

For the purposes of this study we also wish to see if either of the recoded forensic variables (FEV1 and FEV2) interacts with other variables in their effect on conviction rates. Although it is quite possible that the remaining independent variables interact with one another in their effects upon the convict/no convict decision, we choose not to profile such possibilities in this particular study given its primary objective of detailing the influence of scientific evidence on case outcome.

We selected the three key nonforensic evidence variables (defendant statements, tangible evidence, and availability of eyewitnesses) and crime seriousness. We limited our search for forensic interaction terms principally to "sister" evidence categories. Crime seriousness was also added as a potential interaction variable given its importance to police investigators and crime laboratory examiners in deciding which physical evidence to gather and to analyze (Peterson et al., 1984).

The interaction of forensic evidence with other variables assumed statistical significance in explaining case outcome in two of the five study sites (Kansas City and New Haven). In Kansas City, the presence or absence of a laboratory report (FEV1) interacts with statements uttered by the defendant (IEV1) to affect case outcome. Specifically, it is in the <u>absence</u> of a defendant statement where the presence of a laboratory report is associated with an increased likelihood of conviction and its absence associated with lower rates of conviction.

The other significant interaction involving forensic evidence takes place in New Haven, where FEV1 interacts with crime seriousness (SER2) to influence case outcome. Recall that the original seriousness variable was constructed ordinally, classifying offenses from least to most serious. Our bivariate examination of this seriousness variable and conviction rate found theirs to be a non-linear relationship. That is, conviction rate did not always consistently increase (or decrease) as crimes became more or less serious. As a result, we employed three different coding schemes: SER1 (the original ordinal variable); SER2 (a cubic transformation) which classified the most and least serious crimes in the same category; and SER3 which employed a quadratic transformation to plot crime seriousness. SER3 would emerge as the best "fit" for the data if there were two changes in direction of a curve plotting crime seriousness by rate of conviction. In other words, as offenses become more serious, rates of conviction might rise, then fall, only to rise again.

In New Haven, FEV1 (presence/absence of a lab report) interacts with SER2 (which classified progressively more and less serious cases into the same category) in its effect on conviction. Here it is the absence of a laboratory report which combines with the most and least serious cases to reduce the likelihood of a conviction. The most serious offenses would include murders and other violent crimes committed with a firearm and which resulted in great bodily injury. The least serious offenses are thefts and minor property crimes. The presence of a laboratory report tended to "smooth out" this relationship by maintaining higher conviction rates at both ends of the seriousness continuum.

The Effects of Forensic Evidence on Probability of Conviction

The logistic regression equation also enables us to estimate the probability of gaining a conviction where independent variables are set at prescribed levels. These "prescribed" levels are somewhat arbitrary and may be varied depending upon one's interest. In the following "typical" example, categorical variables were set at their modal levels and the continuous variable (age) at its mean.10 We first examine the effect of the presence or absence of a laboratory report (FEV1) on the probability of conviction in the Peoria study site. In this example, the probability of conviction increases 18 percentage points (from 71% to 89%), when conviction rates of cases without laboratory reports are compared with those with laboratory reports.

Employing the same equation we can test the effect of an associative laboratory finding versus a nonassociative report (FEV2). With the remaining independent variables set at the same levels as in the previous example (and FEV1=0), we find the conviction rate to be 59% when the laboratory report yields nonassociative results and 95% when the scientific report yields associative results. In Peoria, therefore, it appears that it is the content of the laboratory report (FEV2) which exerts the greater effect on conviction rate.

It is also informative to determine the relative effects of such other nonforensic variables as incriminating statements and tangible evidence. Once again, setting the independent variables at the same levels as above, we see that going from no defendant statement to a statement (IEV1) increases the conviction rate from 71% to 90%, or about the same as a forensic report (FEV1). The effect of IEV3 (an incriminating versus a damaging statement) is even greater: 93% versus 62% when cases with incriminating admissions are contrasted with those where the defendant makes only a damaging statement. Tangible evidence, however, is a more powerful variable pushing up conviction rates to about 97% when present, compared with 71% when absent.

We are also able to estimate the effect of forensic evidence interactions on conviction rates in the two jurisdictions where they are statistically significant. In Kansas City it is where the defendant has offered no statement to authorities that the presence/absence of a laboratory report (FEV1) makes its major impact. Setting other significant variables (tangible evidence, prior relationship, location of arrest and prior criminal record) at their modal values, we find the conviction rate decreases from 71% to 52% when cases with laboratory reports are contrasted with those without. Where the defendant does make a statement, conviction rates are greatly elevated (in excess of 90%) for all cases, and the difference made by the forensic report is minimal (actually the conviction rate for cases with laboratory reports is slightly lower than for cases without laboratory reports).

In New Haven we find that FEV1 interacts with SER2 in its effect on conviction. SER2 indicates that conviction rates are lower as offenses become both very serious and not at all serious. The effect of the FEV1SER2 interaction is that the conviction rate of cases with laboratory reports remains uniformly high and resists the SER2 trend for lower rates of conviction as offenses become more or less serious. When defendants make no statements, and where cases are at the upper and lower ends of the seriousness continuum, conviction rates are approximately 98% when reports are present and 91% when they are not.

In sum, then, the importance of the forensic variable appears to be *primarily* along the report/no report dimension (FEV1) rather than the *content* of the report; i.e., if the report associated the defendant with the crime or not (FEV2). It should be noted, however, that in Peoria where both FEV1 and FEV2 are significant, FEV2 is the dominant of the two.

The report/no report forensic variable (FEV1) interacted with other independent variables in two jurisdictions to produce a significant effect on conviction. In Kansas City, it is where defendants make *no* statements that FEV1 has its primary effect -- principally *lowering* conviction rates when *absent*. In New Haven, FEV1 works to keep conviction rates high at the extreme ends of the seriousness continuum where, without laboratory reports, there is a tendency for conviction rates to be lower.

Aggregated Analysis of Specific Offenses

We are also interested in how the influence of forensic and other forms of evidence might vary depending upon offense type. Our survey of crime laboratory directors found that these practitioners believe forensic evidence to be most important in deciding the outcomes of drug-related, homicide and rape case). They believe forensic evidence to be of moderate importance in arsons and burglaries and minimal importance in aggravated batteries, robberies and larcenies.

In this section we aggregate similar offenses from the five different study sites to see how various independent variables operate within the primary offense categories of murder, attempt murder/aggravated battery, rape, robbery, burglary and theft/fraud.11 The results are presented in Table 8.4.

True to form, defendants' statements prove to be a critical explanatory form across all offense categories. Of the three dichotomies examined, the one which contrasts the defendant making either a damaging statement or outright confession with those where he/she made no statement at all (IEV1) has greatest generalizability, emerging as a significant predictor in four separate offense categories (attempt murder, robbery, burglary and theft).

The distinction between making a damaging utterance and an outright confession (IEV3) is important in three offense categories - murders, rapes and thefts. This makes intuitive sense, particularly for murders and rapes, where it is not at all uncommon for defendants to acknowledge involvement in the alleged criminal act: "Yes, I shot (raped) the victim, but it was self defense (she was willing)." Such admissions are probably less damaging in murder or rape prosecutions than if similar admissions of participation were made in a robbery or burglary where intent may be more easily inferred by the defendant's participation in the act.

The location of the arrest emerges as another important explanatory variable in the three offense categories involving the taking of money or property (robbery, burglary and theft) plus rape. We know that the success of police in solving property crimes often hinges upon their ability to make rapid apprehensions. It appears, too, that making an on-scene arrest helps see those arrests through to successful prosecution. Away from the scene arrests of robbers, burglars and thieves are associated with a host of witness and evidence problems which are less-

Table 8.4

Conviction: Stepwise Logistic Regression by Offense Type (Log Odds)

	All Cases					
	Murder	Att Murd/ Agg Batt	Rape	Robbery	Burglary	Theft/ Fraud
Conviction Rate	77%	76%	70%	77%	84%	81%
Defendant's Statements	-.75* (IEV3)	-.32* (IEV1)	-.88** (IEV3)	-.80** (IEV1)	-.43** (IEV1)	-.24*(a) -.44**(b) -.35*(c)
Defendant's Age	--	--	--	--	-.05**	--
Forensic Evidence	-.60* (FEV2)	--	-.72* (FEV1 IEV2)	--	.51** (FEV1)	-1.12** (FEV2)
Eyewitnesses	--	1.21*	--	--	.52*	--
Tangible Evidence	--	--	--	.32* (TEV1)	--	--
Arrested at/near Crime Scene	--	--	.87*	.72**	.74**	.74**
Black	--	--	-.91*	--	--	--
Predicted Probabilities	65%	39%	69%	62%	68%	63%
Model Chi Square	10.17**	10.34**	23.98**	63.73**	53.53**	45.05**
N	104	322	202	545	783	807

** Significant at .01

* Significant at .05

(a) IEV1

(b) IEV2

(c) IEV3

ened when the offender is caught "red-handed". Evidently, the same is true for rape prosecutions but not for such other violent crimes as murder, attempt murder and aggravated battery where apprehensions at the scene are commonplace and not necessarily indicative~~ of the defendant's guilt.

The availability of eyewitnesses proves to be significant in predicting the disposition of attempt murders/aggravated batteries and burglaries, and tangible evidence crucial in the prosecution of robberies. For tangible evidence it is the presence of some type of associative tangible material (TEV1) and not its ability to conclusively associate the defendant with the scene (TEV2), which is critical. Two demographic variables, age and race, are significant in explaining the outcomes of burglaries and rapes. Younger defendants are more likely to be convicted of burglaries and black defendants are more likely to be convicted of rape.

A forensic variable has a significant main effect in predicting case outcome for murders, burglaries and thefts. For murders and thefts, it is FEV2 (which distinguishes associative findings from other laboratory reports) which is associated with higher conviction rates. For murder, setting the other significant variable (IEV3) at its modal level (incriminating statement), we find conviction rates increase 4% (from 95% to 99%) when we distinguish cases where nonassociative laboratory reports are present with those where the report associates the defendant with the crime. In a less likely situation, where the defendant makes only a damaging statement, conviction rates dip to 38% when a nonassociative lab report is present, compared with 90% when one is present.

For thefts/frauds, we set other significant independent variables at their modes (defendant makes no statement and is not arrested at scene of crime) and contrast conviction rates where laboratory reports are issued but fail to associate the defendant with the crime and those where they do. Employing these controls, the conviction rate increases from 91% to practically 100% with the presence of a lab report associating the defendant with the crime. We suspect the reason FEV2 dominates for this offense category is the sizeable number of fraud cases, such as the passing of bad checks and use of stolen credit cards, where it is routine to link the defendant to the crime through an examination of handwriting.

This distinction is lost in burglaries where the presence of any forensic report (FEV1) is associated with significantly higher conviction rates. Cases without laboratory reports result in convictions 78% of the time while those with reports lead to conviction 95% of the time and where no witnesses are present, the offender is not apprehended at the scene and the defendant makes no statement.

The forensic variable also interacts with the defendant statements variable in the crime of rape to produce a significant effect on conviction. It is where the defendant offers an alibi to law enforcement authorities that the absence of a laboratory report is associated with significantly lower conviction rates (from 87% to 36%). Because most laboratory reports issued in conjunction with a rape prosecution center on the presence or absence of semen in the victim (yielding an "identification") and seldom are successful in associating the defendant with the crime through other forms of scientific evidence (see Chapter IV), it is not surprising that FEV1 emerges as the critical forensic variable.

In sum, it is in the offense categories of murder, burglary and theft where forensic evidence exerts a main effect on conviction. In murders and thefts, it is the content of the laboratory report which makes the difference, while in burglary it is the presence/absence of a laboratory report which is important. In rape, the forensic variable interacts with defendant statements in its effect on case disposition. It is where the defendant offers an alibi to law enforcement officials that the presence/absence of a laboratory report is critical.

Summary

The focus of this chapter has been upon conviction -- whether a defendant is convicted or not convicted, and the factors influencing that decision. We have examined this issue in five different sites for the full range of cases and for specific offenses aggregated across all jurisdictions.

Our data -- based upon the comprehensive individual case files of prosecutors -- yield a picture both complex and incomplete. The picture is incomplete because so many evidentiary and extra-legal factors account for so little of the variation in the decision to convict or not to convict. The picture is complex because a wide range of variables emerge as statistically significant, albeit small, predictors of conviction.

Forensic evidence makes a minimal contribution to the decision to convict or not convict individual defendants. In only one site -- Peoria -- does forensic evidence (FEV1 and FEV2) emerge as significant across the entire range of cases, with FEV2 exerting the greater influence. In two additional locations, Kansas City and New Haven, FEV1 interacts with other variables in its effect on case outcome. Where FEV1 interacts with another evidence variable (IEV1) it is when that variable is in its weakest state that the absence of forensic evidence leads to a significant decline in conviction rates. The ability to explain the decision to convict is slightly better when similar offenses from the different jurisdictions are aggregated. Depending upon the offense category, either the presence of a report itself or its content links the defendant to the crime, drives up conviction rates. Usually where a forensic variable acts on its own, it is its presence which elevates conviction rates; however, where it interacts with another evidence term it is when that other variable is in a weakened condition that the absence of the forensic variable leads to lower conviction rates.

Defendant statements emerge as the most consistently -- and most powerfully -- predictive variable. In each site, defendants who incriminate themselves to the police -- either with damaging statements or outright confessions -- help convict themselves. This is also true when offenses are aggregated and examined independently. Tangible evidence linking the defendant with the crime/victim, such as articles of clothing, weapons, or proceeds of the crime, also contributes toward conviction rather uniformly. Finally, youthful defendants (20 years and younger) are at higher risk of conviction than older defendants in most sites. Prosecutors, in particular, may be responding to youthful offenders not as "kids" in need of a second chance but as violent offenders who, if given a "second" chance, would wreak a line of terror across their respective communities.

The decision to convict is a crucial one for defendants. But also of importance are the charges of which the defendant is convicted and the sentence imposed. The role of forensic evidence, other evidentiary factors, and extra-legal variables in the charge reduction and sentencing phases is examined in the following chapter.

NOTES

1. Cases still pending at the time of our data collection are excluded. Also excluded are cases in which the defendant jumped bail or failed to appear in court.

2. Unconvicted defendants can be punished informally, through such mechanisms as attorney fees, repeated court appearances, cash bond, etc. For analyses of this, see Feeley (1979); also, Eisenstein and Jacob (1977).

3. The reader should view Table 8.1 and a subsequent table (Table 8.2) which cross-tabulates various levels of tangible evidence and conviction rates, with caution, for they do <u>not</u> control for other evidentiary, extra legal and demographic factors in selected cases. Given that the thrust of this report is on physical evidence, we present these initial bivariate analyses. However, the effects of these variables on conviction must be tempered by consideration of other case variables.

4. This is the first of many instances in Oakland where the very high conviction rate all but precludes identifying effective discriminators of conviction versus non-conviction.

5. Prior record is considered appropriate to be taken into account in sentencing decisions (but see Farrell and Swigert, 1978), but <u>not</u> in decisions regarding conviction.

6. Pearson correlation coefficients were computed for all combinations of independent variables and any pairs with an r exceeding .70 were isolated and one of the two variables eliminated from analysis. In no instances were the FEV1 or FEV2 variables found to be sufficiently collinear to necessitate either's elimination from the analysis. Most instances of collinearity involved one of the forensic variables (FEV1 or FEV2) and a forensic interaction term (such as FEV1TEV1). If such pairs were correlated, the primary variable was retained and the interaction term eliminated.

7. We used the LOGIST procedure to fit the logistic multiple regression model to a single binary (0 or 1) dependent variable. We elected to use the stepwise procedure to determine the best variable to be added to the model at any given step. Maximum likelihood estimates are computed in this procedure using the Newton-Raphson method. The model chi square is twice the difference in log likelihood of the final model from the likelihood based on intercept only. The "Predicted Probabilities" statistic is the percentage of concordant pairs correctly predicted by the model. For a full discussion of this procedure see <u>S.A.S. Supplemental Library Users' Guide</u> (1980) edited by Patti Reinhard, S.A.S. Institute Inc.

8. Eisenstein and Jacob (1977: 242) also explained little of the variation in conviction in their sites (12% in Baltimore, 15% in Chicago, 17% in Detroit, using multiple discriminant function analysis).

9. The "Predicted Probabilities" index for each of the models represents the fraction of concordant pairs of predicted probabilities and responses. The statistical program computes a probability of conviction for every case employing the variables included in the model. Cases with a .5 probability of conviction or higher are predicted to result in conviction; those with less than a .5 probability are predicted to result in a nonconviction. The "predicted probabilities" measure is calculated by taking the number of case outcomes correctly predicted divided by the total number of predictions (cases).

   Since our dependent (conviction) variables are so skewed, one might argue that simply by predicting <u>all</u> cases would result in conviction would yield a correct prediction percentage of from 69% in Kansas City to 91% in Oakland. Although such an atheoretical decision rule might lead to a higher percentage of correct predictions, it would have limited value to criminal justice researchers or policy makers since it fails to identify those factors which help explain case outcome or their relative predictive strengths. At decision junctures where the dependent variable is more evenly distributed, its percentage of correct predictions would be reduced and approach 50%.

10. For the example given in the text, independent variables were set at the following levels:

    IEV1 = 1 (defendant makes no statement)
    IEV3 = 0 (only one defendant statement variable is considered at a time)
    AGE = 27 (the mean age of all defendants)
    TEV1 = 1 (no tangible evidence)
    FEV1 = -1, .5 (the forensic variable contrasts "other" laboratory reports with "associative reports)
    NEWID = 1 (one or more witnesses)
    RELAT = -1 (no prior victim/suspect relationship)
    PROXCRIM = 1 (the defendant was not apprehended at the crime scene)
    SER1 = -4 (a minor theft or burglary)

   The probability of conviction may be expressed by the following equation:

$$
\begin{aligned}
\log \frac{p}{1-p} &= -(.28)(\text{IEV1}) - (.46)(\text{IEV3}) \\
&\quad -(.02)(\text{AGE}) + (.81)(\text{TEV1}) + (.33)(\text{FEV1}) \\
&\quad +(.57)(\text{FEV2}) + (.76)(\text{NEWID}) - (.39)(\text{RELAT}) \\
&\quad +(.46)(\text{PROXCRIM}) - (.10)(\text{SER1}) + \\
&\quad 1.26\ (\text{intercept})
\end{aligned}
$$

Where FEV1 = −1:
(no laboratory
report)

$$p \text{ (probability of conviction)} = \frac{\text{antilog } .396}{(\text{antilog } .396)+1} = \frac{2.488}{3.488} = .71$$

Where FEV1 = .5:
(laboratory
report)

$$p \text{ (probability of conviction)} = \frac{\text{antilog } .891}{(\text{antilog } .891)+1} = \frac{7.78}{8.78} = .89$$

11. We simply consolidated all crimes of the same type from the five jurisdictions and re-ran our stepwise regressions. We did not weight or manipulate our sampled cases in any other fashion as one would had our sites been chosen for their representativeness of court and laboratory systems across the nation. We are simply looking for "trends" in the contributions of various evidence types in selected felonies and our data should be viewed as such.

CHAPTER IX

CHARGE REDUCTION AND SENTENCE: THE INFLUENCE OF FORENSIC EVIDENCE, CONTROLLING FOR OTHER EVIDENCE AND EXTRA-LEGAL FACTORS

Introduction

In this chapter our focus is upon sentence and the factors that influence it. We consider principally the role of forensic evidence, controlling for other evidentiary variables and extra-legal factors, akin to our analysis in the previous chapter. We also examine the intervening influence of charge reduction upon sentence, including the evidentiary and extra-legal factors associated with charge reduction. Our working hypothesis is that forensic evidence (along with a range of other factors) makes a significant difference in the charge reduction and sentencing decisions. We would expect the influence of forensic evidence to be particularly visible in the area of charge reductions. Where forensic evidence, especially associations, exists, the frequency of charge reductions -- all other things being equal -- should be lower, since the state's case can be presumed <u>not</u> to be weak. At sentencing directly, forensic evidence may also make a difference. The certainty that the defendant committed the offense, which forensic evidence sometimes provides, may induce the judge to incarcerate the defendant rather than grant probation or, where incarceration is mandated, to increase the length of incarceration.

Sentencing: An Overview

What sentences do defendants receive, if they are convicted? In most of our research sites, incarceration was the norm in 1981.

Sometimes, as in Oakland and Peoria, county jail time was more likely to be imposed than state prison. Overall, though, the majority of convicted defendants served some time (after conviction) in all sites but Kansas City. The figures range from 79% of convicted defendants incarcerated in Oakland to 41% in Kansas City. The rates of incarceration for Chicago (73%) and New Haven (69%) approach Oakland; in Peoria, it is lower (63%). Inferences about comparative harshness or leniency across sites should not be drawn from these data, however, for the mix of offenses also varies across sites. Chicago and Oakland, which have the highest incarceration rates, also have the highest concentration of serious, violent offenses, such as murder, rape, aggravated assaults, and armed robberies (refer to Table 4.1). Yet when we compare the rates of incarceration for specific offenses across sites, the general pattern remains. Table 9.1 presents rates of incarceration for defendants convicted in six different types of cases by site. Oakland frequently has the highest incarceration rate by crime type, especially for less serious offenses such as burglary and theft. Similarly, Kansas City has a typically low rate of incarceration, even for the most serious offenses such as attempt murder and rape.

Length of incarceration also varies sharply across sites. Overall, it is longest in Chicago where the mean is slightly under 6 years (70 months), followed by Kansas City (57 months), New Haven (40 months), Peoria (31 months), and Oakland (24 months). There is great variance around these means however, as Figures 9.1-9.5 illustrate. The distributions are highly skewed, often with a large concentration of sentences at the low end (1 year or less, county jail time). This is particularly true in Oakland, where there are very few long sentences (5 years +).

Table 9.1

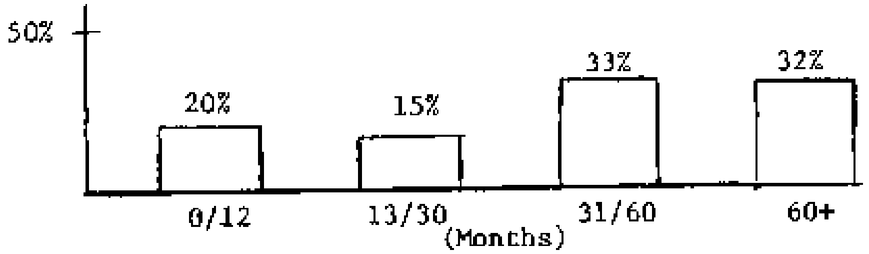
Likelihood of Incarceration Upon Conviction by Site Controlling for Type of Offense

Offense Type	Chicago	Oakland	Kansas City	Peoria	New Haven
Attempt Murder/ Agg. Battery	80%	65%	41%	67%	83%
Rape	95%	74%	39%	91%	59%
Armed Robbery	89%	96%	75%	95%	83%
Robbery	70%	89%	55%	100%	73%
Burglary	80%	85%	39%	74%	70%
Theft	50%	81%	41%	50%	46%

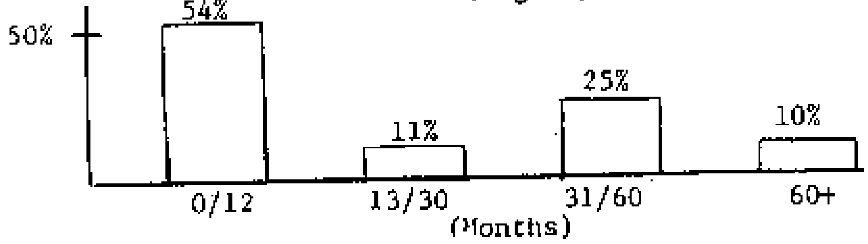
Figures 9.1 - 9.5

Distribution of Incarceration Sentences by Site

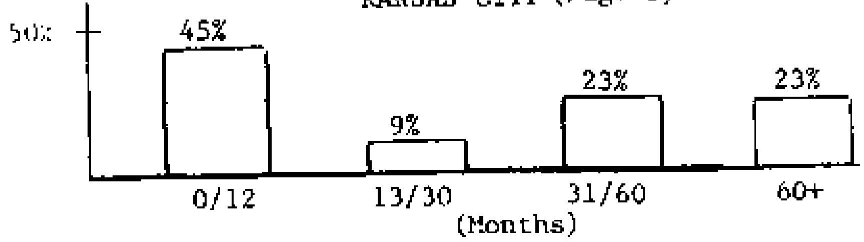
CHICAGO (Fig. 1)



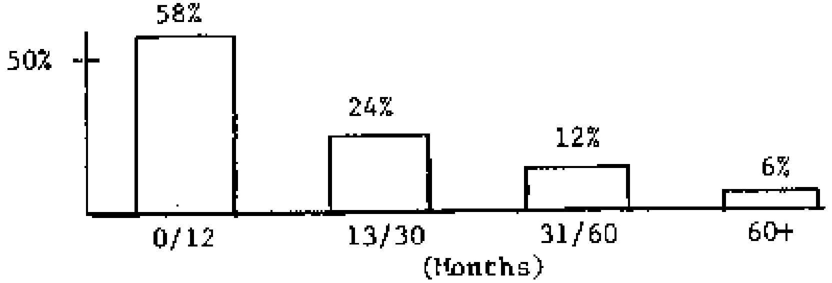
PEORIA (Fig. 2)



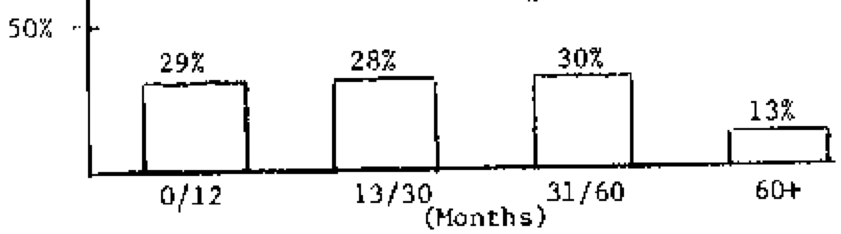
KANSAS CITY (Fig. 3)



OAKLAND (Fig. 4)



NEW HAVEN (Fig. 5)



Chicago, by contrast, is dramatically different from the other sites, having few short sentences (1 year or less) and mostly intermediate and long sentences.

Again, though, inferences about relative sentence severity across sites should not be drawn from these data. When sentences are broken down by type of offense, however, similar patterns emerge. Oakland remains the most lenient site across all types of offenses, as Table 9.2 reveals. For six different offenses for which we have sufficient sentencing data, Oakland defendants received the shortest sentences of incarceration, on average. (Recall, though, that more defendants are incarcerated in Oakland than anywhere else, suggesting that short terms of incarceration are often used in Oakland in lieu of probation alone). The data also reveal that Chicago is generally the toughest site; this is true for all offenses except armed robbery and simple robbery. Interestingly, these data belie the general presumption that sentences are more lenient in large metropolitan areas. Chicago, in particular, does not follow this pattern, given its high rate of incarceration (73%) and long sentences (almost 6 years, on average).

Charge Reductions and Sentencing

Do charge reductions matter for sentencing? If so, how much? And for which decisions -- to incarcerate or not, length of incarceration, or both? At one level, the answer to this basic question would seem obvious. Of course, charge reductions have sentencing implications; otherwise, why would court actors -- prosecutors and defense attorneys -- bother about the charge(s) with which to convict a particular defend-

Table 9.2

Mean Length of Incarceration (months) by Site, Controlling for Type of Offense

Offense Type	Chicago	Oakland	Kansas City	Peoria	New Haven
Attempt Murder/ Agg. Battery	53 mnths	19 mnths	41 mnths	38 mnths	23 mnths
Rape	179	57	163	80	36
Armed Robbery	93	35	133	122	48
Robbery	44	21	59	38	36
Burglary	44	14	36	25	34
Theft	22	12	18	16	16

ant? Skeptics, however, including critics of the plea bargaining process, might argue that charge reductions from the prosecutor are merely illusions designed to induce defendants to plead guilty, designed to convince defendants that their attorney has obtained a "good deal" (Blumberg, 1967) when, in fact, such is not the case.

First, court actors do bother about which charges to convict on. In three sites -- Chicago, Oakland, and Peoria -- about 20% of convicted defendants are convicted of a "reduced" charge. In New Haven, 30% of defendants are convicted on a reduced charge. In Kansas City, slightly more than half of convicted defendants (57%) are convicted of a reduced charge. Thus, charge bargaining is an integral part of plea bargaining in all sites, especially in Kansas City. (For our purposes here, both convictions on lesser, related charges (e.g., armed robbery to robbery) and convictions on lesser, unrelated charges (e.g., rape to attempted robbery) are treated as "charge reductions.")

Secondly, state criminal codes typically encourage charge bargaining, by providing for stiff sentences for certain offenses. For example, in Illinois armed robbery is a "Class X" offense (mandatory prison, term of 6 to 30 years), but simple robbery is not so designated (it is a "probation-able" offense). Likewise, residential burglary in Illinois calls for mandatory prison (4 to 15 years), but burglary of other types of dwellings does not. Thus, at least for some offenses charge bargaining is likely to matter simply because the state legislature has provided different punishments for similar offenses.

Finally, our data verify that charge reductions do lead to fewer instances of incarceration and shorter sentences of incarceration. Table 9.3 illustrates the association between charge reductions and

Table 9.3

Charge Reduction and Likelihood of Incarceration

	All Cases				
Convicted On...	Chicago	Oakland	Kansas City	Peoria	New Haven
Most Serious Charge	71%	81%	52%	66%	73%
Reduced Charge	69%	69%	31%	52%	54%
X^2	N/S	12.0	24.8	10.0	11.5
P	N/S	.001	.001	.001	.001
N	(697)	(846)	(597)	(754)	(337)

likelihood of incarceration. In all sites except Chicago, defendants convicted only of a reduced charge are less likely to be incarcerated. The differences are in the range of 12-14 percentage points in Oakland and Peoria and fully 20 percentage points in New Haven and Kansas City. This pattern, which emerges for the full sample of cases, also appears for specific offenses. In Oakland, Kansas City, Peoria, and New Haven charge reductions are associated with a lesser chance of incarceration for virtually all offense types -- burglary, robbery, theft, etc. -- for which there are sufficient numbers of cases and reductions. In Chicago, such a pattern appears for robbery cases but not for any other offenses.

Similarly, charge reductions are associated with shorter sentences when a defendant is incarcerated. Table 9.4 presents these data. In all sites, without exception, defendants convicted of a reduced charge are sentenced to less prison/jail time. The differences are typically quite large, on the order of four years in Kansas City, two years in Chicago and Peoria. Only in Oakland and New Haven is the difference rather small (9-11 months). Again, these patterns remain consistent across types of offense. Defendants convicted of a reduced charge receive shorter time -- offense by offense -- in Chicago, Kansas City and Peoria. In Oakland and New Haven the pattern holds for the more serious, violent offenses but not for property crimes.

In sum, charge reductions are beneficial to defendants in all sites. The advantage is particularly large in Kansas City -- both for likelihood of incarceration and length of incarceration. And it is in Kansas City where charge reductions occur most frequently, suggesting an inherent <u>rationality</u> to the plea bargaining process and to the role of charge bargaining in that process.

Table 9.4

Charge Reduction and Mean Length of Incarceration (months)*

	All Cases				
Convicted On...	Chicago	Oakland	Kansas City	Peoria	New Haven
Most Serious Charge	75.4	25.6	79.8	35.6	35.0
Reduced Charge	48.2	16.3	27.3	14.6	24.2

* Employing a difference of means t test, all differences were found to be significant at the .01 level.

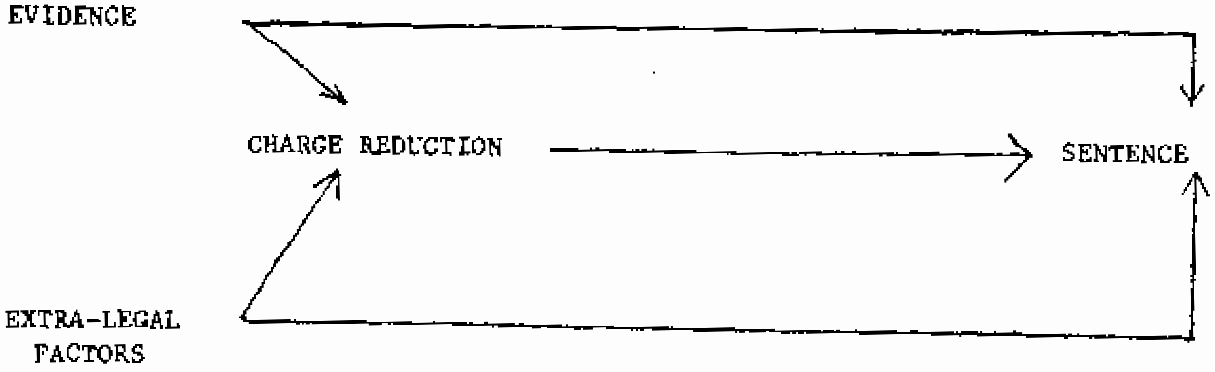
A Path Model Approach

In analyzing the factors that influence charge reduction and sentencing, we adopt the logic and techniques of path analysis. For our purposes in this chapter, we have simplified the analysis to three stages. The last (dependent) stage is sentence -- both the decision to incarcerate and the decision regarding length of incarceration. The intervening stage is charge reduction -- its presence or absence. The first stage is the set of evidentiary and extra-legal factors observed and analyzed in the previous chapter on conviction. These variables, themselves, could be sequenced in a time-ordered framework (e.g., defendant's age would be prior to incriminating statements, etc.), but such refinements are unnecessary for our more straightforward purposes here. Figure 9.6 illustrates this model.

We have already established the links between charge reduction and sentencing. At the bivariate level, charge reductions are associated with less frequent imposition of incarceration and, where incarcerated, shorter time. Thus, the next question becomes: "what factors influence whether a defendant obtains a charge reduction or not?" For, the factors that influence charge reductions influence sentencing. Finally, we address whether these evidentiary and extra-legal factors influence sentencing <u>directly</u>, indirectly (through charge reduction), or both. We turn first to the relationships between evidentiary/extra-legal factors and the likelihood of charge reduction.

Figure 9.6

Illustrative Path Model: Potential Effects of Evidence, Extra-legal Factors, and Charge Reduction Upon Sentencing



Forensic Evidence and Charge Reduction

We would expect that when forensic evidence is present, and associates the defendant with the crime, the likelihood of a reduced charge diminishes. Table 9.5 presents the simple, bivariate relationships for each site. We find the expected pattern in Oakland. Defendants are much more likely to be convicted on the most serious charge when forensic evidence associates them with the crime/scene (86%) than for all other situations. In Peoria, either an association or, particularly, an identification (such as of a controlled substance or semen) results in more convictions on the most serious charge. In both Oakland and Peoria, the differences are statistically significant (p=.001). There are no significant differences in Kansas City or New Haven, although in Kansas City the relationship appears to be curvilinear (where forensic evidence testing results in either an association or a failure to associate) charge reductions are less common than for situations where laboratory results are less definitive or absent altogether.

In Chicago, it is just the opposite with charge reductions more common where the laboratory results either associate or fail to associate the defendant with the crime. The latter relationship is to be expected, but the former is directly contrary to what we would predict. It should be noted, though, that both of these categories have very small numbers of cases in Chicago.

It is clear that, just as with conviction, the forensic variable cannot be assumed to have a linear relationship with charge reduction, and it would appear the forensic evidence may work in combination with

Table 9.5

Forensic Evidence and Charge Reduction

	Percentage of Defendants Convicted on Most Serious Charge				
Results of Laboratory Testing	Chicago	Oakland	Kansas City	Peoria	New Haven
Association	58%	86%	56%	81%	64%
Identification/ Reconstruction	83%	61%	44%	91%	76%
No Evidence Examined	81%	77%	42%	75%	71%
Failure to Associate	56%	69%	50%	73%	100%*
X^2	12.1	20.4	N/S	16.2	N/S
P	.01	.001	N/S	.001	N/S
N	(693)	(843)	(597)	(748)	(379)

* Less than 10 cases.

other variables in its effect on the final charge for which the defendant is convicted.

Tangible Evidence, Other Evidence and Charge Reduction

We would similarly expect that, when tangible evidence associates the defendant with the crime/scene, the likelihood of a charge reduction diminishes. This is true, however, only in Chicago. Where tangible evidence conclusively associates a defendant with the crime/scene, 87% of Chicago defendants are convicted on the most serious charge, compared with 78% where there is no tangible evidence linking defendant and crime. In our other sites, however, there is no relationship or trend. Thus, whereas tangible evidence was a crucial factor in the likelihood of conviction in the sites (Table 8.2), it is quite a marginal factor in charge bargaining.

We, also, examined the bivariate relationships between a variety of other evidentiary factors and the likelihood of charge reduction, but the analyses revealed surprisingly few expected findings. Defendant statements, so critical to conviction, were not systematically associated with conviction on the most serious charge. Indeed, there was no pattern or relationship in any site. Likewise, the circumstances of the arrest -- specifically, whether the defendant was apprehended at or near the crime scene -- generally proved unrelated to charge reductions (only in Chicago were defendants apprehended at/near the crime scene less likely to obtain reductions).

At the bivariate level, we did find four other variables which have significant relationships with charge reduction: seriousness of the incident, prior relationship between the defendant and victim, whether the case was disposed by plea or trial, and the prior criminal record of the defendant. These contingency tables are contained in Appendix IX. This gives us a preliminary indication of what to expect from the multivariate analysis of charge reduction contained in the next section.

A Multivariate Analysis of Charge Reduction

Logistic regression analysis provides an efficient summary of the factors influencing charge reduction, just as it did for conviction in the previous chapter. Again, the dependent variable is a dichotomy. It is skewed substantially in four sites (where between 70% and 81% of cases had no charge reduction), but rather evenly divided in Kansas City. Table 9.6 presents the results.

No single variable contributes to charge reduction across all sites; indeed, the factors vary in importance quite strongly from site to site. Two variables -- the defendant's prior record and the presence/absence of a prior relationship between defendant and victim -- make a consistent difference in three and four sites respectively. The presence of a prior relationship between defendant and victim contributes to an increase in the likelihood of a charge reduction in Chicago, Oakland, Peoria and New Haven. Where the defendant has a prior record, the likelihood of a charge reduction dwindles in Chicago, Kansas City, and New Haven.

The mode of case dispostion (plea or trial) influences the likelihood of charge reductions in three sites, but not always in the same way. In Kansas City and Peoria, pleas are more conducive to charge

Table 9.6

Charge Reduction: Stepwise Logistic Regression by Site (Log Odds)

	All Cases				
	Chicago	Oakland	Kansas City	Peoria	New Haven
Conviction on Most Serious charge	81%	76%	43%	77%	70%
Prior Relationship	-1.41**	-.42*	--	-.57**	-.77*
Prior Record	.32*	--	.43**	--	.42**
Case Disposition (trial)	-1.78**	--	1.72**	.90*	--
Race (Black)	--	.39*	--	.59**	--
Seriousness of Incident	--	--	--	-.18** (SER2)	-.07** (SER3)
Forensic Evidence	-.04** (FE1SER3)	-.40*(a) .13**(b)	.57* (FE2IEV2)	--	-.08** (FE1SER3)
Eyewitnesses	--	-.71*	--	--	--
Defendant Age	--	--	.04**	--	-.04*
Gender (female)	2.88**	--	--	--	--
Defendant's Statement	--	--	--	--	.71**(c) -.89**(d)
Predicted Probabilities	82%	63%	69%	60%	78%
Model Chi Square	36.56**	39.44**	64.29**	35.05**	64.71**
N	(567)	(700)	(520)	(683)	(269)

* Significant at .01

** Significant at .05

(a) FEV2

(b) FEV1 SER1

(c) IEV2

(d) IEV3

reductions, but in Chicago bench trials are more likely to generate reductions. The Chicago - Kansas City contrast, in particular, appears to reflect differences in the political posture of the two prosecutor's offices. In Kansas City, prosecutors fairly readily agree to reduced charges as standard practice; thus, there is little need for defendants to go to trial (or to seek reductions at trial). In Chicago, charge reductions have been anathema to the chief prosecutor, who -- regardless of the particular incumbent -- has faced a hotly-contested, partisan race in each of the past four elections. Rather, it appears that judges take the primary responsibility for charge reductions at (bench) trials in Chicago, just as Chicago judges assumed the responsibility to dismiss (at the preliminary hearing) weak cases prior to the advent of prosecutorial felony review (Eisenstein and Jacob, 1977).

Case seriousness is a significant predictor in two locations. In Peoria, the least and most serious offenses have the greatest likelihood of a conviction to the top charge. In New Haven, the quadratic transformation (SER3) of our original seriousness variable emerges, indicating that at the low end of the seriousness scale, convictions to the top charge decline as crimes become more serious; then rise in the mid-seriousness range, only to tail off again at the most serious level.

The defendant's race is a significant predictor in two locations: Oakland and Peoria. In both locations black defendants are more likely to be convicted of the top charge. The defendants' age makes a difference in Kansas City and New Haven, but not in the same way. Younger defendants are more likely to obtain reductions in Kansas City; older defendants fare better in New Haven.

Forensic Evidence

The only site where forensic evidence exerts a main effect on charge reduction is in Oakland. It is here that the presence of a laboratory report associating the defendant with the crime (FEV2) increases the likelihood of a conviction to the top charge. When we contrast cases with laboratory reports not showing an association between the defendant and the crime with those that do (controlling for other factors), we see that rates of conviction to the top charge are elevated by about 10% (from 87% to 98%). This effect is comparable to the one exerted by the eyewitness variable (contrasting cases having no eyewitnesses with those having one or more eyewitnesses). We also searched for interactions of the two forensic evidence dichotomies (FEV1 and FEV2) and other evidentiary variables.

In the only jurisdiction (Kansas City) where a forensic variable (FEV2) interacts with another evidence variable (IEV2), we find it is when the defendant offers an alibi to authorities, in contrast to making no statement, that a lab report associating the defendant with the crime exerts a significant effect -- elevating convictions to the top charge from 67% to 97%. So, consistent with our findings in the convict/no convict analysis, we find the forensic evidence exerts its maximum effect where the other interactive (evidentiary) term is (prosecutorial speaking) <u>weakest</u>. The forensic/seriousness interactions are many and varied; the clearest and most notable trend takes place in Oakland. Here, it is the cases <u>without</u> laboratory reports which result in a progressively <u>lower</u> rate of conviction to the top charge as cases become more serious (FEV1SER1). Cases with laboratory reports fit this down-ward trend in the less serious offense categories but have higher rates of conviction to the top charge as cases become more serious. In Chicago and Oakland FEV1 interacts with the quadratic seriousness variable (SER3) in similar ways; cases with laboratory reports fit the quadratic trend best: convictions to the top charge decline as crimes approach the mid-seriousness range, rise as offenses become more serious, only to decline once again as offenses become very serious.

In sum, then, the presence of a laboratory report, and to a lesser extent a laboratory report tieing the defendant with the crime, is associated with higher rates of conviction to the top charge. In the only jurisdiction (Kansas City) where a forensic variable interacts with another evidence variable, the introduction of a laboratory report linking the defendant with the crime is associated with conviction to the top charge where defendants have offered an alibi to authorities. The predominant forensic interaction, though is with case seriousness, where the impact of forensic evidence varies depending upon jurisdiction.

The fraction of charge reductions explained by the several variables ranges quite sharply, from a substantial 82% in Chicago to only about 60% in Oakland and Peoria. Generally, though, our set of variables does slightly better predicting charge reductions than conviction (Chapter VIII). Only in Chicago and New Haven are charge reductions substantially predictable. Curiously, charge reductions are less likely to occur in Chicago (19% of all cases) than anywhere else.

Aggregated Offenses

Our ability to explain charge reduction is diminished when similar offense type are aggregated from the five different jurisdictions (Table 9.7). We have less than 50/50 success in predicting convictions to the top charge in the offenses of murder, attempt murder and robbery. Nonetheless, we find defendant statements and tangible evidence to be significant factors in three offense categories each: defendant statements in attempt murder, burglary and robbery, and tangible evidence in attempt murder, burglary and theft. In attempt murders we find the making of a damaging statement or outright confession to be associated with conviction on the top charge. For robberies and burglaries we find the distinction between the making of a damaging statement and a confession to be critical; here a confession is associated with higher rates of conviction to the top charge.

Any kind of tangible evidence is associated with convictions to the original charge for attempt murder/aggravated battery. For the property offenses of burglary and theft, it is the dichotomy (TEV2) which distinguishes tangible evidence that tentatively associates the defendant with the crime from that which conclusively associates the defendant with the offense which is critical. Here, tangible evidence conclusively associating the defendant with the crime is associated with convictions to <u>reduced</u> charges. One plausible explanation for what may be termed an unexpected finding is that such evidence <u>encourages</u> defendants to plea bargain which in turn may often lead to a reduction in charges in exchange for a plea. The only extra-legal factor which was significant in more than a single crime category was prior relationship

Table 9.7

Charge Reduction: Stepwise Logistic Regression
by Offense Type
(Log Odds)

Conviction on Most Serious Charge	Murder	Att Murd/ Agg Batt	Rape	Robbery	Burglary	Theft/ Fraud
	47%	60%	59%	70%	73%	72%
Prior Relationship	--	--	-.93*	-.87**	--	--
Defendant's Statements	--	-.28* (IEV1)	--	-.49** (IEV3)	-.42** (IEV3)	--
Defendant's Age	--	--	--	--	.04**	.03*
Tangible Evidence	--	-.69* (TEV1)	--	--	.49** (TEV2)	.57** (TEV2)
Forensic Evidence	-.65** (FEV2IEV1)	1.48* (FEV2IEV3)	--	--	.44*(a) .92**(b)	.68* (FEV2IEV1)
Arrested at/near Crime Scene	--	--	-1.03*	--	--	--
Race	--	--	--	--	--	.40*
Gender	--	--	--	--	-1.61**	--
Predicted Probabilities	47%	45%	52%	46%	67%	63%
Model Chi Square	6.86**	14.86**	11.67**	17.34**	49.65**	30.39**
N	80	244	142	413	647	648

** Significant at .01

* Significant at .05

(a) FEV1

(b) FEV2 IEV2

between the defendant and the victim in the crimes of rape and robbery; here, no prior relationship leads to convictions on the top charge. Among the demographic variables, only age proved significant in more than a single offense category. For burglaries and thefts, older defendants are more likely to be convicted of top charges than younger defendants.

Only in burglary is forensic evidence (FEV1) associated (on its own) with charge reduction. Here, laboratory reports are associated with convictions to the top charge. The presence of a laboratory report increases the probability of conviction to the top charge by a hefty 20% (from 72% to 92%) when controlling for other independent variables. This effect is comparable, but not as great as, the one exerted by IEV3, which distinguishes damaging statements uttered by the defendant with those where outright confessions are made, and TEV2, which distinguishes tangible evidence that tentatively and conclusively links the defendant to the crime.

The forensic variable FEV2 interacts with the defendant statement variable in four different offense categories. In all categories, save for murder, it is the presence of a laboratory report associating the defendant with the crime in combination with the more incriminating of two types of defendant statements that convictions to the top charge are significantly higher. In murder, where fewer than half the defendants are convicted of the original charge, associative laboratory reports once again lead to convictions at the higher charge, but this time where defendants are <u>less</u> cooperative and refuse to make any statements to officials.

Consequently, we see that even though the presence/absence of a laboratory report (FEV1) emerges as the only main forensic effect (in burglaries), it is the FEV2 variable (keying on the content of the report) which engages in the most significant <u>interactions</u> with other variables in the greatest number of offense categories.

<u>Sentencing: The Decision to Incarcerate</u>

We have already demonstrated earlier in the chapter that charge reductions are intimately associated with sentencing. But what of evidentiary factors, including forensic evidence, and extra-legal variables? Are some of these related to sentencing directly, or only indirectly through their impact on charge reduction, or both? We address this question now.

Sentencing in felony courts involves two distinct, if related, stages: (1) whether or not to incarcerate a defendant, and (2) if so, for how long a term. Prior research has indicated, sometimes in a very detailed way, that the factors associated with these two steps may vary substantially (see, e.g., Eisenstein and Jacob, 1977; Spohn <u>et al</u>., 1981). Thus, it is appropriate that the two stages be analyzed separately, to test for differential influences.

We first examine the decision whether to incarcerate or not. As we noted earlier, convicted defendants are likely to face imprisonment everywhere except Kansas City. In Oakland 79% of convicted defendants are incarcerated; the figure drops to 73% in Chicago, 70% in New Haven, 63% in Peoria, and to 40% in Kansas City. These figures include incarceration in both state prisons as well as county jails; nevertheless, in both instances, defendants are removed from the community and lose their freedom for a period of time.

We examine the decision to incarcerate through logistic regression analysis. Again, as before, our dependent variable is a dichotomy; in this instance, somewhat less skewed than for earlier analyses. Independent or predictor variables include the full range of evidentiary variables, extra-legal factors, and the presence or absence of a charge reduction. Table 9.8 presents the results.

Prior record of the defendant, not suprisingly, overwhelms most other factors in the decision about incarceration. Charge reduction, too, makes a difference for incarceration in four sites (all except for Kansas City). Although its influence is less than the defendant's prior record, it ranks higher than seriousness in most sites in terms of its ability to explain incarceration decisions.

The seriousness of the incident also contributes to the likelihood of incarceration in all five sites but to a lesser extent than prior record and charge reduction. The linear seriousness variable (SER1) is dominant, indicating that as the gravity of offenses increase, the likelihood of incarceration increases accordingly.

Gender of the defendant also makes a sizeable difference in the incarceration decision in two sites (Chicago and Peoria). In both sites, women are <u>less</u> likely to be incarcerated than men, a finding that is also generally consistent with previous research. The number of women in the samples (and the universes) is so small as to suggest caution in interpreting the size of the actual difference. The prior relationship between the defendant and victim is significant in two locations (Chicago and Oakland) where the existence of a relationship is

Table 9.8

Incarceration: Stepwise Logistic Regression by Site
(Log Odds)

	All Cases				
	Chicago	Oakland	Kansas City	Peoria	New Haven
Incarceration Rate	73%	79%	40%	63%	70%
Prior Record	.90**	.62**	1.18**	.85**	.94**
Charge Reduction	.70**	.50*	--	.68**	.74*
Seriousness of Incident	.31**(a) .05**(b)	.15**(a) .05**(b)	.29**(a)	.18**(a)	.52**(a)
Case Disposition (trial)	--	--	2.04**	--	--
Gender (female)	-1.61**	--	--	-1.00**	--
Forensic Evidence	.86** (FEV1) .21** (FEV1SER1) -2.32** (FEV2SER2)	-.34* (FEV1TEV1) .04** (FEV1SER3)	--	.03** (FEV1SER3)	1.55** (FEV1) .50** (FEV1SER1)
Arrested At/Near Crime Scene	--	--	--	-.58**	--
Defendant Statements	--	--	-.32* (IEV2)	--	.65* (IEV2)
Prior Relationship	-.75*	-.58*	--	--	--
Race (Black)	.65*	--	--	--	--
Predicted Probabilities	84%	69%	79%	75%	79%
Model Chi Square	192.24**	71.36**	185.87**	127.27**	73.08**
N	(563)	(697)	(520)	(591)	(269)

** Significant at .01 (a) = SER1

* Significant at .05 (b) = SER3

associated with nonincarcerative sentences. The defendant statement dichotomy which contrasts situations in which defendants offer alibis with cases where they make no statements (IEV2) yields conflicting results in Kansas City and New Haven.

Only in Kansas City are defendants convicted at trial more likely to be incarcerated than defendants convicted by plea. Known as the "penalty" for going to trial this influence has been found by other researchers as well (see, e.g., Brereton and Casper, 1981; Uhlman and Walker, 1979). It is, perhaps, most interesting to note the absence of such a trial effect in four of the five sites in our study. Some caution should be urged here, however, since the number of trials is so small.

Forensic Evidence

Finally, forensic evidence (FEV1) exerts a main effect on the incarceration decision in two sites -- Chicago and New Haven. The influence of a laboratory report is moderate in Chicago, but the most powerful explanatory variable in New Haven. In both sites the presence of a laboratory report increases the likelihood of incarceration substantially.

In Chicago, when offense seriousness is set at its median level the likelihood of incarceration is 19 percentage points higher (46% to 65%) for cases with laboratory reports than without. The interaction of FEV1 and SER1 has the effect of reducing rates of incarceration for convictions without laboratory reports, as offenses become less serious. The addition of the laboratory report keeps rates of incarceration very high

(90%+) even as offenses become less serious. Only for the most minor offenses do cases with laboratory results not result in a jail or prison term.

In New Haven, cases with laboratory reports generally have a higher likelihood of resulting in a prison sentence. At the median seriousness level, the probability of conviction is twenty percentage points higher for cases with lab reports than for those without them. The FEV1SER1 interaction exerts a slightly different effect than it does in Chicago. In New Haven, it is cases _with_ laboratory reports which approximate the linear trend as cases proceed from the lowest to mid-serious range. At the upper case seriousness level, virtually all cases with laboratory reports result in an incarceration.

In Oakland, the forensic laboratory report variable (FEV1) interacts with both the tangible evidence (TEV1) and seriousness (SER3) variables. The presence of a laboratory report is associated with increased rates of incarceration (only 5 percentage points) in the _absence_ of tangible evidence. The FEV1SER3 interaction indicates it is cases with laboratory reports that follow the quadratic trend where rates of incarceration increase with rising seriousness, taper off in the mid-seriousness range, only to rise again at the upper serious level. A similar FEV1SER3 interaction is present in Peoria.

Aggregated Offenses

We, also, examined the decision to incarcerate from an offense-specific standpoint (Table 9.9). As in our jurisdiction-by-jurisdiction analysis, prior record is the dominant variable. Seriousness of the

Table 9.9

Incarceration: Stepwise Logistic Regression
by Offense Type
(Log Odds)

	Murder	Att Murd/ Agg Batt	Rape	Robbery	Burglary	Theft/ Fraud
	97%	68%	72%	83%	69%	51%
Prior Record	--	.56**	1.30**	.91**	.91**	.83**
Charge Reduction	--	--	2.35**	.83**	1.01**	.87**
Case Disposition	--	--	2.22*	--	1.55*	--
Private Attorney	--	--	-1.55**	-.67*	--	-.72**
Prior Relationship	--	--	--	--	--	-.72**
Defendant Statements	--	--	.96* (IEV3)	--	-.42* (IEV3)	--
Defendant's Age	--	-.03*	--	--	--	--
Forensic Evidence	--	.93* (FEV1)	--	1.20* (FEV1)	--	--
Gender	--	--	--	--	--	-.86**
Predicted Probabilities	N/S	69%	86%	73%	71%	72%
Model Chi Square		20.14**	55.54**	60.71**	81.76**	119.10**
N	74	205	130	385	510	492

** Significant at .01; * Significant at .05

offense ceases to be a significant factor in this offense by offense analysis. That is, once we control for offense type, the aggravation of the incident is not of consequence. Apparently, then, the nature of the offense is a superior indicator (of the decision to incarcerate) than factors such as the severity of injuries sustained by the victim of the crime, or the presence or use of a weapon.

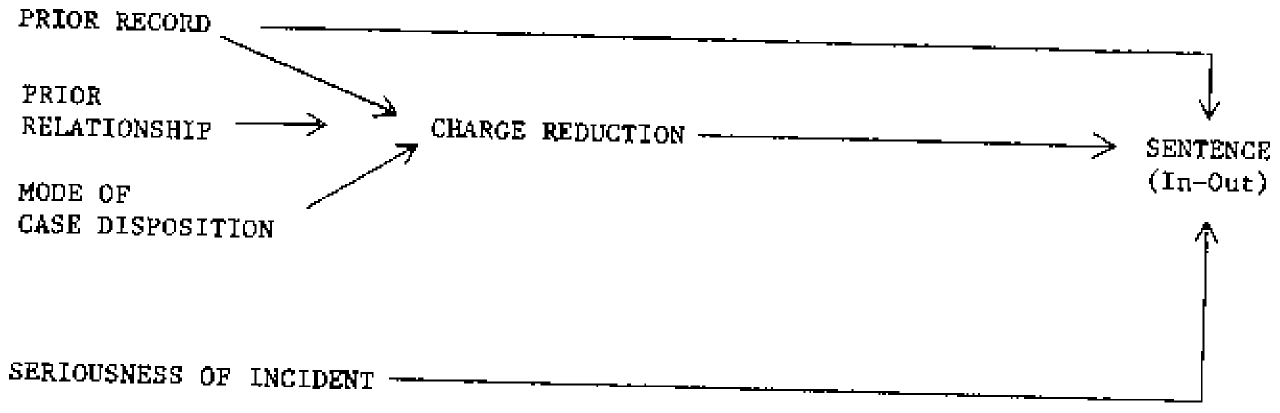
Charge reduction assumes importance in the sentencing of offenders convicted of rape, robbery, burglary and theft. Having a private defense attorney is associated with a reduced likelihood of incarceration for defendants convicted of rape, robbery and theft. Mode of case disposition is only important in the sentencing of convicted rapists and burglars, with defendants convicted at trial more likely to be incarcerated.

The forensic evidence variable (FEV1) exerts a main effect on the sentencing of persons convicted of attempt murder and robbery. This effect is comparable in magnitude to that of prior record in the offense categories of attempt murder and robbery. As in the previous jurisdictional analysis, the appearance of a laboratory report leads to sentences of incarceration. In attempt murders, the probability of incarceration increases practically 30 percentage points with the appearance of a laboratory report. The effect of the laboratory report is even greater in robberies where the likelihood of incarceration increases by about 35 points.

Our ability to explain the sentencing-incarceration decision is much superior to the conviction or charge reduction processes. Eighty-four percent of incarceration decisions would be predicted correctly in Chicago and 79% in Kansas City and New Haven. This is more than 10

Figure 9,7

Composite Path Model: Incarceration*



* Only relationships in three or more sites shown.

percentage points higher than predictions of conviction in the same jurisdictions. The differences in the aggregated offense analysis are even greater, particularly for attempt murders and rapes. This increased explanatory power for the sentencing-incarceration decision is largely attributable to the strong influence of the defendant's prior record.

Path Model for Incarceration

Figure 9.7 summarizes the incarceration decision through the path model approach described earlier (see Figure 9.6). In this approach, charge reduction is the intervening variable between, on the one hand, evidentiary and extra-legal factors and, on the other, the sentencing decision as to incarceration. The path picture illustrated in Figure 9.7 is a composite of the five sites; no path appears unless the relationship between two variables occurs in at least three sites. Of course, this is an arbitrary cutoff point. Were the cutoff two significant paths, the picture in Figure 9.7 would be complicated somewhat further. Three, however, represents a majority of sites, and seems warranted by common sense and the needs for simplification and generalizability. All path coefficients are based upon the log odds weights of statistically significant predictors from the logistic regression analyses presented.

Again, the overwhelming influence of prior record is demonstrated. It exerts a direct effect on the incarceration decision in all five sites. Furthermore, prior record exerts an indirect effect, through charge reduction, in three of the sites. Thus, the influence of prior record on the incarceration decision is even greater than that suggested by Table 9.8.

The prior relationship between defendant and victim and mode of disposition exert an influence on the incarceration decision indirectly, through charge reduction. Defendants who know their victims are typically less likely to be incarcerated, because they are more likely to obtain a charge reduction which, in turn, promotes a smaller chance of incarceration. In Kansas City and Peoria, defendants who plea bargain are more likely to obtain a charge reduction (in Chicago it is those defendants who go to trial) which in turn means they are less likely to be incarcerated. Only in Kansas City does taking a case to trial directly affect the likelihood of receiving a prison sentence. In only a single jurisdiction (Oakland) does forensic evidence exert a main effect on charge reduction, with associative results leading to convictions on the top charge. Forensic evidence interacts with crime seriousness in several jurisdictions to influence charge reduction, but these are not included in the diagram. In the most readily interpretable interaction, the appearance of forensic evidence tends to maintain high rates of convictions to top charges in more serious offenses.

The influence of the seriousness of the crime operates directly on the decision to incarcerate in all five jurisdictions. As was shown in Table 9.6, crime seriousness is also directly associated with the likelihood of charge reduction in two of the five sites.

Cases with forensic laboratory reports (FEV1) are associated directly with higher rates of incarceration in two jurisdictions; forensic evidence also interacts with case seriousness in its effect on incarceration in these same locations.

In sum, the incarceration decision is heavily influenced by the defendant's prior record and the seriousness of the offense. Mode of disposition of the case (plea/trial) and prior relationship between defendant and victim exert an indirect effect on incarceration through the intervening variable, charge reduction. Although forensic evidence, through an interaction with crime seriousness, effects an effect on both charge reduction and incarceration, its dominant influence is on the decision to imprison defendants. No other evidentiary factors <u>typically</u> influence the decision whether to incarcerate the defendant.

When the incarceration decision is examined for specific offense types, differences emerge. Neither mode of case disposition nor prior record exerts an effect on charge reduction when controlling for offense type. Two new variables emerge, however: defendant statements and tangible evidence. At the point of sentencing, prior record and charge reduction continue their strong influence and a new variable, type of defense attorney, becomes significant in three offense types.

Length of Incarceration

The second sentencing question we address centers on the length of incarceration. If a convicted defendant is incarcerated -- whether in state prison or county jail -- for how long? And how do evidentiary variables, extra-legal factors, and charge reductions influence the decision as to length of time imposed?

As we noted in the introduction to this chapter, the average length of incarceration varies sharply across the sites. It is about 6 years in Chicago, 5 years in Kansas City, 3 1/2 years in New Haven, 2 1/2 years in Peoria, and 2 years in Oakland. Also, of course, there is fairly sharp variation within sites illustrated by the standard deviations (Table 9.10) as well as the histograms (Figures 9.1 - 9.5).

A preliminary examination of the data finds a substantial association between charge reductions and length of incarceration. In all five sites, defendants who are convicted of reduced charges are likely to serve shorter terms than those convicted of the most serious charge. We also found there to be a strong linear relationship between the seriousness of the offense and the length of incarceration in all five jurisdictions. But what of the influence of evidentiary (including forensic) and extra-legal factors upon length of incarceration?

To address this question, we now employ stepwise multiple regression analysis inasmuch as our dependent variable is an interval-level variable (months of incarceration). Since this variable typically has some extreme outliers in each site (e.g., 30 or 50 year terms), a logarithmic transformation was performed on it prior to the standard regression analysis. The results of the regression are reported in Table 9.10.

The two most important variables which exert an influence upon length of incarceration in each site are the seriousness of the incident and the presence/absence of a charge reduction. Prior record also exerts a sizeable effect in three of the five jurisdictions. The greater the harm to the victim, which typically occurs in more serious offenses (murder, rape, etc.), the longer the sentences. This influence is particularly strong in Chicago, Oakland and Kansas City. Also, charge reductions lead to shorter sentences of incarceration; again, this influence is particularly strong in Kansas City. The existence of

Table 9.10

Length of Incarceration: Stepwise Multiple Regression by Site (Betas)

	All Cases				
	Chicago	Oakland	Kansas City	Peoria	New Haven
Mean Length (months)	70	24	57	31	40
SD	(99)	(40)	(85)	(59)	(44)
Charge Reduction	.26**	.12**	.45**	.18**	.19**
Seriousness of Incident	.50** (SER1)	.48** (SER1)	.47** (SER1)	.23** (SER1)	.24** (SER1)
Case Disposition (trial)	--	.18**	.18**	--	--
Forensic Evidence	.17** (FEV1)	.26** (FEV1) .26 (FE1SER1)	--	-.11* (FEV2) -.97** (FE1TEV1)	.20** (FEV1)
Arrested At/Near Crime Scence	-.09*	-.11**	--	-.23**	--
Prior Record	.31**	.27**	--	.44**	--
Gender	--	-.09*	--	-.11*	--
Defendant Age	-.08*	--	-.13*	--	--
Defendant Statements	-.14**	--	--	--	--
Eyewitnesses	--	--	--	--	.15*
R	--	--	--	--	--
R^2	38%	31%	46%	33%	16%
N	(400)	(545)	(207)	(358)	(187)

a) Dependent Variable: The log transformation of length of sentence (months)

* Significant at .05; ** Significant at .01; + Borderline

a prior arrest or conviction has a particularly strong effect in Peoria, and to a lesser degree in Chicago and Oakland. It is surprising that prior record is of no importance in predicting sentence length in Kansas City and New Haven. It is interesting to note that the relative importance of prior record and charge reduction is greater for length of incarceration than for the decision to incarcerate. This is, perhaps, most readily understandable for charge reductions. Most defendants -- even those who obtain charge reductions -- are sentenced to incarceration; thus, the predictive value of charge reduction is small (Table 9.6). But shorter terms of incarceration almost necessarily follow from charge reductions granted to those who ultimately are incarcerated; thus, its larger impact on length of incarceration.

The defendant's prior record, by contrast, exerts an influence in only three sites -- Chicago, Oakland, an Peoria. Whereas it was the dominant influence on the decision to incarcerate or not, prior record recedes somewhat in importance for the length of incarceration. In Peoria, prior record remains the most important factor at the sentence length stage; in the other sites, it is either of secondary importance or, suprisingly, no importance at all (Kansas City, New Haven). Why its influence varies so sharply across the sites in the length of incarceration decision is not clear.

Two evidentiary variables make a somewhat suprising appearance in Table 9.10 -- whether the defendant was arrested at/near the crime scene and forensic evidence. For both variables, a modest influence upon sentence length appears in four sites. Defendants arrested <u>away from</u> the scene of the crime receive longer sentences of incarceration than those arrested at or near the crime scene; the direction of influence is the same across all four sites. Why? No intuitively logical answer is apparent. We tested for the possibility of a spurious influence, resulting from the lack of crime types in the regression model.1 We hypothesized that defendants arrested away from the crime scene are much more likely to be involved in more serious offenses and, therefore, more likely to be sentenced to longer terms of incarceration. Table 9.11 reports the results of this test for each of the sites. In every site, There is some relationship -- often a strong one -- between type of offense and where the defendant was arrested. For the most serious offenses -- murder and rape, relatively few defendants are arrested at or near the scene, typically only about 25%. But for less serious offenses such as burglary and theft, a much higher percentage of defendants are apprehended at or near the crime scene (40% - 60%). This relationship is further examined in a subsequent section where we control for crime type.

Forensic Evidence

Forensic evidence also makes a difference for length of incarceration in four sites. In three of the four locations FEV1 (report vs. no report) exerts a main effect on sentence length and in the fourth (Peoria) FEV2 (associative vs. nonassociative report) is of primary importance. In two of these locations, the forensic variable also interacts with another independent variable in its influence on length of sentence.

In the two jurisdictions where FEV1 acts singularly (Chicago and New Haven) the presence/absence of a laboratory report results in a

Table 9.11

Relationships between Type of Offense and Location of Arrest, by Site

	Percentage of Defendants Arrested at/near Crime Scene				
Offense	Chicago	Oakland	Kansas City	Peoria	New Haven
Murder	26%	25%	24%	33%	25%
Rape	21%	27%	30%	38%	24%
Robbery	51%	41%	23%	18%	43%
Burglary	59%	69%	43%	41%	43%
Theft	55%	63%	45%	45%	36%
Drugs	80%	89%	53%	29%	65%

differential of about 30 months in sentence length. This has approximately the same effect as a defendant with a prior arrest record compared with one having a prior conviction record. Neither the effect of the forensic evidence nor having a prior record matches that of increasing the seriousness of the offense by a single level. Looking at cases at the median seriousness level, it is the absence of a laboratory report which typically reduces sentence length by about 30 months, while in New Haven it is the presence of a laboratory report which increases sentence length by about the same amount.

In Oakland, the FEV1 main effect is modified by the FEV1SER1 interaction such that the effect of no report/report is virtually negligible for offenses of low to moderate seriousness, but as seriousness of cases increases above the mid level the sentence handed down to defendants in cases with lab reports rises at a much greater rate than for those without laboratory reports.

In Peoria, both forensic variables (FEV1 and FEV2) have an influence on sentence length. The FEV2 dichotomy has the effect of increasing sentence length where the defendant is linked to the crime by the evidence. At the median serious level for cases in the Peoria sample, an associative laboratory report has the effect of adding an additional 19 months to the sentence (from 28 to 47 months). The presence of a laboratory report (FEV1) interacts with the tangible evidence variable in its effect on sentence length. Here, forensic evidence has its dominant effect where tangible evidence is absent; under such circumstances, the presence of a lab report has the effect of adding about 18 months to sentence length.

We can only speculate as to why forensic evidence has a greater direct effect on sentencing length than for charge reduction and incarceration. One possible explanation might be that laboratory results vividly document the character and degree of violence associated with the crime (e.g., testing for blood, examining weapons and firearms, etc.), thereby leading to a deservedly longer sentence of incarceration. Another related explanation might be that it is the most serious and violent offenses that are more likely to generate forensic evidence and laboratory analysis, because they are the most serious (from the prosecutor's point of view, at least, who commonly requests laboratory reports of collected evidence). When forensic evidence is compared with the seriousness of the offense, we do find a moderate correlation (the highest being about p=.13 in Chicago and New Haven) but nothing approaching collinearity. Given this moderate relationship, plus incorporation of offense class (violent, property, victimless) into the seriousness variable, we feel confident in stating that the forensic evidence variable is not merely a "masked" offense variable. Whatever the precise explanation, there is a clear association between forensic evidence and length of incarceration, while controlling for a range of other variables.

Aggregated Offenses

We, also, examined factors influencing length of incarceration for particular offense types aggregated across the five jurisdictions (Table 9.12). The results are similar to the preceding discussion where all offense types were combined within jurisdictions. We find charge reduc-

Table 9.12

Length of Incarceration: Stepwise Mutiple Regression
by Offense Type
(Betas)

	Murder	Att Murd/ Agg Batt	Rape	Robbery	Burglary	Theft/ Fraud
Mean Lngth (mnths)	299	38	106	73	28	17
SD	(280)	(67)	(110)	(89)	(29)	(17)
Prior Record	--	--	.29**	.15**	.42**	.50**
Charge Reduction	.67**	--	.50**	.38**	.14*	.27**
Case Disposition	.23**	--	.21**	--	.22**	--
Prior Relationship	--	--	--	-.18**	-.13**	-.16*
Def Statement	--	--	-.18* (IEV3)	--	--	--
Tangible Evidence	--	--	--	.17** (TEV1)	--	.12* (TEV1)
Forensic Evidence	--	.27** (FEV1)	.14+ (FEV2)	.13* (FEV1) -.15** (FEV2IEV2)	--	.13* (FEV1) .13* (FEV2IEV1)
Arrested at/near Crime Scene	--	-.32*	--	-.23*	-.15**	-.18**
Black	-.20*	.31*	--	--	--	--
R	--	--	--	--	--	--
R^2	49%	18%	43%	29%	25%	29%
N	70	148	93	312	379	285

** Significant at .01 +Borderline

* Significant at .05

tion to be the most influential variable for the offenses of murder, rape and robbery. Prior record becomes the dominant predictor for burglary and theft. We find, too, that case disposition and prior relationship each assumes significance in three of the six offense categories, influencing length of sentence in the expected direction.

Being arrested away from the scene of the crime increases sentence length in the offense categories of attempt murder/aggravated battery, robbery, burglary and theft. This serves to reject the hypothesis offered in the previous section, that the proximity of arrest variable is simply a surrogate measure for offense type. It is possible that being arrested away from the scene of the crime serves to indicate the defendant took flight and is consequently guilty of the crime.

One or the other of the two forensic dichotomies exerts a main effect on sentence length in four of the six offense categories. FEV1 influences sentence length in the offenses of attempt murder, robbery and theft. In every instance the addition of a laboratory report leads to longer sentences. Holding other independent variables at their median values, the lab report adds about 23 months to attempt murder sentences, 27 months to robbery terms and 4 months to theft sentences.

For rapes, the FEV2 variable exerts an effect quite different than for other offense categories. Here, the critical finding appears to be an identification (of semen) rather than the finding of associative evidence. Such an identification (controlling for other variables) adds approximately 26 months to prison terms of convicted rapists.

In robbery and theft, the FEV2 term also interacts with defendant statements in its effect on length of incarceration. When compared with the effect of FEV1 in these same crime categories, a laboratory report associating a defendant with a crime adds an additional 58 months to a robbery sentence and 7 months to a theft sentence - practically twice the effect of the FEV1 term.

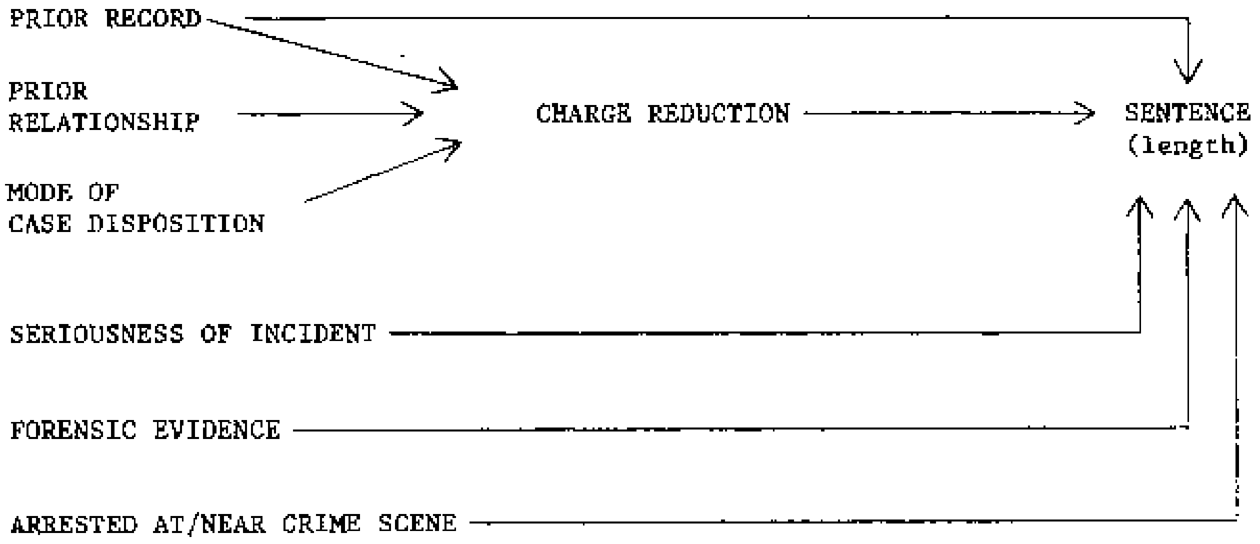
Our ability to explain the decision about sentence length is quite substantial, as measured by the R2 figures in both the site specific and pooled offense analyses. In the site by site analysis, the range is from 46% of the variation explained in Kansas City to 13% in New Haven; both Peoria and Chicago approach the Kansas City figure (30% in Peoria and 36% in Chicago). These figures suggest that the variables discussed do play a central role in decisions about length of incarceration.

Path Model for Length of Incarceration

Finally, Figure 9.8 summarizes the path model for the length of incarceration decision. It suggests that many of the influences upon sentence length are direct, and similar to those found for the decision to incarcerate (Table 9.8). More generally, the influences accounting for the two stages of sentencing decisions are both similar and different. A number of variables -- presence/absence of a charge reduction, seriousness of the incident, and defendant prior record -- influence both decisions, albeit in somewhat differing magnitudes. Forensic evidence only has a direct effect in three or more locations when length of incarceration is the dependent variable. Still, there is sufficient overlap between the two sets of predictor variables to say that the decisional processes for incarceration and length of incarceration are roughly similar but not identical.

Figure 9.8

Composite Path Model: Length of Incarceration*



* Only relationships in three or more sites shown.

Conviction, Charge Reduction, Sentencing: Summary and Synthesis

In these past two chapters focusing upon conviction and charge reduction/sentencing, we have presented a large body of data, analysis, and interpretation. Briefly, below, we attempt to synthesize our results into a general portrait of adjudication and sentencing at the felony level.

The most significant pattern that emerges from our analysis of conviction, charge reduction and sentencing is the shift in classes of variables that influence these decision stages. With respect to the decision whether to convict, evidentiary variables that speak to the defendant's factual guilt or innocence assume prime importance. Did the defendant admit his guilt or incriminate himself? Does tangible evidence link the defendant with the crime or crime scene? The one prime variable not fitting this explanation is the age factor, where younger defendants have a greater likelihood of being convicted.

With respect to the decision whether to reduce charges, these types of evidentiary variables recede into the background. They are replaced by variables that speak to the character or aggravation of the incident. Was the victim harmed? Was there any prior relationship between the defendant and victim? Additionally, system processing characteristics become important -- is the case disposed by plea or at trial? Finally, defendant background characteristics (usually referred to as "extra-legal") also assume greater importance. Does the defendant have a prior record of arrests? of conviction? How old is the defendant? Is he or she black or white?

With respect to the decisions about incarceration and length of incarceration, system processing and defendant background characteristics become even more important. Was a charge reduction obtained? Was the case disposed of via a plea or trial? What is the defendant's prior record? or gender? Among the evidentiary variables, only seriousness of the incident (and for length of sentence, forensic evidence and location of arrest) is uniformily brought into the decision about sentence. Table 9.13 summarizes these patterns.

In sum, forensic evidence plays a rather limited role in the decision to convict -- when compared with the effects of dependent statements, tangible evidence and the age of the defendant. While other evidentiary variables generally diminish in importance at the charge reduction stage, forensic evidence, principally via interactions with the seriousness of the crime, exerts a substantial effect in supporting convictions on the top charge. At the point of sentencing, the influence of forensic evidence assumes its greatest strength, emerging as a significant variable in four of the five jurisdictions. It is length of sentence in particular where forensic evidence exerts a substantial <u>main</u> effect in all jurisdictions except for one, free from the interactive limitations which characterize its effects on all preceding judicial decisions.

Table 9.13

Summary of Influences upon Conviction, Charge Reduction and Sentencing

---

	Number of Sites in which Variable is Associated with....[a]			
		Charge	Sentencing	
	Conviction	Reduction	In-Out	Length
<u>Nature of Evidence</u>				
Forensic Evidence	★	★	★	★★★★
Tangible Evidence	★★★			
Def Statements	★★★★★		★	★
# of Eyewitnesses	★	★		★
Arrested At/Near Crime Scene	★★	★★	★	★★★
Seriousness of Incident	★★	★★	★★★★	★★★★★
Prior Relationship	★★	★★★★	★	
<u>System Processing Characteristics</u>				
Charge Reduction	NA	NA	★★★★★	★★★★★
Mode of Disposition	NA	★★★	★★★	★★
Type of Defense Attorney			★★	
<u>Defendant Background</u>				
Prior Record	★	★★★	★★★★★	★★★
Age	★★★	★★	★	★★
Gender		★	★★	★★
Race		★★	★★	

---

[a] Based upon multivariate analyses; Tables 8.3, 9.6, 9.8, and 9.10

Chapter X

PROSECUTORS' ASSESSMENT OF EVIDENCE IN HYPOTHETICAL CASES

Method of Approach

The respondents included all 165 prosecuting attorneys in the felony trial division of the State Attorney's Office in Chicago who were asked to complete a questionnaire. 65% of the questionnaires were returned (118). Two questionnaires were eliminated from the analyses because more than one choice was selected at several decision points.

Questionnaires were developed consisting of brief, one page descriptions of four crimes: a rape, a robbery, an attempted murder and a burglary.1 The cases varied with respect to: 1) presence/absence of an eyewitness who could identify the defendant as the individual responsible for the offense, 2) strength of association between defendant and crime due to tangible evidence either found on the defendant or left by the defendant at the scene of the crime (strong/week), 3) presence/absence of an oral confession by the defendant and 4) strength of forensic evidence (5 levels). The forensic evidence was varied with respect to two dimensions: how strongly it associated a specific defendant with the crime (strong/week) and its location (distant from the offense and possibly, therefore, able to be explained away, or so situated that no explanation other than the involvement of the defendant could account for it). The fifth level of forensic evidence was a condition in

Figure 10.1

Variations in Tangible and Forensic Evidence

Case Type:

Rape

Tangible Evidence:

Strong-jacket left at scene of crime, defendant's size, defendant's nickname sewn on it
Weak -jacket left at scene of crime, defendant's size

Forensic Evidence:

Associated Defendant-
  Strongly: semen consistent with defendant's blood type
  Weakly: semen is identifiable (no information on blood grouping

Location-
  Distant: on towel in bathroom
  Close: in victim

Robbery

Tangible Evidence:
Strong-gold chain of type worn by victim and with victim's birthdate inscribed on back found on defendant
Weak -gold chain of type worn by victim found on defendant

Forensic Evidence:
Associated Defendant-
  Strongly: human blood on knife consistent with victim's blood type
  Weakly: blood on knife identifiable as human blood (no information on blood grouping)
Location-
  Distant: knife found in alley
  Close: knife found in defendant's pocket

Figure 10.1 (cont'd)

Variations in Tangible and Forensic Evidence

Case Type:

Attempted Murder

Tangible Evidence:

Strong: cap of size worn by defendant, with defendant's initials in it found at scene of crime
Weak: cap of size worn by defendant found at scene of crime

Forensic Evidence:

Associated Defendant-
  Strongly: bullet removed from victim conclusively shown to have been fired from a specified weapon
  Weakly: bullet removed from victim consistent with being fired from a specified weapon

Location-
  Distant: gun found in alley behind defendant's home
  Close: gun found in defendant's bedroom

Burglary

Tangible Evidence:

Strong: Rolex watch with victim's initials found on defendant
Weak: Rolex watch (the allegedly stolen item) found on defendant

Forensic Evidence:

Associated Defendant-
  Strongly: fingerprints matching defendant found
  Weakly: toolmark found consistent with tool found in possession of defendant

Location-
  Distant: evidence found on windowsill of window used for entry
  Close: evidence found on ransacked jewelry box

which no forensic evidence was found. Figure 10.1 presents the variations in tangible and forensic evidence.

As can been seen in Figure 10.2, which presents the design of the study, the variations in the four types of evidence resulted in a total of 40 different stories.[2]

Figure 10.2

Design of the Study

	Eyewitness Identification							
	Yes				No			
	Tangible Evidence							
	Strong		Weak		Strong		Weak	
	Confession							
Forensic Evidence	Yes	No	Yes	No	Yes	No	Yes	No
Close Location:								
Associated Defendant								
Strongly	x	x	x	x	x	x	x	x
Weakly	x	x	x	x	x	x	x	x
Distant Location:								
Associated Defendant								
Strongly	x	x	x	x	x	x	x	x
Weakly	x	x	x	x	x	x	x	x
Absent	x	x	x	x	x	x	x	x

The presentation of the cases was varied such that for any prosecutor, the strength of the tangible evidence, forensic evidence and eyewitness identification were held constant across all cases read. Prosecutors were asked to assume that certain other facts associated with the cases that might have influenced their case processing decisions, were constant across all the cases. Specifically, they were asked to assume:

- the defendant was male,
- the defendant and victim were of the same race,
- the defendant and victim were unknown to each other prior to the offense,
- the defendant had one prior felony conviction for a property offense,
- the defendant had no other charges pending against him,
- the defendant was represented by a public defender with no particular reputation for seeking or avoiding trials,
- and the judge responsible for the case had no biases with respect to the particular offense being considered.

For each crime, prosecutors were initially asked to indicate the most likely path of disposition for the case given that the defendant had orally confessed to the crime, though refused to sign a statement. Prosecutors were then asked to indicate the most likely pattern of case disposition given that the defendant had denied committing the crime. Thus, each prosecutor indicated what he/she believed to be the most likely pattern of case disposition for eight cases. Confession by the defendant is manipulated within subjects, while eyewitness identification, tangible evidence and forensic evidence vary between subjects.

The path of case disposition was assessed by asking prosecutors about:

1) charging--whether a charge of rape, robbery, attempted murder or burglary (as appropriate) would be approved, a lesser charge would be approved or no charge would be approved3

2) the preliminary hearing--whether the case would be bound over or dismissed

3) plea negotiations--if the case were resolved by plea negotiations, whether the case would be pled to the initially approved charge, or a lesser charge

4) trial--if the case were resolved by trial, whether the defendant would be convicted or acquitted at a bench trial or jury trial

5) type of sentence--if the defendant were sentenced, whether it would be to prison, jail or probation

6) length of prison sentence--if the defendant were sentenced to prison, how many years that sentence would be.

Finally, the questionnaire inquired about the number of years each respondent had been in the felony trial division of the state attorney's office, and the number of jury trials taken.

Overview

The results were analysed within the framework of a repeated-measures analysis of covariance. The study consisted of a 2 (strength of tangible evidence in associating the defendant with the offense: weak, strong) x 2 (eyewitness identification: yes, no) x 5 (strength of forensic evidence) between-subjects design and one, two-level, within-subjects factor (whether the defendant had made an oral confession). The variable, strength of forensic evidence, was composed so as to vary within itself the certainty with which the forensic evidence associated the defendant with the crime and the location in which the forensic evidence was found. Five levels of this factor were created by crossing two levels of each of these two factors and including a case variation in which there was no forensic evidence. For the variable of forensic evidence, orthogonal contrasts were established to test for: 1) the effect of strength of association between the defendant and the offense created by the forensic evidence, 2) the effect of location in which forensic evidence was found, 3) the interaction of strength of association and location and 4) the effect of having any, vs. no forensic evidence. Following procedures recommended by McCall & Appelbaum (1973), a grand mean and difference score were constructed for each subject for the within-subjects factor. The repeated measures analysis was achieved by conducting the between-subjects analysis of covariance on these scores. Two variables were used as covariates in this analysis: number of years in the felony trial division of the state attorney's office and number of jury trials experienced. Because cell frequencies are unequal, all reported tests of significance are "eliminating" tests (c.f. Appelbaum & Cramer, 1974).

Results revealing the types of evidence which influenced the decisionmaking of prosecutors are presented for each of the dependent measures for each of the four investigated crimes. The dependent measures were prosecutors' responses about how the case would fare at each decision point, and several additional dichotomous measures created from the prosecutors' responses (ie. would the case be resolved by plea or trial; if a trial, would the defendant be found innocent or guilty; regardless of method of disposition, would the defendant be likely to be judged innocent or guilty).

It should be noted that due to the design of the study, analyses could have revealed main effects and up to five-way interactions of the various types of evidence. We conducted the analyses so as to look for all possible interactions. We found no five-way interactions, but we did discover four, four-way interactions. Because of the small number of four-way interactions, and because they were not readily interpretable, we are inclined to regard these as spurious results. We have therefore not presented this data in this report.

The Charging Decision

Prosecutors first indicated whether they thought the facts of the case would support the filing of charges of rape, robbery, attempted murder or burglary (as appropriate to the case), or the filing of a lesser charge, or the filing of no charge at all. Responses were coded as: (1) no charges approved, (2) lesser charge approved and (3) full charge approved. Percentages of respondents choosing each of these responses for each of the hypothetical cases are presented in Table 10.1. As can be seen in Table 10.1, for two of the crimes--robbery and burglary--very few respondents indicated that anything other than filing the case as a robbery or burglary would occur. With such an uneven distribution of responses, statistical analyses of the impact of eyewitness identification, forensic or tangible evidence or a confession by the defendant were either impossible, or meaningless for these two crimes.4

Table 10.1

Percentage Distribution of Case Charging Decisions

	% Full Charge Approved	% Lesser Charge Approved	% No Charge Approved
Rape	83%	2%	15%
Attempted Murder	70%	24%	6%
Robbery	96%	2%	2%
Burglary	96%	1%	3%

Rape Case   Whether the case would be filed as a rape is affected by a two-way and a three-way interaction of the types of evidence. The two-way interaction involves the strength of association between the defendant and the offense created by the tangible evidence and analysis of the forensic evidence (F(1,91)=4.37,p<.039). It appears that forensic evidence linking the defendant with the rape has no influence on charging decisions when the tangible evidence strongly associates the defendant with commission of the offense (a jacket found at the scene has the defendant's nickname sewn on it) (p>.1). However, when the tangible evidence more weakly links the defendant with the crime (the jacket is merely the size that would fit the defendant), the strength of the forensic association has a statistically significant effect on charging (F(1,91)=3.95,p<.05). If the semen is merely identified but not classified as being of the same blood type as the defendant, prosecutors are less likely to file the case as a rape (adjusted cell means=strong tangible evidence & strong association-2.72, strong tangible evidence & weak association-2.80, weak tangible evidence & strong association-2.72; weak tangible evidence & weak association-2.48).5 That is, if one considers the adjusted cell means, it appears that when both evidentiary factors are weak, the cell mean is much lower (in fact, statistically signficantly lower) and the case is more likely to be dismissed or filed as a lesser offense.

The charging decision is also influenced by a three-way interaction of: tangible evidence, eyewitness identification and a confession by the defendant (F(1,91)=5.82,p<.018). Adjusted cell means associated with this three-way interaction are presented in Table 10.2. Examination of those means would suggest an interpretation such as: the presence/absence of a confession has its greatest impact, that is, most affects the numerical value associated with a cell mean, when both the tangible evidence weakly identifies the defendant and the victim cannot identify the rapist.6 In the absence of these two other kinds of evidence, the lack of a confession severely reduces the chances that the case will be filed as a rape.

Table 10.2

Adjusted Cell Means for Charging Decision:
Interaction of Tangible Evidence, Identification,
and Confession for Rape Case

	Tangible Evidence			
	Strong		Weak	
	Eyewitness Identification			
	Yes	No	Yes	No
Confession				
Yes	3.00	3.00	3.00	2.97
No	2.96	2.02	3.01	1.43

Codes: 1=no charge approved, 2=lesser charge approved, 3=full charge approved

<u>Attempted Murder Case</u> With respect to the attempted murder case, differences in charging decisions appear to be influenced by one, three-way interaction. The three-way interaction involves presence/absence of forensic evidence, eyewitness identification and a confession (F(1,91)=7.23,p<.08). The three-way interaction is similar to that noted in the discussion of the effects associated with charging decisions in the rape case. Although one of the three types of evidence differs from the rape case (tangible evidence has been replaced by forensic evidence), presence/absence of a confession appears to have its greatest effect when there is no forensic evidence and no eyewitness identification of the defendant. Absence of a confession reduces the likelihood of a charge of attempted murder. Adjusted cell means associated with this interaction are presented in Table 10.3.

Table 10.3

Adjusted Cell Means for Charging Decision: Interaction of Availability of Forensic Evidence, Identification and Confession for Attempted Murder

	Forensic Evidence			
	Yes		No	
	Eyewitness Identification			
	Yes	No	Yes	No
Confession				
Yes	2.99	2.97	2.99	2.99
No	2.97	1.76	3.00	1.52

Codes: 1=no charge approved, 2=lesser charge approved, 3=full charge approved

Discussion Two major conclusions seem to emerge from these analyses of the charging decision. First, forensic evidence seems to have affected prosecutorial decisions only when it was absent. For both the rape and the attempted murder cases, it is in the absence of both forensic evidence and some other type(s) of evidence that the prosecutor is less willing to file charges or to file the case as a rape or attempted murder.

As would be expected, the prosecutor is most likely to be influenced by forensic evidence in making decisions about the rape case when body fluids have been analysed to provide information about blood group type. (There was a significant interaction involving the strength of association between defendant and offense resulting from analysis of forensic evidence.) Such an analysis would probably not be available within the time that the charging decision would have to be made, but if the prosecutor is aware that the examination revealed semen but did not establish a link between the defendant's and sample's blood groups, prosecutors indicate that if there is also an absence of tangible evidence which strongly associates the defendant with the crime, that they are less likely to charge.

A second major finding is that strength of tangible evidence appears to have been an important consideration in evaluating the rape case (it was involved in one interaction with confession and eyewitness identification and another with location of the forensic evidence) but not the attempted murder. Prosecutors apparently feel that tangible evidence is a key consideration in deciding on a charge for a rape case. This may be because eyewitness testimony (from the victim) is regarded as less valid for a rape than eyewitness testimony (from a bystander) for an attempted murder. It may also reflect a basic difference in the nature of the results of any analysis of the forensic evidence associated with the rape and attempted murder cases. Analysis of semen can at best indicate that it is of a blood group consistent with that of the defendant. It will not unequivocally identify the defendant as the rapist. Ballistics analysis, however, at best can establish that this is the gun that fired the shot into the victim. Because forensic evidence would be less conclusive for the rape case, the need for tangible evidence before charging may have been greater. Or it may be a reflection of the type of tangible evidence manipulated in the two hypothetical cases. In the rape, a jacket was left at the scene of the crime; in the attempted murder, a cap was left. A jacket may he perceived as more powerful tangible evidence than a cap, and therefore, receive more consideration in the charging decision.

Preliminary Hearing

For all four cases, regardless of the level and combination of positive identification, tangible and forensic evidence and occurrence of defendant confession, such a high percentage of the responses indicated that the case would be bound over, that analyses, even if statistically possible, would have been meaningless. This is revealed clearly in Table 10.4.

Table 10.4

Percentage Distribution of Mode of Case Disposition at Preliminary Hearing

	% Bound Over	% Dismissed
Rape	94%	6%
Attempted Murder	98%	2%
Robbery	99%	1%
Burglary	99%	1%

It may seem surprising that so little attrition was expected at this stage of case processing. Certainly, the literature on the criminal courts has concluded that many cases fail to survive the preliminary hearing. It might be that the types of cases we presented to prosecutors were not a representative sample of the cases normally received (being more serious offenses) and therefore would not reflect the normal screening of cases at this disposition point. However, statistics about dismissal rates at the preliminary hearing for robberies in this jurisdiction are available. They reveal a dismissal rate consistent with our data. Only about 3% of cases are dismissed at the preliminary hearing in Chicago (Chicago Crime Commission, 1983).

Method of Disposition: Plea/Trial

This variable was created by dichotomizing responses to the question of whether the case would be pled to the original charge, pled to a lesser charge or resolved at trial. If a response indicated that a case would be pled (regardless of the charge) it was coded as a 1. Cases that were expected to go to trial were coded as a 2. The percentage of each of the hypothetical cases expected to be resolved by guilty plea and trial is presented in Table 10.5.

Table 10.5

Percentage Distribution of Plea/Trial Mode of Disposition

	% Pleas	% Trials
Rape	22%	78%
Attempted Murder	40%	60%
Robbery	50%	50%
Burglary	64%	36%

Before discussing the impact of types of evidence on mode of disposition, it should be noted that the plea/trial decision is largely controlled by the defense. It is the defendant's choice whether to enter a plea or to go to trial. Although the prosecution may offer charge or sentence considerations in exchange for a plea, the defense will decide whether or not to accept. Thus, in these responses, prosecutors are indicating what they think defendants will choose to do. The data do not reflect how prosecutors would <u>like</u> to dispose of a case, but what they <u>expect</u> will happen. Both very strong and very weak cases may be expected to go to trial: the former because the defense recognizes that there is nothing to be lost (the prosecutor will offer no bargain for pleas in these cases), the latter because the defense honestly believes there to be a high probability of acquittal. In addition, it should be noted that the expectation that a case will be resolved through entry of a plea is not an indication that the case will be plea bargained. Whether a guilty plea will be motivated by an offer from the prosecutor cannot be inferred from patterns in the data.

<u>Rape Case</u> Likelihood of resolving the rape case by plea or trial was affected by considerations of strength of tangible evidence, the location of the forensic evidence and availability of a confession ($F(1,52)=5.06, p<.029$).7 The adjusted cell means associated with this three-way interaction are presented in Table 10.6. There is a rather complex perception of the likely method of disposition of this case. The pattern of means is not consistent with the more common finding of this study that it is in the absence of two of more types of evidencethe prosecutor is less likely to take some action. Instead, it appears that presence/absence of a confession has its greatest impact on mode of case resolution when there is weak tangible

evidence and the forensic evidence is found in a location which strongly links the defendant with commission of the offense of rape. It would appear that prosecutors are more inclined to take a rape case to trial whenever semen is discovered on vaginal swabs. However, if there is only weak tangible evidence and the defendant has confessed to the offense, the prosecutor appears to expect a guilty plea. Perhaps in these circumstances the prosecutor is uncertain about whether he/she could win the case in court, so he/she will not insist on trial and the defense may consider the prior confession and strength of forensic evidence sufficient to warrant entering a plea of guilty. In the absence of a confession, however, prosecutors expect the case to go to trial--probably expecting the defense to evaluate a case in which the prosecution has only weak tangible evidence and semen found inside a victim as one with sufficient ambiguity to justify a trial.

Table 10.6

Adjusted Cell Means for Plea/Trial Disposition:
Interaction of Tangible Evidence, Location of Forensic
Evidence and Confession for Rape Case

	Tangible Evidence			
	Strong		Weak	
	Forensic Evidence Location			
	Close	Distant	Close	Distant
Confession				
Yes	1.91	1.62	1.63	1.89
No	1.92	1.66	1.99	1.88

Codes: plea=1, trial=2

Robbery Case Likelihood of resolution by plea or trial for the robbery case was determined by a two-way interaction of presence/absence of eyewitness identification of the defendant and whether there was any forensic evidence available in the case (F(1,83)=5.51,p<.021).

Consideration of adjusted cell means associated with the former effect suggests that the presence of forensic evidence has no impact on mode of disposition when there is an eyewitness (p>.1). Yet if there is no eyewitness, the presence/absence of forensic evidence has a statistically significant effect on whether the case will be pled (F(1,83)=7.31,p<.008). The absence of forensic evidence greatly increases the likelihood that the case will be pled (means=eyewitness & forensic evidence-1.55, eyewitness & no forensic evidence-1.51, no eyewitness & forensic evidence-1.58, no eyewitness & no forensic evidence-1.17).

Attempted Murder Case Prosecutorial expectations about whether the attempted murder case would be resolved by plea or trial were related to the occurrence of a confession (F(1,73)=10.45,p<.002). Adjusted cell means associated with this main effect suggest that a trial is more likely when a defendant has confessed to the attempted murder (means=2.1 and 1.7, respectively). Presumably, prosecutors expect the confession will help them to establish the intent necessary to prove an attempted murder.

In addition, prosecutors' expectations were influenced by a two-way interaction of presence/absence of eyewitness identification and whether forensic evidence was available (F(1,73)=5.14,p<.026). These are the same independent variables that interacted in the plea/trial decision in the robbery case. For the offense of robbery it was suggested that a lack of forensic evidence increased the chances of a plea if there was also no eyewitness. For the attempted murder it is also in the absence of an eyewitness and forensic evidence that chances of a plea are increased (F(1,73)=8.23,p<.005) (means=eyewitness & forensic evidence-1.58, eyewitness & no forensic evidence-1.64, no eyewitness & forensic evidence-1.65, no eyewitness & no forensic evidence-1.28).

Burglary Case Prosecutors' expectations about the plea/trial choice for the burglary case were influenced by three, three-way interactions. One is a three-way interaction of confession, tangible evidence and strength of association between the defendant and the offense created by analysis of forensic evidence (F(1,82)=4.75,p<.032). Simple effects tests indicate that the strength of association created by the forensic evidence has a statistically significant effect only when there has been no confession by the defendant and the tangible evidence weakly associates the defendant with the offense (the defendant is found wearing a Rolex watch but there is no way to be certain that it is the victim's Rolex) (F(1,82)=10.37,p<.002). In these circumstances, prosecutors are less likely to take a burglary case to trial if the forensic evidence is a toolmark than if it is a fingerprint (either on a windowsill or jewelry box). When the prosecutor has neither a confession, nor strong tangible evidence but does have strong forensic evidence, neither prosecution nor defense appear to believe that they would be favored at trial. The advantage conferred by the forensic evidence is insufficient to justify a trial for the prosecution, yet sufficient to encourage the defense to plead. The means associated with this interaction are presented in Table 10.7.

Table 10.7

Adjusted Cell Means for Plea/Trial Disposition:
Interaction of Confession, Tangible Evidence, and Strength
of Association of Forensic Evidence for Burglary Case

	Confession			
	Yes		No	
	Tangible Evidence			
	Strong	Weak	Strong	Weak
Forensic Evidence Association				
Strong	1.28	1.10	1.67	1.15
Weak	1.37	1.21	1.44	1.47

Codes: plea=1,trial=2

A second, three-way interaction associated with the plea/trial disposition of burglary cases involves the presence/absence of a confession, whether any forensic evidence could be found and eyewitness identification (F(1,82)=6.03,p<.016). The adjusted cell means associated with this interaction are presented in Table 10.8. Presence/absence of an eyewitness has a statistically significant effect on method of case disposition only if the defendant has not confessed to the offense and there is no forensic evidence (F(1,82)=5.41,p<.022). If there has been a confession, prosecutors appear to expect that the case will be resolved by a guilty plea. If, however, there has been no confession, defense attorneys are thought to be more likely to request a trial--except in the absence of both eyewitness identification and forensic evidence. In this situation, one that is extremely unfavorable to the prosecutor, one would expect the defense to demand a trial. The fact that prosecutors expect a plea may be an indication that the facts are so weak that prosecutors believe charges will have to be reduced and that the defendant will then plead guilty to the reduced charge.

Table 10.8

Adjusted Cell Means for Plea/Trial Disposition:
Interaction of Confession, Identification and
Availability of Forensic Evidence for Burglary Case

	Confession			
	Yes		No	
	Forensic Evidence			
	Yes	No	Yes	No
Eyewitness Identification				
Yes	1.32	1.01	1.42	1.66
No	1.24	1.18	1.45	1.17

Codes: plea=1,trial=2

Finally, there is a three-way interaction of tangible evidence, strength of association between defendant and offense created by the analysis of the forensic evidence and eyewitness identification (F(1,82)=11.45,p<.001). Means associated with this interaction are presented in Table 10.9. It appears that the interaction of presence/absence of eyewitness identification and strength of association of forensic evidence is stronger (F(1,82)=10.89,p<.001) when there is weak tangible evidence than when the tangible evidence strongly associatesthe defendant with the crime (F(1,82)=4.20,p<.043). The presence/absenceof eyewitness identification would appear to have a greater effect whenforensic evidence weakly associates the defendant withthe offense (toolmarks, rather than fingerprints are available for analysis) and there is weak tangible evidence. As in the previous interaction, when the prosecutor has only an eyewitness whose credibility can be attacked, it seems to be expected that the defense will choose to take the case to trial in an attempt to escape conviction.

Table 10.9

Adjusted Cell Means for Trial/Plea Disposition:
Interaction of Tangible Evidence, Strength of Association
of Forensic Evidence and Identification for Burglary Case

	Tangible Evidence			
	Strong		Weak	
	Forensic Evidence Association			
	Strong	Weak	Strong	Weak
Eyewitness Identification:				
Yes	1.49	1.21	1.01	1.59
No	1.46	1.60	1.24	1.09

Codes: plea=1,trial=2

Discussion As the reader may have noticed, in the interpretation of the interactions the ordering of the four types of evidence has been varied between types of offenses. Whenever there is an interaction, a variety of interpretations are possible. It is the task of the researcher to select that interpretation that makes the most sense. In making our interpretations we are guided bytwo principles: a desire for parsimony and the results of simple effects tests. Simple effects tests are checks that there is indeed a statistically significant difference between levels of one independent variable within one level of another. To the extent allowed by the results of simple effects tests, we try to interpret all interactions for a crime type according to the same basic ordering of factors. For rape and attempted murder cases the ordering which could be supported by simple effects tests for the greatest number of interactions was: tangible evidence, eyewitness identification, forensic evidence and confessions. For burglary cases, the best ordering appeared to be: confessions, tangible evidence, forensic evidence and eyewitness identification. Robbery case decisions appear best explained by considering the impact of confessions, tangible evidence, eyewitness identification and forensic evidence.

The ordering of variables implies nothing about their relative "importance." The essence of an interaction, is that all variables participating in the interaction are equally necessary for the occurrence of the interaction. Differences in the ordering of variables, may indicate that prosecutors are using different mental rules for combining different types of evidence for different criminal offenses, but this remains to be tested in further research.

Method of Disposition: Type of Plea

If it was indicated that a case was likely to be resolved by a plea rather than trial, a further analysis was conducted to determine determine whether the presence/absence of eyewitness identification, tangible evidence, confession and strength of forensic evidence might be related to prosecutors' expectations of a plea to the filed charge or plea to a lesser charge. Responses that the case would be pled to the original charge were coded as 3 and that the case would be pled to a lesser charge were coded as 2. Unfortunately, for the rape, attempted murder and robbery charges, there were too few responses indicating that a plea was likely to permit this subsequent analysis. For those cases where a plea was expected, Table 10.10 presents the expected percentages of each type of plea for each type of crime.

Table 10.10

Percentage Distribution of Pleas to Original vs. Lesser Charge

	% Plea to Original Charge	% Plea to Lesser Charge
Rape	83%	17%
Attempted Murder	57%	43%
Robbery	64%	36%
Burglary	80%	20%

<u>Burglary Case</u> With respect to the burglary case, a plea to the original rather than a lesser charge seems related to four,[7] two-way interactions: 1) presence/absence of a confession by eyewitness identification (F(1,29)=9.47,p<.005), 2) confession by strength of association between the defendant and the offense created by the forensic evidence (F(1,29)=4.76,p<.037), 3) confession by location of forensic evidence (F(1,29)=9.74,p<.004), and 4) eyewitness

identification by tangible evidence (F(1,29)=6.52,p<.016).

Examination of adjusted cell means associated with the first effect suggests that when there is a confession, the presence/absence of a victim who can identify the defendant has no effect on prosecutors' expectations that the case will be pled to a lesser offense than burglary (p>.1). However, when there is no confession, prosecutors are statistically signficantly more likely to expect a plea to a lesser offense if there is no eyewitness identification (F(1,29)=9.77,p<.004) (means=confession & eyewitness-2.79, no confession & eyewitness-2.81, confession & no eyewitness-2.71, no confession & no eyewitness-2.44).

The second interaction of confession and strength of association created by the forensic evidence repeats this pattern of results. The adjusted cell means associated with this effect suggest that if there has been a confession, the finding of toolmarks vs. fingerprints has no impact on expectations that the case will be pled to a lesser offense than burglary (p>.1). If, however, the defendant has denied committing the burglary, the fact that there are toolmarks, rather than fingerprints for analysis statistically significantly increases the perception that the case will be pled to a lesser charge (F(1,29)=1.39,p<.004)(means=confession&strong association-2.89, no confession & strong association-2.79, confession & weak association-2.73, no confession & weak association-2.4).

The third interaction involves the presence/absence of a confession and the location of the forensic evidence. Its interpretation is similar to that proposed for the previous interactions. If there has been a confession, the fact that forensic evidence was found on a jewelry box rather than a windowsill is irrelevant to the type of plea that will be expected for the case (p>.1). If, however, there has been no confession, and the forensic evidence was found in a poor location expectations that the case will be pled to a reduced charge are increased (F(1,29)=3.77,p<.062) (means=confession & good location-2.76, no confession & good location-2.73, confession & poor location-2.86, no confession & poor location-2.46).

The fourth interaction, that of eyewitness identification and tangible evidence is quite different in pattern. In the previous interactions it has been when two kinds of evidence are lacking that a prosecutor reduces his/her expectations for the degree of prosecution of the case. In this double-order interaction, however, it is when two kinds of evidence are present that prosecutors increase their expectations about how such a case will be disposed. In this interaction the presence/absence of a positive identification of the burglar has a greater effect on the likelihood of the case being resolved as a plea to the original vs. a lesser charge if there is strong tangible evidence (F(1,29)=3.64,p<.066) than if there is weak tangible evidence (p>.1). If there is eyewitness identification, it increases the likelihood of a plea to the original charge of burglary (means=eyewitness & strong tangible evidence-2.9, no eyewitness & strong tangible evidence-2.61, eyewitness & weak tangible evidence-2.55, no eyewitness & weak tangible evidence-2.62).

<u>Method of Disposition</u>: <u>Type of Trial</u>

If it was indicated that a case was likely to be resolved by a trial rather than a plea, a further analysis was conducted to determine whether the types of evidence might be related to prosecutors' expectations about a bench vs. jury trial. Since the decision about type of trial is made by the defendant and his/her counsel, responses to this question indicate the aspects of a case which prosecutors believe influence defense thinking. Indications that the case would be resolved at a jury trial were coded as 2; responses that the case would be resolved at a bench trial were coded as 3. The analysis could not be conducted for the burglary, robbery or attempted murder cases. The number of responses indicating that these cases would go to trial was simply too small to permit an analysis of a breakdown of responses by type of trial. For those cases expected to be resolved at trial, Table 10.11 presents the percentages expected to appear at bench and jury trials.

Table 10.11

Percentage Distribution of Jury vs. Bench Trials

	% Jury Trials	% Bench Trials
Rape	47.4%	52.6%
Attempted Murder	41.7%	58.3%
Robbery	45.2%	54.8%
Burglary	23.9%	76.1%

<u>Rape Case</u> For the rape case, type of trial appears related to whether or not the victim could identify the defendant (F(1,25)=4.35,p<.047).9 Examination of adjusted cell means suggests

that a jury trial is more likely when there is eyewitness identification than when there is not (means=2.11 and 2.5, respectively). Since judges are likely accustomed to defense tactics questioning a rape victim's identification of her attacker, defense counsel may see little gain in taking cases, based on assailing eyewitness credibility, before a judge. Defense counsel may believe they have a greater probability of success with these tactics before a jury.

In addition, likelihood of a jury trial is affected by the strength of association between the defendant and the offense created by analysis of the forensic evidence (F(1,25)=6.95,p.<014). A jury trial is more likely when analysis can identify the blood group of the semen as consistent with the defendant's blood group than when it can merely confirm the presence of semen (means=2.5 and 3.4, respectively). Defense counsel may be perceived as taking the less certain cases to a bench trial. The more clearly the evidence suggests the guilt of the defendant, the more likely a judge may be to be angered at having to "waste his time" on such a trial and the better it may be to take such a case before a jury.

Case Outcome: Trial Acquittal or Conviction

For those cases expected to be resolved by trial, an analysis was made of the expected outcome of that trial. If the case was expected to be acquitted, a code of 2 was entered into the analysis; if a conviction was expected, the response was coded as a 1. As would be expected from the frequency of response to the question assessing expectations about type of trial, there were too few responses indicating that the burglary, robbery, or attempted murder cases would go to trial for these crimes to break down into groups large enough to allow statistical analysis along this dimension. For those cases expected to go to trial, percentages expected to be acquitted and convicted are presented in Table 10.12.

Table 10.12

Percentage Distribution of Trial Acquittal vs. Conviction

	% Acquitted At Trial	% Convicted At Trial
Rape	15%	85%
Attempted Murder	16%	84%
Robbery	11%	89%
Burglary	13%	87%

Rape Case Prosecutorial expectations about likely trial outcome for the rape cases are influenced by one main effect and two, double-order interactions.10 First, trial outcomes in the rape case are expected to be influenced by the strength with which the forensic evidence associates the defendant with the crime (F((1,25)=5.80,p<.024). Examination of adjusted cell means indicates that prosecutors expect that a conviction is more likely if the analysis of sampled fluids shows the presence of semen of the same blood group as that of the defendant, than if the analysis merely confirms the presence of semen (means=1.18 and 1.25, respectively). Thus, although prosecutors expect defense attorneys to ask for jury trials, they also expect that this strategy will not be successful in avoiding conviction.

Secondly, there is an interaction of eyewitness identification and confession (F(1,25)=12.9,p<.001). Adjusted cell means suggest a familiar pattern: when there is an eyewitness, the presence/absence of a confession is expected to have little effect on chances of conviction at trial. Yet if there is no eyewitness, the lack of a confession reduces the chance that the defendant will be convicted at trial (means=eyewitness & confession-.99, eyewitness & no confession-1.16, no eyewitness & confession-1.15, no eyewitness & no confession-1.85).

Finally, expected trial outcomes in the rape case are influenced by an interaction of tangible evidence and presence/absence of a confession. (F(1,25)=5.86,p<.023). Adjusted cell means suggest that confession has a greater effect on the chances of being found guilty at trial when the tangible evidence only weakly associates the defendant with the offense. In this circumstance, the lack of a confession increases the chances of being acquitted (means=strong tangible evidence & confession-1.08, strong tangible evidence & no confession-1.37, weak tangible evidence & confession-.99, weak tangible evidence & no confession-1.42).

Case Outcome: Acquitted or Convicted

A general measure of case outcome was created by lumping persons whose cases were expected to be dismissed at felony review or the preliminary hearing and those found innocent at trial and comparing them to those who pled guilty or were found guilty at trial. Cases expected to yield a conviction were coded as 1, and those expected to result in an acquittal were coded as 2. An analysis was then conducted to ascertain whether the variables of eyewitness identification, tangible evidence, forensic evidence and a confession by the defendant were related to this measure of acquittal/conviction. For the crime of robbery, so many prosecutors evaluated the case as one in which the defendant would be adjudicated guilty that no analysis of the data was possible. Only four-way interactions emerged for the offense of burglary, and as explained above, such effects have been omitted from this report.

Rape Case For the rape case, two, two-way interactions: 1) eyewitness identification and confession (F(1,89)=122.62,p<.001), and 2) tangible evidence and confession (F(1,89)=5.47,p<.022), and one three-way interaction of degree to which the forensic evidence associated the defendant with the offense, tangible evidence and eyewitness identification (F(1,89)=4.69,p<.033) emerge as determinants of this overall measure of acquittal/conviction.

For the first of these effects, adjusted cell means suggest a familiar pattern. It appears that presence/absence of a confession is expected to have little effect on a defendant's chances of being convicted if there is an eyewitness who can identify him. However, if there is no eyewitness, the lack of a confession will increase the defendant's chances of being acquitted (means=eyewitness & confession-1.0, no eyewitness & confession-1.07, eyewitness & no confession-1.12, no eyewitness & no confession-1.92).

The second effect reveals a similar pattern. When there is strong tangible evidence, presence/absence of a confession has less effect on the likelihood that the defendant will be found guilty than when there is weak tangible evidence. When there is no confession, and the jacket found at the crime scene is simply of a size that fits the defendant, the defendant's chances of acquittal are reduced (means=strong tangible evidence & confession-1.03, weak tangible evidence & confession-1.03, strong tangible evidence & no confession-1.44, weak tangible evidence & no confession-1.60).

Analysis of the three-way interaction of eyewitness identification, tangible evidence and location of the forensic evidence reveals a statistically significant interaction between the presence/absence of an eyewitness and the location of forensic evidence when tangible evidence is strong (F(1,89)=8.42,p<.005). In addition, location of the forensic evidence results in a statistically significant difference in the likelihood of conviction if there is no eyewitness but there is strong tangible evidence (F(1,89)=14.42,p<.001). When the tangible evidence is weak, neither forensic evidence nor eyewitness identification has much effect on the likelihood of acquittal. However, when the tangible evidence is strong, prosecutors believe that the likelihood of conviction is quite good. When the tangible evidence is strong, it is only in the absence of <u>both</u> strong forensic evidence found in a location that strongly links the defendant to commission of the crime and an eyewitness that chances of acquittal are perceived to increase. The adjusted cell means associated with this three-way interaction are presented in Table 10.13.

Table 10.13

Adjusted Cell Means for Likelihood of Acquittal/Conviction:
Interaction of Tangible Evidence, Location of Forensic
Evidence and Identification for Rape Case

	Tangible Evidence			
	Strong		Weak	
	Forensic Evidence Location			
	Close	Distant	Close	Distant
Eyewitness Identification				
Yes	1.00	1.00	1.57	1.30
No	1.04	1.11	1.49	1.58

Codes: 1=conviction, 2=acquittal

<u>Attempted Murder</u> For the attempted murder, likelihood of acquittal vs. conviction is affected, as it was in the rape case, by interactions of eyewitness identification and confession (F(1,90)=41.63,p<.001) and tangible evidence and confession (F(1,90)=8.65,p<.004). In addition, however, outcome for the attempted murder case is influenced by a main effect of whether any forensic evidence was found (F1,90)=5.08,p<.027), an interaction of location of forensic evidence and confession (1,90)=7.11,p<.009), and an interaction of location of forensic evidence and strength of tangible evidence (F1,90)=5.75,p<.019).

The first two of these double-order interactions are the same as they were in the rape case. When there is a positive identification of the defendant, or tangible evidence that strongly associates the defendant with the offense, presence/absence of a confession has no effect on the likelihood of acquittal (p>.1 for both). However, if there is no eyewitness identification, or the tangible evidence only weakly associates the defendant with commission of the crime, whether or not the defendant has made a confession will influence his chances of being adjudicated guilty (F(1,90)=3.44,p<.001; F((1,90)=8.62,p<.004, respectively). If thereis a lack of eyewitness identification or weak tangible evidence and the defendant has denied responsibility for the attempted murder, his chances of being acquitted will be increased (means=eyewitness & confession-1.05, no eyewitness& confession-1.02, eyewitness & no confession-1.09, no eyewitness & no confession-1.56; strongtangible evidence& confession-1.03, weak tangible evidence & confession-1.03, strong tangible evidence & no confession-1.22, weak tangible evidence& no confession-1.44).

The first of the effects not parallel to those in the rape case, suggests that defendants charged with attempted murder are expected to fare worse overall if there is any forensic evidence found at the scene of the crime. If there is any forensic evidence, prosecutors perceive a greater likelihood of conviction (means=1.22 and 1.16, respectively).

There are also two, two-way interactions that are perceived to be associated with the likelihood of acquittal for attempted murder, but did not emerge as predictive of outcome for the crime of rape. These interactions can be interpreted in accord with the pattern of many of the findings of this study. First, there is an effect such that the presence/absence of a confession has a statistically significant effect only if the forensic evidence weakly associates the defendant with the offense (F(1,90)=6.59,p<.012). If the gun associated with the offense can be identified as the weapon which fired the bullets into the victim, whether or not the defendant has confessed has little effect. However, if the gun can only be declared to be consistent with the weapon that fired the bullets, then if the defendant denies commiting the crime, chances of acquittal are increased (means=confession & strong association-1.04, no confession & strong association-1.19, confession & weak association-1.03, no confession & weak association-1.4).

Secondly, there is an interaction of the associative strength of tangible evidence and forensic evidence such that strength of the forensic evidence has a statistically significant effect only when the tangible evidence is weak (F(1,90)=9.87,p<.002). When the police have weak tangible evidence (a cap which would fit the defendant) then the fact that the forensic evidence weakly links the defendant to the crime is expected to increase the likelihood of acquittal (means= tangible evidence & strong forensic association-1.15, weak tangible evidence & strong forensic association-1.08, strong tangible evidence & weak forensic association-1.12, weak tangible evidence & weak forensic association-1.32).

Discussion Although differences in the relative importance of various types of evidence appear to have emerged with respect to the charging of offenses, no such differences are found in expectations of conviction/acquittal. For the rape and attempted murder, all four types of evidence are perceived as important determinants (in combination with each other) of the likelihood of conviction.

Type of Sentence

Prosecutors were asked to indicate, for those cases where they expected that a defendant would enter a guilty plea or be found guilty at trial, whether they expected that the defendant would receive a sentence of probation, jail, or a prison term. As can be seen in Table 10.14, the percentage of defendants expected to receive prison sentences was so high that statistical analyses were not meaningful for this measure.

Table 10.14

Percentage Distribution of Type of Sentence

	% Probation	% Jail	% Prison
Rape	1%	0%	99%
Attempted Murder	4%	4%	92%
Robbery	4%	2%	94%
Burglary	7%	1%	92%

Length of Sentence

For those defendants who were expected to receive a sentence of incarceration in prison, prosecutors were asked to indicate the length of term the defendant was likely to receive. The number of years indicated by the prosecutors was used as the dependent measure. None of the types of evidence appeared related to length of sentence received by an individual convicted in the attempted murder case. Although there were a sufficient number of responses for an analysis of the rape case, the distribution of responses into only 12 of the 20 cells of the between subjects design mitigates against the conduct of any statistical analyses of this crime.

Robbery Case   Length of sentence received for the robbery case appears to be a function of two, three-way interactions. The first is an interaction of confession, strength of tangible evidence and strength of association of the forensic evidence (F(1,56)=11.51,p<.001), and the second, an interaction of confession, tangible evidence and eyewitness identification (F(1,56)=4.66,p<.035).

Investigation of the first of these three-way interactions by simple effects tests indicates that there is a statistically significant effect of strength of association between the defendant and the crime created by the forensic evidence only within conditions of weak tangible evidence (F(1,59)=5.66,p<.021) and only when there has been no confession. When the prosecution is lacking all three types of evidence, expected sentence length appears to be reduced by about three years. Adjusted cell means associated with this interaction are presented in Table 10.15.

Table 10.15

Adjusted Cell Means for Sentence Length:
Interaction of Confession, Tangible Evidence and Strength of Association of Forensic Evidence for Robbery Case

	Confession			
	Yes		No	
	Tangible Evidence			
	Strong	Weak	Strong	Weak
Forensic Evidence Association				
Strong	8.5	6.8	8.9	7.3
Weak	7.8	7.2	8.5	4.7

Codes: numbers represent years of incarceration

The reader will recall that Jacoby et al.'s (1982) research, had suggested that prosecutors expected length of sentence to be affected by strength of evidence. This is supported for at least the crime of robbery, by the pattern of means in Table 10.15. When the evidence is weakest, the defendant is expected to receive the shortest sentence. Jacoby et al., however, also concluded that defendants who have confessed to the crime receive shorter sentences. This conclusion differs from our results. In this study it appears that defendants become eligible for shorter sentences when there is no confession and there is an absence of, or prosecutorial weakness, in other types of evidence.

The second of the three-way interactions is similar in pattern to the first in that simple effects tests reveal an effect of eyewitness identification only within conditions of weak tangible evidence and when there is no confession (F(1,59)=11.88,p<.001). A lack of eyewitness identification, when the tangible evidence against the defendant is only a gold chain of the same style as that taken from the victim, and there is no confession by the defendant greatly reduces expected sentence length. The adjusted cell means for this interaction are presented in Table 10.16. As in Table 10.15, they confirm Jacoby et al.'s finding that strength of evidence is expected to influence sentence length and contradict their conclusion that confessions are associated with reductions in sentence.

Table 10.16

Adjusted Cell Means for Sentence Length:
Interaction of Confession, Tangible Evidence,
and Identification for Robbery Case

	Confession			
	Yes		No	
	Tangible Evidence			
	Strong	Weak	Strong	Weak
Eyewitness Identification				
Yes	7.73	7.58	8.17	7.68
No	8.01	6.26	8.25	3.99

Codes: numbers represent years of incarceration

Burglary Case One three-way interaction emerges as predictive of sentence length in the burglary case. The three-way interaction involves: presence/absence of a confession, availability of forensic evidence and eyewitness identification (F(1,55)=10.79,p<.002). Adjusted cell means, presented in Table

10.17, suggest the same pattern of effect as observed in the robbery case: the impact of eyewitness identification is greatest when there has been no confession and there is no forensic evidence. Simple effects tests support this conclusion, there is a statistically significant effect of presence/absence of an eyewitness when there is no forensic evidence, and no confession (F(1,55)=4.44,p<.04).11 As for the robbery offense, the lack of an eyewitness who can identify the defendant as the burglar, combined with a lack of forensic evidence and no confession is expected to reduce sentence length. There is support here, as in the robbery case, for Jacoby et al.'s conclusion about the impact of strength of evidence on sentence length. And again, there is a failure to support Jacoby's finding that defendants who have confessed will receive shorter sentences.

Table 10.17

Adjusted Cell Means for Sentence Length:
Interaction of Confession, Availability of Forensic Evidence
and Identification for Burglary Case

	Confession			
	Yes		No	
	Forensic Evidence			
	Yes	No	Yes	No
Eyewitness Identification				
Yes	4.5	3.9	4.6	5.0
No	4.2	4.2	4.3	3.1

Codes: numbers represent years of incarceration

<u>Discussion</u> It is interesting to note the similarity in the

perceived determinants of sentence length for the crimes of robbery and burglary. For both offenses, it is in the absence of a confession, and the presence of only weakly associative tangible evidence that the location and/or associative strength of forensic evidence or absence of eyewitness identification affects sentence length. For both crimes, it is the situation when it is least certain that the defendant is in fact responsible for the offense that the shortest sentences are expected.

Conclusion

Several major themes emerge from the multitude of significant results discussed in the previous section and summarized in Table 10.18. Perhaps the most obvious is the virtual non-existence of main effects. That is, the results are clear in proclaiming that the four investigated types of evidence act in combination to influence prosecutorial decisions and judgments. Previous investigations of prosecutorial decision processes have looked for main effects (either without any statistical analysis or within the context of a regression analysis that did not include interactive terms),(Kaplan, 1965; Miller, 1970; Williams, 1978; McDonald, Rossman & Cramer, 1979; Jacoby et al., 1982), and found them. However, because those studies did not look for interactions, the more complicated manner in which evidence may combine in prosecutorial decisionmaking has not been revealed. Attorneys have often driven social scientists to despairwith their response to such questions as, "How important is tangible evidence?" for usually they have replied, "Well, it depends on

Table 10.18

Summary of Statistically Significant Effects

Charging Decision

Rape	Murder	Burglary	Robbery
Tan Ev x For Ev Assoc	Eye Id x For Ev Pres x Conf	N/A	N/A
Tan Ev x Eye Id x Conf			

Plea/Trial Decision

Rape	Murder	Burglary	Robbery
Tan Ev x For Ev Loc x Conf	Conf	Conf x Tan Ev x For Ev Assoc	Eye Id x For Ev Pres
	Eye Id x For Ev Pres	Conf x For Ev Pres x Eye Id	
		Tan Ev x For Ev Assoc x Eye Id	

Type Plea

Rape	Murder	Burglary	Robbery
N/A	N/A	Conf x Eye Id	N/A
		Conf x For Ev Assoc	
		Conf x For Ev Loc	
		Tan Ev x Eye Id	

Table 10.18 (cont'd)

Summary of Statistically Significant Effects

Type Trial

Rape	Murder	Burglary	Robbery
For Ev Assoc	N/A	N/A	N/A
Eye Id			

Trial Outcome

Rape	Murder	Burglary	Robbery
For Ev Assoc	N/A	N/A	N/A
Eye Id x Conf			
Tan Ev x Conf			

Acquittal/Conviction

Rape	Murder	Burglary	Robbery
Eye Id x Conf	Eye Id x Conf	N/A	N/A
Tan Ev x Conf	Tan Ev x Conf		
Tan Ev x Eye Id x For Ev Loc	For Ev Pres		
	For Ev Assoc x Conf		
	Tan Ev x For Ev Assoc		

Sentence Length

Rape	Murder	Burglary	Robbery
N/A	none	Conf x For Ev Pres x Eye Id	Conf x Tan Ev x For Ev Loc
			Conf x Tan Ev x Eye Id

the evidence." That is exactly what the results of this research demonstrate: the effect of any one type of evidence on prosecutorial decisions or judgments "depends." It depends on a multitude of other factors in the case. If we are to understand the prosecutorial decisionmaking process, we have to look for and interpret the interactions of types of evidence.

In this context there is a statistical truism that bears repeating--main effects have no meaning in the presence of interactions. There were many statistically significant main effects that emerged in the analyses of the results of this study. But they were not reported, because they were qualified by interactions, and were therefore, meaningless. Simple and appealing as it is to conclude, for example that forensic evidence will increase the likelihood of charging, such a conclusion is untrue and unwarranted if it is qualified by an interaction. The current study makes clear that we no longer have any excuse for searching only for main effect relationships between evidentiary variables and decisionmaking. As prosecutors have told us, their decisions can be multiply determined, and we must be prepared to deal with that complexity.

Because prosecutors can be influenced by combinations of evidence does not necessarily mean that their actual case decisions will reflect that complexity. If, as appears to be the case, prosecutors receive cases characterized by only a limited number of types or combinations of evidence, only main effects may emerge from an analysis of case file data. The interactions which guide hypothetical decisions will not appear. Thus, an analysis of hypothetical cases allows insight into the richness of prosecutorial thinking and the analysis of actual cases informs us of the manner in which cases are actually treated. There is a need to look for interactions in both types of data, but interactive effects may only be observed when prosecutors are presented with a full range of hypothetical cases. The main effects associated with actual cases may predict how the "usual" case will be handled. The interactions which emerge in the analysis of hypotehtical case data may allow prediction of how <u>any</u> case will be handled.

The analysis of the hypothetical cases also makes clear that of the four types of evidence considered in this research, no one emerges as preeminently important. A simple tally of the number of times each type of evidence is involved in a significant effect reveals about equal frequencies. However, the variation in the interpretation of the interactions of types of evidence suggests a need for further research into the exact nature of prosecutorial decisionmaking.

Another major finding of the study is the repeated use of a disjunctive decision rule by prosecutors. It is only in the absence of two or three kinds of evidence that they believe themselves unwilling to file, unlikely to take the case to trial, unlikely to get a long sentence, etc. As long as they have even one factor in their favor, they exhibit an aggressive stance towards the case.

NOTES

1. These meetings presuppose that the testimony concerns other than a routine identification of drugs. If the testimony is to be "run-of-the-mill," prosecutors in all jurisdictions are content to merely check with the forensic expert a few moments before trial.

2. The methodology is similar to that of Jacoby et al. (1982). The current study, however, investigated a complete factorial design of 40, rather than an incomplete factorial design of 254 criminal cases varying in type and seriousness. Prosecutors were therefore asked to evaluate and respond to only eight, rather than 30 cases.

3. Unlike Jacoby, we did not ask respondents to indicate prosecution priority. The factors which Jacoby had found to influence this decision, but not the decision to charge (criminality of the defendant, corroboration by two or more police or civilian witnesses the defendant admits to involvement (not to be confused with confession) and use of a gun in the crime, were not manipulated in our study, so there seemed little reason to ask for this measure.

4. Although the analysis of covariance can be computed on extremely small n's and the computer program we employed would not compute (so we do not report) redundant effects caused by missing cells, we decided not to report any effects for tests based on fewer than 40 subjects. When the more than 40 subjects are not distributed across all 20 conditions, this is reported in footnotes.

5. Adjusted cell means are reported throughout, ie. we have presented means adjusted for the two covariates of attorney experience. Because the means are adjusted for these covariates it is possible for reported means to be greater than or less than the scores entered into the analyses. Thus there is no error when we report a mean less than 1 or greater than 3 when only values of 1 to 3 could have been entered into the analysis.

6. Because the independent variable of presence/absence of a confession was manipulated within subjects, there is no way to conduct simple effects tests to explore whether presence/absence of a confession exerts an effect within specific levels of the other independent variables. Thus, in reporting the results of this study, whenever the variable of confession is involved in an interaction, if that interaction has been interpreted such that another independent variable has an effect when there is (or is not) a confession, simple effects tests are conducted within conditions where there was a confession and conditions where there was not a confession. Whenever the interaction is interpreted such that presence/absence of confession has an effect whenever there is (or is not) eyewitness testimony, tangible evidence, etc. simple effects tests are not conducted or reported.

7. The reader may note that the degrees of freedom associated with this, and subsequent tests are often considerably less than what would be expected on the basis of a sample of 115 prosecutors. Response frequency was often reduced by the failure of prosecutors to reply to the entire questionnaire. The most serious lost of responses occurred through the manipulation of the variable of confession. We asked prosecutors to indicate the most likely path of case disposition, first, given that the defendant had confessed, and second, given that the defendant had denied committing the crime. Often prosecutors failed to complete the second question. Although we had partial data for these persons, difference scores could not be computed for the repeated-measures analysis and so these respondents were lost from the analysis.

8. There were only 48 respondents, distributed across 17 of the 20 cells of the design whose answers to this question were suitable for analysis. Therefore, the reader may wish to be cautious in accepting these five reported interactions. There was a sixth, two-way interaction of eyewitness identification by presence/absence of forensic evidence (F(1,29)=5.12,p<.031) that is not reported in the text. Although it is statistically significant, examination of cell means provides no insight into why this effect should have emerged. We have therefore chosen not to present it.

9. The 42 respondents to this question are distributed over 15 conditions.

10. The 42 respondents to this question are distributed over 15 conditions.

CHAPTER XI

Summary and Policy Implications

Summary of Major Findings

This multimethod examination of the uses and effects of scientific evidence in the criminal courts has yielded a variety of data, all with their own strengths and weaknesses. The major findings drawn from the analysis and interpretation of these data are summarized below.

Crime Laboratory Caseloads

There are more than 300 crime laboratories in the nation, most of which (80%) are located within law enforcement agencies. Approximately two-thirds of the caseloads of these laboratories are in the offense categories of drug possession/sale and driving while intoxicated. Only about one-quarter of cases examined concern evidence from personal and property offense categories. Examiners within these laboratories typically examine about 350 cases per year, which varies as a function of the type of jurisdiction served and type of evidence submittted by law enforcement agents.

Rates of Usage of Evidence

Laboratory reports of evidence examined are found typically in about one-quarter to one-third of felony case files; more than half these reports, however, concern the identification of controlled substances. Fingerprint evidence is the next most common form of scientific evidence in cases going to court, followed (to a much lesser extent) by firearms, blood and biological fluids, and trace evidence. These patterns suggest that crime laboratories are most often requested to analyze evidence that is mandatory for prosecution (as with drugs); next, they are most likely to examine evidence which is readily recognizable and that which can conclusively link a defendant with a crime (as with fingerprints).

With the rapid increase in the number of crime laboratories in recent years, and a judicial climate more receptive to scientific evidence, we hypothesized that rates of usage of scientific evidence would have increased in recent years. To the contrary, we find that rates have not changed appreciably over the time period of our study (1975-1981). Only in one jurisdiction (Peoria, IL) have rates of usage increased in more than a single offense category. It appears, too, that drug analyses occupy as large a share of forensic evidence input to the criminal courts in 1981 as they did in 1975.

Charging/Mode of Disposition

Prosecutors believe forensic evidence to be relatively unimportant in decisions to charge defendants, relying instead on the testimony of police officers and eyewitnesses. A major exception would be the filing of charges in drug related offenses. Prosecutors state laboratory results are not usually available at the time charging decisions have to be made. Our hypothetical case review showed that prosecutors believe that it is the absence or weakness of several forms of evidence (including forensic) that lead to charges being declined; otherwise, the defendant would be charged. Usually, too, it is in the absence or weakness of two or more types of evidence which increase the likelihood of a plea. In fact, our case file analysis shows that the overwhelming majority (90%) of cases are resolved through pleas.

Conviction/Nonconviction

A very high percentage (70 to 80%) of charged felons are convicted. Admissions and incriminating statements are consistently the most important class of evidence leading to conviction. Tangible evidence also proves to be a significant predictor in the majority of study sites. Forensic evidence exerts a "main effect" on case outcome in only a single jurisdiction -- Peoria. In Kansas City, it is the absence of forensic evidence in combination with no defendant statements which pushes cases toward dismissal or acquittal. Our hypothetical case review further affirms this latter trend, indicating prosecutors believe it is principally the absence of forensic evidence usually in combination with the absence of a confession or other weak evidence, which leads cases to acquittal.

Charge Reduction

Defendants are convicted of reduced charges in only about one-fifth of all prosecutions. It is principally the defendant's criminal record, prior relationship to the victim and how the case is resolved (plea or trial) which are most strongly associated with conviction charge. Forensic evidence emerges as a major factor influencing charge reduction in only one jurisdiction. In Oakland, the presence of a laboratory report associating the defendant with the crime significantly increases the likelihood of a conviction to the top charge. Where forensic evidence interacts with another evidentiary variable (Kansas City), it is where the defendant offers an alibi, and consequently weakens the prosecution's case, that the presence/absence of a forensic report makes a significant difference. The hypothetical cases are not dissimilar in that it is in the absence of other forms of evidence where the forensic variable can make a difference: weak associative forensic evidence generally leads to pleas to reduced charges.

Sentencing

Nonevidentiary factors are the predominant variables explaining if convicted defendants will be sentenced to prison and for what period of time. The more serious the crime, a prior criminal record, and being convicted of the top charge are all associated with sentences of incarceration. Although typically no type of evidence is found to influence the severity of sanctions given defendants, there is one major exception: forensic evidence. In two locations, the presence of laboratory reports leads to higher rates of incarceration.

It is upon length of incarceration, however, where forensic evidence seems to make the greatest difference. In four of the five study locations, the presence/absence of laboratory reports is associated with longer/shorter periods of incarceration. The forensic evidence variable interacts with several other variables in our hypothetical case analyses in a predictable fashion: weak forensic evidence in combination with other forms of evidence (statements, tangible clues) which leads to reduced expectations of sentence length.

The relationship between forensic evidence and sentence length was completely unexpected; our survey of lab directors found that forensic examiners believe forensic evidence has its major impact in determining guilt or innocence and that its impact on sentencing to be inconsequential. The fact that scientific evidence is found to be associated with sentence severity may be due to the fact that this evidence serves as particularly graphic and convincing corroboration of the prosecution's case, reduces any doubt in the judge's mind concerning the defendant's guilt, and frees the sentencing judge to give the defendant the maximum prison term.

Trial

Scientific examiners testify in a very small percentage of trials (less than 25%) and of cases where they've examined evidence (about 10%). Nevertheless, examiners and prosecutors believe forensic testimony to be an extremely powerful form of evidence. Prosecutors are fearful of prosecuting a case before a jury without forensic testimony, if they believe the jury expects it. This was confirmed in our survey of jurors who found scientific experts to be the most persuasive witnesses they heard at trial.

Whether jurors truly understand scientific testimony and utilize it in making their decisions is another issue. Laboratory scientists have little faith in jurors' ability to comprehend scientific evidence. Prosecutors believe jurors do have the potential to understand scientific results, but that they need a capable person to interpret the technical material for them. Prosecutors think it is <u>they</u> who must function in this role. Jurors, themselves, say they understand scientific testimony as well as, and sometimes better than, other evidence presented at trial. Juror <u>understanding</u> of forensic evidence proves to be a significant variable in predicting trial outcome -- the better the understanding, the greater the likelihood the defendant will be found guilty. <u>Persuasiveness</u> of crime laboratory experts is a significant factor in predicting the ease or difficulty with which jurors reach their decisions; as experts are perceived as being more persuasive, jurors have an easier time making their decisions. that they don't actually put it to <u>use</u> in rendering verdicts. Our analyses suggest jurors are more inclined to rely upon the testimony of police officers and lay witnesses in making their decisions.

Defense attorneys feel at a great disadvantage when it comes to utilizing scientific evidence and usually will not attempt to attach the evidence or the prosecution's expert head-on, but will rather try to "explain away" the physical evidence by supplying a reasonable and lawful explanation for its presence.

<u>Policy Implications</u>

In this final section we attempt to answer four fundamental questions central to the research project and which have implications for the role of forensic science services in the criminal justice system.

1. Why haven't the rates of usage of forensic evidence increased?
2. Why does forensic evidence have impact in some jurisdictions but not in others?
3. Is the principal motivation behind usage of forensic evidence its perceived <u>contribution</u> to the proof of guilt in criminal cases or is it the fear that its <u>absence</u> may result in the loss of an otherwise "winnable" case?
4. What priority should be placed on forensic evidence by law enforcement authorities vis-a-vis other forms of evidence?

Rates of Usage

Our examination of case file data in six jurisdictions over the 1975-1981 time period reveals that rates of usage of scientific evidence have not increased appreciably. What accounts for this? Before attempting to answer this question we should first explain why we think this usage issue is important. Fundamentally, the impact of such evidence in the criminal justice process is limited by the <u>extent</u> to which it is used. Even though it may have impact in cases in which it is used, if it is used in only a small minority of cases,, then its effect on criminal case processing <u>en toto</u> will be limited.

Insofar as answering why jurisdictions are not using forensic evidence more in 1981 than they were in 1975, we must recognize that the availability of forensic evidence in court depends upon the resources and practices of many other agencies and actors in the criminal justice system. Police officers and detectives must call for the services of evidence technicians to search for physical clues; there must be a sufficient number of crime scene officers to respond rapidly to these calls for service; technicians must have the skills and resources to know what to collect and how to collect it; standards must be gathered from suspects to be compared with evidence retrieved from the scenes of crimes; laboratories must have the physical and human resources to examine the evidence; and prosecutors must be sufficiently knowledgeable and comfortable with scientific results to integrate such findings into their cases. If there are deficiencies at any stage in this process, scientific evidence may not be used. While the desire to improve the utilization of forensic evidence is important, unless the resources are forthcoming and personnel are properly trained, the goal can never be realized.

Only in the jurisdiction of Peoria have rates of usage of scientific evidence increased across several offense categories. We think it is not coincidental that Peoria has also experienced the most dramatic increase in crime scene and laboratory resources from the early 1970's until the present day. The regional crime laboratory has doubled in size during this period and the crime scene unit of the police department experienced similar expansion and upgrading of services. None of the other jurisdictions in our study has experienced comparable growth in this period (1975-1981).

When we consider laboratory resources, we must remember that the court (prosecutor) has little or no voice in budgetary decisions of the laboratory. Crime laboratories have experienced chronic problems in obtaining adequate funding from their parent police agencies, receiving on average less than one-half of one percent of the police budget. These limited funds, the more fundamental economic woes of state and local governments, the drying up of federal (LEAA) monies to underwrite improvements or expansion, and the lack of interest by the police in the disposition of arrests as they move through the court system, have all contributed to this steady-state condition.

A second limiting factor at the laboratory level continues to be the dominance of drug evidence. In many laboratories around the nation any growth in personnel or scientific resources has been justified by citing the growing influx of drug and narcotic evidence. As was explained earlier in this report, drug cases are one of the few offense classifications which require a scientific analysis for prosecution. Laboratories fight a continuing battle to manage this drug caseload so that it does not displace or overwhelm their ability to respond to other forms of evidence.

Consequently, from a prosecutorial perspective, there may exist a favorable climate and general receptivity for greater use of scientific evidence, but there have been few specific forces to require it. The prosecutor is critical at this point since it is he/she who determines what evidence is to be used in the determination of guilt or innocence. Prosecutors are faced with rising caseloads and probably are no better trained scientifically today than they were ten years ago. They may attend periodic seminars and be exposed to laboratory innovations, but the practice today is similar to that of yesterday; they will "bone up" on forensic techniques only when a particular case demands it. There exists a feeling among prosecutors that crime laboratories are understaffed and overworked, and that they should only request analyses of evidence where it is essential. Forensic laboratories are viewed as a limited resource -- one which should not be tapped unless necessary and one which can supply an expert for court testimony only under extraordinary circumstances. Defense attorneys, similarly, are no better trained and very rarely are in a position to introduce or request more scientific evidence. The same holds true for the judiciary where few judges have taken an active role in seeing that forensic evidence is used more regularly in the courtroom.

Nevertheless, the defense bar and the judiciary are two units within the judicial process which can play very important roles in seeing that greater use is made of forensic evidence. Well-prepared defense attorneys and judges can pressure police and prosecutors to gather and present relevant scientific evidence and require that laboratories maintain the highest standards with respect to the examination of evidence and the reporting of results. In fact, the prosecution, defense and judiciary should join together to lobby for improved laboratory resources so that all relevant evidence is gathered, examined and reported in a timely manner.

Why Does Forensic Evidence Have Impact in Some Jurisdictions but Not Others?

As with the previous question, there is no simple answer. By rights we must take stock of the entire criminal justice process in local communities and address such questions as the fitness of technicians to search crime scenes and gather evidence; the skill and ingenuity of laboratory examiners in processing evidence; and the ability of prosecutors to effectively question expert witnesses and to bring out the favorable aspects of the evidence. A multijurisdictional study such as ours, however, is not equipped to look in depth at the criminal justice systems in each location. There are, however, some fundamental differences detected in our review of case files and interviews of laboratory scientists, police officers and judicial personnel which shed some light on this question.

Our ability to explain variations in the conviction rate of criminal cases depends, in part, on the distribution of case outcomes. As was discussed in depth in Chapters VIII and IX, most of our jurisdictions have such high rates of conviction that it is extremely difficult to account for variations in case outcome. It was in the cities of Peoria and Kansas City, where conviction rates are lowest, that we are moderately successful in predicting case outcome. It is also in these two cities where our several evidentiary factors account for much of this explanation. Therefore, it is in those locations where police and prosecutors do the least screening prior to charging that the evidence accounts for more of the variation in case disposition. It was also in Peoria, and to some degree Kansas City, where the forensic evidence proves to be a significant predictor in explaining the conviction/nonconviction decision. Conversely, it was in the two jurisdictions (Oakland and New Haven) where the greatest amount of pre-charge screening of cases takes place, that conviction rates are highest and also where none of the evidentiary variables (besides defendant statements) emerge as important predictor variables.

Is there anything about the forensic evidence results in Peoria and Kansas City which would distinguish them from the other locations? Although their overall reliance upon scientific evidence is not that different from our other study sites, we do find that these two locations employ fingerprint and firearms evidence to a greater degree than other jurisdictions and, more importantly, they have the greatest fraction of lab results which fall into the "associative" category. Prosecutors in Peoria and Kansas City receive laboratory results which associate the accused with the victim or the crime scene a higher percentage of the time than prosecutors in the other locations. It is important to not, too, that it is these same categories of fingerprints and firearms which can conclusively associate a person with another person, location, tool or weapon. Accordingly we might conclude that it is the conclusive linkage of forensic evidence which makes the greatest difference in judicial decision making.

From a offense specific perspective we recall that it is in the offenses of burglary, theft, rape and murder that forensic evidence seems to make the greatest difference in conviction. With respect to the crimes of burglary and theft we know that fingerprints are the dominant form of forensic evidence, the evidence category where Peoria and Kansas City are distinctive. For the crime of rape we found that Peoria returned the highest percentage of semen reports where the laboratory was also able to associate the semen with the defendant (employing blood group substances in the semen). The other cities primarily identified the semen but seldom were successful in performing the associative, blood grouping work. Peoria and Kansas City are also distinctive in the prosecution of rapes in that they more often report the results of hair comparisons than other locations. The hair evidence also may serve to associate the defendant with the crime (victim), albeit in a tentative fashion.

Our interviews also indicated that prosecutors are simply more comfortable using scientific evidence in a jurisdiction like Peoria than in a more pressurized, high volume location like Chicago-Cook County. The attitude in Peoria appears to be a reflection of a lighter caseload and greater opportunity for personal interaction among attorneys, crime scene officers and laboratory examiners. Since examiners apppear in about one in four cases which go to trial in Peoria, prosecutors have much more face-to-face contact with scientists and more experience in the direct examination of experts and the presentation of results to judges and juries.

A comment is also in order regarding the effect of scientific evidence on the sentencing of convicted defendants. The reader will recall that the presence of forensic evidence was associated with longer sentences while controlling for other variables in four of the five locations. It appears then that not all convictions are the same; that is, the <u>certainty</u> of the defendant's guilt can make a difference in how severe a sanction a judge will award a defendant. Although such a finding was not expected, it is nonetheless an important one which we feel should be recognized in any discussion of scientific evidence and the processing of criminal defendants.

Is the Use of Forensic Evidence Voluntary or Obligatory?

Do prosecutors seek out scientific evidence for what it may contribute to their cases or do they feel obliged to use it for fear they may loose the case if it is absent? Although our case file case sheds little light on this issue, our interviews and hypothetical cases in Chicago suggest that both perspectives on scientific evidence are important considerations.

As often as prosecutors would stress the added value of having physical or scientific evidence in a case, they would note the potential danger of proceeding with a case absent scientific evidence, yet where it might be expected. Judges and jurors seem to be persuaded by the argument that scientific evidence should have been found in a given case and its absence indicates an inadequate investigation by the police and prosecutor which, in turn, may constitute sufficient grounds to acquit the defendant.

Probably more striking are the results of our hypothetical cases which demonstrated that prosecutors believe that it is either the absence of scientific evidence altogether, or its presence in a weakened form, which can lead to a less desirable case outcome. The classic circumstance is a situation where the prosecution already lacks a confession or an eyewitness to the crime but also lacks tangible or scientific clues where they think the case will be lost.

We conclude that such an attitude toward scientific evidence can also be cited as a reason why forensic evidence is not being used more than at present. If the predominant reason for the use of scientific evidence is to protect one's self against a charge of not conducting a thorough investigation, then there may be less support for the active growth and development of forensic services than in a situation where the evidence was seen as infomation which could help <u>win</u> cases.

We believe some users of forensic evidence support its use because it is the "professional" thing to do. Others cast it in even more pragmatic terms, "If that's what the jury expects, and it can help my case, then that's what I'll give them." This attitude may prevail even though the prosecutor believes other evidence in the case to be more compelling. This orientation is also related to a concern on the part of some prosecutors that they really don't understand the scientific procedures used to examine evidence and find working with experts to be difficult and frustrating. Such attitudes don't promote the increased utilization of scientific evidence, but rather perpetuates the almost mystical quality of forensic findings and its nonacceptance by laypersons.

Where Should Law Enforcement Agents Concentrate Their Evidence Gathering Resources?

After all is said and done, can we recommend where law enforcement officials should concentrate their evidence gathering efforts? Is it possible to conclude that one form of evidence is more important than others? How does scientific and tangible evidence stack up against eyewitnesses and confessions?

Our case file analysis indicates that defendant statements (confessions) are the most critical form of evidence in explaining convictions. Tangible evidence is next most important, following by scientific evidence andfinally eyewitnesses. These conclusions are tempered by the observation that the eyewitness variable failed to capture the credibility of witnesses and that in aggregate our collection of independent variables failed to accounnt for substantial variation in the outcomes of sampled cases. As noted earlier, however, these cases were so strong to begin with that, with the exception of defendant statements, *none* of the evidentiary facts make much difference.

In the two jurisdictions with the least amount of pre-charge screening, the ability to predict case outcome is substantial and *all* classes of evidence (including forensic) emerge as important predictors. When we approach sentencing, while general emphasis moves to nonevidentiary factors in the case, the forensic evidence stands out as the single most important type of *evidence* influencing the severity of sanctions. We interpret this as an indication that judges are more likely to punish severely where forensic evidence is available. While we cannot, therefore, forecast that greater usage of forensic evidence will increase conviction rates, its increased utilization might likely lead to the imposition of more severe penalties.

Our second recommendation is for justice officials to devote greater attention to the content of laboratory findings and their proper interpretation. Throughout the examination of our data, and particularly at the point of sentencing, we find decision makers to rely more on the presence of any type of laboratory report than its content. Often, reports which linked the defendant with the crime were less significant that the fact that a report (of any type) was introduced. Although findings which identify substances and "reconstruct" a criminal offense can be important, we feel the more critical question to be, "Is the defendant involved?" Perhaps it is because such a small percentage of laboratory reports actually do address the question of the defendant's association with the crime that such results seem to have such little impact upon case disposition and why legal practitioners are not more reliant upon them.

Prosecutors and jurists need to devote more attention to understanding what scientific examinations can yield and how to present those results in an accurate and nonbiased fashion. More training, greater exposure to scientists and fewer organizational barriers to reach the laboratory would be a significant beginning. Prosecutors should not look to laboratories as "insurance", as a means to save a losing case, or merely to comply with judge or jury expectations. Such practices distort and demean the potential utility of such evidence and need to be replaced by procedures which allow for the full consideration of such information in all cases where such evidence is available.

REFERENCES

Adler, F. (1973) "Socioeconomic Factors Influencng Jury Verdicts," 3 New York University Review of Law and Social Change 1.

American Academy of Forensic Sciences (1984) Code of Ethics. Colorado Springs, CO.

Appelbaum, M. and E. Cramer (1974) "Some Problems in the Nonorthogonal Analysis of Variance," 81 Psychological Bulletin 335.

Benson, W. et al. (1970) Systems Analysis of Criminalistics Operations. Kansas City, MO: Midwest Research Institute.

Bernstein, I. et al. (1977) "Societal Reactions to Deviates: The Case of Criminal Defendants". 42 American Sociological Review 743.

Black, D. (1971) "The Social Organization of Arrest," 23 Stanford Law Review 1087.

Boland, B. et al. (1983) The Prosecution of Felony Arrests, 1979. Washington, D.C.: Bureau of Justice Statistics.

Brereton D. and J. Casper (1981) "Does it Pay to Plead Guilty? Differential Sentencing and the Functioning of Criminal Courts," 16 Law and Society Review 45.

Casper, J. (1972) American Criminal Justice: The Defendant's Perspective. Englewood Cliffs: Prentice Hall.

Cole, G. (1970) "The Decision to Prosecute," 4 Law and Society Review 331.

Curry, A. (1965) "Science Against Crime," Science and Technology, 47.

Decker, J. (1982) "Expert Services in the Defense of Criminal Cases: The Constitutional and Satutory Rights of Defendants," 51 Univ of Cincinnati Law Review 574.

Ebbesen, E. and V. Konecni (1975) "Decision Making and Information Integration in the Courts: The Setting of Bail," 32 Journal of Personality and Social Psychology 805.

Ebbesen, E. and V. Konecni (1980) "On the External Validity of Decision-Making Research: What Do We Know About Decisions in the Real World?" in T. S. Wallsten (ed.) Cognitive Processes in Choice and Decision Behavior. Hillsdale, NJ: Lawrence Erlbaum.

Eisenstein, J. and H. Jacob (1977) Felony Justice: An Organizational Analysis of Criminal Courts. Boston: Little, Brown.

Feeney, F. et al. (1983) Arrests Without Conviction: How Often They Occur and Why. Washington, D.C.: National Institute of Justice.

Florek, K. and D. Smith (1984) Armed Robbery in Chicago. Chicago: Chicago Crime Commission.

Fong, W. (1969) "Criminalistics and the Prosecutor," Volume I, Section B, Chapter XIV: The Prosecutor's Sourcebook, J. George and I. Cohen, (eds.). New York: Practicing Law Institute.

Forst, B. et al. (1977) What Happens After Arrest? A Court Perspective of Police Operations in the District of Columbia. Washington, D.C.: Institute for Law and Social Research.

Forst, B. and K. Brosi (1977) "A Theoretical and Empirical Analysis of the Prosecutor". 6 Journal of Legal Studies 177.

Forst, B. et al. (1982) Arrest Convictability as a Measure of Police Performance. Washington, D.C.: INSLAW.

Gianelli, P. (1980) "The Admissibility of Novel Scientific Evidence: Frye V. United States, A Half-Century Later," 80 Columbia Law Review 1197.

Hagen, J. (1974) "Extra-Legal Attributes and Criminal Sentencing: An Assessment of a Sociological Viewpoint". 8 Law and Society Review, 357.

Heumann, M. (1977) Plea Bargaining: The Experiences of Prosecutors, Judges and Defense Attorneys. Chicago: University of Chicago Press.

Imwinkelreid, E. (ed.) (1981) Scientific and Expert Evidence (2nd Edition) New York: Practising Law Institute.

Jacoby, J. et al. (1982) Prosecutorial Decisionmaking: A National Study. Washington, D.C.: U.S. Department of Justice.

Joseph, A. (1968) Crime Laboratories -- Three Study Reports. Washington, D.C.: U.S. Department of Justice.

Kalven, H. and H. Zeisel (1966) The American Jury. Boston: Little, Brown.

Kaplan, J. (1965) "The Prosecutorial Discretion-A Comment," 60 Northwestern University Law Review 174.

Keefe, J. (1978) "The Defense Perspective," in Forensic Science Services and the Administration of Justice, Summary Report of a Special National Workshop. Washington, D.C.: National Institute of Law Enforcement and Criminal Justice.

Kirk, P. (1953) Crime Investigation. New York: Interscience.

Konecni, V. and E. Ebbesen (eds.) (1982) The Criminal Justice System: A Social-Psychological Analysis. San Francisco: W. H. Freeman Co.

Kruttschmidt, C. (1980) "Social Status and Sentences of Female Offenders," 15 Law and Society Review 247.

Lagoy, S. et al. (1976) "An Empirical Study of Information Usage for Prosecutorial Decision Making in Plea negotiations". 13 American Criminal Law Review 435.

Lassers, W. (1968) "Proof of Guilt in Capital Cases -- An Unscience," 58 Journal of Criminal Law, Criminology and Police Science 310.

Mather, L. (1974) "Some Determinants of the Method of Case Disposition: Decision-Making by Public Defenders in Los Angeles," 8 Law and Society Review 187.

Mather, L. (1979) Plea Bargaining or Trial? The Process of Criminal Case Disposition. Lexington, MA: Lexington Books.

McCall, R. and M. Appelbaum (1973) "Bias in the Analysis of Repeated-Measures Designs: Some Alternative Approaches," 44 Child Development 401.

McDonald, W. F. et al. (1979) "The Prosecutor's plea Bargaining Decisions," in W. F. McDonald (ed.) The Prosecutor. Los Angeles: Sage.

Miller, F. (1970) Prosecution: The Decision to Charge a Suspect With a Crime. Boston: Little, Brown.

Mills, C. and W. Bohannon (1980) "Juror Characteristics: To What Extent Are They Related to Jury Verdicts?" 64 Judicature 22.

Nardulli, P. (1978) "Plea Bargaining: An Organizational Perspective, 6 Journal of Criminal Justice 217.

Neubauer, D. (1974) Criminal Justice in Middle America. Morristown, N.J.: General Learning Press.

Newman, D. (1966) Conviction. Boston: Little Brown.

Parker, B. (1963) "The Status of Forensic Science in the Administration of Criminal Justice." XXXII Revista Juridica de la Universidad P.R., 405.

Parker, B. and V. Gurgin (1972) Criminalistics in the World of the Future. Menlo Park, CA: Stanford Research Institute.

Parker, B. and J. Peterson (1972) Physical Evidence Utilization in the Administration of Criminal Justice. Washington, D.C.: U.S. Government Printing Office.

Peterson, J. et al. (1977) New York State Review of Criminalistics Services. Rockville, MD: Forensic Sciences Foundation, Inc.

Peterson, J. et al. (1978) Crime Laboratory Proficiency Testing Research Program. Washington D.C.: U.S. Government Printing Office.

Peterson, J. et al. (1984) Forensic Evidence and the Police: The Effects of Scientific Evidence on Criminal Investigations. Washington, D.C.: National Institute of Justice.

President's Commission on Law Enforcement and Administration of Justice (1967) Task Force Report: The Police. Washington, D.C.: U.S. Government Printing Office.

Rogers, R. (1979) Survey of Criminalistics Facilities in California Submitted to California Council on Criminal Justice. Long Beach, CA: California State College.

Rosenthal, P. and D. Travnicek (1974) Analysis of Criminalistics Laboratory Effectiveness in Criminal Justice Systems. Buffalo, N.Y.: Calspan Corporation.

Rosett, A. and D. Cressey (1976) Justice by Consent: Plea Bargains in the American Courthouse. Philadelphia: Lippincott.

Saks, M. and R. Van Duizend (1983) The Use of Scientific Evidence in Litigation. Williamsburg, VA: National Center for State Courts.

Schroeder, O. (1977) Assessment of the Forensic Sciences Profession: Volume 3, A Legal Study Concerning the Forensic Sciences Personnel. Washington, D.C.: U.S. Government Printing Office.

Spohn, C. et al. (1981) "The Effect of Race on Sentencing: A Re-examination of an Unsettled Question," 16 Law and Society Review 71.

Stanko, E. (1981) "The Impact of Victim Assessment on Prosecutors' Screening Decisions: The Case of the New York County District Attorney's Office," 16 Law and Society Review 225.

Uhlman, T. and D. Walker (1979) "A Plea is No Bargain: The Impact of Case Disposition on Sentencing," 60 Social Science Quarterly 218.

Ward, R. (1971) "The Investigative Function: Criminal Investigation in the United States," unpublished doctoral dissertation. Berkeley, CA.

Williams, K. (1978) The Role of the Victim in the Prosecution of Violent Offenses, Institute for Law and Social Research, Washington, D.C.: Government Printing Office.

APPENDICES

APPENDICES (Continued)

Table III.1

CRIME LABORATORY
PHYSICAL EVIDENCE EXAMINATION CAPABILITIES*

	Jurisdiction				
Evidence Type	Chicago	Peoria (Morton)	Kan City	Oakland	Connecticut (Meriden)
Alcohol (blood and or breath)	+	-	+	+	-
Accelerants	+	+	+	+	+
Bloodstains	+	+	+	+	+
Drugs	+	+	+	+	-
Explosives	+	-	+	-	+
Fibers	+	+	+	+	+
Fingerprints	+	+	+	+	+
Firearms	+	+	+	+	+
Glass	+	+	+	+	+
Gunshot Residue	+	-	+	-	+
Hairs	+	+	+	+	+
Paint	+	+	+	+	+
Polygraph	+	+	-	-	-
Ques Documents	+	-	+	+	+
Semen	+	+	+	+	+
Toolmarks	+	+	+	+	+
Toxicology	-	-	-	-	-
Voiceprint	-	-	-	-	+

* + indicates capability − indicates no capability

APPENDIX IV

PROSECUTOR CASE FILE CHARACTERISTICS

Defendant Characteristics

The vast majority (more than 90%) of defendants in these cases are male. The median age of defendants ranges from 24 years in Kansas City and Peoria to 28 years in Oakland. About two-thirds of the defendants charged in Chicago, Oakland and Kansas City are black; one-half of defendants in New Haven and 40% of the accused in Peoria are black. In Litchfield, however, only 2% of charged defendants are black. Latinos constitute about 10% of the charged defendants in New Haven, Chicago and Oakland.

Defendants had an existing or prior relationship with their victim(s) from 35% of the time in New Haven to 20% of the time in Litchfield. Of the cases in which the victim and defendant know one another, about one-quarter are spouses, lovers or family members and another quarter involve casual acquaintances. On the average, 10 to 15% involve parties who may be classified as friends.

More than two-thirds (68%) of the Oakland defendants have at least one prior felony conviction (Table IV.1). About half of the defendants in New Haven, Chicago, Kansas City and Peoria have felony conviction records but only about one-quarter of the Litchfield defendants do. In Chicago we also find a higher than average percentage of defendants with prior arrest (but no conviction) records (18%). In all other jurisdictions, fewer than 10% of defendants had "arrest-only" records. Litchfield has the highest percentage of defendants (66%) with no felony record.

Table IV.1

Prior Record of Defendants

	City					
Type of Criminal Record	Chicago n=990	Oakland n=955	Kansas City n=894	Peoria n=1057	New Haven n=442	Litchfield n=234
None	26%	23%	48%	44%	40%	66%
Arrest (felony)	18%	9%	2%	6%	9%	8%
Conviction (felony)	56%	68%	50%	50%	51%	26%

The greatest percentage of defendants are represented by public defenders in Peoria: public defenders represent 79% of persons charged. Kansas City and Oakland follow closely: 70% of cases are handled by public defenders. About half the defendants in Chicago (52%) and New Haven (56%) are represented by public defenders but only about one-third (37%) of Litchfield's defendants are so represented.

Nature of the Evidence

Location of Arrests

The highest percentages of defendants apprehended by police at or near the scene of the crime are found in Oakland (63%) and Chicago (56%). About 40% of defendants are apprehended in close proximity to the crime in New Haven, Kansas City and Peoria, but this is true for only 29% of the defendants in Litchfield. Such patterns generally correspond to the distribution of personal and property crimes. A higher percentage of violent crimes result in on-scene apprehensions than do property crimes. There is also a high correlation between drug offenders and on-scene apprehensions.

Incriminating Statements

Table IV.2 tabulates the nature of statements defendants made to the police (or prosecutor) following their apprehension. Forty percent of the defendants charged in Oakland made outright confessions; in addition another 14% made damaging statements which, somehow, implicated them in

Table IV.2

Nature of Defendant Statements to the Police

	City					
Nature of Statement	Chicago n=990	Oakland n=955	Kansas City n=894	Peoria n=1057	New Haven n=442	Litchfield n=234
Confession	29%	40%	22%	31%	18%	24%
Damaging	8%	14%	6%	18%	10%	10%
None	57%	42%	58%	40%	62%	64%
Alibi	6%	4%	14%	11%	10%	2%

the crime. About twenty to thirty percent of defendants in the remaining cities confessed, with another six to eighteen percent making damaging statements. We see, too, that alibis rarely appear in the official prosecutor files: except for Kansas City and Peoria 10% or less of defendants offer such statements.

Witnesses

Next, we consider the number of witnesses to the offense, if one or more are able to positively identify the defendant, and the relationship of these witnesses to the defendant. Table IV.3 summarizes the number of witnesses noted in the police/prosecutor files who reported they were able to identify positively the defendant as the person who committed the crime.

With the exceptions of Litchfield and Peoria, where there is a higher than average percentage of property crimes, about 80 to 85% of the offenses have at least one eyewitness who can positively identify the defendant. With the exception of those two jurisdictions, again, from 27 to 40% of offenses had two or more witnesses. Slightly more than ten percent of the crimes charged in Oakland, New Haven and Chicago had <u>three</u> or more such witnesses.

The victim him or herself was able to identify the defendant in 62% of the New Haven cases; 44% of the Chicago and Oakland cases; and in about 30 to 35% of the cases in the remaining jurisdictions. With the exception of Chicago, where police are witnesses in 37% of cases, police are able to identify the defendant in about 25% of filed cases.

Table IV.3

Percent of Witnesses who Positively Identify The Defendant

Number of Witnesses Who I.D. Defendant	City Chicago n=990	 Oakland n=955	 Kansas City n=894	 Peoria n=1057	 New Haven n=442	 Litchfield n=234
0	20%	16%	18%	33%	22%	41%
1	40%	46%	55%	48%	46%	43%
2	30%	25%	21%	13%	20%	13%
3 or more	10%	13%	6%	6%	12%	3%

Tangible Evidence

We define tangible evidence as something physical but which is not examined scientifically. The primary items of tangible evidence noted in the case files in the different jurisdictions are shown in Table IV.4.

We see that proceeds of the crime (e.g., stolen property, vehicles, currency) are recovered in from 20 to 40% of the offenses. Firearms and other weapons are recovered in another 10 to 15% of cases, with the exception of New Haven and Litchfield. Miscellaneous other tangible evidence is also recovered in a substantial percentage of cases in Kansas City and Peoria -- two jurisdictions which have higher than average proportions of property crimes.

This tangible evidence actually associated the defendant with the crime scene or victim from about one-third to one-half the time in the cities of Chicago, Oakland and Kansas City. The tangible evidence associated the defendant with the crime in a considerably lower percent of cases in the other cities.

System Processing Characteristics

The determinants of case outcome are discussed in greater detail in the text. Table IV.5 describes the mode of disposition for the offenses in each jurisdiction. Several differences in case processing become apparent. A very high percentage of charged cases result in guilty pleas in Oakland and New Haven (more than 80%). Only about half the cases result in guilty pleas in Chicago. There are very few jury trials (5 to 10% of charged cases) in all jurisdictions except Chicago, which

Table IV.4

Items of Tangible Evidence

	City					
Type of Tangible Evidence	Chicago n=990	Oakland n=955	Kansas City n=894	Peoria n=1057	New Haven n=442	Litchfield n=234
Proceeds	29%	29%	40%	20%	1%	18%
Personal Identification	2%	3%	3%	1%	0%	1%
Firearms	11%	10%	9%	4%	2%	3%
Other Weapons	4%	3%	4%	5%	2%	3%
Other Tangible	8%	7%	17%	14%	4%	7%

Table IV.5

Mode of Case Disposition

	City					
Disposition	Chicago n=990	Oakland n=955	Kansas City n=894	Peoria n=1057	New Haven n=442	Litchfield n=234
Plea	53%	86%	63%	67%	82%	70%
Jury Trial	4%	3%	5%	7%	4%	1%
Bench Trial	32%	1%	2%	4%	1%	0%
Dismissal/ Acquittal	11%	10%	30%	22%	13%	29%

is distinctive in having a high percentage of bench trials (32% of charged cases in Chicago are resolved through bench trials).

Kansas City, Litchfield and Peoria have the highest percentage of cases resulting in dismissals or acquittals (30%, 29% and 22% respectively). It is in these cities where the least case screening between arrest and acceptance of the case by the prosecutor occurs. In Chicago a police-prosecutor "felony review" process screens out many "weak" cases prior to case filing; in Oakland, as many as one-third of charged felonies are dismissed or pled to misdemeanors in a lower municipal court and are not included in this sample; in New Haven, the two-tiered (A and B) court structure permits only the most serious felony offenses to pass into the Part A court, and eligible to be included in our case sample.

Table IV.6

Rates of Occurrence of Forensic Evidence Types in the Crime of Murder (Percentages)

Evidence Type	City					
	Chicago (n=54)	Peoria (n=06)	Kan City (n=17)	Oakland (n=22)	Litch (n=00)	New Haven (n=18)
Fprints	11	33	18	23	--	11
Blood	11	50	53	27	--	50
Firearms	28	83	71	14	--	39
Hair	02	00	35	00	--	11
Fibers	00	00	00	00	--	06
Impress/ Imprints	00	50	00	06	--	00
ME Rept	78	00	82	68	--	78

Table IV.7

Rates of Occurrence of Forensic Evidence Types in the Crime of Att. Murder/Agg. Bat. (Percentages)

	City					
Evidence Type	Chicago (n=81)	Peoria (n=127)	Kan City (n=42)	Oakland (n=77)	Litch (n=07)	New Haven (n=40)
Fprints	00	02	14	03	00	03
Blood	04	02	02	01	00	13
Firearms	11	04	12	01	00	08

Table IV.8

Rates of Occurrence of Forensic Evidence Types in the Crime of Rape (Percentages)

	City					
Evidence Type	Chicago (n=51)	Peoria (n=17)	Kan City (n=45)	Oakland (n=50)	Litch (n=36)	New Haven (n=72)
Fprints	04	12	02	00	00	07
Blood	06	29	13	04	14	00
Firearms	00	00	00	00	03	00
Hair	14	35	36	02	08	13
Semen	73	41	47	38	25	25
Impress/ Imprints	00	06	02	00	00	--

Table IV.9

Rates of Occurrence of Forensic Evidence Types in the Crime of Robbery (Percentages)

	City					
Evidence Type	Chicago (n=165)	Peoria (n=50)	Kan City (n=133)	Oakland (n=143)	Litch (n=12)	New Haven (n=115)
Fprints	00	20	05	10	08	07
Blood	00	00	00	00	00	05
Firearms	05	04	03	00	00	07
Hair	00	00	02	00	00	02

Table IV.10

Rates of Occurrence of Forensic Evidence Types in the Crime of Burglary (Percentages)

	City					
Evidence Type	Chicago (n=136)	Peoria (n=217)	Kan City (n=235)	Oakland (n=234)	Litch (n=63)	New Haven (n=35)
Fprints	10	25	15	17	06	34
Blood	01	00	02	01	00	00
Firearms	00	01	00	00	00	00
Glass/ Plastic	01	00	03	00	00	00
Paint	00	01	00	00	00	00
Impress/ Imprints	00	02	00	01	03	00
Toolmarks	01	02	00	00	00	00

APPENDIX VIII

BIVARIATE RELATIONSHIPS BETWEEN EVIDENTIARY AND EXTRA-LEGAL FACTORS AND CONVICTION

Non Forensic Evidence and Conviction

A variety of evidentiary considerations (forensic and otherwise) may help establish the guilt or innocence of a defendant. These would include witnesses, statements by the defendant regarding the crime, the presence of a prior relationship between the defendant and victim, the circumstances surrounding the defendant's apprehension, and so forth. We present simple, bi-variate relationships between a number of these variables and conviction in this section.

Seriousness of the Incident

One factor associated with a case that might influence conviction likelihood is the seriousness -- or aggravation -- of the incident. Was a gun used? Was some other weapon used? Did the defendant use such a weapon to threaten or harm the victim? Was the victim injured during the commission of the crime and how serious were these injuries? These several considerations were merged into one scale -- from 0 to 8 -- to measure the seriousness of the incident. Victimless and property crimes appear at the low end of the scale and violent crimes at the top. For violent offenses, the seriousness of injury to the victim was incorporated as was the use of a weapon, with offenses resulting in death at the very top. Due to missing data we were unable to incorporate a "dollar loss" seriousness index for the property offenses, except we did distinguish theft from burglary where the act of "breaking and entering" places burglary at a higher seriousness level. In sum, our index incoporates those three features of a crime considered to be important indicators of crime "seriousness": offense type, i.e., property or personal; extent of injury to the victim; and presence/use of a weapon.

We would expect the conviction rate to be higher where the incident is more serious or aggravated, given the known tendency of prosecutors to focus resources disproportionately upon more serious cases (see Mather, 1979). Likewise, given the victim's point of view aggravated incidents would seem least likely candidates for dismissals.

Our data fail to support the hypothesis. Generally speaking, there is no relationship between seriousness of the incident and likelihood of conviction. The conviction rate fluctuates hardly at all across categories in Chicago, Oakland, Peoria and New Haven. In Kansas City, there are sharp differences but without much linear pattern. Actually, an alternative hypothesis might have argued that incident seriousness would _not_ be related to conviction, since how aggravated the incident happens to be is not a form of evidence that associates any particular defendant with a crime scene or victim. Our data are quite consistent with this alternative (null) hypothesis.

Defendant Statements

The Supreme Court in _Miranda v. Arizona_ (1966) held that a suspect had the right, among others, to remain silent and to be so informed of his right. Notwithstanding _Miranda_, however, many defendants -- knowingly or otherwise -- waive their right to silence and make statements regarding the offense for which they were arrested. These statements range from alibis or exculpatory statements to incriminating statements to outright confessions. We would expect that defendants who make confessions will have the highest conviction rates, followed by those who make damaging statements, by those who make no statement, and with defendants who offer alibis having the lowest conviction rate. Table VIII.1 presents the data relevant to this hypothesis.

There is a clear relationship in all sites between the propensity of defendants to make statements and the likelihood of conviction. It appears from the data, however, that "damaging" statements are not all that damaging, nor are "alibis" necessarily all that exculpatory. Rather, confessions typically result in a large increase in the conviction rate, while the differences in conviction rates among the other categories are usually insignificant. Defendants who make confessions are much more likely to be convicted, about 15 percentage points or more in Chicago, Kansas City, and Peoria. These differences are easily of statistical significance ($p<.01$), in large part because the number of confessions is surprisingly large in all sites.

Witnesses

Historically, witnesses have been viewed as critical to conviction. Did someone see the defendant commit the offense? How many individuals actually observed the crime? Witnesses represent a human, readily understandable form of evidence that is presumed to be persuasive not only to jurors but to prosecutors and defense attorneys in plea nego-

Table VIII.1

Defendant Statements and Conviction

Defendant Statements	Chicago	Oakland	Kansas City	Peoria	New Haven
Confession	85%	94%	80%	86%	96%
Damaging	71%	93%	52%	73%	93%
None	74%	86%	68%	63%	83%
Alibi	68%	89%	55%	75%	80%
X	14.2	13.2	28.6	47.9	11.9
P	.003	.004	.001	.001	.01
N	877	868	884	1055	440

tiations. Previous research (Forst et al., 1982) has found that conviction rate inreases as the number of witnesses increase, and that having two or more witnesses (whose testimony could corroborate one another) was particularly critical.

Table VIII.2 presents our data. Suprisingly, there is no statistically significant relationship in Chicago, Oakland, Kansas City or New Haven, though the conviction rate in all four cities is somewhat higher when there are three or more eyewitnesses. Only in Peoria does the relationship meet statistical significance, and here it is the absence of any eyewitnesses that is associated with reduced conviction rates (only 67%). In no site, however, is there any discernible linear trend associating increasing numbers of eyewitnesses with increasing conviction rates.

The lack of such clear-cut relationships suggests that we may be missing some critical information about these eyewitnesses. In the broadest sense, how credible or believable are they (Stanko, 1981)? Are they "upstanding" citizens, are they people who could clearly articulate in a courtroom what they saw? Unfortunately, our data generally do not permit such refined distinctions, because this information is not recorded in most prosecutors' files. Were we to have such information, the relationship between the number of eyewitnesses and conviction could almost certainly be significant in all sites.

It is possible, too, that the lack of a statistical relationship between number of witnesses and conviction is the result of where we drew our sample. The reader will recall we selected cases which had survived an initial judicial screening. Forst et al.'s cases were drawn earlier, at the point of arrest. It is quite likely that as cases

Table VIII.2

Eyewitnesses and Conviction

Number of Eyewitnesses	Chicago	Oakland	Kansas City	Peoria	New Haven
3 or more	84%*	91%	79%**	79%	91%
2	77%	88%	66%	76%	87%
1	75%	91%	67%	77%	84%
None	76%	86%	67%	67%	85%
X	N/S	N/S	N/S	12.3	N/S
P				.007	
N	897	949	888	1049	440

* 100 cases

** 47 cases

proceed through the judicial process, concern focuses more upon the *quality* of evidence (witnesses) than on its *quantity*.

The Arrest

The circumstances surrounding an arrest may influence directly or indirectly the likelihood of conviction. One obvious factor is the legality (constitutionality) of the arrest and any associated search of the suspect and seizure of items. A less obvious influence is whether the defendant was arrested at or near the scene of the crime. Some defendants are caught "red-handed" or with a "smoking pistol," others are apprehended sufficiently proximate to the crime scene to suggest the likelihood or possibilty of their presence at the crime scene. Still other defendants are not arrested near the crime scene, rendering a linkage to the scene problematical. We would expect that when defendants are arrested at or near the crime scene, the likelihood of conviction is greater than when they are not.

Our data provide some, but not uniform, support for this hypothesis. In Kansas City and Peoria, defendants arrested at/near the crime scene are more likely to be convicted. In Kansas City, the difference is 77% versus 63% ($p=.001$); in Peoria, 81% versus 72% ($p=.002$). In Oakland, Chicago, and New Haven, however, the percentages are virtually identical, indicating no such relationship. The lack of relationship in these three jurisdictions is partly attributable to the fact that it is in these same jurisdictions where the greatest amount of prosecutorial and lower court screening has already taken place (see Chapter III).

Prior Relationship Between Victim and Defendant

The presence or absence of a relationship between victim and defendant prior to the criminal encounter is not, strictly speaking, a form of evidence. But this factor does bear upon perceptions of defendant culpability or guilt. Previous research has shown that the police are less likely to write up incidents occurring between people known to one another (Black, 1970), and that prosecutors are less likely to charge where a prior relationship exists (Stanko, 1981). Thus, we might also expect lower conviction rates in cases where the defendant and victim knew one another prior to the crime. Alternatively, it is possible that police and prosecutor screening of these types of cases is typically sufficient to weed out instances where a prior relationship damages the likelihood of conviction.

Our data do not provide support for this hypothesis that prior relationships influence likelihood of conviction. In sites where both felony review is aggressive and lower court screening by judges is the norm, conviction rates do not vary by presence or absence of a prior relationship. This occurs in Chicago, Oakland, and New Haven where, Presumably, cases damaged by prior relationships have been screened out. By contrast, in Kansas City and Peoria where many fewer cases are rejected for prosecution or upper court action, the predicted relationship appears. In Kansas City, 51% of defendants who knew their victims were convicted, compared with 71% of defendants who were strangers ($p=.001$). In Peoria, that difference is 68% versus 78% ($p=.001$).

Extra-legal Factors and Conviction

In addition to evidentiary considerations such as those described above, researchers have found that extra-legal variables also influence the adjudication of criminal cases (for an early review, see Hagan, 1974). Though unrelated to the facts of the case and often clearly improper to consider, a number of such variables have been found related either to sentence severity, likelihood of conviction, or both. These include type of defense attorney, prior record, and defendant characteristics such as age, race, and gender.

Defense Attorney

Public defenders have been routinely criticized for the quality of their representation of defendants. Because they are a part of the criminal justice system ("courtroom workgroup," Eisenstein and Jacob, 1977), they are seen as less than effective advocates. Defendants, themselves, are quite critical of public defenders (Casper, 1972). Nevertheless, there is little empirical research comparing the effectiveness of different types of counsel regarding case outcomes. Differences have been found, but few are significant when defendant attributes are controlled. Thus, in this analysis where we do not control for defendant attributes, we might expect significant differences in conviction rates by type of defense representation. Table VIII.3 presents these data.

Our data do indicate systematic differences in likelihood of conviction by type of defense counsel. In four sites, the clients of

Table VIII.3

Type of Defense Counsel and Conviction

Type of Defense Counsel	Chicago	Oakland	Kansas City	Peoria	New Haven
Public Defender	83%	91%	74%	77%	89%
Private*	74%	86%	64%	77%	80%
X	10.5	5.5	5.1	N/S	5.9
P	.001	.02	.02	N/S	.02
N	856	925	512	867	431

* Includes court-appointed attorneys from the private bar. This number is very small, except in Peoria.

private attorneys are less likely to be convicted than the clients of public defenders. Nowhere are the differences extremely large, but they are statistically significant. Only in Peoria is there no relationship.

Prior Record

The perceived seriousness of a case may also be influenced by the defendant's prior record (Heumann, 1977). Defendants with long records of arrest and conviction are not typically viewed as "worthy" of any breaks, such as a dismissal of charges, even in the face of weak evidence.[3] Although the defendant's prior record may be, at best, a peripheral or submerged issue in a trial, in plea negotiations -- which dominate the work of the criminal courts -- it is likely to be a central issue. Thus, we would expect defendants with prior arrests, and especially with previous felony convictions, to be convicted at higher rates. In our data analysis, we distinguished three categories: defendants with no prior record of arrest or conviction, defendants previously arrested but not convicted of a felony, and defendants with one or more felony convictions. We would expect a linear increase in the conviction rate across these three categories.

In fact, our data show little support for this hypothesis. In Chicago, Oakland, and New Haven, there is no relationship between prior record and conviction. In Kansas City, defendants with <u>no</u> prior record are convicted more frequently (73% versus 61% and 64%, respectively). Only in Peoria are defendants with no prior record significantly less likely to be convicted.

It should be noted, however, that prior record is one of the most difficult pieces of information to collect accurately (the absence of a prior record usually must be inferred from the absence of a "rap sheet"). Also, our category of prior convictions does not distinguish among the number or type of previous felony convictions, distinctions that prosecutors, defense attorneys, and judges surely make in the plea bargaining and sentencing processes. For these reasons, our findings here should be viewed with some caution.

Demographic Characteristics of the Defendant

The influence of race in the criminal adjudication process has been the subject of much controversy and much research. The results have been mixed but tend to indicate harsher treatment for minorities, especially blacks, at some, if not all, stages of the adjudication process (see, e.g., Spohn *et al*., 1981). Our data, however, indicate no systematic relationship between race and likelihood of conviction across all sites. In two locales, however -- Peoria and Kansas City -- blacks are marginally less likely to be convicted than whites. The differences are small (65% versus 73% in Kansas City, 70% versus 76% in Peoria), but do reach levels of statistical significance ($p=.03$, in both instances).

The influence of gender in criminal adjudication has received some treatment, but the results are inconclusive. Some studies suggest the lenient treatment of women, typically for paternalistic or chauvinistic reasons. Other studies indicate somewhat harsher treatment of women, because of greater expectations for women by court officials. Still others (Kruttschnitt, 1980) suggest that it is not gender *per se* but the social status of women that influences their treatment in court. While our data cannot speak to this latter point, we find no relationship between gender and the likelihood of conviction in any site. Differences that exist are small and subject to sharp fluctuations because of the small numbers of women in our samples.

The influence of defendant age has probably received the least attention in the criminal justice literature. Historically, there has been the view that juvenile and other youthful offenders should be treated leniently, given a "second" chance, diverted from the system, etc. Our data, however, do not support this view; indeed, they flatly contradict it (Table VIII.4). In four of the five sites, youthful defendants (between the ages of 17 and 20) are much more likely to be convicted than "middle-aged" defendants (21 to 34), who in turn are more likely to be convicted than "old" defendants (35 and above). The differences are quite sharp, typically with a full ten percentage point drop in the conviction rate for the "middle-aged" defendants, and another -- though smaller -- drop for "old" defendants. These differences are statistically significant, except in Oakland, where the high conviction rate again all but precludes the appearance of significant relationships.

Table VIII.4

Defendant's Age and Conviction

Defendant's Age	Chicago	Oakland	Kansas City	Peoria	New Haven
17 - 20	86%	92%	76%	82%	85%
21 - 34	75%	90%	66%	74%	86%
35 or older	68%	86%	63%	67%	86%
X	17.6	3.4	8.8	12.8	N/S
P	.001	.18	.01	.001	
N	917	946	880	1021	430

APPENDIX IX

BIVARIATE RELATIONSHIPS BETWEEN EVIDENTIARY AND EXTRA-LEGAL FACTORS AND CHARGE REDUCTION

The seriousness of the incident -- measured in degree of threats and/or harm to victim -- is related to charge reductions: the more serious the incident, the more likely that there will be a charge reduction. Though perhaps contrary to common sense, this relationship exemplifies the moral ambiguity frequently involved in interpersonal crimes and the criminal justice system's response to that ambiguity (charge reduction). This relationship is linear and consistent across four sites. For example, in Chicago -- where the relationship is strongest -- 89% of defendants in cases with no threat/harm to victim were convicted on the most serious charge, compared with only 60% of defendants in cases with highly aggravated harm (including death) to the victim. Smaller differences occur in Oakland, Peoria, and Kansas City. Only in New Haven are there roughly equal amounts of charge bargaining across serious and less serious incidents.

The presence of a prior relationship between the defendant and victim also is related to charge reductions, in the expected direction. When a prior defendant-victim relationship exists, the likelihood of a charge reduction increases sharply (Table IX.1). This is true in four sites, everywhere but Kansas City. It is especially dramatic in Chicago,where only 56% of defendants were convicted on the most serious charge in cases where defendant and victim knew one another prior to the criminal encounter. By contrast, 88% of defendants in Chicago who were strangers to their victims were convicted on the most serious charge.

Table IX.1

Defendant-Victim Relationship and Charge Reduction

	Percentage of Defendants Convicted on Most Serious Charge				
	Chicago	Oakland	Kansas City	Peoria	New Haven
Prior Relationship	56%	68%	48%	67%	58%
No Relationship	88%	77%	43%	83%	79%
X^2	71.1	6.8	N/S	23.3	17.1
P	.001	.01	N/S	.001	.001
N	(685)	(844)	(596)	(742)	(373)

Similar patterns, but smaller differences, occur in New Haven, Peoria, and Oakland. It is interesting to observe that prior relationship influences either conviction or charge reduction in all sites; in Peoria, prior relationship adversely affects both the likelihood of conviction and the likelihood of being convicted on the most serious charge.

Extra-Legal Factors and Charge Reduction

Whereas evidentiary factors revealed only marginal associations with the likelihood of charge reductions, extra-legal factors are more consistently related. This is particularly true for the type of defense attorney and the defendant's prior record.

Just as private attorneys were more likely than public defenders to avoid conviction for their clients, so also are private attorneys more likely to obtain charge reductions if their clients are convicted. In all sites except New Haven, clients of public defenders are more likely to be convicted on the most serious charge. The differences range from 6 to 8 percentage points across the sites and are statistically significant.

The defendant's prior record is also related to the likelihood of charge reductions. Reductions are less likely, as we would expect, when defendants have either a prior record of arrest or arrest and conviction (Table IX-2). In all sites, there is a tendency for defendants with prior records to be convicted on the most serious charge. The differences are most pronounced in Kansas City (for prior convictions), more modest in New Haven, Chicago, and Peoria, and slightly short of statis-

Table IX.2

Defendant's Prior Record and Charge Reduction

	Percentage of Defendants Convicted on Most Serious Charge				
	Chicago	Oakland	Kansas City	Peoria	New Haven
Prior Record					
No Record	74%	70%	33%	75%	61%
Prior Arrest(s)	80%	80%	27%	93%	81%
Prior Conviction(s)	84%	77%	56%	82%	78%
X^2	7.7	4.1	28.8	8.5	12.8
P	.02	(.13)	.001	.01	.001
N	(636)	(820)	(545)	(643)	(360)

tical significance in Oakland. Some might argue that prior record assumes legitimacy in plea (charge) bargaining discussions, since the defendant's guilt is conceded, and thus should not be labeled "extra-legal." We refrain from taking sides in that argument, but our data point to an unmistakable empirical connection between a defendant's prior record and the plea bargaining discussions as to charge.

The demographic characteristics of defendants -- age, race, and gender -- generally are not related to the likelihood of charge reductions. No consistent relationship emerges for any of the three variables across sites. Nevertheless, each variable is associated with charge reductions in at least one site. Younger defendants are more likely to get a reduction in Kansas City (contravening the generally harsh treatment of youthful defendants, see Table VIII.4) but less likely to get a reduction in New Haven; male defendants are more likely to get a reduction in Chicago; and white defendants are more likely to get a reduction in Peoria. Each of these individual relationships is sizeable and statistically significant.

Finally, one variable new to our analysis -- whether the case was disposed by plea or trial -- is significantly related to the likelihood of charge reductions in two sites. In Chicago, charge reductions are far more likely to occur at trial -- especially the frequent bench trials -- than in pleas. The differences are quite large, as Table IX.3 indicates. Exactly the opposite situation prevails in Kansas City and New Haven, where virtually all reductions occur in the plea negotiation process. No reductions occurred in the few bench trials in KansasCity or New Haven, and only a handful of reductions occurred at jury trials. By contrast, more than half (59%) of the guilty pleas in Kansas City

Table IX.3

Mode of Case Disposition and Charge Reduction

	Percentage of Defendants Convicted on Most Serious Charge				
	Chicago	Oakland	Kansas City	Peoria	New Haven
<u>Mode of Case Disposition</u>					
Plea	91%	75%	41%	78%	70%
Bench Trial	55%	100%*	100%	79%	100%*
Jury Trial	73%	83%	78%	86%	94%
X^2	109.1	N/S	30.0	N/S	6.2
P	.001	N/S	.001	N/S	.04
N	(696)	(849)	(597)	(750)	(379)

* Less than 10 cases.

were to reduced charges. No significant differences appeared in Oakland or Peoria.

APPENDIX XII

DATA COLLECTION INSTRUMENTS

XII-1	Crime Laboratory Survey
XII-2	Prosecutor Case File Survey
XII-3	Instructions for Completion of Scientific/Tangible Evidence Form
XII-4	Juror Questionnaire
XII-5	Hypothetical Case Instrument
XII-6	Prosecutor and Defense Attorney Interview Guides

1983 CRIME LABORATORY SURVEY

Center for Research in Law and Justice
University of Illinois at Chicago
Chicago, Illinois 60680

Instructions: Please complete the survey and return it in the postage-paid return envelope which we have enclosed. Please try to return the questionnaire by February 15, 1983.

Please
Disregard
Column
Numbers
↓

1983 CRIME LABORATORY SURVEY

1. In what year was your crime laboratory established? 19____ 4-5

2. In which type of agency is your laboratory placed? *(Please circle the appropriate answer code.)* 6

   Law enforcement/public safety 1
   Prosecutor 2
   Medical examiner/coroner 3
   Scientific/public health 4
   College/university 5
   Independent (private) 6
   Independent (public) 7
   Other *(Please specify.)* ________________________________ . . 8

3. What type of jurisdiction do you primarily serve? *(Circle one.)* 7

   Municipal 1
   County 2
   Regional (multi-county) 3
   State: main/centralized facility 4
   State: satellite/regional facility 5
   Federal 6
   Other *(Please specify.)* ________________________________ . . 7

4. What is the approximate population of the jurisdiction you serve? 8-14

   ____

5. Approximately how many different law enforcement agencies did you serve this past year (1982)? 15-17

   ____

6. As a policy, will your laboratory examine physical evidence submitted by someone other than a "law enforcement" (e.g., police, prosecutor, medical examiner, fire marshal) official? 18

   No (except under court order) 1
   Yes 2
   Occasionally, under certain circumstances *(Please specify.)* . . . 3

   ____

   ____

7. As a policy, will you permit private examiners to use your facilities/equipment to re-examine physical evidence which your laboratory has already examined for a law enforcement official? 19

No (except under court order) 1
Yes 2
Occasionally, under certain circumstances *(Please specify.)* . . . 3

____

____

8. As a policy, will you allow your examiners to engage in private criminal/civil casework or consultation? *(Please circle one response for the criminal column and one for the civil column.)* 20-21

Criminal		Civil	
No	1	No	1
Yes, without restriction . .	2	Yes, without restriction . .	2
Yes, with restrictions . . .	3	Yes, with restrictions . . .	3
Explain: ________________		*Explain:* ________________	
______________________		______________________	

9. As a policy, will your laboratory analyze noncriminal evidence samples (water, pesticides, pollutants, etc.)? 22

No 1
Yes, without restriction 2
Yes, with restrictions *(Please explain)* 3

____

____

10. Are the following evidence categories examined in your laboratory? *(Circle 1 or 2 (yes or no) for each evidence category.)*

	Yes	No	
Alcohol (blood and/or breath)	1	2	23
Arson accelerants	1	2	24
Bloodstains	1	2	25
Drugs	1	2	26
Explosives	1	2	27
Fibers	1	2	28
Fingerprints	1	2	29
Firearms	1	2	30
Glass	1	2	31
Gunshot residue (testing hands of shooters)	1	2	32

	Yes	No	
Hairs	1	2	33
Paint	1	2	34
Polygraph	1	2	35
Questioned documents	1	2	36
Semen	1	2	37
Toolmarks	1	2	38
Toxicology	1	2	39
Voiceprint	1	2	40
Other *(Please specify.)* ______________________	1	2	41
______________________	1	2	42

11. What type of system does the major law enforcement agency in your jurisdiction use to store, retrieve and compare latent fingerprints with fingerprint standards? 43

Manual system 1

Microfilm or microfiche aided system 2

In-house computer aided system 3

Out-of-house computer aided system 4

Unknown 5

Other *(Please specify.)* __________________________ . . 6

12. In 1982, approximately how many cases did your laboratory examine in the following general categories?

Violent crimes (murder, rape, robbery, assault) . . . . . . __________ 44-47

Property crimes (burglary, theft, fraud, arson) . . . . . . __________ 48-51

Drug cases . . . . __________ 52-55

Driving while intoxicated cases . . . . __________ 56-59

Other *(Please specify.)* ______________________ . . . __________ 60-63

13. In approximately what percentage of: a) drug cases examined, b) criminalistics cases examined do your scientists testify in court?

Of drug cases examined . . . . ________% 64-65

Of criminalistics cases examined . . . . ________% 66-67

14. Of cases in which your examiners <u>testify in court</u>, in approximately what percentage do your examiners confer beforehand with:

Prosecutors . . . . ________% 68-70

Defense attorneys . . . . ________% 71-73

80/1

.5. In approximately what percentage of all cases <u>in which your laboratory examines evidence</u> do you learn of the final disposition of the cases? 4-6

_______%

.6. How satisfied are you with the quality of feedback you receive from judicial personnel about the evidence and the testimony of your examiners after a case is decided? 7

Very Satisfied			Neither Satisfied Nor Dissatisfied			Very Dissatisfied
1	2	3	4	5	6	7

.7. Based upon your experience as an examiner and administrator, <u>in general</u> how important have the following physical evidence categories been in deciding the outcomes of criminal cases? *(Please circle an answer code for each evidence type.)*

	Importance				
Category	Minimal	Moderate	High	Essential	
Accelerants	1	2	3	4	8
Bloodstains (patterns)	1	2	3	4	9
Bloodstains (grouping)	1	2	3	4	10
Drugs	1	2	3	4	11
Explosives	1	2	3	4	12
Fibers	1	2	3	4	13
Fingerprints	1	2	3	4	14
Firearms	1	2	3	4	15
Glass	1	2	3	4	16
Hairs	1	2	3	4	17
Paint	1	2	3	4	18
Soil	1	2	3	4	19
Toolmarks	1	2	3	4	20

.8. From your experience, how important would you say forensic evidence is in deciding the outcomes of the following types of crimes?

	Importance				
Crime Type	Minimal	Moderate	High	Essential	
Homicide	1	2	3	4	21
Rape	1	2	3	4	22
Robbery	1	2	3	4	23
Burglary	1	2	3	4	24
Aggravated Assault	1	2	3	4	25
Arson	1	2	3	4	26
Drug-Related	1	2	3	4	27
Larceny	1	2	3	4	28
Hit-and-Run	1	2	3	4	29

19. Based upon your experience, how important would you say forensic evidence is at the following stages in the criminal justice process?

	Importance				
Stage	Minimal	Moderate	High	Essential	
Determining if crime has been committed	1	2	3	4	30
Providing investigative leads	1	2	3	4	31
Corroborating involvement of suspects	1	2	3	4	32
Verifying statements of victims/suspects/witnesses	1	2	3	4	33
Deciding to charge a suspect	1	2	3	4	34
Deciding to grant bail, pretrial release	1	2	3	4	35
Plea bargaining	1	2	3	4	36
Trial	1	2	3	4	37
Sentencing	1	2	3	4	38

20. In general, how well do the following users of scientific evidence understand the significance of laboratory results.

Users	Very good understanding	Good	Fair	Poor	Very poor understanding	
Police officers	1	2	3	4	5	39
Police investigators	1	2	3	4	5	40
Police administrators	1	2	3	4	5	41
Prosecutors	1	2	3	4	5	42
Defense attorneys	1	2	3	4	5	43
Judges	1	2	3	4	5	44
Jurors	1	2	3	4	5	45

21. Does your crime laboratory use the F.B.I.'s Crime Laboratory Information System (CLIS)? 46

Yes 1

No 2

22. What do you believe is the most significant scientific/technological advance that has been made in the field of criminalistics in the past five years? 47-48

23. If you could single out one area of criminalistics where you believe there is the greatest need for research in the future, what would that be? 49-50

24. Approximately what percentage of your total laboratory staff time is devoted to research on new laboratory techniques? 51-52

_______%

25. Of the research conducted in your laboratory in the past five years, where has the majority of it been concentrated? *(Please select the three where most of your resources have been devoted, and rank them by placing a 1, 2, or 3 in the appropriate blank.)* 53-58

______ Arson 1
______ Bloodstains 2
______ Drugs 3
______ Explosives 4
______ Fibers 5
______ Fingerprints 6
______ Firearms 7
______ Glass 8
______ Hair 9
______ Instrumental 10
______ Paint 11
______ Questioned documents 12
______ Semen 13
______ Soil 14
______ Toolmarks 15
______ Other *(Please specify.)* 16

____

26. Approximately what percentage of the research conducted in your laboratory over the past five years has been supported through outside grants? 59-60

_______%

27. Approximately how many presentations were made by your laboratory staff at scientific meetings in 1982 and how many papers did your staff publish in scientific journals in that year?

______ Presentations at scientific meetings 61-62

______ Articles published in scientific journals 63-64

80/2

28. For the calendar years 1982 and 1977 please provide the total number of examiners employed in your laboratory classified by sworn status and the highest level of education attained:

Nonsworn Examiners	1982	1977	
Number with No College Credits			4-7
Number with Some College Credits			8-11
Number with Bachelor's Degrees			12-15
Number with Some Graduate Credits			16-19
Number with Graduate Degrees			20-23
Unknown			24-27
Sworn Examiners			
Number with No College Credits			28-31
Number with Some College Credits			32-35
Number with Bachelor's Degrees			36-39
Number with Some Graduate Credits			40-43
Number with Graduate Degrees			44-47
Unknown			48-51
TOTAL NUMBER OF EXAMINERS IN YOUR LABORATORY			52-57

29. For 1982, how many of the highest degrees of your examiners fall in each of the following categories?

Chemistry		58-59
Biology		60-61
Engineering		62-63
Forensic science/criminalistics		64-65
Criminal justice		66-67
Other physical science		68-69
Other social science/humanities		70-71

30. What were the annual budgets of your crime laboratory for the years 1982 and 1977? (Of those laboratories in statewide systems, only the state level administrator should respond to this question. We ask that he provide the budget figures for the total laboratory system.) 80/

4-17

	1982	1977
Laboratory Budget	$	$

31. For the following instruments/techniques, please indicate if: a) it is in use in your laboratory; b) the year in which the <u>first</u> of these units was acquired; c) the year in which the <u>newest</u> of these units was acquired; and d) if a computer is used to store or interpret data from the instrument.

Instrument/Technique	In Use? Yes	No	Year First Unit Acquired	Year Newest Unit Acquired	Computer Yes	No	
Gas Chromatograph	1	2	______	______	1	2	18-23
Liquid Chromatograph . .	1	2	______	______	1	2	24-29
Emission Spectrograph . .	1	2	______	______	1	2	30-35
Mass Spectrometer	1	2	______	______	1	2	36-41
GC-MS	1	2	______	______	1	2	42-47
UV-Vis Spectrophotometer	1	2	______	______	1	2	48-53
IR Spectrophotometer . .	1	2	______	______	1	2	54-59
IR-Fourier Transform . .	1	2	______	______	1	2	60-65
AA Spectrophotometer . .	1	2	______	______	1	2	66-71 80/4
Raman Spectrophotometer .	1	2	______	______	1	2	4-9
Ultramicro (nanometric) . Spectrophotometer	1	2	______	______	1	2	10-15
X-Ray Diffraction	1	2	______	______	1	2	16-21
Energy Dispersive X-Ray . (Fluorescence)	1	2	______	______	1	2	22-27
SEM	1	2	______	______	1	2	28-33
Polarimeter	1	2	______	______	1	2	34-39
NAA	1	2	______	______	1	2	40-45
Electrophoresis (blood/ . body fluid application)	1	2	______	______	1	2	46-51
Iso-Electric Focusing . .	1	2	______	______	1	2	52-57
Radio-Immuno-Assay. . . .	1	2	______	______	1	2	58-63
Hot Stage	1	2	______	______	1	2	64-69 80/5
Laser	1	2	______	______	1	2	4-9
Electrostatic Detection . Apparatus (ESDA)	1	2	______	______	1	2	10-15
Voice (sound) Spectrograph	1	2	______	______	1	2	16-21
Computer (for management information purposes)	1	2	______	______	N.A.		22-27
Other ______________	1	2	______	______	1	2	28-33
______________	1	2	______	______	1	2	34-39
______________	1	2	______	______	1	2	40-45

80/G

32. Do you have any other comments or suggestions?

THANK YOU FOR YOUR COOPERATION

iable

PROSECUTOR'S CASE FILE SURVEY INSTRUMENT

Columns

Coder's Initials: ________

Is survey information complete? Yes No

Needs Information On: ____________________

100 Project Control Number . . . . ☐☐☐☐ 1/4

101 Prosecutor's Case Number . . . . ☐☐☐☐☐☐☐ 5/11

INFORMATION FROM POLICE (ARREST) REPORT

102 Police Incident Number . . . . ☐☐☐☐☐☐☐☐ 12/19

103 Date/Time Offense Occurred - Hour (military time). . . . . ☐☐☐☐ 20/23
(if range is given, compute average)

104 - Month/Day/Year . . . . ☐☐☐☐☐☐ 24/29

105 Date/Time Defendant Arrested - Hour (military time). . . . . ☐☐☐☐ 30/33

106 - Month/Day/Year. . . . . ☐☐☐☐☐☐ 34/39

107 Was defendant apprehended at or in close proximity to the crime? . . . . . . ☐ 40

1 = Yes
2 = No
9 = Unknown

108 With what offense did the police charge the defendant at the time of arrest? (if more than one offense, enter most serious) . . . . ☐☐ 41/42

Offense Codes (listed in order of seriousness)

01=Murder
02=Att. Murder
03=Agg. Arson
04=Rape/Dev. Sex. Asslt.
05=Armed Robbery
06=Att. Rape
07=Att. Armed Robbery
08=Cont. Subst. (Sale)*
09=Cont. Subst. (Poss.)*
10=Vol. Manslaughter
11=Robbery

12=Arson
13=Burglary
14=Invol. Manslaughter
15=Agg. Asslt./Battery
16=Att. Robbery
17=Att. Arson
18=Att. Burglary
19=Unlawful Use of Weapons
20=Theft/Stealing/Larceny
21=Fraud/Forgery
22=Reckless Homicide

23=Crim. Dam. Prop.
24=Stolen Prop. Poss.
25=Marijuana-Poss./Sale
26=Other (specify)
____

* Any controlled substance except marijuana

iable Columns

109 Extent of Injury to Victim (enter the most serious if multiple victims). . . ☐ 43

0 = No Personal Victim
1 = None Visible
2 = Minor - No Medical Treatment
3 = Serious - Emergency Treatment and Discharge
4 = Serious - Hospital Admission and Discharge
5 = Death
9 = Unknown

110 Estimated Value of Property Stolen/Destroyed . . . . ☐☐☐☐☐ 44/48
(enter actual dollar amount from police report)

If not applicable, enter 00000; if ≥ $99,998, enter 99998; if amount is unknown, enter 99999 and describe loss and/or damage below.

111 Type of Weapon Used by Defendant . . . . ☐ 49

0 = None
1 = Feigned Weapon
2 = Arms, Legs, Feet, Fist
3 = Blunt Instrument
4 = Knife, Sharp Instrument
5 = Rifle, Shotgun, Handgun
6 = Other (please specify) ____________
9 = Unknown

112 Use of Weapon by Defendant . . . . ☐ 50

0 = No Weapon Involved
1 = Defendant Feigned Weapon
2 = Weapon Present on Defendant--Use Unclear
3 = Weapon Present on Defendant--Not Used to Threaten
4 = Weapon Present on Defendant--Used to Threaten
5 = Weapon Used by Defendant to Injure/Kill
6 = Weapon in Possession of Codefendant
7 = Weapon Used by Codefendant/Accomplice
8 = Other (please specify) ____________
9 = Unknown

113 Relationship Between Defendant and Principal Victim . . . . ☐☐ 51/52

00 = None
01 = Spouse
02 = Ex-spouse
03 = Other Immediate Family (Parent, Sibling, Child)
04 = Extended Family (Uncle, Aunt, Cousin, Nephew/Niece)
05 = Lover (boyfriend/girlfriend)
06 = Ex-lover
07 = Friend
08 = Neighbor
09 = Business Associate
10 = Casual Acquaintance
11 = Other (please specify) ____________
98 = Victimless
99 = Unknown

able Were there witnesses to the crime, who are they and did they positively identify the defendant? (list up to three witnesses) Columns

	Witnesses	Who are they?	Observed Crime?	Positive I.D. of Def.? (e.g., on scene, photo I.D., line up)	
/116	1				53/55
/119	2				56/58
/122	3				59/61

Who are they?:
0=None (no eyewitnesses)
1=Victim
2=Friend, Relative, Employee of Victim
3=Friend, Relative, Employee of Def.
4=Unacquainted Bystander
5=Co-conspirator
6=Police
7=Other law enforcement, security, corr. off.
8=Other
9=Unknown

Observed Crime?:
0=Not Applicable
1=Yes
2=No
3=Reports No Crime Occurred

Positive I.D. of Def.?:
0=Not Applicable
1=Yes
2=No
3=Testimony Excludes Defendants

23 Was an incriminating statement made by defendant to police?. . . . . ☐ 62

0 = No
1 = Yes, Admitted Crime
2 = Yes, Only Damaging Statement(s)
9 = Unknown

24 Did defendant offer any alibis (assertion made by defendant he was elsewhere when crime occurred)?. . . . . ☐ 63

1 = Yes
2 = No
9 = Unknown

25 Does defendant have a prior adult felony arrest record? . . . . ☐ 64

1 = Yes
2 = No
9 = Unknown

26 Has defendant ever been convicted of a felony as an adult? . . . . ☐ 65

1 = Yes
2 = No
9 = Unkonwn

INFORMATION FROM CRIME LABORATORY REPORT

127 Is there a laboratory report or mention of one in file?. . . . . ☐ 66

1 = Yes, Crime Laboratory or Fingerprint Report 1
2 = Yes, Coroner's Report
3 = Yes, Crime Laboratory and Coroner's Report
4 = Yes, Other Laboratory Report (specify) ____________________
5 = No

Consult attached instructions for completing the following table

SCIENTIFIC AND TANGIBLE EVIDENCE	COLLECTED 1=Yes	SCIENTIFICALLY EXAMINED (Lab Report) 1=Yes	R E S U L T S				col.
			IDENTIFICATION 1=Pos. 2=Neg.	ASSOCIATION 1=Yes, Conclusive 2=Yes, Not Concl. 3=No, Fails to Assc.	RECONSTRUCTION/ RESTORATION 1=Yes	INCONCLUSIVE 1=Yes	
V201 Arson Accelerants/ Fire Debris	1	1	1 2	1 2 3	1	1	5/10
V207 Blood/Bloodstains	1	1	1 2	1 2 3	1	1	11/16
V213 Ques. Documents	1	1	1 2	1 2 3	1	1	17/22
V219 Drugs (Street)	1	1	1 2	1 2 3	1	1	23/28
V225 Explosives	1	1	1 2	1 2 3	1	1	29/34
V231 Fingerprints	1	1	1 2	1 2 3	1	1	35/40
V237 Firearms	1	1	1 2	1 2 3	1	1	41/46
V243 Fibers	1	1	1 2	1 2 3	1	1	47/52
V249 Glass/Plastics	1	1	1 2	1 2 3	1	1	53/58
V255 Hair	1	1	1 2	1 2 3	1	1	59/64
V301 Impressions, Imprints, Patterns	1	1	1 2	1 2 3	1	1	2 5/10
V307 Paint	1	1	1 2	1 2 3	1	1	11/16
V313 Semen/Vag. Smear/ Susp. Semen	1	1	1 2	1 2 3	1	1	17/22
V319 Tools/Toolmarks	1	1	1 2	1 2 3	1	1	23/28
V325 CORONER/M.E. RPT.	1	1	1 2	1 2 3	1	1	29/34
V331 Toxic Substances	1	1	1 2	1 2 3	1	1	35/40
V337 Other ________	1	1	1 2	1 2 3	1	1	41/46
V343 ________	1	1	1 2	1 2 3	1	1	47/52
V349	1	1	1 2	1 2 3	1	1	53/58

401 Laboratory Report Number (enter 0000000 if not applicable) ☐☐☐☐☐☐☐ 5/11

INFORMATION FROM CORONER/MEDICAL EXAMINER REPORT (if applicable)

402 If coroner's/medical examiner's report is present, was the cause of death determined? (i.e., stabbing, strangulation, gunshot wound, etc.). . . . ☐ 12

0 = Not Applicable
1 = Yes (please specify) ____________________
2 = No

403 What was the manner of death? . . . . ☐ 13

0 = Not Applicable
1 = Homicide
2 = Suicide
3 = Accidental
4 = Natural
9 = Undetermined

INFORMATION FROM PROSECUTOR'S FILE/COURT DISPOSITION SHEET

Charge Codes (listed in order of seriousness)

01=Murder
02=Att. Murder
03=Agg. Arson
04=Rape/Dev. Sex. Asslt.
05=Armed Robbery
06=Att. Rape
07=Att. Armed Robbery
08=Cont. Subst. (Sale)*
09=Cont. Subst. (Poss.)*
10=Vol. Manslaughter
11=Robbery
12=Arson
13=Burglary
14=Invol. Manslaughter
15=Agg. Asslt./Battery
16=Att. Robbery
17=Att. Arson
18=Att. Burglary
19=Unlawful Use of Weapons
20=Theft/Stealing/Larceny
21=Fraud/Forgery
22=Reckless Homicide
23=Crim. Dam. Prop.
24=Stolen Prop. Poss.
25=Marijuana-Poss./Sale
26=Other (specify)
____

* Any controlled substance except marijuana

Indictment/Information Charge(s) Filed Against Defendant
(enter up to five charges from the above list)

404 First Charge . . . . ☐☐ 14/15
405 Second Charge . . . . ☐☐ 16/17
406 Third Charge . . . . ☐☐ 18/19
407 Fourth Charge . . . . ☐☐ 20/21
408 Fifth Charge . . . . ☐☐ 22/23

Charges for Which Defendant Was Convicted
(enter 00 if case was dismissed or defendant was not convicted of any charges; enter up to five charges from the above list)

V409 First Charge . . . . ☐☐ 24/25
V410 Second Charge . . . . ☐☐ 26/27
V411 Third Charge . . . . ☐☐ 28/29
V412 Fourth Charge . . . . ☐☐ 30/31
V413 Fifth Charge . . . . ☐☐ 32/33

Columns

Case Disposition For Each Charge (enter up to five)

00 = Not Applicable	07 = Guilty Plea to Reduced Charge
01 = Dismissed	08 = Deferred Prosecution/Pre-trial Diverision
02 = Acquitted After Bench Trial	09 = Remanded to Lower Court
03 = Acquitted After Jury Trial	10 = Delayed Sentence
04 = Convicted After Bench Trial	11 = Jumped Bail
05 = Convicted After Jury Trial	12 = Other
06 = Guilty Plea to Charge	99 = Unknown

	First Charge	☐☐	34/35
5	Second Charge	☐☐	36/37
5	Third Charge	☐☐	38/39
7	Fourth Charge	☐☐	40/41
3	Fifth Charge	☐☐	42/43

) Are there any motions to suppress any type of evidence?. . . . . ☐ 44

1 = Yes, and was granted
2 = Yes, but was not granted
3 = Yes, but outcome of motion unknown
4 = No record of motion in file

) If yes, which evidence was specified in the motion? . . . . ☐☐ 45/46

____

Were the following types of sentences imposed?

1 = Yes
2 = No

1	Deferred Sentence	☐	47
2	Probation	☐	48
3	Fine	☐	49
4	Restitution	☐	50
5	Time Served	☐	51
6	Periodic Imprisonment	☐	52
7	Work Release	☐	53
8	Community Based Treatment Program	☐	54
9	Incarceration - Jail	☐	55
0	Incarceration - Prison	☐	56
1	Committed to Psychiatric Institution	☐	57
2	Other (please specify) ________________________	☐	58

If defendant was sentenced to incarceration (either of time already served or to be served), indicate the period of incarceration in <u>months</u>.

3 0000 = Not Applicable ☐☐☐☐ TO ☐☐☐☐ 59/66
0001 = One Month or Less
9999 = Unknown (min.) (max. and determinate)

riable Column

/434 Date of Final Disposition (trial, plea, dismissal)

--Month/Day/Year . . . . ☐☐☐☐☐☐ 67/7

/435 Type of Defense Attorney . . . . ☐ 73

0 = None
1 = Public Defender
2 = Court-Appointed Private Attorney
3 = Privately-Retained Attorney
9 = Unknown

/436 Defendant's Sex . . . . ☐ 74

1 = Male
2 = Female
9 = Unknown

/437 Defendant's Year of Birth . . . . ☐☐ 75/7

(99 = Unknown)

/438 Defendant's Race/Ethnicity . . . . ☐ 77

4

1 = White
2 = Black
3 = Latino
4 = Asian/Pacific Islander
5 = Other
9 = Unknown

CODER'S COMMENTS

Was there anything about this case which made it special or distinguishable from the others? Any other comments or notes?

INSTRUCTIONS FOR COMPLETION OF SCIENTIFIC AND TANGIBLE EVIDENCE FORM

A major goal of this project is to record the presence of various types of tangible (physical) and scientifically analyzed evidence which were collected in the cases under review. A one page form has been designed which defines the most common forms of scientific evidence which will be encountered in these case files and the most common types of findings which result from a scientific review.

The coder is to use this form to record all tangible evidence collected by investigators, even though it may not be examined scientifically in a laboratory. A number of blank spaces are present at the bottom of the form; these spaces should be used to itemize the different types of tangible evidence recovered, e.g., stolen currency, recovered stolen property or proceeds of the crime, wearing apparel, wallets, jewelry, etc. This project is defining tangible evidence as any physical item of evidence relevant to the crime which is collected, but not scientifically analyzed. Every physical item of evidence which is analyzed will be defined as scientific evidence.

If a particular type of evidence is collected, then the corresponding "1" in the column headed COLLECTED should be circled. If the evidence collected, tangible or scientific, is not listed on the form, enter it in the space at the bottom of the form and circle the "1" in the COLLECTED column.

A note of explanation is in order at this point. For items of evidence collected and/or examined in the laboratory, we want you to code the evidence which was examined, not the material or surface on which the evidence was found. For example, if a bloody undershirt is submitted to the laboratory for analysis, the correct evidence category to check would be blood/bloodstains. The coder should not enter the shirt as an item of evidence. If a blunt object is submitted for examination and hairs are found on it, the only evidence that would be enumerated would be the hair. So, to reiterate, we are interested in knowing what evidence was examined scientifically, not the material or object from which it was taken.

If the physical evidence was examined in the laboratory, then the "1" in the SCIENTIFICALLY EXAMINED column should be circled. For items of tangible evidence which are collected, but never examined scientifically, the "1" would not be circled in the EXAMINED column. It is entirely possible that an item of physical evidence, such as a handgun, is collected (possibly in an armed robbery investigation), but that no scientific examination is conducted. In this case, the coder should circle the "1" corresponding to the FIREARMS category under the COLLECTED column.

The next four columns on the form pertain to the results and/or value of the evidence. The first column is headed IDENTIFICATION. This means that an item of evidence was identified and placed into a category of like items with similar class characteristics. A positive identification (circle "1") is appropriate where the material is identified. Common examples are where suspected flammable liquids are identified in an arson investigation; where a suspected controlled substance (drug) is positively identified; or where suspected semen recovered from the clothing or body of an alleged rape victim is identified as semen. In other cases, a suspected bloodstain is identified as human blood of a particular type, or a fiber is identified and placed into a generic class (e.g., rayon). These results would also be classified as an "identification".

If the substance turns out not to be composed of the material it was suspected to be (the liquid is not a volatile, or the suspected drug sample is not a controlled substance) then the coder should circle the "2" representing a negative identification.

In the column headed ASSOCIATES, we want to record if the examination of the evidence (or the tangible evidence by itself) associates the defendant with the crime. Here, the evidence (material of unknown source) is compared with a standard (whose origin is known). For the purpose of this project, we are only recording associations which link the defendant with the crime. There may be evidence which associates several crimes together or which links other people, places and things together, but we will not be coding these types of linkages. There are three possible responses here. Circle "1" if there is a conclusive association. This is usually only possible with pattern, imprint or impression evidence. For example, finger, palm, foot or shoe prints; bullets and cartridge cases; toolmarks; or handwriting and printing can be conclusively associated with a single source. A conclusive determination is the same as establishing a common origin, concluding that two or more items originated from the same source, or that two marks were made by the same instrument at the exclusion of all other possibilities. Another way in which a conclusive association can result is where two pieces of evidence "physically match"; that is, where two or more items are brought together to form a "jigsaw" fit, to demonstrate commonality of origin. In order to circle a "1", there must be a conclusive and unequivocal linkage between the items of evidence.

It is possible that there may be a conclusive association with tangible evidence, even though it is not scientifically examined. For example, if the defendant leaves his wallet (with identification) at the scene of the crime; or if the defendant is found wearing a wristwatch with the mugging victim's name engraved on the back; or if the victim's stolen property (that he can identify) is found in the defendant's possession. If such linkages are clear and unequivocal, then a conclusive association would be indicated for such tangible items.

Most scientific and tangible evidence, however, fails to result in an association that is conclusive. Most results are tentative, partial or probable associations and these would be indicated by circling the "2" in the ASSOCIATION column, indicating a nonconclusive association. The general rule is that examinations of chemical or physical properties may not yield a conclusive association. For example, a bloodstain found on the suspect's trousers and the victim's blood are found to be the same for all grouping systems analyzed (e.g., ABO, Rh, MN, PGM, etc.). Even though the stains are similar, they still would not be conclusively associated with one another, since there could be another member of the population having a similar configuration of blood groupings. The same holds true with fibers, paint and glass chips (unless there is a physical match), hair and other body fluids. All the major forms of evidence are discussed in subsequent pages and the limits of association are defined.

The third option under the ASSOCIATION column is "3" which is No, the evidence fails to associate the defendant with the crime. This response should be circled when the tangible evidence or scientific laboratory report fails to link the defendant with the crime scene or victim.

The RECONSTRUCTION column is employed where the primary result of the examination is an aid to the reconstruction of the crime; i.e., to shed light on "what happened" or how the crime was committed. Specific examples of these reconstruction type responses are listed below by evidence type. The results of an autopsy report describing the manner and/or cause of death will usually be indicated in this column.

The final column, INCONCLUSIVE, should only be employed if the scientific results fail to yield any information of value. Usually, though, the results will customarily fall into one of the previously discussed categories.

PHYSICAL EVIDENCE TYPES

Arson/Accelerants/Fire Debris - Suspected flammable liquids and/or arson debris are collected for the purpose of identifying the accelerant. Ignition devices & other arson-related physical evidence should be itemized under "other". The usual purpose of collecting this evidence is to identify the presence of a flammable liquid.

Blood/Bloodstains - All blood evidence, animal or human, liquid or dried is included in this category. Some blood may simply be identified (the stain is blood, or it is human blood) or classified (the stain is Type A); for our purposes a simple "classified" would be indicated by circling the "1" under the IDENTIFY column. Most bloodstain examinations, however, have the purpose of associating a person with another person, object or environment. This will involve the comparison of two or more samples - usually an unknown "evidence" stain with a known "standard".

Comparison of bloodstains may only tentatively associate; they may never conclusively associate. Bloodstain comparisons, however, can disassociate where stains are found to be of different origin. In such a situation, the "3" would be circled for failing to associate.

Bloodstain pattern interpretations would be indicated as a "reconstruction" under the column headed RECONSTRUCTION.

Documents - This category would include the comparison of handwriting, printing and typewriting, but may include, too, the examination of ink, paper and photocopying/printing devices. Most examinations are conducted for determining the authorship of signatures or other writings and thereby show an association between a document and a person. Other times, the examination yields information about how or when a document was effected, or if the document has been altered; such demonstrations would be noted under the RECONSTRUCTION column.

Drugs - Laboratories are commonly requested to examine and identify drugs of abuse - opiates, stimulants, hallucinogens and depressants. If the test is positive, "1" should be circled in the IDENTIFIES column; if the suspected drug turns out not to be a controlled substance, the "2" should be circled (Negative I.D.).

Explosives - Similar to the examination of arson accelerants, the conventional objective, here, is to identify explosive residues. Such examinations will either yield a positive identification ("1") or a negative identification ("2").

Fingerprints (also palm and footprints) - Finger, palm and footprints have the potential of conclusively associating a defendant with the scene of a crime. Usually, examiners will report that an unknown print and a standard either are or are not of common origin. In such cases, either the "1" or "3" would be employed in the ASSOCIATES column.

Firearms - Firearms evidence may range from the collection of a firearm without comparison to fired evidence, to a case where bullets or cartridge cases are shown to have been fired from a particular weapon (a conclusive association). If only the class characteristics correspond, there would be an association which is not conclusive. Bullets and cartridge cases may also be shown not to have been fired from a particular gun: coded as a No - fails to associate.

Weapons will oftentimes be collected by the police in the course of crimes involving firearms, but where there is no fired evidence. Here, there is a collection but no examination and usually no other interpretation possible.

Fibers - Fibers may either be natural (animal, vegetable or mineral) or artificial (synthetic or derived). They will oftentimes be identified but, other times, will be compared with a standard to show association. Although an association is possible, it will never be conclusive.

Glass and Plastics - The examination of glass may yield a simple identification (the chip is auto headlamp glass), or through an examination of fracture patterns may aid in reconstructing events surrounding the criminal act ("the window was broken from the inside, not the outside"). Conclusive associations may only result when a physical match occurs between a questioned evidence sample and a known standard. An examination of the composition of glass and characterizing its physical and chemical properties may yield an association, but never one which is conclusive.

Hair - Human head, pubic and body hair may be shed in the course of many violent crimes. Hair evidence and standards are often compared with one another to determine if they share a common origin; i.e., originated from the same individual. Although hair may not result in a conclusive association, except under the most unusual circumstances, it may yield a "partial" association (a "2" on the code sheet under ASSOCIATION). Examinations of hair may also be shown not to have originated from the same source (coded as a "3"). Animal hair is sometimes encountered in an investigation and this hair will usually be identified, perhaps as to its species of origin. Finding animal hair on a defendant may also associate (not conclusively, however) this individual with the crime scene or victim.

Impressions, Imprints, Patterns - Impressions are commonly preserved using a casting medium (such as plaster of paris or silicone); imprints are sometimes photographed and other times "lifted," as where fingerprints are dusted and lifted with transparent tape; and pattern evidence is ordinarily examined in place and photographed for later analysis. These types of evidence may be helpful in 1) identifying an object used to make an imprint or impression; 2) serving to individualize an item of evidence and thereby conclusively associate it with a standard; or 3) helping to reconstruct a crime, as where a gunshot residue pattern (developed chemically) helps the examiner to estimate the distance of firing between a shooter and his victim, or where bloodstain spatters aid in determining the size, speed, force and direction of blood droplets formed by the force of an object on a victim's body.

Paint - Burglaries and hit-and-run accidents are two of the most common crimes where paint is collected and analyzed. While some paint chips may be physically matched with their point of origin, and form a conclusive association, most chips will be characterized by physical and chemical testing. Such analysis of paint evidence and standards will sometimes demonstrate an association (nonconclusive); or if they are dissimilar in composition will fail to associate. Examination of layered paint chips, as where an automobile has been painted several different times, may also demonstrate a nonconclusive association.

Semen - The primary purpose of examinations of suspected semen is to identify its presence. Semen may also be partially individualized by determining if the donor secretes blood group substances into his body fluids, and then characterizing the semen by using these blood group systems. As with bloodstain comparisons, it is possible to make a nonconclusive association or, if the blood groups are dissimilar, to have a "failure to associate."

Tools/Toolmarks - Toolmark comparisons are usually associated with breaking and entering cases near points of entry to the building, or close to the target area of the crime. Toolmarks can also result in other circumstances where a harder object comes into contact with a softer one and leaves an impression or striation (scratch) markings. If a tool is found it may be compared with the toolmarks for the purpose of determining if the tool made the particular marks. Much like the comparison of firearms evidence, a comparison of a tool and toolmark may yield a conclusive association. If the individual characteristics are not present or consistent in sufficient detail, then a nonconclusive association may result. Such a comparison can also yield a "failure to associate" conclusion. If only the toolmark is present the examiner may be able to define or identify the type of tool which made the mark, and would be coded accordingly (positive identification).

CORONER/MEDICAL EXAMINER'S REPORT - In cases of suspicious, homicidal or suicidal deaths, a coroner's or medical examiner's report will usually be in the case file providing the cause and/or manner of death. For such cases, the "1" should be circled in the RECONSTRUCTION column. When using the full, "deep" sample survey instrument, your coding of the cause and manner of death will be more specific. See the survey form for additional detail.

Toxic Substances - In the autopsy of victims of suspicious or violent death, there is commonly a toxicological report which accompanies the pathologist's report. These toxicological reports will determine the presence or absence of extraneous, foreign substances in the victim's body fluids or tissue. If such a determination was made and the identification of the substance (such as drugs, alcohol or poison) was a factor in explaining the deceased's death, then circle the "1" in the IDENTIFIES column.

University of Illinois at Chicago

College of Liberal Arts and Sciences
CENTER FOR RESEARCH IN LAW AND JUSTICE
Post Office Box 4348
Chicago, Illinois 60680
(312) 996-4632

Dear Juror:

This is a short questionnaire about the case on which you just completed jury service. As a part of a research study being conducted by the University of Illinois, we are interested in your assessment of the evidence presented in this case. YOUR RESPONSES WILL REMAIN TOTALLY ANONYMOUS. Thank you for your cooperation.

Joseph L. Peterson, Director

1. What verdict did your jury arrive at? (CHECK ONE)

_____ Guilty of Most Serious Charge

_____ Guilty of Lesser Charge

_____ Not Guilty

2. Was there a single piece of evidence (a witness's testimony or an exhibit) that persuaded you to find the defendant guilty or not guilty?

_____ Yes

_____ No

IF YES, which piece of evidence? ______________________________

3. Were there several pieces of evidence that, when taken together, persuaded you to find the defendant guilty or not guilty?

_____ Yes

_____ No

IF YES, which pieces of evidence? (1) ______________________________

(2) ______________________________

(3) ______________________________

4. Was there any information not presented at trial, which would have helped you make your decision?

_____ Yes

_____ No

IF YES, what? ______________________________

5. Was your personal decision to find the defendant guilty or not guilty an easy or difficult decision to reach in this case?

_____ Easy Decision

_____ Difficult Decision

OVER →

6. For the following persons who testified at trial, how persuasive was their testimony to you?

(RATE FROM (1) HIGHLY PERSUASIVE TO (5) NOT AT ALL PERSUASIVE; IF PERSON DID NOT TESTIFY, CIRCLE X)

	Did not Testify	Highly Persuasive				Not at all Persuasive
a. Victim	X	1	2	3	4	5
b. Eyewitness(es) to crime	X	1	2	3	4	5
c. Defendant	X	1	2	3	4	5
d. Police Officer(s) . . .	X	1	2	3	4	5
e. Crime Lab Examiner . .	X	1	2	3	4	5
f. Coroner/Pathologist . .	X	1	2	3	4	5

7. Was physical evidence (e.g., fingerprints, weapons, photographs, bloodstains, chemical analyses, etc) introduced at trial?

_____ Yes (Which evidence? ______________________________)

_____ No (Skip to Question 11)

8. How much (if at all) was the physical evidence discussed in your jury's deliberations?

_____ Substantial portion of time

_____ Moderate portion of time

_____ Minimal portion of time

_____ Not at all

9. If there had been no physical evidence introduced in this case, do you feel the jury would have reached the same verdict?

_____ Same Verdict

_____ Different Verdict → What? ______________________________

10. Compared with other types of evidence, how well do you feel that you understood the physical evidence introduced in this case?

_____ Understood physical evidence better than other types of evidence

_____ Understood physical evidence about as well as other types of evidence

_____ Understood physical evidence less well than other types of evidence

11. How old are you?

_____ 18-29

_____ 30-39

_____ 40-49

_____ 50-64

_____ 65 and older

12. Are you . . . . . _____ Male

_____ Female

THANK YOU FOR YOUR TIME.

October 7, 1983

TO: State's Attorneys in the Felony Trial Division

The attached questionnaire is part of a research project on the role of evidence, funded by the National Institute of Justice and conducted by professors at the University of Illinois-Chicago. The questionnaire is concerned with the variety of ways in which evidence affects the disposition of charges. We are asking you to read some information about four different types of cases (a robbery, a rape, an attempted murder and a burglary) and tell us how you think such situations would likely be resolved. We are interested in how you think such cases would actually be disposed, not how they should be disposed. In order that the questionnaire not be invalidated, please complete the questions on your own and do not ask others about their responses until all the questionnaires have been returned. Reading the cases and answering the questions should take no more than ten to fifteen minutes of your time.

For administrative convenience, we have asked your supervisors to distribute these materials to you and to collect the completed questionnaires from you one week from today. Your answers will be completely anonymous. Once you have completed the questionnaire and sealed it in the attached manila envelope, no one will be able to connect you with it in any way. (Remove your name from the envelope before returning it to your supervisor.)

If you have questions about how to complete the questionnaire or would like to talk with us about the research, please call us at the number listed below. Thank you very much for your time and effort. It is much appreciated.

Joe Peterson
John Ryan
Pauline Houlden
Center for Research in Law and Justice
University of Illinois-Chicago
996-4632

ASSUMPTIONS

For each of the cases that you read, please assume the following:

The defendant is male.

The defendant and victim are of the same race.

The defendant and victim were unknown to each other prior to the offense.

The defendant has one prior felony conviction for a property offense.

The defendant has no other charges pending against him.

The defendant is represented by a public defender who has no particular reputation for trying cases or avoiding trials.

The judge has no bias with respect to the particular type of offense.

se #1

ctim woke up around midnight to find a man standing in the darkness by her bed.

e man grabbed her by the hair and told her to keep quiet. He said he would kill her if she screamed.

e attempted to break free from his grasp, but he slappped her hard across the face.

th one hand around her throat, he pulled down his pants and tore off her nightclothes and raped her.

en he was finished he pulled up his pants, stepped into the bathroom for a few seconds and exited through the front door.

e victim waited a few moments, then ran outside her apartment into the hallway and screamed for help.

o neighbors came out of their apartments, spoke to the victim, and called the police.

out fifteen minutes later, a man matching the general description of the rapist provided by the victim, was stopped by lice. The apprehension occurred four blocks from the scene of the crime, as the defendant was entering a tavern.

ctim had several minutes to view the attacker. She was able to provide a good description to the police: about six feet ll, medium build, in his early 30's, with curly dark hair and aviator glasses. Later, she picked the defendant out of a lice line-up.

en police arrived at the victim's apartment, they discovered a man's windbreaker lying on the floor by a broken window of e victim's ground floor apartment. "Slim" was printed on the back of the jacket. Police subsequently learned this was the fendant's nickname.

ctim was taken to the hospital for an examination. Vaginal swabs taken from the victim were submitted to the crime boratory for analysis. Spermatozoa were found on the swabs. No other tests were possible.

ter being given his Miranda warnings by the police, the defendant orally admitted committing the rape. He later refused to gn a statement.

Case #2

Victim was waiting for a bus at about 11 pm on a Saturday evening.

He states he was approached by an individual who asked for the time.

When he looked up from his watch, he saw that this individual now had a knife in his hand.

The robber then demanded the victim's wallet and gold chain, or said he would kill him.

After handing his wallet and chain to the robber, the victim tried to knock the knife from the robber's hand.

In the struggle, the victim cut his hand on the blade of the knife. The robber broke free and fled down the street.

Almost immediately the victim caught sight of a police car and flagged it down.

Victim got in the back seat of the police car which then drove in the direction that the robber had run.

Turning down an alley, they saw the defendant.

Upon seeing the defendant, the victim exclaimed, "That's him, that's the man who robbed me!"

In the defendant's pants' pocket, police found a 14 kt. gold chain with a St. Christopher medal and a date inscribed on the back. Victim is certain the chain is his since he wore such a medallion, and his birth date, which was inscribed on the bac matches that on the medallion now in police custody.

In a pants' pocket of the defendant, police also found a knife. Laboratory analysis revealed human bloodstains on it, but further testing proved inconclusive.

After being given Miranda warnings by the police, the defendant orally acknowledged committing the robbery, but refused to sign a written statement.

se #3

the early morning hours, victim was walking home from the "L."

he came down the street, a young man jumped out at him from an alley, knocked him to the ground and held a gun against his est.

ive it up, mother-fucker or you die!" shouted the gunman.

ctim took a swing at the gunman's head and knocked his cap off.

th that, the gunman fired, wounding victim in the shoulder.

parently frightened by the lights of an oncoming car, the gunman fled without the victim's wallet, leaving the victim ing wounded on the sidewalk.

aring the shot, a neighbor called the police. The police arrived at the scene within minutes.

ctim was taken to a nearby hospital.

the hospital, the victim gave police a description of the gunman. He was wearing a tan suede coat with fringe, was about x feet tall, 200 pounds, and had wavy hair, a mustache and goatee. Also, shortly after the shooting, the police received an onymous tip that the defendant was bragging about the shooting and displaying a weapon to his friends. Later, the victim s able to identify the defendant in a police line-up.

the scene the police found a cap which was black in color and had an "Extra Large" tag in it. On the inside head band re the initials "C.K." After the defendant was taken into custody, it was found that the initials were the same as his and at the hat matched the size of his head.

ter obtaining a search warrant, police went to question the defendant at his home. There they found a gun in the fendant's bedroom. A firearms examination in the laboratory revealed that the bullet which was removed from the victim was nsistent with being fired from this gun. Because of damage to the bullet, the examiner was unable to state positively that is was the gun used in the shooting.

ter being given his Miranda warnings by the police, the defendant orally admitted the shooting, but later refused to sign a itten statement.

ase #4

ictim returned home to his bungalow about midnight and was surprised to find his front door unlocked.

e entered the house and began turning on the lights and checking to see if anything was missing.

He heard footsteps upstairs and called out, "Who's there?"

he footsteps stopped and a voice muttered, "Dammit!" A man then ran down the stairs and burst past him and out the front oor.

he burglar entered a dark colored station wagon which was parked in front of the house and sped away.

pon inspection of the house, the victim noticed that a ground floor dining room window had been forced open by the intrude

ictim told police that he did not know who the burglar was. He described the intruder as a male, about five and a half fe all, around 150 pounds, with dark hair and glasses, and wearing dark slacks and a dark turtleneck sweater. The victim was ater able to identify the defendant in a police line-up.

he victim also found that his bedroom dresser had been rifled by the intruder. His jewelry box was on the floor and is Rolex watch, with his initials, "J.C." inscribed in the back, was missing. When the police performed their canvass of eighborhood and stopped the defendant on the street, he had a screwdriver sticking out of his back pocket and a Rolex watc ith the initials, "J.C." on the back on his wrist.

vidence technicians were unsuccessful in finding fingerprints within the home or at the suspected point of entry used y the burglar. The jewelry box, however, had been pried open with a screwdriver, leaving one, fresh tool impression. Upo xamination in the laboratory, it was found that this mark was consistent with being made by the screwdriver found in the ocket of the defendant. The examiner could not state unequivocally, though, that this particular screwdriver had been use o make the tool impression on the jewelry box.

fter being given his Miranda warnings by the police, the defendant orally acknowledged committing the burglary. He later efused to sign a written statement.

Question:

1. What is the most likely path that this case would take? Complete the sequence below from felony review to sentence.

FELONY REVIEW ⟶

☐ charge approved

☐ lesser charge approved
(what?_______________)

☐ no charges approved
(stop here; go to Q. 2)

PRELIMINARY HEARING/GRAND JURY ⟶

☐ bound over

☐ dismissed
(stop here;
go to Q. 2)

PLEA NEGOTIATIONS ⟶

☐ plea to charge approved
at felony review

☐ plea to a reduced charge
(what?____________________)

☐ no guilty plea (trial)

TRIAL ⟶

☐ bench trial < conviction ☐ / acquittal ☐

☐ jury trial < conviction ☐ / acquittal ☐

☐ no trial (guilty plea)

SENTENCE

☐ IDOC (how long?______

☐ county jail

☐ probation

---

2. If the path checked in Question #1 were not to occur, what path would be the next most likely to occur?
(Do not consider only a change in sentence to be a change in path.)

FELONY REVIEW ⟶

☐ charge approved

☐ lesser charge approved
(what?_______________)

☐ no charges approved
(stop here; go to Q. 3)

PRELIMINARY HEARING/GRAND JURY ⟶

☐ bound over

☐ dismissed
(stop here;
go to Q. 3)

PLEA NEGOTIATIONS ⟶

☐ plea to charge approved
at felony review

☐ plea to a reduced charge
(what?____________________)

☐ no guilty plea (trial)

TRIAL ⟶

☐ bench trial < conviction ☐ / acquittal ☐

☐ jury trial < conviction ☐ / acquittal ☐

☐ no trial (guilty plea)

SENTENCE

☐ IDOC (how long?______

☐ county jail

☐ probation

---

3. How likely are the paths you checked in Questions 1 and 2 to occur? (Fill in percentages in the blanks below.)

Path in Question 1 _____%

Path in Question 2 _____%

Other paths (if any) _____%

100 %

Now assume that the defendant denied committing the crime.

On the following page, complete Questions #1, 2 and 3 again, for the same scenario except without an oral admission by the defendant.

BACKGROUND QUESTIONS

How many years have you been with the felony trial division of the State's Attorney's Office?

Approximately how many jury trials have you tried?

Have you tried the following types of cases?

___ Yes ___ No	Attempt Murder
___ Yes ___ No	Rape
___ Yes ___ No	Robbery
___ Yes ___ No	Burglary

REVISED INTERVIEW GUIDE: PROSECUTORS

General

1. What's your first reaction to the thought that forensic evidence (DEFINE) may be available in a case?

    probe: by type of case (homicide, rape, robbery, assault, burglary, other)

    by type of evidence (fingerprints, hair, blood, semen, other)

2. How aggressively do you seek out the possibility/presence of forensic evidence?

    probe: from police

    from crime lab

    office guidelines/norms?

3. In the charging process, how (if at all) does forensic evidence come into play?

    probe: are there cases you wouldn't charge without forensic evidence? (rape?)

    when the charging decision is made, do you know ...

    a) if forensic evidence is available

    b) results?

PLEA - CASES

4. If a case is likely to be disposed by plea ... is the lab report sought? is the lab report used in the negotiations?

    probe: by type of case

    by type of evidence

    by opposing defense attorney

5. In plea negotiations with defense attorneys ... how much (if at all) is the forensic evidence -- where present -- <u>discussed</u>?

   probe: more/less/same as other types of evidence?

6. In plea negotiations, does the defense attorney question the forensic evidence -- its accuracy, relevance?

   probe: how often
   types of cases?
   public defenders or private ... or both?

7. In plea negotiations, how comfortable is the judge with the use (maybe reliance?) of forensic evidence in establishing factual basis for plea?

   probe: type of case
   judicial variation

TRIAL - CASES

8. In your experience, how do juries react to forensic evidence?

   probe: by type of evidence (fingerprints, blood, hair, semen, other ...)

   comparative importance w/other types of evidence?

   comprehensibility of ...

9. In your experience, how do judges react to forensic evidence -- bench trials

   probe: same as 8

10. How effective -- typically -- are forensic experts in testifying at trials?

    probe: compared with police officers?

    critical keys to effective testimony

    preparation before trial w/prosecutor?

11. In trials, do defense attorneys challenge forensic evidence introduced by the prosecutor?

    How? (defense experts, cross-examination, in argument)
    How often?
    Who -- which defense attorneys around here?

BACKGROUND

12. Years in Prosecutor's office?

13. Other professional experiences (post-law school?)

14. Type of work performed while in prosecutor's office?

    a) screening/charging?

    b) trial preparation

    c) number of felony trials -- bench, jury

15. Personal understanding of ... comfort with ... forensic evidence?

    how could use be improved? (role of prosecutor's office, self-improvement

INTERVIEW GUIDE: DEFENSE ATTORNEYS

General

1. What's your first reaction to the thought that forensic evidence (DEFINE) may be used in a case?

   probe: by type of case (murder, rape, robbery, burglary, etc.)

   by type of evidence (fingerprints, ballistics, blood, semen ...)

2. How aggressively does the prosecutor's office seek out forensic evidence?

   probe: limitations?

   seriousness of case?

3. What is the discovery practice regarding lab reports?

   are they readily available to you? (to all defense attorneys?)
   at what stage are they available?

4. Are lab examiners accessible to you?

   can you call them up to ask a question about their report?
   are they responsive to your questions?
   do you actually sometimes call up?

Plea - Cases

5. If a case is likely to be disposed by plea ...

   a. will the prosecutor seek out a lab report (results)?

   b. are lab reports used as leverage by the prosecutor in plea negotiations? How?

6. During plea negotiations, do you question or attack the forensic evidence -- its accuracy, relevance?

   If YES, how often? what types of evidence?

   If NO, why not?

<u>Trial - Cases</u>

7. In your experience, how do <u>juries</u> react to forensic evidence?

   probe: by type of evidence (fingerprints, ballistics, blood, semen ...)

   compared with other types of evidence?

   comprehensibility of forensic evidence?

8. In your experience, how do <u>judges</u> react to forensic evidence in bench trials?

   probe: same as 7 above

9. How effective, typically, are forensic experts in testifying at trial?

   probe: amount of individual variation

   keys to effective testimony

10. Do you employ any strategies/techniques for challenging these experts?

    probe / a. challenging qualifications of experts

    b. cross-examining expert testimony

    c. consulting authoritative texts or written matter on subject

    d. consulting "outside" experts (when, who?)

    e. using "outside" experts to testify (when, who?)

    * f. only against certain types of evidence?

11. Why so infrequent use of outside experts?

    probe / a. lack of $$

    b. availability of competent, independent experts

    c. mandatory discovery of findings of any outside expert

12. How frequently do you stipulate -- or seek to stipulate -- to the testimony of the forensic expert?

    Why?

13. Have the results of a lab report <u>ever</u> exonerated -- or cast great doubt as to the guilt of -- a client of yours?

    Circumstances?

    How often?

14. How accurate/reliable are the tests performed by the lab?

    probe / a. problem areas

    b. problem examiners

    c. newcomer examiners (role of experience?)

15. How impartial -- on the whole -- is the crime lab?

    are they scientists or arms of the prosecutor?

    probe / conducting tests

    interpreting results of tests

Background

16. Years as defense attorney?

specialization (if any)?

17. Prior professional experiences?

18. Personal knowledge/understanding of forensic evidence?

-- how obtained?

-- comfortable in attacking it?

19. Reforms in the use of forensic evidence?

"independence" of labs from prosecutor/police control?

other?