The Impact of Forensic Evidence on Arrest and Prosecution

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Introduction

The National Institute of Justice (NIJ) grant solicitation, *Social Science Research on Forensic Science* (NIJ-2011-2822), was heavily reliant on the NIJ study, *The Role and Impact of Forensic Evidence in the Criminal Justice Process* (Peterson, Sommers, Baskin, and Johnson, 2010). The objectives of Peterson et al., (2010) were to 1) "Estimate the percentage of crime scenes from which one or more types of forensic evidence is collected;" 2) "Describe and catalog the kinds of forensic evidence collected at crime scenes;" 3) "Track the use and attrition of forensic evidence in the criminal justice system from crime scenes through laboratory analysis, and then through subsequent criminal justice processes;" 4) "Identify which forms of forensic evidence contribute most frequently (relative to their availability at a crime scene) to successful case outcomes" (Peterson et al. 2010, Pg. 11-12). Peterson, et al. (2010) analyzed crime lab, investigative, and prosecutorial case file information of crimes that fit into one of five crime categories: assault; burglary; homicide; rape; and robbery. Peterson et al. (2010) concluded their analysis by making ten recommendations regarding future research on the utility of forensic evidence. The current study, *The Impact of Forensic Evidence on Arrest and Prosecution*, addressed several of these recommendations via a methodology that informs the four research objectives listed above.

The first Peterson et al. (2010) recommendation is generally related to simple replication - refining and performing a similar analysis in another jurisdiction. This study addressed this recommendation by mimicking the methodology used by Peterson et al. (2010). Variables, crime categories, sample size, and analytical models were all borrowed from Peterson et al. (2010).

Another recommendation of the Peterson et al. (2010) makes clear the need for a more detailed assessment of how the mere existence of available forensic evidence affects the arrest and prosecution of offenders. A major finding of Peterson et al. (2010) stated most evidence goes unexamined, but its presence in cases was associated with arrest and movement of cases through the justice process. As forensic evidence moves through the criminal justice system, less and less evidence makes it to the next stage. This movement resembles a funnel or an inverted pyramid (Peterson, 1974). Added studies are needed to review how unexamined forensic and tangible evidence teams with other conventional investigative procedures to lead to arrests (page 9). The same phenomenon has also been discovered in another recent analysis of the use of one type of forensic evidence, namely DNA. Schroeder (2007) discovered that among his sample of homicide cases from the City of New York (1996 – 2003) the group of cases that had the highest clearance rate was the group in which evidence for DNA analysis was collected from the scene but never analyzed.

There are three general areas of explanation for why unexamined evidence is associated with higher clearance rates. First, the collection of forensic evidence from crime scenes has become so commonplace that its collection is not contingent upon the needs of the investigation, but simply a matter of protocol. Therefore, when cases present non-forensic evidence (e.g. suspect interrogations, witness statements and identifications) sufficient to advance the case through the system the byproduct is a great deal of collected, but unanalyzed forensic evidence. Second, the analysis of forensic evidence is so time-consuming as to influence its utility.

Detectives may simply be relying on more traditional methods (e.g. suspect interrogations, witness statements and identifications) as these methods can produce the desired result more directly. Third, that there is some latent interactive effect between the existence of forensic evidence and other non-forensic forms of evidence (again, most likely suspect interrogations, witness statements and identifications) which fosters a greater ability to make an arrest than those non-forensic forms of evidence do by themselves. Given the infrequency of the analysis of forensic evidence (Strom & Hickman, 2010; Peterson et al., 2010; McEwen, 2011) all three of these explanations would seem likely. However, which of these occurrences is happening most frequently, or even more often, is currently unknown given the existing literature. Moreover, there is no existing research that specifically examines how the threat (real or perceived) of analyzing collected forensic evidence may have affected the use of more traditional forms of evidence (e.g. suspect interrogations, witness statements and identifications). In addition, Peterson et al. (2010) recommended exploring how forensic evidence effects prosecutorial perceptions and decisions. Therefore, to improve upon Peterson et al. (2010), regarding these recommendations the current research includes a qualitative survey was issued to investigators from the relevant investigating agencies. The focus of this survey is to ascertain whether investigators' perception match the reality of what evidence aids in case clearance as well as their views on whether the presence of forensic evidence influences prosecutor decision-making.

Peterson et al. (2010) suggested an exploration of the prioritization of forensic evidence analysis as a means of reducing backlog and in making the analysis process more efficient to the needs of the existing criminal justice system. To address this, a three-step process was used. First, forensic evidence was analyzed in relation to arrest and conviction rates for a significant number of cases within each offense categories. Second, once certain forms of forensic evidence have been associated with higher arrest and conviction rates for certain categories of offense, an analysis of other associated variables were used to rule out any intervening variable which may account for these correlations. Third, a predictive statement of probable efficacy can then be calculated and assigned to any incoming evidence given the type of evidence and the type of offense being investigated. The findings gleaned from the results of these analyses can inform investigators and crime labs in prioritizing the analysis of any piece of forensic evidence. This process also serves to address Peterson et al.'s (2010) urgings to better understand the relationship between DNA evidence and different types of crime (property and personal). Traditionally DNA has been seen as efficacious in the investigation of violent crime (i.e. homicide and sexual assaults) but several studies have indicated that DNA is a very useful tool in the investigations of burglary and other offenses (Bond, 2007a, 2007b; Roman et al., 2009; Gabriel, Boland & Holt 2010). By paying close attention to what impact DNA evidence has on burglaries and robberies, this study addresses both recommendations.

From the above summarization of Peterson et al.'s (2010) recommendations, it would seem clear that for a follow-up study to advance the research already completed the study should be performed in an area with a population of case files similar in category and number of crimes, which is serviced by a centralized crime lab. Further, that access is available to analyze a significant number of case files in these categories of crime over a longer period of time, at both the investigative and the prosecutorial level. Finally, that a qualitative component be employed that can directly record the perceptions of investigators as to the use and effect of forensic evidence on the movement of cases through the criminal justice system.

To address these areas of focus mentioned above, this study tracked the submission, analysis and dissemination of forensic evidence for a significant number of cases in the State of Connecticut. To achieve this, relationships were established to access crime lab, investigative, and case outcome (court file) information. However, since Peterson et al. (2010) examined cases from five areas or cities (Los Angeles County, Indianapolis, Evansville, Fort Wayne and South Bend) within two states (California and Indiana, respectively), designed to represent, city, county and state crime lab services, a replication of this same methodology was utilized in a more homogeneous environment (a single crime lab covering a wide area with myriad offenses) to provide a productive and rich comparisons between the two studies. The time frame from which cases are sampled was expanded to a three-year period (2006-2009) rather than the one or two-year period (2003 – 2004) used by Peterson et al. (2010). This sample of cases was representative of the five crime categories examined by Peterson et al. (2010): assault; burglary; homicide; rape; and robbery.

This study's methodology is similar to Peterson et al. (2010), however it differed in two important ways. First, in examining case file information, the coding of the existence of a witness includes a dichotomous indication as to whether the witness named a suspect, and also record the presence of any suspect statement. Second, the current study includes a qualitative second phase in which surveys regarding detective's opinions of the utility of FAPE were administered to detectives for comparison to the results of the quantitative analysis.

It should be noted that while every effort was made to obtain investigative information for the entire sample of 2801 cases, not all the police departments from the original sample agreed to participate. Most non-participating police departments were, by themselves inconsequential due to the small number of cases in their possession from the original sample. The sole exception to this was one large police department, representing 153 cases that could not participate due to logistical issues. Investigative and courtroom information from non-participating police departments were not included in this study. It should also be noted that, even at participating police departments, it was not always possible to gather information for every case in the sample due to legal or logistic issues.

The Connecticut State Forensic Science Laboratory (The Crime Lab), located in Meriden Connecticut, is a full-service forensic laboratory. The Crime Lab staff's criminalistics divisions are in the areas of forensic biology, DNA database entry and matching (CODIS), mitochondrial DNA, nuclear DNA, trace evidence, and arson/chemistry. The Crime Lab also staffs identification divisions in the areas of imprints/impressions, latent prints, questioned documents, and firearms/tool mark identification. The Crime Lab also has dedicated laboratories for forensic science, toxicology and controlled substances, computer crime and electronic evidence, and crime scene reconstruction. The Crime Lab is accredited by The American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) and annually receives approximately 150,000 requests for analysis (18,000 of which are specifically for DNA analyses, and 4,000 for fingerprint analyses/comparison). The Crime Lab also has access/involvement with the CODIS (DNA), AFIS (fingerprints) and IBIS/NIBIN (firearms) databases. The Crime Lab services approximately ninety percent of the requests for forensic analyses by law enforcement within the State of Connecticut.

Table 1.1: Crime rates and crime lab submissions (2006-2009)		
Crime type	Crimes reported in Connecticut	Submitted to Connecticut crime lab
Assault	22,315	1,201 (5.3%)
Burglary	61,506	3,442 (5.5%)
Robbery	16,830	1,075 (6.3%)
Rape	2,752	1,829 (66.4%)
Homicide	478	438 (91.6)

Table 1.2: Most commonly collected evidence by offense

Study	Biological (%)	Firearms/Weapons (%)	Fingerprints (%)
Peterson et. Al, (2010)			
Homicide	38.3	83.0	28.5
Assault	4.0	22.4	1.2
Rape	53.5	1.8	4.3
Robbery	1.0	5.5	9.3
Burglary	1.0	0.4	16.5
*Current Study**			
Homicide	89.7	54.3	35.2
Assault	30.8	70.0	14.2
Rape	94.2	0.6	2.9
Robbery	47.3	23.3	44.4
Burglary	32.3	1.7	69.4

*Used submission rates as opposed to collected rates.

Most major crime investigations involved processing a crime scene (Peterson et al., 1984) but evidence collection and examination rates varies by crime type (Peterson, Ryan, Houlden, & Mihajlovic, 1987; Peterson et al. 2010; McEwen, 2011). This study found homicides and rapes tend to have higher evidence collection rates while property crimes have lower rates, which agrees with Peterson et al.'s (2010) findings. Biological evidence, fingerprints, and firearms are the most common evidence types collected (Peterson et al., 1984; Peterson et al., 1987; Peterson et al., 2010; McEwen, 2011), which agrees with this study.

Table 1.3: Forensic evidence stages by offense

Study	Collection (%)	Submission (%)	Examination (%)	Report Generated (%)
Homicide				
Peterson et al (2010)	97.0	88.5	81.0	--
Current study	91.6	98.6	85.2	82.9
Assault				
Peterson et al (2010)	30.3	11.9	9.2	--
Current study	5.3	99.0	82.7	82.7
Robbery				
Peterson et al (2010)	24.8	10.9	9.9	--
Current study	6.3	98.9	86.3	86.2
Rape				
Peterson et al (2010)	63.8	32.2	18.6	--
Current study	66.4	97.7	84.5	84.5
Burglary				
Peterson et al (2010)	19.6	13.0	9.2	--
Current study	5.5	99.3	84.8	84.9

Offender identification and case clearance are achieved via suspect confession; witness testimony; and physical evidence (Rossmo, 2009; Edmond & Vuille, 2014, Klockars & Mastrofski, 1991; Simon, 2006). However, early studies show the majority of case clearance was the result of information provided by the public or victim/witnesses and few cases were significantly aided by forensic evidence (Greenwood et al., 1975; Eck, 1983; Coupe & Griffiths, 1996). Peterson et al (2010) found that while forensic evidence aided in clearance for some crime types, often non-forensic types of evidence were strong predictors of clearance.

Peterson et al. (2010) stated that the majority of arrests occurred before evidence could be examined. This agrees with other studies that found suspects were often identified before the results of forensic reports were available to police (Peterson et al., 1984; Schroeder, 2007; King, Wells, Katz, Maguire, & Frank., 2013; McEwen, 2011), which makes the actual influence of forensic evidence questionable.

Peterson et al. (2010) found forensic evidence was not a predictor for arrest for homicide cases. Rather, witness reports to police as well as the relationship between victim and offender that increased the likelihood of arrest instead of physical evidence. This agrees with several homicide studies that showed non-forensic variables have a significant impact on case clearance,

including police procedure (Wellford & Cronin, 1999, 2000; Keel, Jarvis & Murihead, 2009) and community involvement (Riedel & Rinehart, 1996). However, there is some support that forensic evidence does influence case outcome for homicide (Wellford & Cronin, 2000; Keel et al., 2009).

Studies show forensic evidence was a strong predictor for whether a case will reach court (Briody, 2002, 2004; Roman et al., 2009; Peterson et al., 2013). However, there is conflicting studies on whether forensic evidence aids in convictions. Early studies showed forensic evidence had little impact on conviction rates (Lassers, 1968; Peterson et al., 1987). Peterson et al. (2010) found physical evidence increased the chance burglary, assault, homicide, rape cases reached court but not for robbery. However, physical evidence was not a predictor for conviction.

The relationship between forensic evidence and sentencing is also muddy, with some studies showing physical evidence results in longer sentences (Briody, 2004; McEwen, 2011) while other studies show forensic evidence predicts shorter sentences (Briody, 2004). Peterson et al's (2010) results showed physical evidence was a predictor for longer sentences only in assault cases.

The literature suggests that forensic evidence has no impact on whether a defendant pleads guilty or whether plea deals are offered (Briody, 2002, 2004; Rosett & Cressey, 1976), however, Peterson et al. (2010) found physical evidence increased the likelihood a case would be resolved though trial for assault whereas burglary cases were more likely to end in a plea deal if physical evidence was present. In addition, plea negotiated cases tended to have less examined evidence than trial cases for violent crimes.

Methodology

A random stratified sample of assaults, burglaries, robberies, and rapes were pulled from the Connecticut State Forensic Science Laboratory as well as all homicide cases. To be eligible for sampling, evidence collected in connection with a criminal investigation must have been submitted to the Connecticut State Forensic Science Laboratory between 2006 and 2009. The methodology for data collection closely adheres to the methods used by Peterson et al. (2010) to allow for comparison between this study and its predecessor. Peterson's sample is based on calculating the rate of each crime by dividing the number of cases for a particular crime by the total number of cases for all crime types. The results of these calculations are shown in Table 2.1 and were used as a guide to determine the sample size for this study. Attempts were made to oversample due to an expected reduction of viable cases.

Table 2.1: Sample size by crime type and phase

Crime type	CT Averages 2006-2009	Threshold Percentage	Number of cases needed	Number of cases: crime lab phase	Number of cases: detective phase	Number of cases: court phase
Assault	5,579	6.13%	342	393	335	313
Burglary	15,1377	6.18%	950	1011	749	702
Rape	688	55.56%	382	310	211	184
Robbery	4,208	18.48%	776	636	461	435
Homicide	120	85.52%	102x2	438	284	238
Unclassified	--	--	--	13	--	--
Totals			2654	2801	2040	1872

The coding process had three phases: gathering variables on what forensic evidence was analyzed and the results of those tests gathered from the Connecticut State Forensic Science Laboratory (crime lab phase); investigative and case clearance status as well as victim/suspect demographics collected at participating Connecticut police department (detective phase); and sentencing outcomes gathered from Connecticut court documents (court phase). Coding for the crime lab phase and the detective phase involved sending graduate research assistants to either the Connecticut State Forensic Science Laboratory or participating Connecticut police departments to gather information from official records. There were 60 participating police departments of various sizes across Connecticut. Collecting information from the court phase involved requesting the docket numbers connected to the sample of cases and then accessed the online database for the Connecticut court system (www.jud.ct.gov). Court phase data was collected up until August 25, 2016 and was not collected for any police department that had less than five cases represented in the sample. As the coding process progressed, it became obvious some cases were inappropriate and were removed from the sample. These cases include those that were determined to be misclassified (e.g. an assault that was really a traffic stop); couldn't be found at the police department; had restricted access due to privacy laws (e.g. the suspect was a minor); only had an Office of the Chief Medical Examiner (OCME) case numbers; belonged to any agency that wasn't the Connecticut State Police or local police department; the crime occurred before November 2005; or were determined to be unfounded by the police department. Appropriate cases for the detective phase analysis only include those with investigative information from participating police departments. Court phase eligible cases include cases

where conviction status was available. It should be noted it was not always possible to gather investigative or courtroom information for every case in the sample for every participating police department due to legal or logistical issues. Only cases that were from participating police departments and were available to researchers were included in this study for the investigative phase analyses and the court phase analyses.

Crime Rate

Connecticut's crime rates have been consistently lower than national averages. From 2006 to 2009, the crime rates were lower than the national average for all crime types examined. Connecticut's clearance rates have habitually been higher than the national average, including during the study period. Connecticut's crime rates before and after the study period did not significantly differ for any crime type (see Table 2.2).

Table 2.2: Connecticut and national crime rates and case clearance					
Year	Offense	CT Rate (per 100,000)	CT Clearance (%)	National Rate (per 100,000)	National Clearance (%)
2005	*Murder*	3.2	70.5	5.6	62.1
	Aggravated Assault	144.9	63.5	291.1	55.2
	Robbery	118.0	26.4	140.7	25.4
	Burglary	445.2	14.8	726.7	12.7
	Rape	21.6	39.9	31.7	41.3
2006	*Murder*	3.9	60.0	5.8	60.7
	Aggravated Assault	148.8	62.9	292.0	54.0
	Robbery	127.3	25.2	150.0	25.2
	Burglary	443.6	14.8	733.1	12.6
	Rape	20.4	41.3	31.6	40.9
2007	*Murder*	3.1	48.1	5.7	61.2
	Aggravated Assault	154.5	62.0	287.2	54.1
	Robbery	123.6	27.0	148.3	25.9
	Burglary	447.8	14.7	726.1	12.4
	Rape	20.1	42.0	30.6	40.0
2008	*Murder*	3.7	64.1	5.4	63.6
	Aggravated Assault	168.7	65.2	277.5	54.9
	Robbery	115.6	28.3	145.9	26.8
	Burglary	431.9	15.8	733.0	12.5
	Rape	19.6	36.4	29.8	40.4
2009	*Murder*	3.0	71.0	5.0	66.6
	Aggravated Assault	164.3	65.1	264.7	56.8
	Robbery	113.5	28.1	133.1	28.2
	Burglary	430.6	14.8	717.7	12.5
	Rape	18.5	36.9	29.1	41.2
2010	*Murder*	3.7	61.4	4.8	64.8
	Aggravated Assault	162.1	66.2	252.3	56.4
	Robbery	99.4	31.3	119.1	28.2
	Burglary	424.1	14.8	699.6	12.4
	Rape	16.8	30.9	27.5	40.3

Sources: Department of Public Safety, 2016; Federal Bureau of Investigation, 2016.

Forensic Services

The Connecticut Forensic Science Laboratory handles the majority of the forensic needs of Connecticut's police force. This forensic laboratory has several divisions to handle a variety

of evidence types, including firearm/toolmark evidence, trace evidence, biological evidence, electronic evidence, imprints, and fingerprint evidence (Department of Emergency Services and Public Protection, 2012). A 2010 survey (Hayes, 2010) compared the Connecticut Forensic Science Laboratory to other U.S. forensic labs and found that Connecticut's turnaround time for sex assault kits, homicides with a suspect, DNA testing for property crimes, latent print processing; and imprint processing, crime scene reconstruction, firearm/toolmark analysis, and forensic photography processing were slower than the national average. Connecticut's turnaround times for DNA cases without a suspect, rushed DNA tests, DNA tests with a suspect, arson debris analysis, gunshot residue tests, and AFIS submission and reporting were on par with most of the other forensic labs. Connecticut had the fastest turnaround time for NIBIN submissions and reporting in the entire country.

The Connecticut Forensic Science Laboratory has had an increasing DNA backlog since 2005 (Hartford Courant, 2011). By 2011, Connecticut DNA backlog became the largest in the U.S. (Matthews, 2014). To help mitigate this backlog, Connecticut officials have requested law enforcement agencies limit the number of DNA evidence submissions to the Connecticut Forensic Science Laboratory (New Haven Register, 2012). These efforts combined with additional funding has resulting in reducing the DNA backlog (Flynn, 2015).

Analytical Strategy

This study seeks to ascertain the impact forensic evidence has on three different outcomes: 1) arrest, 2) conviction, and 3) sentence length. Since the first two outcomes are binary in nature (yes, no), a logistical regression will be used for each crime type. Sentence length will be analyzed using OLS regression. While sample sizes allow us to analyze these outcomes for each crime type, rape has too few cases to allow for a multivariate OLS regression for sentence length. See Appendix A for a list of variables.

This study did attempt to mimic the analyses done by Peterson et al. (2010), however it became necessary to make substitutions for several variables. Peterson et al. (2010) had a 'friend/acquaintance' variable that did not match up exactly with this study's coding of suspect/victim relationships. Instead, the variable 'friend' was used. Peterson et al. (2010) used 'crime scene evidence' as a variable, however since the random selection for this study of cases from a crime lab, every case had crime scene evidence and a substitution variable was not available. Peterson et al. (2010) had 'arrest within 10 minutes', however, only days between when the crime occurred and arrest was coded for this study. 'One day arrest' was substituted for this variable. Peterson et al. (2010) had a variable named 'direct arrest', which is defined as a suspect admission, suspect arrested in another case, suspect surrender, police saw the crime, recovery of property related to the crime, or traffic stop lead to an arrest. This study will substitute a variable that accounts for whether a suspect was named or described by a witness and whether a suspect made a statement to the police. Since Peterson et al.'s (2010) data came from five study sites from two different states, variables Indianapolis and Los Angeles were used to represent the two states to analyze the difference between study sites. Because this study collected data from a single state, similar variables will not be used. Peterson et al. (2010) also includes a correctional factor to account for a lack of randomization in certain outcome stages

due to sampling directly from the police department rather than from the crime lab itself. Since this study randomly selected data from the crime lab, a correction factor is not needed.

Further, this study analyzed whether disaggregating evidence into separate categories and controlling for whether an evidence report was available at least three days before case clearance or verdict changed the relationship between forensic evidence and case outcomes. However, there were too few cases to utilize a logistical regression so a chi-square test was used.

Assault

Of the original 393 assault cases randomly sampled from the State Lab, 335 cases (85.2%) with investigative information available to the researchers. It should be noted that some records were not available due to legal factors or due to logistical issues (i.e. the records were stored in places that were not easily accessible). Victims were typically male (76.1%) as were the suspects (74.6%). Most victims and suspects were Black (49.0% and 41.8% respectively) and both victims and suspects tended to be between the ages of 20-29 (36.1% and 19.7% respectively. Most cases (47.2%) involved people who were strangers and most victims (77.0%) required medical treatment. The majority (69.0%) of the cases had at least one witness who gave a statement to the police and, in most cases (65.4%), either named the suspect or gave a description of the suspect. Assaults were reported to the police on an average of 13 days and the average arrest occurred about 97 days after the crime occurred. Compared to Peterson et al.'s (2010) data (see Appendix B for a comparison of descriptive statistics between this study and Peterson et al, 2010), this study's assault cases were reported to the police quicker but the cases took longer to clear.

Physical Evidence Submitted, Examined & Reported

Of the 393 assault cases, all but four had at least one piece of evidence submitted for examination. Weapons/firearms evidence (70.0%) was by far the most common evidence type submitted, with biological evidence (30.8%) a distant second. The most common weapons/firearm evidence was NIBIN related evidence, such bullets and cartridges found at the scene as well as confiscated firearms. Fingerprint evidence was only submitted in 14.2% of the cases and all other evidence types were submitted in less than 6% of assaults. Peterson et al. (2010) and McEwen (2011) agreed weapons evidence is the most common evidence type for assault cases. However, Peterson et al. (2010) found fingerprint evidence to be more prevalent in assaults than biological evidence.

While 99.0% of assault cases had evidence submitted for examination, 82.7% of the evidence was examined and generated a report based on the findings. Weapons/firearms evidence had the highest percentage of examined and reported physical evidence. Not surprisingly, if evidence was examined, a report was generated for that evidence for all cases. Peterson et al. (2010) found a much lower rate (9.2%) of evidence examination.

Tracking Cases through the Justice System

The movement of assault cases through the criminal justice system is shown in Figure D.1. Cases with at least one evidence report generated did not significantly differ from cases without evidence reports when it came to arrests ($\chi = 1.884$, $p = 0.170$) or convictions ($\chi = 3.463$, $p = 0.063$). While Peterson et al. (2010) found assault cases with physical evidence was more likely to end in arrest and conviction, they did not control for whether the evidence was analyzed or when that analysis was reported back to detectives.

Predictors of Criminal Justice Outcomes

Arrest

The strongest predictor of arrest was the relationship between the offender and the victim. Incidences involving friends were over 10 times more likely to end in arrest and incidences that occurred between intimate partners or family were about 8 times more likely to end in arrest. How quickly the crime was reported to police also increased the odds of arrest but only marginally. Unlike Peterson et al.'s (2010) findings (see Appendix E for a comparison of predictors between this study and Peterson et al, 2010), lab examined evidence were not significant predictors of arrest.

Like Peterson et al. (2010), several extralegal factors were found to be significant predictors of arrest. Arrests were more likely if the suspect was Black or Latino. While Peterson et al. (2010) found victim sex and race as well as offender sex to be significantly related to arrest, this study did not support this.

Peterson et al. (2010) found arrest was significantly more likely in Los Angeles than Indianapolis. While the data comes from a single crime laboratory, police departments were categorized by the number of full-time sworn officers. However, police department size did not have a significant relationship with arrest.

There may be a simple explanation why Peterson et al. (2010) found physical evidence to be significant predictors of arrest while the results for this study did not. Several studies have noted a difference in the utilization of forensic evidence from city to city (McEwen, 2011; King et al., 2013; Roman et al., 2009). These differences include how much evidence is collected for a specific crime type as well as what evidence type crime scene investigators focus on for that particular crime type. For example, Peterson et al. (2010) showed low rates of examination for biological evidence in assault cases while this study shows biological evidence examination was the second only to weapon/firearm evidence.

Conviction

Of the 331 assault cases with court data available to the researchers, 26.8% resulted in a conviction. This study's findings differ from Peterson et al. (2010) in several ways. While Peterson et al. (2010) found witness reports and victim treatments to have a significant relationship with conviction, this study did not. Lab examined evidence doubled the likelihood of conviction, as did whether an arrest occurred on the day of the crime (see Appendix F for a comparison of predictors between this study and Peterson et al, 2010). Witness reports and victim/suspect relationships were not significant predictors of conviction. While this study shows lab examined evidence to be a significant predictor of conviction, the Nagelkerke's R-square of 0.038 shows that a large percentage of variation within this study's data is still unexplained.

Plea/Trial

This study's findings were similar to Peterson et al. (2010) in that very few cases were adjudicated through trial. About 81% of convicted cases involved a guilty plea and only four cases were adjudicated. While Peterson et al. (2010) found physical evidence increased the likelihood of case resolution through trial, there was not enough cases were physical evidence was not examined for assault cases to conduct a similar analysis.

Sentencing

The average sentence length for convicted offenders in assault cases were approximately 3035 days. Considering this average sentence length of about 8 years, most cases in this study must have been violent assaults. This is supported by the low number (3.3%) of misdemeanor assault convictions in the sample. This study's data had significantly longer average sentence lengths for assaults than Peterson et al.'s (2010) cases (see Appendix G for a comparison of predictors between this study and Peterson et al, 2010). Compared to the national average of 41 months (Rosenmerkel, Durose, & Farole, 2009), this study saw longer average sentence lengths for assault cases. Of the 82 cases with sentencing information, the majority (79.3%) of offenders served their time out at a state prison, with only 6.1% serving in a county jail. Only 10 (12.2%) received probation and 2 received either conditional or unconditional releases without a prescribed probation period.

While these results agree that witness reports have a significant relationship with sentencing, this study found it decreased sentence length while Peterson et al. (2010) found it increases sentence length. Victim report and intimate or friend victim/suspect relationship decreases sentence length. The number of prior convictions, whether the victim is a young adult or whether the victim is a Latino increases sentence length. Unlike Peterson et al. (2010), this study found physical evidence to have no significant relationship with sentencing.

Hard to Solve Cases

While Peterson et al. (2010) had 198 cases that had no witnesses or known relationship between the victim and offender, only 42 of this study's cases matched that description. All 42 cases had evidence submitted for examination, 85.7% had the evidence examined, and 81.1% of the cases had a report generated based on the results of the examination. Of the 42 cases, only 12 (28.6%) ended in an arrest and 7 (18.9%) resulted in a conviction. About 71% of the hard to solve cases had forensic evidence examined. Cases that were not hard to solve, unsurprisingly, had higher rates of arrest (54.3%) and conviction (81.1%) than the hard to solve cases.

Time and Evidence Types

For evidence to be able to influence an outcome, such as arrest or conviction, the evidence must have been examined and a report generated stating the results of the examination before the outcome occurs. While it may reinforce the officer's decision to arrest the suspect, it did not influence the initial decision to arrest. While Peterson et al. (2010) does mention most

arrests take place before physical evidence can be examined for the case, he did not take time factors into consideration when conducting his inferential analyses.

Table H.1 demonstrates how frequent evidence is submitted for examination before case clearance and conviction. Only about 36% of all evidence is submitted before a case is cleared and only about 24% of cases had evidence reports available before a case was cleared. Peterson et al. (2010) noted that only 4.3% of his sample of assault cases had evidence examined before an arrest was made. This means that a clear majority of assault cases are cleared without the aid of physical evidence.

A larger portion of the sample had reports available before the offender was convicted but it is clear not every case goes to court with physical evidence reports present. The 5% of cases without evidence prior to a conviction could be due to several factors, including issues transporting or storing the evidence and backlogs at the forensic laboratory.

For the most part, Peterson et al (2010) did not separate his analysis based on evidence type. While Peterson et al. (2010) did occasionally run additional analysis to see which evidence type helped the most, he did not consistently report how different evidence types impacted case outcomes and instead aggregated all evidence types into one variable. While this method does give a more generalized understanding of how physical evidence can influence outcomes, separating the evidence types has a practical purpose. Resource allocation is an ever-present issue when it comes to collecting and analyzing physical evidence (Greenwood, et al., 1975; Steadman, 2000, 2002; Office of Justice Programs, 2011; Parker & Peterson, 1972). Knowing which evidence type has the best chance of increasing the odds of arrest and conviction would allow for a more informed way of deciding which types of cases to send crime scene investigators to and what kind of evidence they should focus on.

Cases with examined biological and fingerprint evidence were more likely to end in arrest than cases without these evidence types. Weapons/firearm evidence decreased the likelihood of arrest. Trace evidence did not significantly influence the odds of arrest for assault cases. For all evidence types, there were too few cases with evidence reports generated before a case was cleared to analyze.

Examined biological evidence was more likely to end in a conviction than cases without this evidence type. However, when factoring in whether the report was generated before a verdict was reached, there were too few cases to analyze. Weapons/firearm and fingerprint evidence had no impact on conviction.

All evidence types had too few cases that had timely reports, which demonstrates the scarcity of case outcomes directly influenced by what the forensic evidence tells the investigator or courts. This suggests that whatever impact physical evidence has on a case does not directly come from the information any one evidence examination can provide to an investigation.

Burglary

Burglaries, by far, made up most the entire sample, with 36.1% of the randomly selected cases falling into this category. The original sample was comprised of 1011 burglary cases; however, investigative information was only available to the researchers for 749 of those cases (74.1%). Most victims and offenders were male (57.4% and 46.2% respectively) and White (66.8% and 24.2%). Unsurprisingly, the majority (75.9%) of the victims did not know the offenders. Victims and suspects were typically (75.6% and 18.0%) 30 years of age or older.

A suspect was only named or described in 23.9% of the cases and most (86.4%) burglaries were reported to the police by the victims of the crime. Burglary had the lowest arrest rate of 27.6% and 10.7% of those arrests occurred the same day the crime was reported to police. On average, an arrest took place 357 days from the incident. Again, the data shows quicker report times but longer average times between incidents to case clearance compared to Peterson et al.'s (2010) data (see Appendix B for a comparison of descriptive statistics between this study and Peterson et al, 2010). Only 11.9% of burglaries ended in a conviction, which is the lowest conviction rate in the sample. However, this low clearance rate is not surprising considering the national average of burglary clearance rates are often one of the lowest (Federal Bureau of Investigation, 2016).

Physical Evidence Submitted, Examined, and Reported

Burglary cases had low evidence collection rates, which agrees with earlier studies (Peterson et al., 2010; McEwen, 2011). About 84.8% of the evidence submitted for analyses was examined. Fingerprints was the most common evidence type submitted for burglaries, followed by biological evidence. Of the fingerprint evidence submitted, 67.9% was examined and a report was generated for all but 2 cases. Biological evidence was examined in 32.3% of the cases, however, only 18.1% of the cases had that evidence examined. See Table C.2 for the evidence categories submitted and examined. Only 166 (16.4%) cases had physical evidence that linked the tested suspect to the crime. Tangible evidence was present in 48.3% of the cases.

Tracking Cases through the Justice System

Police investigation data as well as courtroom documents were consulted to better understand how physical evidence impacts the outcomes of these burglary cases. Figure D.2 shows the progression of burglary cases as they move through the criminal justice system. The original sample included 1011 cases. Arrest information was obtained for 207 of those cases and courtroom outcomes were collected for 89 cases. The presence of examined evidence or evidence reports did not impact the likelihood of arrest (χ= 0.673, p = 0.412 and χ= 1.071, p = 0.301) as well as convictions (χ= 0.407, p = 0.524 and χ= 0.493, p = 0.483). While Peterson et al. (2010) and McEwen (2011) found crime scene evidence to be significantly related to arrest and conviction rates, they failed to account for whether the evidence was examined. Peterson et al. (2010) does mention that less than half of the burglary sample had evidence examined, he did not control for it in his analyses.

Predictors of Criminal Justice Outcomes

Arrest

The results of this study's findings differed significantly from Peterson et al.'s (2010). Other studies contradict this study's findings, as some show forensic evidence to increase suspect identification (Roman et al., 2009; Bond, 2007b; Gabriel et al, 2010) as well as arrest for property crimes (Roman et al, 2009; McEwen, 2011; Gabriel et al, 2010). Not only was lab examined evidence not a significant predictor, but neither was any other variable. Peterson et al. (2010) found that whether the witness reported the crime and an offender that was a family member or had an intimate relationship with the victim were significantly related to arrest (see Appendix E for a comparison of arrest predictors between this study and Peterson et al, 2010). Suspect sex as well as ethnicity was not found to be a significant predictor from this study's results but Peterson et al (2010) found that Black female suspects were more likely to be arrested than White offenders. It should be noted that while Peterson et al.'s (2010) Nagelkerke's R-square is higher than ours, both show little variation in the data is explained by the model.

Conviction

Only 89 (12.6%) out of the 749 burglary cases ended in a conviction. Both Peterson et al. (2010) and this study show examined evidence has no significant relationship with conviction. While Peterson et al. (2010) found a quick arrest to be a predictor of conviction, this study found none of the variables to be predictors (see Appendix F for a comparison of conviction predictors between this study and Peterson et al, 2010).

Plea/Trial

About 96% of convictions were the result of a guilty plea. Again, this study agrees with Peterson et al.'s (2010) findings. The low rate of convictions by trial makes it difficult to analyze how physical evidence influences the outcomes of plea deals.

Sentencing

Peterson et al.'s (2010) sample had longer average sentence for burglary than this study (see Appendix G for a comparison of sentencing predictors between this study and Peterson et al, 2010). Both studies had longer sentences than the national average sentence length for burglaries, which is 41 months (Rosenmerkel et al. 2009). Both Peterson et al (2010) and these results show having a public defender has a significant relationship with sentence length. However, while Peterson et al (2010) found the presence of a public defender decreases sentence length while this study found the opposite. Presence of a public defender was the only significant variable while Peterson et al (2010) found plea bargain and young adult victims were related to sentence length.

Hard to Solve Cases (stranger and no witnesses)

Unlike Peterson et al.'s (2010) data, this study had fewer hard to solve burglary cases. Peterson et al's (2010) burglary sample was mostly (84.6%) hard to solve cases while only 42.8% of burglary cases were categorized as such in the current data. About 88.5% of the hard to solve cases had lab examined evidence. Peterson et al.'s (2010) hard to solve burglaries had a 3.8% arrest rate and a 4.0% conviction rate. This study found 63.1% of the hard to solve burglaries ended in arrest and 26.4% ended in conviction.

Time and Evidence Type

Interestingly, unlike other crime types, burglary cases typically had evidence reports generated before outcomes (arrests and convictions). Unfortunately, the timeliness of these reports does not seem to increase the likelihood of arrest or conviction. Peterson et al. (2010) found that 28% of burglary cases had evidence examined prior to an arrest while 62.5% of this study's burglary cases had evidence reports generated before case clearance.

Biological evidence did increase the likelihood of arrest and conviction. This agrees with previous studies on DNA evidence and property crimes (Roman et al, 2009; Gabriel et al, 2010). Fingerprint evidence decreased the likelihood of arrest and conviction. Unlike the other crime types, burglary cases suffered from having too few cases where evidence was not examined before arrest or conviction to analyze.

Robbery

A total of 636 robberies were randomly selected and 461 (72.4%) cases had investigative information available to the researchers. About half the victims were male, 30 or older, and White. Offenders were predominately male, 30 or older, and Black. The majority (84.2%) of offenders were strangers. Only 11.7% of victims required medical treatment. Most (40.3%) had two or more witnesses. On average, robberies were reported to the police on the same day and the mean time from crime to arrest was 1564 days. Peterson et al. (2010) saw a longer time between when the crime occurred and when it was reported to the police but a shorter time for case clearance than this study (see Appendix B for a comparison of descriptive statistics between this study and Peterson et al, 2010).

Physical Evidence Examined, Submitted & Reported

Physical evidence was submitted in 98.7% of robbery cases and had a report generated in 85.2% of the cases. The most common evidence type was biological (47.3%) and fingerprint (44.4%) evidence. Weapons/firearm evidence was submitted in 23.3% of the cases. Peterson et al. (2010) saw similar trends but had higher rates of weapons/firearms submissions. McEwen (2011), on the other hand, found fingerprints to be the most common evidence type for his Colorado study site.

Tracking Cases Through the Justice System

About half of robberies ended in an arrest, with 46.2% being suspended or still open. However, only 30.6% of robberies ended in a conviction. Most (95.7%) of convictions ended in a guilty plea. There was no difference between cases with and without examined evidence for either arrest ($\chi = 0.179$, $p = .673$) or conviction ($\chi = 1.409$, $p = .235$).

Predictors of Criminal Justice Outcomes

Arrest

Peterson et al. (2010) found crime scene evidence was a significant predictor of arrest, as was witness reports and friend/acquaintance relationship between victim and offender (see Appendix E for a comparison of arrest predictors between this study and Peterson et al, 2010). The current data indicate that victim reporting was the only predictor of arrest. The Nagelkerke's R-square of this study's model is smaller than Peterson et al.'s (2010). However, both Peterson et al.'s (2010) and this study's analyses point to a high level of unexplained variance.

Conviction

About 32% of the robbery cases ended in a conviction. Peterson et al. (2010) found victim reports, intimate/family relations between victim and offender, and whether the victim received medical treatment were positive predictors of conviction (see Appendix F for a comparison of conviction predictors between this study and Peterson et al, 2010). This study's findings, on the other hand, show arrest variables are the only predictors of conviction. Both

studies agree physical evidence does not have a significant relationship with conviction. However, the Nagelkerke's R-square of this study's model shows a high level of unexplained variance.

Plea/Trial

Most (97.1%) of robberies had plea bargains. Only 4 cases did not end in a guilty plea and all 4 cases had examined evidence. Most (90.4%) cases that had a plea deal had examined evidence. However, 13 robberies ended in a guilty plea without the presence of examined evidence.

Sentencing

The average sentence was 114.48 months, with a median of 119.99 months, which is about 27 months more than the national average (Rosenmerkel et al. 2009). Cases with guilty pleas had an average of 112.30 month sentences while trial cases had an average of 188.99 months. This study's data had longer average sentences than Peterson et al.'s (2010) data. Both studies show lab examined evidence is not a predictor of sentence length. Peterson et al. (2010) found plea bargains reduced sentence length while victim age increased it (see Appendix G for a comparison of sentencing predictors between this study and Peterson et al, 2010). This study also had several predictors of sentencing, including the number of prior convictions which negatively impacts sentence length. Victim reports and having a Black female for a victim significantly increases sentence length.

Hard to Solve Cases

Peterson et al. (2010) had 694 (64%) robbery cases that were hard to solve (strangers with no witnesses) but this study only had 114 (24.8%) cases that met that criteria. The arrest ($\chi = 2.596$, $p = .107$) and conviction ($\chi = 0.411$, $p = .522$) rates between hard to solve cases and all other cases was not significantly different. Most (83.3%) hard to solve cases had examined evidence.

Time and Evidence Types

While Peterson et al. (2010) admits that only 21 robbery cases had evidence examined before an arrest occurred, he did not control for timeliness in his analyses. Table H.1 demonstrates how frequent evidence is submitted and examined before case clearance and conviction. While less than half of cases had evidence reports generated before case clearance, most (89.3%) cases had reports available before conviction.

When controlling for timeliness, evidence has a negative relationship with arrest. The presence of examined weapons/firearm evidence is correlated with a higher rate of arrest. However, there is not enough information to analyze how the relationship changes when controlling for timeliness.

Overall, forensic evidence does not significantly impact conviction rates. Weapons/firearm evidence alone does increase the likelihood of conviction. However, there is not enough information to analyze how the relationship changes when controlling for timeliness.

Rape

Of the 310 randomly selected rape cases, 211 (68.0%) had investigative variables available to the researchers. The majority (92.9%) of victims were female and most (88.6%) suspects were male. Victims tended to be white (57.8%) and in their 20s. Offenders tended to either be White (30.3%) or Black (31.3%) and 30 or older (35.5%). Most (37.0%) victims were friends with their attacker. Victims received medical treatment in 88.2% of the cases. The majority (75.8%) of cases were reported by the victim and most (66.8%) cases did not have witnesses.

Only 29.4% of cases ended in arrest and 15.2% ended in a conviction. Few (5.2%) cases had an arrest within a day of the incident. On average, it took 9.19 days for a rape to be reported to the police and 199.53 days for an arrest to occur. Unlike other crimes, Peterson et al. (2010) had both a shorter average time between crime and when it was reported as well as a shorter time between when a crime occurred and arrest (see Appendix B for a comparison of descriptive statistics between this study and Peterson et al, 2010).

Physical Evidence Submitted, Examined & Reported

Physical evidence was submitted in 97.7% of rape cases and examined in 84.5% of cases. Biological evidence was by far the most common evidence type submitted and examined. Both Peterson et al. (2010) and McEwen (2011) had high rates of biological evidence in rape cases. Sex assault kits made up the bulk of biological evidence submitted. Trace was the second most common evidence type; however, it was present in only 5.2% of cases.

Tracking Cases Through the Justice System

Figure D.4 shows how rape cases moved through the criminal justice system. It's clear the majority of rape cases remain open or suspended. Conviction rates for rapes are also very low, with only half of arrest ending in a guilty sentence. Cases with examined evidence (χ = 3.410, p = .065) were not more or less likely to end in arrest. There were too few cases that ended in conviction that did not have examined evidence to analyze the impact of the evidence. This could suggest prosecutors hesitate to try a rape case without forensic evidence or juries are reluctant to convict without physical evidence.

Predictors of Criminal Justice Outcomes

Arrest

Like Peterson et al. (2010), these findings show victim/offender relationships to be a predictor of arrest (see Appendix E for a comparison of arrest predictors between this study and Peterson et al, 2010). While Peterson et al (2010) found examined evidence increased the chances of arrest, this study suggests it is not significantly related to arrest. Both studies agree that witness reporting to police has an impact on arrest, however, this study's findings suggest it increases the chances of arrest while Peterson et al (2010) found it decreased chances.

Conviction

About 17% of rape cases ended in a conviction. Intimate or family relations between victim and offender were almost six times more likely to end in a conviction. Surprisingly, the chances of conviction go down if the victim received medical treatment. Peterson et al. (2010), on the other hand, found medical treatment increases the likelihood of conviction. Both studies found physical evidence has no impact on conviction outcomes (see Appendix F for a comparison of conviction predictors between this study and Peterson et al, 2010). The strongest predictor of conviction was whether a witness reported the crime to police. Peterson et al. (2010) found forensic evidence to be a predictor of conviction while this study did not. However, other studies show forensic evidence aids in convictions for rape cases (Briody, 2002; Gabriel et al, 2010). Peterson et al.'s (2010) model had an impressive Nagelkerke's R-square of .844 while this study's model had a significantly lower R-square of .331.

Plea/Trial

Of the 32 cases with trial information to the researchers, only one case did not end with a guilty plea. The one trial case and 30 guilty plea cases had examined physical evidence. One case that ended in a guilty plea had no examined physical evidence. While this study did not have enough cases to analyze the impact of forensic evidence on plea deals, Briody (2002) found DNA evidence had no significant relationship with guilty pleas.

Sentencing

The average sentence length was about 77 months, which is about 83 months shorter than the average sentences reported by Peterson et al. (2010) and 61 months shorter than the national average (Rosenmerkel et al, 2009). Only 27 rape cases had sentencing information available. Because of this sample size, it is not possible to conduct a regression that has all the variables tested by Peterson et al (2010). A simple regression was used to determine whether examined evidence is a predictor of sentence length and found it had no relationship with sentence length. These findings agree with Peterson et al's (2010) results (see Appendix G for a comparison of sentencing predictors between this study and Peterson et al, 2010). However, both McEwen (2011) and Briody (2002) found forensic evidence had a relationship with sentence length. McEwen (2011) found probative physical evidence increased sentence length while Briody (2002) found DNA evidence decreased sentence length.

Hard to Solve Cases

Of the 211 rape cases, 18.5% were 'hard to solve' (no witnesses and strangers). Only 6 of the 'hard to solve' cases ended in arrest, however 31 (79.48%) of those cases had examined evidence. 'Hard to solve' cases were three times ($\chi = 6.184$, $p = .013$) less likely to end in arrest.

Time and Evidence Types

While Peterson et al. (2010) mentions only 1.6% of the rape cases he sampled had evidence examined prior to an arrest, he did not control for timeliness in his statistical analyses.

Table H.1 demonstrates how frequently evidence is submitted and examined before an outcome. While most evidence categories have reports generated before conviction, the table shows less than half of biological evidence, which is the most common evidence type submitted for rape cases, had a report generated before an arrest occurred.

Teasing out the impact different evidence categories have on arrest and conviction outcomes can tell us how useful an evidence type is for case clearance and may help police departments better allocate their limited resources.

Overall, evidence did not have an impact on arrest. More telling, the most common evidence type collected, biological evidence, did not have a significant relationship with arrest. There were not enough cases with other evidence types to analyze.

There were not enough cases without examined evidence to analyze its impact on conviction. In fact, only one case that lacked examined evidence ended in conviction. Biological evidence did not have a significant relationship with conviction. When it came to timeliness, there were too few cases where evidence was not examined before conviction to test.

Homicide

Out of the cohort of 438 homicide cases with evidence submitted to the crime lab, 284 (64.8%) constituted the total number of cases for which investigative information could be gathered from participating police departments. Some cases were unavailable to researchers at participating police departments for both legal and logistical reasons. Both victims and offenders tended to be males and Black. Victims almost evenly fell into the 20-29 years old category (41.2%) and the 30 or older category (40.5%) while offenders were mostly 30 years or older (30.3%). Most homicide victims had a previous relationship with the offender (43.3%), in most cases (21.1%) they were friends. The majority (61.3%) of homicide victims received medical treatment. Most homicides (56.7%) had at least one witness and a description or name of the offender was provided in 58.5% of the cases. On average, it took 1.18 days for a homicide to be reported to police and case clearance occurred, as an average, about 177 days from the incident. Peterson et al. (2010) saw quicker report times and shorter case clearance times than this study's sample (see Appendix B for a comparison of descriptive statistics between this study and Peterson et al, 2010).

Physical Evidence Submitted, Examined, & Reported

Of the 438 homicide cases, 432 had evidence submitted for examination, which took place in 85.2% of the cases. A report detailing the results of those examinations were generated in 363 of the cases. Biological evidence was, by far, the most common evidence submitted, examined, and reported. Firearms/weapons evidence was the second most common, followed by fingerprint evidence. Only 35.4% of homicides had evidence that linked the suspect to the crime but 77.6% of cases had tangible evidence. Peterson et al.'s (2010) homicide cases had a high collection rate as well. Peterson et al. (2010) had more fingerprint evidence collected than biological evidence for homicide cases while McEwen (2011) had higher rates of biological evidence.

Tracking Cases Through the Justice Process

Figure D.5 shows how homicide cases moved through the criminal justice system. Evidence was examined in all but 45 homicides. Homicide, by far, had the highest arrest rate, with only 20.1% of the cases categorized as either suspended or open. A greater percentage of homicides that ended in arrest resulted in a conviction. Of the 163 homicide arrests, only 57 cases did not end in a conviction. Considering the consequences of a guilty verdict, it is not surprising that homicide cases had the highest percentage of 'not guilty' pleas.

Unfortunately, there are not enough homicide cases that did not end in arrest to adequately analyze in a bivariate test. However, there is enough cases to explore the impact examined evidence has on conviction rates, which was shown to be insignificant (χ= 0.659, p = 0.417).

Predictors of Criminal Justice Outcomes

Arrest

Peterson et al. (2010) found that forensic evidence was not a predictor of arrest but pointed out that may be due to a lack of homicide cases without physical evidence. Other studies showed the collection of certain evidence types (Wellford & Cronin, 2000; Keel et al., 2009) or evidence that was the result of close physical contact between offender and victim (Addington, 2006; Roberts, 2007; Alderden & Lavery, 2007; Puckett & Lundman, 2003; Litwin, 2004) increased arrest rates. However, other studies suggest DNA evidence has no impact on case clearance (Schroeder, 2007; Schroeder & White, 2009). While Peterson et al. (2010) found witness report was a significant predictor of arrest, this study shows otherwise (see Appendix E for a comparison of arrest predictors between this study and Peterson et al, 2010). This study shows the presence of lab examined evidence was a strong predictor of arrest. However, when the regression was re-run to control for whether an evidence report was generated before the case was cleared, examined physical evidence was not a significant predictor of arrest.

Like Peterson et al. (2010), this study found victim gender as well as victim and offender race to be predictors of arrest. Cases with White male victims and Black suspects (both male and female) were more likely to end in arrest.

Conviction

Of the 238 homicide cases with courtroom information available, 106 (44.5%) ended in a conviction. Peterson et al. (2010) found victim/offender relationships was a predictor of conviction but not forensic evidence (see Appendix F for a comparison of conviction predictors between this study and Peterson et al, 2010). This study also found forensic evidence had no significant relationship with conviction, however, none of the other variables were significant including victim/offender relationships. While both this study and Peterson et al (2010) found physical evidence had no impact on conviction for homicide cases, Briody (2004) found DNA and fingerprint evidence increased conviction rates.

Plea/Trial

Of the 106 homicide convictions, 74 (69.8%) were adjudicated via a guilty plea. The majority (95.9%) of the cases that had a guilty plea had examined physical evidence. Most plea cases had examined biological (57 cases), weapons/firearms (43 cases), and fingerprint evidence. (38 cases). Only three cases that ended in a guilty plea did not have any lab examined evidence. Of the 28 trial cases, 27 had lab examined evidence. Biological (22 cases), weapons/firearm (21 cases), and fingerprint (15 cases) evidence. Both Peterson et al. (2010) and Briody (2004) found physical evidence had no impact on whether a defendant would enter a guilty plea.

Sentencing

The average sentence was about 10688 days. Unlike all other crime types, there are almost identical sentence lengths in both studies. Both studies had longer sentences than the

national average of 244 months (Rosenmerkel et al, 2009). Both studies also agree plea bargains are strong predictors of sentence length and decrease the number of incarcerated months. Neither this study or Peterson et al (2010) showed forensic evidence to be predictors of sentencing (see Appendix G for a comparison of sentencing predictors between this study and Peterson et al, 2010). Briody (2004), on the other hand, found DNA to have a negative impact on sentence length.

Hard to Solve Cases (stranger and/or no witnesses)

Only four homicide cases had no witnesses and occurred between strangers. All four cases had examined physical evidence; two of those cases ended in arrest and one ended in a conviction. It is difficult to compare these findings to Peterson et al. (2010) since the previous study had a large enough sample size (N = 35) to determine whether evidence may have increased the likelihood of arrest and conviction. Peterson et al. (2010) found the rates of arrest and conviction for hard to solve cases with and without lab examined evidence did not differ significantly.

Time and Evidence Types

While Peterson et al. (2010) acknowledged only 12% of his homicide sample had evidence examined prior to arrest, he did not control for this time variable in his analyses. As mentioned before, this study showed examined evidence was correlated with arrest. However, when the timeliness of the examination was included in the analysis, examined evidence did not have a relationship with arrest.

The frequencies of evidence that was submitted and had an evidence report generated before a case was cleared or before a verdict was reached are shown in Table H.1. On average an evidence report was generated about 73 days after a case was cleared. Often, most homicide cases were cleared before evidence could be submitted for examination. Weapons/firearm evidence was the most likely to have a report generated before an arrest.

Peterson et al. (2010) often did not report whether separating evidence into categories changed the results of his analyses. Analyzing the differences between evidence categories provides practical information on what crime types benefit from the examination of what types of evidence and may aid in resource allocation decisions.

Biological, fingerprint, electronic/print, and trace examined evidence had a significant relationship with arrest. Weapons/firearm evidence decreased the likelihood of arrest. However, there were too few cases with evidence reports generated before a case was cleared to analyze.

Biological and fingerprint evidence increased the likelihood of conviction. Weapons/firearm, electronic/print, and trace evidence did not have a significant relationship with conviction. Unfortunately, the high rate of convictions coupled with the high rate of examined evidence for homicide cases makes it impossible to analyze how the timeliness of this evidence impacts conviction rates.

There were not enough cases with pattern or ‘other’ evidence to analyze the impact examined evidence of these categories have on arrest or conviction.

Discussion

Robbery had the highest rate of evidence examined, followed closely by homicide. Biological evidence was the most commonly submitted evidence type for homicide, rape, and robbery. Assaults mostly had firearms/weapons evidence submitted while burglary's most common evidence was fingerprints.

Demographics between the two studies were roughly similar, with Black and White ethnicities being dominant for both suspects and victims for most crime types. Peterson et al (2010), however, had higher rates of Latino victims and suspects. Most crimes were committed by males and most victims, except for rape, were also males.

While Peterson et al (2010) often saw longer times between when a crime occurred and when it was reported to the police, the crimes in his sample were often cleared more quickly. Peterson et al (2010) had longer sentences for burglaries and rapes while this study had longer sentences for assaults and robberies. Interestingly, homicide sentences were roughly identical between the two studies and both studies saw longer homicide sentences than the national average (Rosenmerkel et al, 2009). Rape had few cases with sentencing information (N = 27) but this is most likely due to the low (10.3%) conviction rate.

Peterson et al. (2010) found physical evidence variables to be predictors of arrest for several crimes. However, this study show homicide is the only crime in which evidence has a significant relationship with arrest. Both studies, for the most part, agree physical evidence does not impact conviction outcomes. The only exception is assault, which this study found to be positively influenced by forensic evidence. Both studies agree physical evidence is not a predictor of sentence length. It seems investigative factors and victim/offender relationships tend to influence case outcomes more than physical evidence.

A bivariate analysis of evidence types and case clearance showed biological evidence increased the likelihood of arrest for all crime types (assault cases, biological evidence more than triples the likelihood of arrest in assault cases) with the exceptions of robbery and rape. The interaction between biological evidence and rape could be due to several factors. Most (82.9%) of rape cases had examined biological evidence and a lack of cases without biological evidence may be responsible. Most (62.2%) rape victims knew their assailants making the investigation one of establishing consent rather than identifying an offender. As for conviction, bivariate analyses showed biological evidence increased conviction rates for assaults, burglaries, and homicides.

Bivariate analyses also found fingerprint evidence aided in case clearance for homicide and assault but reduced the likelihood for arrest in burglary cases. Fingerprint evidence increased the likelihood for conviction in homicide cases but decreases the likelihood for burglary. Weapons/firearm evidence aided case clearance for robberies but decreased clearance rates for homicide and assaults. Weapons/firearms evidence increased the likelihood of conviction only for robberies. Homicide cases were aided by several evidence types beyond biological or fingerprint evidence. Homicide clearance increased when electronic/print or trace evidence was examined.

While most cases had evidence reports available before a verdict was reached, few cases had evidence reports available at least three days before an arrest was made. Burglary (62.8%) had the highest rate of evidence, it had one of the lowest (20.5%) clearance rates. Peterson et al (2010) also admitted that little evidence was examined before an arrest occurred. Some would suggest this lack of timeliness is the reason physical evidence does not have stronger relationships with arrest. However, if this was the case, when controlling for timeliness, there should have been positive relationships between evidence and arrest. Instead, this study saw either no relationship or a negative relationship between these two variables.

Nagelkerke's R-square or R-square is used to measure the amount of unexplained variance in regression models. The higher the number, the better the model is at explaining the outcomes seen in the data and thus the stronger model has a higher model. Peterson et al. (2010) had higher Nagelkerke's R-squares in his arrest models for burglary, robbery, and rape while this study's models were better for assault and homicide. Peterson et al.'s (2010) conviction model was better for all crimes. For OLS models on sentencing, this study's models were better for assault and robbery while Peterson et al.'s (2010) were better for burglary and rape. Homicide sentencing models were roughly the same. While exploring the differences between models, especially why this study's arrest models were better for violent crimes, this study looked to the crime rates between the study sites but found Peterson et al.'s (2010) sites had both higher violent crime rates as well as higher property crime rates (Federal Bureau of Investigation, 2016).

The Impact of Forensic Evidence on Arrest and Prosecution Surveys

Little research exists analyzing how detectives perceive forensic evidence. This lack of research is startling considering investigators are responsible for identifying and constructing a case against the offender by interpreting both forensic and non-forensic evidence. Because most forensic analysis requests are submitted by detectives (Steadman, 2000), it behooves us to understand what forensic evidence they deem useful.

An early study by Greenwood, Chaiken, Petersilia, and Prusoff (1975) suggested forensics and investigative efforts in general played a very small part in case clearance. Most cases were closed due to catching a criminal in the act, information provided by the public, and clerical work such as looking up a license plate. A property crime study (Eck, 1983) found detectives relied mostly on victim statements, however fingerprint evidence was a strong predictor of case clearance.

More recent literature shows that forensic evidence is, at least on the surface, highly valued. A survey of Michigan law enforcement agencies found most the participants believed that knowledge of forensic science was desirable for new recruits (Lambert et al., 2003). This view persisted regardless of the geological setting, size of the agency, or whether it was a sheriff's department or local agency (Lambert et al., 2007). While analyzing the use of the National Integrated Ballistic Information Network (NIBIN), interviews with detectives showed they viewed the forensic resource as a powerful investigative tool (King, Wells, Katz, Maguire, & Frank, 2013). While forensic knowledge seems to be prized in the law enforcement community, forensic evidence is mainly used to either corroborate witness or suspect statements or used for leverage when attempting to obtain a confession rather than identify the offender (Horvath and Messig, 1996). The limited use of forensic evidence has been blamed on a lack of training for detectives in what forensic evidence can accomplish (Horvath and Messig, 1996; Ludwig & Fraser, 2013).

Methodology

To ascertain how law enforcement personnel perceive forensic evidence, a survey was administered to detectives within the State of Connecticut. Out of a solicited 300 surveys, attempted within 47 separate law enforcement agencies, only 153 surveys were successfully returned from 27 police departments, representing a 51% response rate. Paper surveys were used and the targeted population for these surveys were any detectives currently employed in a Connecticut law enforcement agency from which data was collected in the quantitative phase of this research. Confidentiality was guaranteed for participants. The survey included questions created to gather information from five specific areas of interest: demographics, case specific evidence, general experiences concerning physical evidence, timeliness of forensic evidence, and how prosecutors utilize physical evidence. In addition to these five areas of interest, participants were invited to comment on what they felt would make forensic evidence a more powerful tool in case clearance and conviction.

Demographic questions included the size of the participant's law enforcement agency; level of education and investigative experiences; and gender. Crime specific experience with forensic evidence was measured by asking participants how they would rate the usefulness of

both forensic (DNA, fingerprint, other forms of forensic evidence) and non-forensic evidence (suspect and witness statements) when investigating burglaries, rapes, robberies, homicides, and gun-related crimes. General experiences with forensic evidence was assessed by asking the participant to rate statements that evaluate how useful forensic evidence is in solving cases and whether the lack of forensic evidence has a profound negative effect on case clearance. Data regarding detectives' thoughts on the current timeliness of forensic evidence reports and whether investigations would be improved by quicker reports was also solicited. The final area of interest, concerning prosecutors' usage of forensic evidence, assessed detectives' opinions on how the presence or absence of forensic evidence impacts prosecutorial decisions.

The actual usefulness of evidence type was ranked by conducting a chi-square analysis for each evidence type in each crime type to determine whether there was a statistically significant relationship between the evidence type and case clearance. Evidence types were then ranked based on the percentage of cleared cases with each evidence type. For example, 34.7% of cleared assault cases had biological evidence compared to the 16.0% of cleared assault cases with fingerprint evidence.

Demographics

Respondents were mostly from large (49.0%) and medium (48.4%) agencies, with only 2% from small agencies. Most (80.4%) of the respondents were males and had at least a Bachelor's degree (51.0%). About half of the respondents were detectives between 2006 to 2009. The average career length as a detective was about 6 years (SD = 4.93 years), with the longest career spanning 23 years.

Investigations

Respondents were asked to rate whether they agree on how the forensic analysis of physical evidence (FAPE) helps in investigations. The rating was between 1 to 5, with a rating of 1 indicates total agreement, 3 denotes a neutral stance and a 5 indicates total disagreement. On average, respondents were neutral on whether property or violent crimes would not have been cleared without the presence of FAPE. However, most agreed that they experienced at least one case where arrest would not have been possible without FAPE and have worked on cases that would have not been cleared without FAPE. On average, the use of databases was also viewed in a positive light.

Table 9.1: Usefulness of FAPE	
Question	**Mean (SD)**
The majority of property crime cases that I've investigated that were cleared would never have been cleared without FAPE. (N = 149)	3.01 (1.01)
The majority of violent crime cases that I've investigated that were cleared would never have been cleared without FAPE. (N = 150)	3.11 (0.96)
I have worked on at least one investigation that ended in an arrest solely because of FAPE. (N = 150)	2.02 (1.33)
The majority of the time, when DNA profiles or fingerprints are entered into databases, hits are made that provide information that lead directly to case clearance. (N = 151)	2.72 (1.04)
I have worked on many cases that would never have been solved without FAPE. (N = 149)	2.74 (1.02)
I have worked on many cases that were never solved in spite of FAPE. (N = 150)	2.85 (0.99)
The most common effect FAPE has on the investigations I've conducted is to tell me something I already knew. (N = 153)	3.12 (0.91)

FAPE timeliness

As with investigative experiences, respondents were asked to rate statements on the timeliness of FAPE. The rating was between 1 to 5, 1 indicates total agreement and a 5 indicates total disagreement. Most respondents agreed that the usefulness of forensic evidence would increase if the turnaround time from submission to analysis was shorter. While most investigators would rather wait until they have the results of evidence analysis before making an arrest, respondents were almost neutral when asked whether they did indeed wait on results. Investigators were mostly neutral when asked whether the results of an analysis conflicted with other investigative information.

Table 9.2: Using FAPE	
Question	**Mean (SD)**
I feel that if FAPE were conducted more quickly, it would be of greater benefit in making arrests. (N = 153)	2.03 (1.06)
In most investigations I would rather wait until I have seen the results of some FAPE before making investigative decisions. (N = 150)	2.57 (0.97)
In most investigations I do in fact wait until I have seen the results of FAPE before making investigative decisions. (N = 150)	2.91 (0.97)
In most investigations that use FAPE, the results of the analyses conflict with some other investigative information discovered before the results of the analysis were known. (N = 148)	3.41 (0.79)

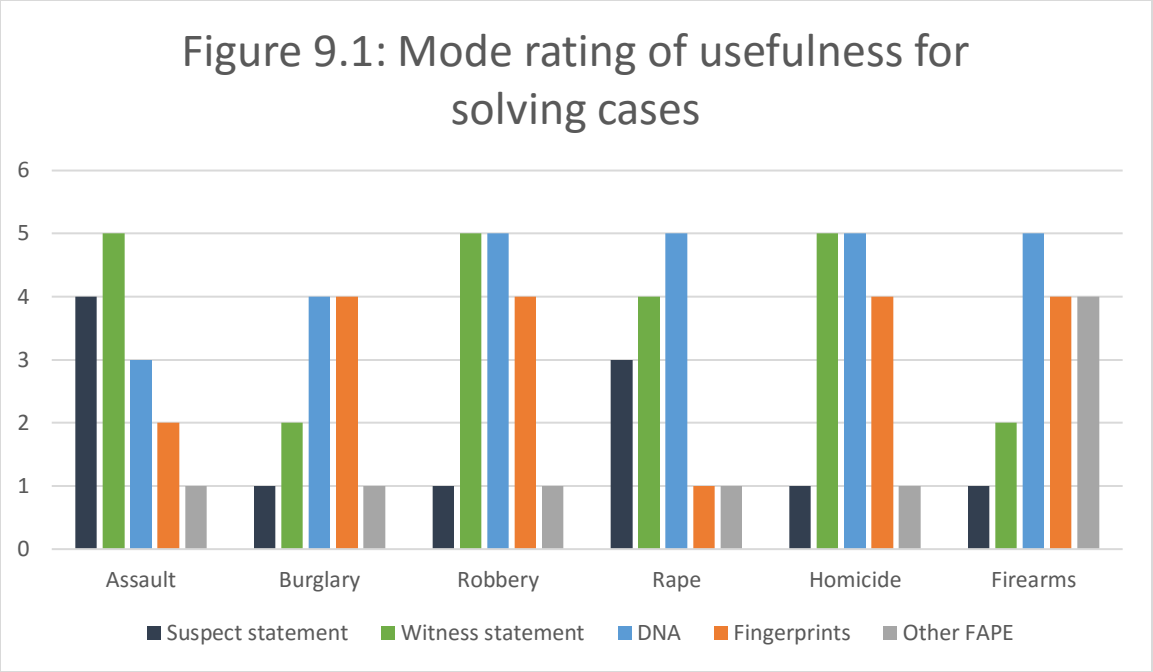
Prosecutors and FAPE

Investigators were asked to rate whether they agree with statements concerning their experience with prosecutors and FAPE. The rating was between 1 to 5, 1 indicates total agreement and a 5 indicates total disagreement. Most respondents were neutral when asked whether prosecutors were reluctant to charge cases without forensic evidence. However, most slightly agreed that prosecutors may feel trying a case or negotiating a plea deal without FAPE is difficult. On average, respondents felt they could make arrests in both property and violent cases without confirmation from the prosecutor.

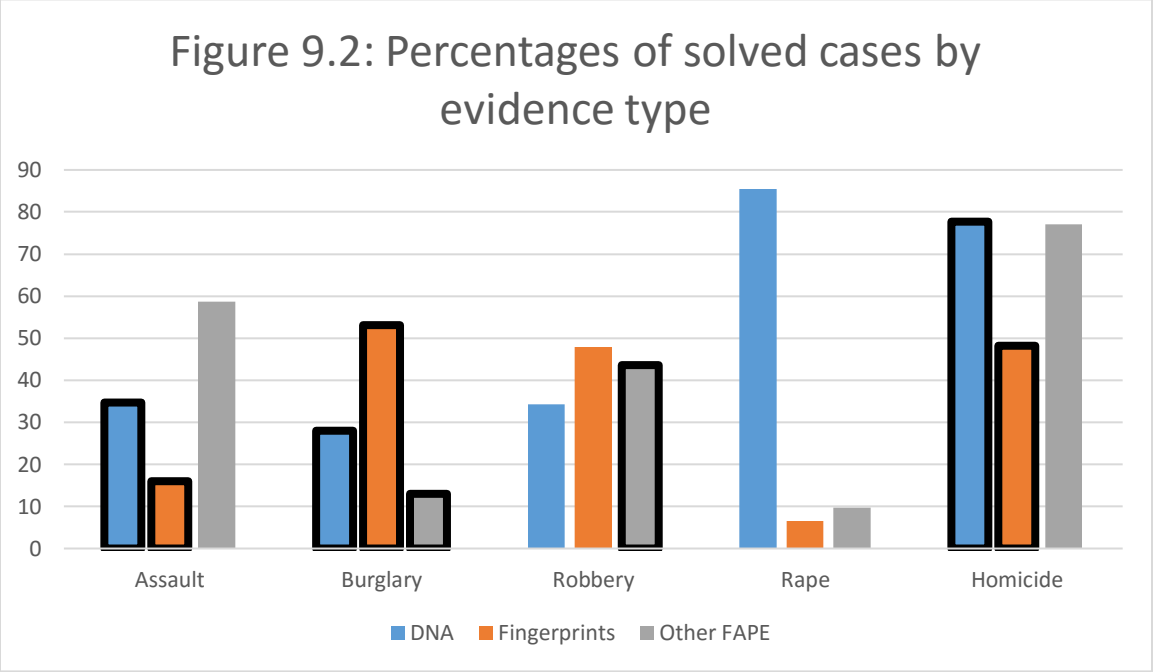
Table 9.3: Prosecutors and FAPE	
Question	**Mean (SD)**
Most prosecutors, when dealing with property crime are reluctant to prosecute without FAPE. (N = 143)	3.05 (0.92)
Most prosecutors, when dealing with violent crime are reluctant to prosecute without FAPE. (N = 144)	3.05 (0.93)
Most prosecutors believe that juries will not convict suspects unless some FAPE is part of the prosecution's case. (N = 142)	2.75 (0.91)
Most prosecutors, believe that they will have a very difficult time negotiating appropriate plea agreements with suspects unless some FAPE is part of the prosecution's case. (N = 142)	2.75 (0.86)
I feel comfortable/I am allowed to determine probable cause and make arrests in property crime cases without conferring with the prosecutor. (N = 144)	2.13 (1.02)
I feel comfortable/I am allowed to determine probable cause and make arrests in violent crime cases without conferring with the prosecutor. (N = 147)	2.39 (1.06)

FAPE usefulness

Respondents were asked to rate the usefulness of various forms of evidence and forensic analysis of physical evidence (FAPE) for case clearance for several crime types. DNA has a high rating throughout all crime types. Fingerprints have a relatively high rating except for assault or firearm crimes. Witness statements were consistently rated higher than suspect statements and, in several crimes, were rated as high as DNA evidence. Other forms of FAPE had low ratings except for firearm evidence, in which it tied for second alongside fingerprint evidence.



Note: the rating for fingerprints in rape cases was equally split between 2 and 1.



The above chart shows the percentage of cleared cases with each evidence type. The bars with the bars with a black outline indicate the evidence type has a statistically significant relationship with arrest.

Assault

Investigators rated DNA as the most useful forensic evidence category for assault cases. However, cleared assault cases had higher percentage of other forms of FAPE than both DNA and fingerprint evidence. Judging by percentages of evidence in solved cases, while fingerprint evidence was rated the second most useful form of forensic evidence, it was the least prevalent in cleared assault cases. Bivariate analyses, on the other hand, showed DNA evidence ($\chi = 22.93$, $p = .000$) and fingerprint evidence ($\chi = 8.13$, $p = .004$) increased the likelihood of arrest but other forms of FAPE did not ($\chi = 3.30$, $p = .069$). However, fingerprints had a higher percentage of cleared cases than DNA for assaults. In other words, the bivariate analysis show that while investigators were correct in ranking other forms of FAPE as least useful, they were mistaken when they rated DNA evidence as more useful than fingerprint evidence.

Burglary

DNA and fingerprint evidence were tied as the most useful rated form of FAPE by investigators, however, the percentage of cleared cases with fingerprints far outstripped cleared cases with DNA evidence. The low value investigators placed on other forms of FAPE as well as the high value placed on fingerprints, seem to be justified. The chi-square tests show DNA ($\chi = 16.18$, $p = .000$), fingerprint ($\chi = 15.0$, $p = .000$), and other forms of FAPE ($\chi = 7.73$, $p = .005$) increased the chances of an arrest. Figure 9.2 shows fingerprints were, in reality, the most useful.

Robbery

As with the other crime types, DNA was rated the most useful evidence type for robbery cases. However, judging by the percentages of evidence types in cleared cases, fingerprints and other forms of FAPE outperformed DNA. Bivariate analyses show DNA ($\chi = 0.63$, $p = .427$), and fingerprint evidence ($\chi = 3.06$, $p = .080$) have no relationship with arrest. However, other forms of FAPE ($\chi = 14.63$, $p = .000$) increase the likelihood of arrest. In short, while DNA and fingerprints are rated as very useful by investigators, the data shows that other forms of FAPE, which was rated least useful, is the only evidence type that helps case clearance.

Rape

Investigators' perception on the usefulness of evidence for rape matches the trends seen in cleared crimes. However, chi-square tests show DNA ($\chi = 0.82$, $p = .364$). had no significant relationship with arrest. Unfortunately, there were not enough cases with either fingerprint evidence or other forms of FAPE to analyze.

Homicide

DNA was rated the most useful for homicide cases and was present in a high number of cleared cases. However, other forms of FAPE, which were deemed least useful, was just as prevalent in solved cases. DNA ($\chi = 6.97$, $p = .008$) and fingerprint ($\chi = 9.79$, $p = .002$) evidence had positive relationships with arrest. Other forms of FAPE ($\chi = 0.88$, $p = .348$), on the other hand, did not. So, while other forms of FAPE were just as common in cleared homicide cases as DNA evidence, other forms of FAPE did not aid in arrest. Overall, investigators were accurate in rating evidence for homicide cases, despite the frequency of other forms of FAPE in cleared cases.

Discussion

DNA was viewed as one of the most useful forms of FAPE. However, DNA only lived up to expectations in homicides. DNA did not have a significant relationship with arrest for robbery or rape cases. Conversely, other FAPE was rated the least useful in all crimes but firearm crimes but had strong showings in burglaries and robberies. However, other forms of FAPE was only significant these two crime types. Overall, it seems investigators' perception of FAPE does not match the reality. DNA has been grossly overestimated for all but two crime types while other forms of FAPE, such as trace evidence or other class-level evidence, has been unduly devalued for property crimes.

Investigators do not have accurate views on what evidence helps the most for different crime types. Investigators were most accurate evaluating evidence for violent crimes such as homicide and assault cases. The perceived usefulness of fingerprints in burglaries was correct, however investigators were overconfident in DNA for this crime type. Investigators were correct in their rating of DNA evidence for homicide and assault cases but overestimated fingerprint evidence for robberies while devaluing other forms of FAPE for the same crime type.

Limitations

Although this study was well designed and yielded important findings on the efficacy of forensic evidence, several limitations must be acknowledged. While other similar studies have used multiple sites, these studies suffer from issues concerning differences in laws, in police culture, and prosecutorial policies when attempting to measure the efficacy of forensic evidence (Baskin & Sommers, 2010, 2011, 2012; Sommers & Baskin, 2011; Roman et al., 2009; King et al., 2013). A single state-wide study site, with a single crime lab, does not suffer from these limitations. However it has become obvious that crime labs vary in what evidence is collected and examined (Peterson et al., 2010; McEwen, 2011) so the generalizability of this single state-wide study could be a concern.

While the study period was selected to ensure a large number of the selected cases would have judicial adjudication, changes in procedure, laws, and technological advances that have occurred since 2009 are not represented in this data. The biggest changes concerned DNA evidence as the procedures and laws in Connecticut for this evidence type has changed since the end of the study period. In particular, a new law has allowed the collection of DNA samples from arrestees as long as the suspect is charged with a subset of felonies. Prior to this law, DNA was only collected if the offender was convicted of a felony (Prince, 2011; National Institute of Justice, 2012). To address the growing backlog of DNA evidence, law enforcement agencies have started to limit DNA submissions to the Connecticut State Forensic Laboratory (New Haven Register, 2012). These efforts, aided by federal funding, have paid off as Connecticut's DNA backlog has been significantly reduced (Flynn, 2015).

The cases selected for this study originated from the Connecticut State Crime Laboratory, which means all the cases reviewed included at least one piece of forensic evidence and cases without evidence submitted to this crime lab were excluded based on this selection process. It is unknown how many cases contained evidence but were never submitted to this particular lab or cases were evidence was submitted to another crime lab.

While Peterson et al. (2010) included whether a case was referred to the prosecutor and whether the prosecutor decided to charge the defendant, this study does not include information on these decision steps. Due to data gathering complications, including privacy laws, this study could only determine whether or not a defendant was arrested and whether they were convicted of the crime. If a suspect was arrested or convicted, the data cannot tell us the specific reason (e.g.-how each piece of evidence impacted the decision to arrest or convict; whether a prosecutor decided a case wasn't strong enough to bring to court, etc.). Unfortunately, many of these questions cannot be answered without interviewing the detectives and prosecutors that handled each case, which would be a very difficult task.

While this study addressed many of Peterson et al.'s (2010) recommendations, there were two recommendations we could not address. The first is improving the crime laboratory information and management systems (LIMS). This study did not analyze crime lab management or procedures. Connected with that recommendation was the recommendation to perform a cost analysis of forensic evidence. While both recommendations are commendable and should be explored, they were beyond the scope of this study.

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Appendix A: Variables and Analytical Models

Offense — **Type of offense (based on crime lab report)**

Location: 3
Variable type: Numeric (width: 24; decimal: 0)

Value	Label	Unweighted frequency	%
1	Assault	663	10.7
2	Burglary	1387	22.4
3	Robbery	1208	19.5
4	Rape	524	8.5
5	Homicide	2398	38.7
	Missing	19	0.3

Based upon 6199 valid cases out of 6617 total cases

- Mean: 3.49
- Median: 3.00
- Mode: 5
- Minimum: 1
- Maximum: 5
- Standard Deviation: 1.454

TypeEvCol — **Type of evidence collected**

Location: 66
Variable type: String (width: 60; decimal: 0)
Based upon 6199 valid cases out of 6617 total cases

ForCSLoc — **Forensic crime scene location**

Location: 67
Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Interior	2927	47.2
2	Exterior	1550	25.0
	Missing	1722	27.8

Based upon 6199 valid cases out of 6617 total cases

- Mean: 1.35
- Median: 1.00
- Mode: 1
- Minimum: 1
- Maximum: 2
- Standard Deviation: 0.476

Submit — **Submitted to crime lab?**

Location: 68
Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	46	0.7
1	Yes	5723	92.3

	Missing	430	6.9

Based upon 6199 valid cases out of 6617 total cases

- Mean: 0.99
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.089

Sub_Date **Submitted date**

Location: 69

Variable type: Date (width: 8; decimal: 0)

Based upon 6199 valid cases out of 6617 total cases

Examine **Evidence examined?**

Location: 70

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	533	8.6
1	Yes	4931	79.5
	Missing	735	11.9

Based upon 6199 valid cases out of 6617 total cases

- Mean: 0.90
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.297

Exam_Date **Examined date**

Location: 71

Variable type: Date (width: 8; decimal: 0)

Based upon 6199 valid cases out of 6617 total cases

ReportGen **Report generated**

Location: 72

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	429	6.9
1	Yes	4859	78.4
	Missing	911	14.7

Based upon 6199 valid cases out of 6617 total cases

- Mean: 0.92
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1

- Standard Deviation: 0.273

ReportGen_Date **Report generated date**

Location: 73

Variable type: Date (width: 8; decimal: 0)

Based upon 6199 valid cases out of 6617 total cases

IdEvid **Identification of Evidence**

Location: 75

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Inconclusive	139	2.2
2	Negative	789	12.7
3	Positive	3908	663.0
	Missing	1363	22.0

Based upon 6199 valid cases out of 6617 total cases

- Mean: 2.78
- Median: 3.00
- Mode: 3
- Minimum: 1
- Maximum: 3
- Standard Deviation: 0.479

IndivEvid **Individualization of evidence**

Location: 76

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Inconclusive	719	11.6
2	Individual	2465	39.8
3	Class	1294	20.9
	Missing	1721	27.8

Based upon 6199 valid cases out of 6617 total cases

- Mean: 2.13
- Median: 2.00
- Mode: 2
- Minimum: 1
- Maximum: 3
- Standard Deviation: 0.658

LinkSuspCrime **Link suspect to crime**

Location: 79

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3868	62.4
1	Yes	881	14.2
	Missing	1450	23.4

Based upon 6199 valid cases out of 6617 total cases

- Mean: 0.19
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.389

CrimOff **Type of offense (based on crime police report)**

Location: 82

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Assault	543	11.9
2	Burglary	1014	22.2
3	Robbery	885	19.4
4	Rape	379	8.3
5	Homicide	1747	38.2
6*	Inappropriate	--	--

*These cases not represented in the descriptive statistics for this variable

Based upon 4568 valid cases out of 6617 total cases

- Mean: 3.39
- Median: 3.00
- Mode: 5
- Minimum: 1
- Maximum: 5
- Standard Deviation: 1.470

DayCrimeToReprt **Total number of days between crime and report**

Location: 88

Variable type: Numeric (width: 8; decimal: 0)

Based upon 4403 valid cases out of 6617 total cases

- Mean: 0.84
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 474
- Standard Deviation: 12.984

DayCrimeToArr **Total number of days between crime and arrest**

Location: 89

Variable type: Numeric (width: 8; decimal: 0)

Based upon 2710 valid cases out of 6617 total cases

- Mean: 222.52
- Median: 33.00
- Mode: 0
- Minimum: 0

- Maximum: 2845
- Standard Deviation: 422.016

DayReprtToArr **Total number of days between reported to police and arrest**

Location: 90

Variable type: Numeric (width: 8; decimal: 0)

Based upon 2685 valid cases out of 6617 total cases

- Mean: 221.32
- Median: 32.00
- Mode: 0
- Minimum: 0
- Maximum: 2842
- Standard Deviation: 422.317

VicSex **Victim sex**

Location: 91

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Female	1644	36.0
2	Male	2791	61.1
	Missing	133	2.9

Based upon 4568 valid cases out of 6617 total cases

- Mean: 1.63
- Median: 2.00
- Mode: 2
- Minimum: 1
- Maximum: 2
- Standard Deviation: 0.483

VicAge **Victim age**

Location: 92

Variable type: Numeric (width: 8; decimal: 0)

Based upon 4280 valid cases out of 6617 total cases

- Mean: 34.30
- Median: 30.00
- Mode: 21
- Minimum: 0
- Maximum: 92
- Standard Deviation: 15.638

VicRace_W **Victim race-white**

Location: 93

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2100	46.0
1	Yes	1997	43.7
	Missing	471	10.3

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.49
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.500

VicRace_B **Victim race-black**

Location: 94

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2764	60.5
1	Yes	1333	29.2
	Missing	471	10.3

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.33
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.469

VicRace_L **Victim race-latino**

Location: 95

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3485	76.3
1	Yes	612	13.4
	Missing	471	10.3

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.15
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.357

VicRace_A **Victim race-asian**

Location: 96

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	4021	88.0
1	Yes	76	1.7
	Missing	471	10.3

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.02
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.357

VicRace_O **Victim race-other**

Location: 97

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	4018	88.0
1	Yes	79	1.7
	Missing	471	10.3

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.02
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.138

SuspSex **Suspect sex**

Location: 98

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Female	130	2.8
2	Male	3567	78.1
	Missing	871	19.1

Based upon 4568 valid cases out of 6617 total cases

- Mean: 1.96
- Median: 2.00
- Mode: 2
- Minimum: 1
- Maximum: 2
- Standard Deviation: 0.184

SuspAge **Suspect age**

Location: 99

Variable type: Numeric (width: 8; decimal: 0)

Based upon 1651 valid cases out of 6617 total cases

- Mean: 30.26
- Median: 27.00
- Mode: 21
- Minimum: 13

- Maximum: 84
- Standard Deviation: 11.794

SuspRace_W **Suspect race-white**

Location: 100

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2185	47.8
1	Yes	1127	24.7
	Missing	1256	27.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.34
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.474

SuspRace_B **Suspect race-black**

Location: 101

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	1683	36.8
1	Yes	1629	35.7
	Missing	1256	27.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.49
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.500

SuspRace_L **Suspect race-latino**

Location: 102

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2796	61.2
1	Yes	516	11.3
	Missing	1256	27.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.16
- Median: 0.00
- Mode: 0
- Minimum: 0

- Maximum: 1
- Standard Deviation: 0.363

SuspRace_A **Suspect race-asian**

Location: 103

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3300	72.2
1	Yes	12	0.3
	Missing	1256	27.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.00
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.060

SuspRace_O **Suspect race-other**

Location: 104

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3284	71.9
1	Yes	28	0.6
	Missing	1256	27.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.01
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.092

NumWit **Total number of witnesses**

Location: 105

Variable type: Numeric (width: 8; decimal: 0)

Based upon 3946 valid cases out of 6617 total cases

- Mean: 1.70
- Median: 1.00
- Mode: 0
- Minimum: 0
- Maximum: 30
- Standard Deviation: 2.671

VicReprt **Victim report to police**

Location: 106

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	1971	43.1
1	Yes	2333	51.1
	Missing	264	5.8

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.54
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.498

WitReprt **Witness report to police**

Location: 107

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	1831	40.1
1	Yes	2349	51.4
	Missing	388	8.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.56
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.496

WitNameSusp **Witness name/provide suspect**

Location: 108

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	1395	30.5
1	Yes	2676	58.6
	Missing	497	10.9

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.66
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.475

VicSuspRel_S **Victim relationship to suspect-stranger**

Location: 109

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	1366	29.9
1	Yes	1985	43.5
	Missing	1217	26.6

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.59
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.491

VicSuspRel_IP **Victim relationship to suspect-intimate partner**

Location: 110

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3014	66.0
1	Yes	337	7.4
	Missing	1217	26.6

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.10
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.301

VicSuspRel_Fam **Victim relationship to suspect-family**

Location: 111

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3213	70.3
1	Yes	138	3.0
	Missing	3351	26.6

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.04
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.199

VicSuspRel_Fnd **Victim relationship to suspect-friend**

Location: 112

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2659	58.2
1	Yes	692	15.1
	Missing	1217	26.6

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.21
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.405

VicSuspRel_W **Victim relationship to suspect-work**

Location: 113

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	3152	69.0
1	Yes	199	4.4
	Missing	1217	26.6

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.06
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.236

VicMedTx **Victim received medical treatment**

Location: 114

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2420	53.0
1	Yes	1883	41.2
	Missing	265	5.8

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.44
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.496

SuspStmnt **Suspect gave statement**

Location: 115

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2191	48.0
1	Yes	1763	38.6
	Missing	614	13.4

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.45
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.497

SuspArr **Suspect arrested**

Location: 116

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	1715	37.5
1	Yes	2470	54.1
	Missing	383	8.4

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.59
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.492

DefCon **Defendant convicted?**

Location: 119

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	2677	58.6
1	Yes	1459	31.9
	Missing	432	9.5

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.35
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 1
- Standard Deviation: 0.478

NumPrevArrCon **Number of previous arrests that end in convictions**

Location: 122

Variable type: Numeric (width: 8; decimal: 0)

Based upon 1417 valid cases out of 6617 total cases

- Mean: 0.74
- Median: 0.00
- Mode: 0
- Minimum: 0
- Maximum: 16
- Standard Deviation: 1.386

Plea **Plea bargain**

Location: 138

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
0	No	242	5.3
1	Yes	1128	24.7
2	Nolo contendere	39	0.9
	Missing	3159	69.2

Based upon 4568 valid cases out of 6617 total cases

- Mean: 0.86
- Median: 1.00
- Mode: 1
- Minimum: 0
- Maximum: 2
- Standard Deviation: 0.423

SentLeng **Sentence length (Days)**

Location: 140

Variable type: Numeric (width: 8; decimal: 0)

Based upon 1443 valid cases out of 6617 total cases

- Mean: 7588.77
- Median: 5475.00
- Mode: 7300
- Minimum: 0
- Maximum: 21900
- Standard Deviation: 6698.637

DefenseType **Defense attorney type**

Location: 145

Variable type: Numeric (width: 8; decimal: 0)

Value	Label	Unweighted frequency	%
1	Private counsel	1371	30.0
2	Public defender	27	0.6
	Missing	3170	69.4

Based upon 4568 valid cases out of 6617 total cases

- Mean: 1.02
- Median: 1.00

- Mode: 1
- Minimum: 1
- Maximum: 2
- Standard Deviation: 0.138

Predictors for the Selection Models:

Table A.1: Logistic Regression Predictors

Arrest		Conviction	
Current Study	Peterson et al. (2010)	Current Study	Peterson et al. (2010)
Witness reports	Witness reports	Witness reports	Witness reports
Victim reports	Victim reports	Victim reports	Victim reports
Intimate/family	Intimate/family	Intimate/family	Intimate/family
Friend	Friend/acquaintance	Friend	Friend/acquaintance
Examined evidence	Crime scene evidence	Examined evidence	Crime scene evidence
Time incident to report	Time incident to report	Victim received medical treatment	Victim received medical treatment
Victim male	Victim male	One day arrest	Arrested within 10 minutes
Suspect male	Suspect male	Suspect statement/suspect named or described	Direct arrest
Victim teen	Victim teen	--	LA
Victim young adult	Victim young adult	--	Indy
Victim Black	Victim Black	--	Correction factor
Victim Latino	Victim Latino		
Suspect Black	Suspect Black		
Suspect Latino	Suspect Latino		

Table A.2: OLS sentence length predictors

Current Study	Peterson et al. (2010)
Witness reports	Witness reports
Victim reports	Victim reports
Intimate/family	Intimate/family
Friend	Friend/acquaintance
Examined evidence	Crime scene evidence
Victim received medical treatment	Victim received medical treatment
One day arrest	Arrested within 10 minutes
Suspect statement/suspect named or described	Direct arrest
--	LA
--	Indy
Gender*race interaction	Gender*race interaction
--	Correction factor

Appendix B: Case Descriptive Characteristics

Table B.1: Descriptive characteristics of assault incidents

	Current study	Peterson et al. (2010)
N	393	859
Victim:		
% male	76.1	69.0
% <20	21.2	25.0
% 20-29	36.1	33.3
% 30+	34.9	41.7
White	23.6	36.7
Black	49.0	50.3
Latino	15.2	12.3
Asian	0.3	1.5
Other	1.5	0.1
Suspect:		
% male	74.6	86.4
% <20	11.0	43.9
% 20-29	19.7	29.1
% 30+	19.4	26.0
White	14.3	29.9
Black	41.8	55.7
Latino	13.4	13.5
Asian	0.9	0.8
Other	0.0	0.1
Victim/Suspect Relationship:		
% intimate/family	8.4	37.1
%friend/acquaintance	--	24.9
% friend	17.0	--
%work	5.4	--
%stranger	47.2	38.0
%victim received medical treatment	77.0	52.4
# of Witnesses:		
%0	21.5	33.0
%1	29.3	43.5
%2+	39.7	23.5
% witness report to police	62.4	33.3

% victim report to police	71.0	79.7
% arrests	44.5	49.4
% convictions	25.1	20.5
% arrested within 10 minutes	--	29.9
% arrested within a day	23.0	--
Time from incident to police report (mean days)	0.13	1.37
Time from incident to arrest (mean days)	96.62	21.57
Time from reported to arrest (mean days)	85.01	--

Table B.2: Descriptive characteristics of burglary incidents

	Current study	Peterson et al. (2010)
N	749	1263
Victim:		
% male	57.4	51.7
% <20	1.7	7.4
% 20-29	13.8	26.0
% 30+	75.6	66.6
White	66.8	54.0
Black	7.9	26.9
Latino	7.5	13.8
Asian	2.1	4.3
Other	1.9	1.0
Suspect:		
% male	46.2	85.0
% <20	18.0	24.2
% 20-29	13.8	39.3
% 30+	75.6	36.5
White	24.2	41.4
Black	8.9	43.9
Latino	6.5	13.3
Asian	0.1	1.4
Other	0.1	
Victim/Suspect Relationship:		
% intimate/family	2.1	7.5
%friend/acquaintance	--	11.2
% friend	4.8	--
%work	4.0	--
%stranger	34.4	81.3
%victim received medical treatment	0.4	0.6
# of Witnesses:		
%0	72.4	95.3
%1	13.9	3.5
%2+	6.7	1.2
% witness report to police	15.9	4.7
% victim report to police	86.4	7.5

% arrests	27.6	8.2
% convictions	11.9	3.2
% arrested within 10 minutes	--	29.9
% arrested within a day	3.9	--
Time from incident to police report (mean days)	1.25	3.65
Time from incident to arrest (mean days)	363.96	35.62
Time from reported to arrest (mean days)	360.32	--

Table B.3: Descriptive characteristics of robbery incidents

	Current study	Peterson et al. (2010)
N	461	1081
Victim:		
% male	52.5	66.6
% <20	8.5	16.4
% 20-29	31.7	26.5
% 30+	50.8	57.1
White	46.0	37.4
Black	17.8	20.9
Latino	12.8	32.2
Asian	2.8	6.5
Other	4.8	2.8
Suspect:		
% male	92.8	93.1
% <20	10.2	28.3
% 20-29	19.5	48.8
% 30+	26.2	22.9
White	25.8	12.1
Black	51.8	60.1
Latino	12.1	26.6
Asian	0.2	1.0
Other	0.0	0.2
Victim/Suspect Relationship:		
% intimate/family	1.3	6.0
%friend/acquaintance	--	19.5
% friend	3.9	--
%work	0.9	--
%stranger	84.2	74.5
%victim received medical treatment	11.7	10.0
# of Witnesses:		
%0	29.7	51.9
%1	21.3	29.6
%2+	40.3	18.5
% witness report to police	34.3	30.4
% victim report to police	85.0	45.8

% arrests	51.2	22.6
% convictions	30.6	12.6
% arrested within 10 minutes	--	9.4
% arrested within a day	15.4	--
Time from incident to police report (mean days)	0.02	2.38
Time from incident to arrest (mean days)	1564.00	56.16
Time from reported to arrest (mean days)	1564.00	--

Table B.4: Descriptive characteristics of rape incidents

	Current study	Peterson et al. (2010)
N	211	602
Victim:		
% male	5.7	0
% <20	28.9	48.1
% 20-29	34.1	26.0
% 30+	29.4	25.9
White	57.8	53.9
Black	18.0	28.6
Latino	9.5	16.3
Asian	0.0	1.2
Other	1.4	--
Suspect:		
% male	88.6	100
% <20	10.9	16.7
% 20-29	19.0	41.0
% 30+	35.5	42.3
White	30.3	32.9
Black	31.3	45.9
Latino	14.2	20.3
Asian	0.0	0.9
Other	0.5	--
Victim/Suspect Relationship:		
% intimate/family	20.9	36.2
%friend/acquaintance	--	42.7
% friend	37.0	--
%work	4.3	--
%stranger	25.1	21.1
%victim received medical treatment	88.2	68.3
# of Witnesses:		
%0	66.8	78.3
%1	11.4	11.5
%2+	9.0	10.2
% witness report to police	25.1	11.3
% victim report to police	75.8	66.3

% arrests	29.4	45.0
% convictions	15.2	11.1
% arrested within 10 minutes	--	10.6
% arrested within a day	5.2	--
Time from incident to police report (mean days)	9.19	7.56
Time from incident to arrest (mean days)	199.53	53.08
Time from reported to arrest (mean days)	198.29	--

Table B.5: Descriptive characteristics of homicide incidents

	Current study	Peterson et al. (2010)
N	284	400
Victim:		
% male	80.3	85.5
% <20	15.1	25.1
% 20-29	41.2	36.8
% 30+	40.5	38.1
White	23.9	14.1
Black	49.3	49.9
Latino	21.5	32.1
Asian	0.4	2.9
Other	0.4	1.0
Suspect:		
% male	77.5	94.8
% <20	12.3	20.8
% 20-29	30.3	47.7
% 30+	25.7	31.5
White	16.9	15.4
Black	38.7	54.2
Latino	15.1	28.8
Asian	0.0	1.6
Other	1.1	0.0
Victim/Suspect Relationship:		
% intimate/family	18.7	19.4
%friend/acquaintance	--	25.4
% friend	21.1	--
%work	3.5	--
%stranger	23.2	55.2
%victim received medical treatment	61.3	62.8
# of Witnesses:		
%0	18.3	24.0
%1	18.3	62.2
%2+	38.4	13.8
% witness report to police	74.6	67.0
% victim report to police	8.1	15.8

% arrests	58.1	55.5
% convictions	37.3	34.5
% arrested within 10 minutes	--	14.8
% arrested within a day	14.8	--
Time from incident to police report (mean days)	1.18	0.47
Time from incident to arrest (mean days)	174.02	35.56
Time from reported to arrest (mean days)	173.89	--

Appendix C: Evidence Submitted, Examined, and Reported

Table C.1: Evidence type-assault

Evidence type	Total		Submitted		Examined		Report generated	
	n	%	n	%	n	%	n	%
Total	393	--	389	99.0%	325	82.7%	325	82.7%
Biological	124	31.6%	121	30.8%	102	26.0%	102	26.0%
Pattern Evidence	3	0.8%	2	0.5%	2	0.5%	2	0.5%
Firearms/Weapons	112	28.5%	275	70.0%	221	56.2%	221	56.2%
Fingerprints	58	14.8%	56	14.2%	53	13.5%	53	13.5%
Electronic/printed data	21	5.3%	20	5.1%	12	3.1%	12	3.1%
Trace	17	4.3%	17	4.3%	17	4.3%	17	4.3%
Other	2	0.5%	2	0.5%	2	0.5%	2	0.5%

Table C.2: Evidence type-burglary

Evidence type	Total		Submitted		Examined		Report generated	
	n	%	n	%	n	%	n	%
Total	1011	--	1004	99.3%	857	84.8%	852	84.9%
Biological	339	33.5%	327	32.3%	183	18.1%	179	17.7%
Pattern Evidence	20	2.0%	19	1.9%	18	1.5%	15	1.5%
Firearms/Weapons	18	1.8%	17	1.7%	16	1.6%	16	1.6%
Fingerprints	708	70.0%	702	69.4%	686	67.9%	684	67.7%
Electronic/printed data	42	20.8%	38	3.8%	33	3.3%	32	3.2%
Trace	28	2.8%	26	2.6%	25	2.5%	25	2.5%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Table C.3: Evidence type-robbery

Evidence type	Total		Submitted		Examined		Report generated	
	n	%	N	%	n	%	n	%
Total	636	--	629	98.9%	549	86.3%	548	86.2%
Biological	316	49.7%	301	47.3%	220	34.6%	220	34.6%
Pattern Evidence	46	1.6%	38	1.4%	38	1.4%	38	1.4%
Firearms/Weapons	665	23.7%	652	23.3%	587	21.0%	586	20.9%
Fingerprints	1262	54.1%	1243	44.4%	1211	43.2%	1209	43.2%
Electronic/printed data	274	9.8%	229	8.2%	158	5.6%	154	5.5%
Trace	210	7.5%	185	6.6%	176	6.3%	174	6.2%
Other	31	1.1%	18	0.6%	17	0.6%	17	0.6%

Table C.4: Evidence type-rape

Evidence type	Total		Submitted		Examined		Report generated	
	n	%	n	%	n	%	n	%
Total	310	--	303	97.7%	262	84.5%	262	84.5%
Biological	300	96.8%	292	94.2%	257	82.9%	257	82.9%
Pattern Evidence	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Firearms/Weapons	2	0.6%	2	0.6%	2	0.6%	2	0.6%
Fingerprints	11	3.5%	9	2.9%	9	2.9%	9	2.9%
Electronic/printed data	10	3.2%	10	3.2%	3	1.0%	2	0.6%
Trace	19	6.1%	16	5.2%	16	5.2%	16	5.2%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Table C.5: Evidence type-homicide

Evidence type	Total		Submitted		Examined		Report generated	
	n	%	n	%	n	%	n	%
Total	438	--	432	98.6%	373	85.2%	363	82.9%
Biological	421	96.1%	393	89.7%	287	65.5%	261	59.6%
Pattern Evidence	14	3.2%	13	3.0%	13	3.0%	13	3.0%
Firearms/Weapons	241	55.0%	238	54.3%	237	54.1%	236	53.9%
Fingerprints	157	35.8%	154	35.2%	150	34.2%	150	34.2%
Electronic/printed data	95	21.7%	67	15.3%	36	8.2%	35	8.0%
Trace	89	20.3%	72	16.4%	67	15.3%	65	14.8%
Other	29	6.6%	16	3.7%	15	3.4%	15	3.4%

Appendix E: Arrest Analysis

Table E.1: Arrest

	Current study		Peterson et al. (2010)	
	Estimate	Odds Ratio	Estimate	Odds Ratio
Assault				
Witness reports to police	0.92 (.537)	2.53	.224 (.165)	1.25
Victim reports to police	-1.59 (.603)	0.20**	1.06 (.218)	2.87***
Intimate/family	2.17 (.973)	8.73*	.642 (.199)	1.90**
Friend/Acquaintance	--	--	.272 (.215)	1.31
Friend	2.42 (.604)	11.25***	--	--
Crime scene evidence	--	--	1.24 (.178)	3.45***
Lab examined evidence	.21 (.762)	1.23	1.27 (.281)	3.57***
Los Angeles	--	--	2.14 (.271)	8.51***
Indianapolis	--	--	.625 (.186)	1.87**
Nagelkerke's R-square	.535		.271	
Burglary				
Witness reports to police	-.47 (.547)	.624	1.64 (.329)	5.16***
Victim reports to police	-1.03 (.694)	.357	.265 (.326)	1.30
Intimate/family	-1.37 (.756)	.253	1.23 (.390)	3.42**
Friend/Acquaintance	--	--	.575 (.348)	1.78
Friend	-.027 (.470)	.974	--	--
Crime scene evidence	--	--	1.23 (.333)	3.41***
Lab examined evidence	-.258	.465	.602 (.465)	1.83
Los Angeles	--	--	1.06 (.450)	2.88*
Indianapolis	--	--	-.515 (.411)	.598
Nagelkerke's R-square	0.100		0.275	

	Current study		Peterson et al. (2010)	
Robbery	**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**
Witness reports to police	.06 (.297)	1.65	.452 (.227)	1.57*
Victim reports to police	-1.70 (.673)	.182**	.748 (.573)	2.11
Intimate/family	--	--	.607 (.587)	1.84
Friend/Acquaintance	--	--	1.20 (.312)	3.32***
Friend	1.24 (.722	3.45	--	--
Crime scene evidence	--	--	1.88 (.176)	6.54***
Lab examined evidence	.164 (.383)	1.17	1.33 (.221)	3.77
Los Angeles	--	--	1.42 (.621)	4.11*
Indianapolis	--	--	-.009 (.244)	.991
Nagelkerke's R-square	.159		.231	
Rape				
Witness reports to police	1.350 (.683)	3.85*	-.991 (.495)	.371*
Victim reports to police	.475 (.743)	1.60	2.70 (.441)	14.80***
Intimate/family	1.945 (.508)	6.99***	1.91 (.337)	6.70***
Friend/Acquaintance	--	--	1.18 (.309)	3.26***
Friend	.695 (.443)	2.00	--	--
Crime scene evidence	--	--	.920 (.227)	2.51***
Lab examined evidence	1.127 (.718)	3.08	.491 (.256)	1.63*
Los Angeles	--	--	3.46 (.483)	31.69***
Indianapolis	--	--	3.10 (.317)	22.12***
Nagelkerke's R-square	.188		.433	

	Current study		Peterson et al. (2010)	
Homicide	Estimate	Odds Ratio	Estimate	Odds Ratio
Victim reports to police	.547 (1.22)	1.72	-.222 (.315)	.801
Intimate/family	-2.43 (1.08)	.088*	1.054 (.404)	2.87**
Friend/Acquaintance	--	--	1.83 (.425)	6.25***
Friend	.002 (1.43)	1.00	--	--
Crime scene evidence	--	--	.377 (.693	1.46
Lab examined evidence	1.97 (.872)	7.20*	.553 (.314)	1.74
Los Angeles	--	--	-.564 (.345)	.569
Indianapolis	--	--	-.052 (.420)	.949
Nagelkerke's R-square	.323		.277	

*p<.05, **p<.01, *** p=.000

Note: Standard errors are in parentheses.

Appendix F: Conviction Analysis

Table F.1: Assault convictions

	Current study		Peterson et al. (2010)	
	Estimate	Odds Ratio	Estimate	Odds Ratio
Witness reports to police	.324 (.207)	1.383	-.721 (.351)	.486*
Victim reports to police	-.002 (.221)	.998	-1.41 (.896)	.244
Intimate/family	-.379 (.246)	.685	-.754 (.400)	.471
Friend/Acquaintance	--	--	-.505 (.489)	.603
Friend	.043 (.208)	1.044	--	--
Crime scene evidence	--	--	-.120 (.380)	.887
Lab examined evidence	.697 (.263)	2.00**	.699 (.531)	2.01
Victim medical treatment	.012 (.174)	1.01	3.25 (1.07)	25.68***
Arrest within 10 minutes of crime incident	--	--	-.012 (.353)	.988
Arrest on the same day as crime incident	.415 (.194)	1.51*	--	--
Direct arrest	--	--	.701 (.638)	2.02
Suspect gave a statement or witnesses available	.082 (.170)	1.08	--	--
Los Angeles	--	--	-.588 (.969)	.555
Indianapolis	--	--	-2.51 (.834)	.082**
Correction factor	--	--	-.404 (.524)	.677
Nagelkerke's R-square	.038		.287	

*p<.05, **p<.01, *** p=.000

Note: Standard errors are in parentheses.

Table F.2: Burglary convictions

	Current study		Peterson et al. (2010)	
	Estimate	Odds Ratio	Estimate	Odds Ratio
Witness reports to police	-1.00 (.697)	.367	-.346 (1.23)	.708
Victim reports to police	.298 (.762)	1.34	--	--
Intimate/family	-1.57 (1.10)	.207	-1.11 (1.42)	.330
Friend/Acquaintance	--	--	-.969 (1.01)	.379
Friend	.243 (.535)	1.27	--	--
Crime scene evidence	--	--	1.06 (1.46	2.87
Lab examined evidence	.718 (.570)	2.05	.139 (1.15)	1.15
Arrest within 10 minutes of crime incident	--	--	2.29 (1.19)	9.83*
Arrest on the same day as crime incident	-.063 (.576)	.939	--	--
Los Angeles	--	--	--	--
Indianapolis	--	--	--	--
Correction factor	--	--	.553 (1.08)	1.74
Nagelkerke's R-square	.098		.399	

*p<.05, **p<.01, *** p=.000

Note: Standard errors are in parentheses

Table F.3: Robbery convictions

	Current study		Peterson et al. (2010)	
	Estimate	Odds Ratio	Estimate	Odds Ratio
Witness reports to police	-.204 (.352)	.816	-.004 (1.00)	.996
Victim reports to police	-.065 (.499)	.937	2.26 (1.08)	9.62*
Intimate/family	--	--	37.37 (.638)	1.70***
Friend/Acquaintance	--	--	.215 (1.06)	1.24
Friend	.286 (.674)	1.33	--	--
Crime scene evidence	--	--	-1.74 (2.90)	.175
Lab examined evidence	.542 (.445)	1.75	-.316 (.939)	.729
Victim medical treatment	.675 (.501)	1.96	37.54 (.409)	2.00***
Arrest within 10 minutes of crime incident	--	--	-1.07 (.626)	.343
Arrest on the same day as crime incident	.778 (.355)	2.17*	--	--
Direct arrest	--	--	1.55 (.991)	4.72
Suspect gave a statement or witnesses available	1.852 (.736)	6.37*	--	--
Los Angeles	--	--	--	--
Indianapolis	--	--	--	--
Correction factor	--	--	.670 (1.15)	11.14*
Nagelkerke's R-square	.086		.245	

*p<.05, **p<.01, *** p=.000

Note: Standard errors are in parentheses.

Table F.4: Rape convictions

	Current study		Peterson et al. (2010)	
	Estimate	Odds Ratio	Estimate	Odds Ratio
Witness reports to police	1.929 (.971)	6.88*	.204 (1.05)	1.23
Victim reports to police	-.310 (.998)	.734	3.02 (1.29)	20.41*
Intimate/family	1.780 (.867)	5.93*	-1.69 (.940)	.184
Friend/Acquaintance	--	--	-4.39 (2.09)	.012*
Friend	-.468 (.810)	.626	--	--
Crime scene evidence	--	--	1.91 (1.17)	6.75
Lab examined evidence	3.029 (1.847)	20.68	.955 (1.01)	2.60
Victim medical treatment	-2.408 (1.036)	.090*	1.73 (.809)	5.64*
Arrest within 10 minutes of crime incident	--	--	.128 (1.37)	1.14
Arrest on the same day as crime incident	.642 (.900)	1.90	--	--
Direct arrest	--	--	3.23 (1.20)	25.31**
Los Angeles	--	--	-.311 (.948)	.733
Indianapolis	--	--	-.221 (1.23)	.801
Correction factor	--	--	3.56 (.993)	35.22***
Nagelkerke's R-square	.331		.844	

*p<.05, **p<.01, *** p=.000

Note: Standard errors are in parentheses.

Table F.5: Homicide convictions

	Current study		Peterson et al. (2010)	
	Estimate	Odds Ratio	Estimate	Odds Ratio
Witness reports to police	.206 (.539)	1.22	-1.45 (1.07)	.235
Victim reports to police	.417 (.688)	1.51	.558 (1.05)	1.80
Intimate/family	-.504 (.570)	.604	-2.14 (1.11)	.118*
Friend/Acquaintance	--	--	-2.17 (1.02)	.115*
Friend	.013 (.448)	1.013	--	--
Crime scene evidence	--	--	.644 (1.56)	1.90
Lab examined evidence	1.424 (.914)	4.15	.172 (.753)	1.19
Victim medical treatment	.376 (.463)	1.45	-.301 (.559)	.740
Arrest within 10 minutes of crime incident	--	--	-2.05 (.915)	.128*
Arrest on the same day as crime incident	.122 (.526)	1.12	--	--
Direct arrest	--	--	.741 (.613)	2.10
Suspect gave a statement or was named/described by a witness	.709 (.837)	2.03	--	--
Los Angeles	--	--	1.65 (.889)	5.22
Indianapolis	--	--	-.581 (.634)	.560
Correction factor	--	--	-4.01 (1.78)	.018*
Nagelkerke's R-square	.097		.182	

*p<.05, **p<.01, *** p=.000

Note: Standard errors are in parentheses.

Appendix G: Sentencing Analysis

Table G.1: Assault sentencing

	Current study			**Peterson et, al. (2010)**		
	B	*S.E*	*Sig.*	*B*	*S.E*	*Sig.*
Witness reports	**-73.16**	**25.98**	**.009**	**21.22**	**9.90**	**.036**
Victim reports	**-94.70**	**23.34**	**.000**	14.39	17.54	.415
Intimate	**-72.51**	**27.64**	**.014**	6.89	11.77	.560
Acquaintance	--	--	--	14.98	12.26	.226
Friends	**-81.09**	**21.01**	**.001**	--	--	--
Suspect arrested within 10 minutes	--	--	--	-8.17	9.85	.410
Suspect arrested within a day	40.55	20.90	.063	--	--	--
Victim medical treatment	--	--	--	19.12	12.77	.139
Public defender	-38.30	47.26	.425	4.11	7.40	.581
Plea bargain	-65.07	38.01	.098	-4.69	15.09	.757
# prior arrests	--	--	--	.291	.555	.602
# prior convictions	**32.84**	**11.68**	**.009**	-.280	1.10	.800
Lab examined evidence	--	--	--	**51.99**	**11.38**	**.000**
Indianapolis	--	--	--	7.06	12.70	.580
Victim teen	30.38	30.38	.326	-9.21	12.70	.471
Victim young adult	**53.21**	**20.34**	**.014**	15.11	9.95	.134
Victim black male	--	--	--	-2.63	14.58	.857
Victim black female	47.31	35.17	.190	9.98	13.70	.469
Victim Latina	-7.43	33.64	.827	--	--	--
Victim Latino	**73.57**	**26.59**	**.010**	--	--	--
Suspect black male	11.47	28.68	.693	-1.07	11.14	.924
Suspect Latino	60.69	37.42	.116	**230.33**	**44.00**	**.000**
Suspect black female	--	--	--	17.16	18.51	.357
R^2	.854			.573		
Mean sentence (month)	99.78			29.67		
Mean sentence (days)	3035.05			902.46		
Median sentence (months)	66.00			12.00		
Median sentence (days)	2007.50			365.00		

Table G.2: Burglary sentencing

	Current study			**Peterson et, al. (2010)**		
	B	*S.E*	*Sig.*	*B*	*S.E*	*Sig.*
Witness reports	23.56	52.64	.658	-47.15	25.42	.161
Victim reports	17.87	39.32	.653	-17.96	38.45	.672
Intimate	-50.20	36.69	.182	-14.64	34.43	.699
Acquaintance	--	--	--	42.66	45.98	.199
Friends	-9.93	18.43	.594	--	--	--
Suspect arrested within 10 minutes	--	--	--	46.06	31.26	.237
Suspect arrested within a day	23.33	21.01	.277	--	--	--
Public defender	**53.55**	**26.71**	**.055**	**-54.87**	**17.33**	**.051**
Plea bargain	--	--	--	**-672.94**	**38.34**	**.000**
# prior arrests	--	--	--	-1.89	4.22	.685
# prior convictions	-2.13	2.84	.461	19.18	7.70	.088
Lab examined evidence	-28.21	29.05	.340	-68.67	28.69	.096
Los Angeles	--	--	--	82.42	31.68	.080
Victim teen	-6.65	28.15	.815	8.88	39.66	.837
Victim young adult	3.76	19.48	.848	**76.12**	**21.86**	**.040**
Victim black male	13.00	19.85	.518	-51.91	25.67	.136
Victim black female	-53.00	50.56	.304	-20.22	22.50	.435
Victim Latino	-5.90	29.00	.840	--	--	--
Suspect black male	-14.56	15.53	.357	-60.53	31.48	.150
Suspect Latino	-7.61	18.04	.676	--	--	--
R^2	.566			.995		
Mean sentence (month)	45.08			56.56		
Mean sentence (days)	1371.26			1720.37		
Median sentence (months)	36.00			34.00		
Median sentence (days)	1095.00			1034.17		

Table G.3: Robbery sentencing

	Current study			**Peterson et, al. (2010)**		
	B	*S.E*	*Sig.*	*B*	*S.E*	*Sig.*
Witness reports	-6.155	25.23	.808	24.56	17.01	.152
Victim reports	**26.42**	**17.74**	**.045**	58.35	84.95	.494
Intimate	--	--	--	14.06	59.94	.815
Acquaintance	--	--	--	-5.11	24.93	.838
Friends	-20.14	29.69	.500	--	--	--
Suspect arrested within 10 minutes	--	--	--	-10.00	16.00	.534
Suspect arrested within a day	5.85	15.99	.715	--	--	--
Victim medical treatment	38.66	45.12	.114	.988	26.36	.970
Public defender	-57.53	49.10	.245	34.10	25.41	.183
Plea bargain	--	--	--	**-74.45**	**24.72**	**.003**
# prior arrests	--	--	--	1.02	1.18	.392
# prior convictions	**-14.56**	**5.06**	**.005**	-.821	1.51	.587
Lab examined evidence	22.28	24.17	.360	34.31	19.68	.085
Los Angeles	--	--	--	-72.20	93.23	.441
Indianapolis	--	--	--	6.36	28.81	.826
Victim teen	12.87	24.42	.600	-8.64	24.32	.723
Victim young adult	-22.26	18.43	.231	**36.15**	**17.78**	**.045**
Victim black male	-22.60	22.38	.316	-40.72	26.02	.121
Victim black female	**63.22**	**27.49**	**.024**	-18.56	33.84	.585
Victim Latina	-7.63	29.38	.796	40.58	37.97	.288
Victim Latino	-39.11	26.91	.150	10.99	24.36	.653
Suspect black male	4.81	18.45	.795	-.884	20.56	.966
Suspect Latino	-6.03	28.89	.835	10.36	25.89	.690
Suspect black female	--	--	--	74.28	44.04	.095
Suspect Latina	--	--	--	-146.55	230.05	.526
R^2	.529			.334		
Mean sentence (month)	114.48			75.19		
Mean sentence (days)	3482.20			2287.03		
Median sentence (months)	119.99			60.00		
Median sentence (days)	3650.00			1825.00		

Table G.4: Rape sentencing

	Current study			**Peterson et, al. (2010)**		
	B	*S.E*	*Sig.*	*B*	*S.E*	*Sig.*
Witness reports	--	--	--	104.73	90.92	.264
Victim reports	--	--	--	21.93	74.89	.773
Intimate	--	--	--	-185.5	115.4	.125
Acquaintance	--	--	--	-119.3	116.85	.321
Suspect arrested within 10 minutes	--	--	--	8.15	63.53	.899
Victim medical treatment	--	--	--	-28.96	79.62	.720
Public defender	--	--	--	**-163.1**	**80.18**	**.057**
Plea bargain	--	--	--	**-378.0**	**118.0**	**.005**
# prior arrests	--	--	--	-10.12	6.25	.123
# prior convictions	--	--	--	8.20	9.63	.406
Lab examined evidence	45.12	88.73	.509	59.67	52.17	.268
Los Angeles	--	--	--	10.45	113.17	.927
Victim teen	--	--	--	-131.9	76.55	.102
Victim young adult	--	--	--	85.55	82.37	.313
Victim black female	--	--	--	65.17	93.77	.496
Victim Latina	--	--	--	**-270.3**	**114.3**	**.029**
Suspect black male	--	--	--	-115.2	103.3	.279
Suspect Latino	--	--	--	44.32	91.59	.634
R^2	.111			.801		
Mean sentence (month)	76.72			160.40		
Mean sentence (days)	2333.84			4878.83		
Median sentence (months)	60.00			60.00		
Median sentence (days)	1825.00			1825.00		

Table G.5: Homicide sentencing

	Current study			Peterson et, al. (2010)		
	B	*S.E*	*Sig.*	*B*	*S.E*	*Sig.*
Witness reports	-22.17	79.41	.781	-105.10	100.40	.296
Victim reports	5.42	71.86	.940	28.07	129.47	.829
Intimate	30.54	67.43	.652	**261.90**	**136.28**	**.058**
Acquaintance	--	--	--	68.86	88.87	.440
Friends	-58.38	53.59	.281	--	--	--
Suspect arrested within 10 minutes	--	--	--	-100.56	95.60	.300
Suspect arrested within a day	2.70	62.22	.965	--	--	--
Victim medical treatment	**-127.15**	**64.48**	**.054**	-84.87	82.50	.306
Public defender	--	--	--	-30.88	79.97	.700
Plea bargain	**-215.22**	**55.87**	**.000**	**-326.89**	**78.07**	**.000**
# prior arrests	--	--	--	-1.36	7.37	.853
# prior convictions	2.77	33.36	.934	9.49	11.42	.408
Lab examined evidence	-128.38	139.40	.361	207.87	117.63	.080
Link suspect to crime	--	--	--	**225.35**	**94.66**	**.019**
Los Angeles	--	--	--	**-435.88**	**118.17**	**.000**
Indianapolis	--	--	--	**-262.78**	**109.62**	**.018**
Victim teen	2.37	64.24	.971	51.09	98.51	.605
Victim young adult	81.08	60.28	.184	**204.55**	**92.36**	**.029**
Victim black male	-6.13	71.21	.932	-91.89	125.97	.467
Victim Latino	-34.55	70.45	.626	241.66	126.98	.060
Victim black female	43.64	103.49	.675	149.53	164.21	.365
Victim Latina	--	--	--	-148.83	246.73	.548
Suspect black male	52.20	67.16	.440	150.74	119.25	.209
Suspect Latino	24.85	79.16	.755	-86.60	128.98	.503
Suspect black female	-232.75	124.50	.067	-106.17	252.51	.675
Suspect Latina	--	--	--	-146.55	230.05	.526
R^2	.488			.428		
Mean sentence (month)	351.39			423.59		
Mean sentence (days)	10688.34			12884.21		
Median sentence (months)	299.99			300.00		
Median sentence (days)	9125.00			9125.01		

Appendix H: Time and Evidence Type Analysis

Table H.1: Timeliness of evidence

Evidence type	Cases with submitted evidence at least 3 days before clearance (%)	Cases with reports generated at least 3 days before clearance (%)	Cases with submitted evidence at least 3 days before verdict (%)	Cases with reports generated at least 3 days before verdict (%)
Assault				
All	57 (35.4)	29 (21.2)	110 (97.3)	78 (86.7)
Biological	21 (31.3)	12 (21.1)	44 (93.6)	31 (83.8)
Pattern	1 (100.0)	1 (100.0)	1 (100.0)	1 (100.0)
Weapons/firearms	37 (37.8)	17 (20.7)	68 (100.0)	45 (88.2)
Fingerprint	10 (35.7)	7 (25.9)	21 (95.5)	16 (88.9)
Electronic/document	5 (41.7)	3 (50.0)	8 (100.0)	5 (100.0)
Trace	3 (42.9)	3 (42.9)	6 (100.0)	6 (100.0)
Other	--	--	--	--
Burglary				
All	208 (77.0)	135 (62.8)	222 (98.2)	150 (94.9)
Biological	89 (78.8)	48 (76.2)	95 (96.9)	50 (96.2)
Pattern	3 (30.0)	0 (0.0)	7 (100.0)	5 (100.0)
Weapons/firearms	4 (44.4)	3 (37.5)	6 (85.7)	5 (83.3)
Fingerprint	133 (79.6)	94 (59.5)	141 (100.0)	107 (95.5)
Electronic/document	8 (61.5)	7 (63.6)	9 (100.0)	8 (100.0)
Trace	4 (57.1)	3 (50.0)	5 (100.0)	4 (100.0)
Other	--	--	--	--
Robbery				
All	119 (46.3)	77 (35.2)	199 (96.1)	150 (89.3)
Biological	57 (46.7)	18 (20.7)	91 (91.0)	43 (70.5)
Pattern	3 (30.0)	3 (60.0)	4 (80.0)	4 (80.0)
Weapons/firearms	16 (23.9)	12 (18.8)	54 (98.2)	48 (92.3)
Fingerprint	68 (54.0)	43 (36.1)	106 (99.1)	80 (92.0)
Electronic/document	22 (48.9)	16 (50.0)	31 (96.9)	24 (92.3)
Trace	14 (56.0)	10 (40.0)	22 (100.0)	19 (95.0)
Other	--	--	--	--
Rape				
All	81 (71.1)	43 (42.6)	93 (100.0)	59 (95.2)
Biological	78 (72.9)	42 (42.9)	90 (100.0)	58 (95.1)
Pattern	--	--	--	--
Weapons/firearms	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
Fingerprint	7 (100.0)	5 (71.4)	7 (100.0)	6 (100.0)
Electronic/document	2 (33.3)	--	3 (100.0)	--
Trace	4 (66.7)	3 (50.0)	6 (100.0)	4 (80.0)
Other	--	--	--	--

Evidence type	Cases with submitted evidence at least 3 days before clearance (%)	Cases with reports generated at least 3 days before clearance (%)	Cases with submitted evidence at least 3 days before verdict (%)	Cases with reports generated at least 3 days before verdict (%)
Homicide				
All	98 (57.0)	71 (44.1)	142 (99.3)	130 (99.2)
Biological	81 (52.9)	38 (30.6)	122 (100.0)	93 (97.9)
Pattern	2 (33.3)	2 (33.3)	5 (100.0)	5 (100.0)
Weapons/firearms	68 (63.6)	57 (53.3)	93 (98.9)	88 (98.9)
Fingerprint	29 (35.4)	20 (24.7)	64 (100.0)	63 (100.0)
Electronic/document	11 (30.6)	4 (18.2)	22 (100.0)	15 (100.0)
Trace	16 (42.1)	9 (25.7)	30 (100.0)	26 (100.0)
Other	3 (25.0)	2 (16.7)	9 (100.0)	8 (88.9)

Table H.2: Arrest and timeliness

Examined evidence type	Odds ratio	Cramer's V	Report generated before arrest	Odds ratio	Cramer's V
Assault					
All	1.41	.057	*All*	--	--
Biological	3.73*	.265	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	0.61*	.119	*Weapons/firearms*	--	--
Fingerprints	2.87**	.158	*Fingerprints*	--	--
Electronic/document	--	--	*Electronic/document*	--	--
Trace	1.18	.016	*Trace*	--	--
Other	--	--	*Other*	--	--
Burglary					
All	0.87	.020	*All*	0.76	.054
Biological	2.19***	.150	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	--	--	*Weapons/firearms*	--	--
Fingerprints	0.52***	.145	*Fingerprints*	0.70	.079
Electronic/document	2.06	.060	*Electronic/document*	--	--
Trace	0.65	.028	*Trace*	--	--
Other	--	--	*Other*	--	--
Robbery					
All	1.12	.020	*All*	0.18***	.247
Biological	0.86	.036	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	2.66***	.186	*Weapons/firearms*	--	--
Fingerprints	1.38	.080	*Fingerprints*	--	--
Electronic/document	1.67	.076	*Electronic/document*	--	--
Trace	1.47	.050	*Trace*	--	--
Other	--	--	*Other*	--	--
Rape					
All	2.46	.133	*All*	0.93	.017
Biological	1.45	.064	*Biological*	0.95	.012
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	--	--	*Weapons/firearms*	--	--
Fingerprints	--	--	*Fingerprints*	--	--
Electronic/document	--	--	*Electronic/document*	--	--
Trace	--	--	*Trace*	--	--
Other	--	--	*Other*	--	--

*p<.05, **p<.01, ***p = .000

Examined evidence type	Odds ratio	Cramer's V	Report generated before arrest	Odds ratio	Cramer's V
Homicide					
All			*All*		
Biological	2.24**	.172	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	0.48*	.148	*Weapons/firearms*	--	--
Fingerprints	2.63**	.204	*Fingerprints*	--	--
Electronic/document	3.36*	.132	*Electronic/document*	--	--
Trace	2.54*	.142	*Trace*	--	--
Other	--	--	*Other*	--	--

*p<.05, **p<.01, ***p = .000

Table 3: Convictions and timeliness

Examined evidence type	Odds ratio	Cramer's V	Report generated before arrest	Odds ratio	Cramer's V
Assault					
All	1.90	.087	*All*	--	--
Biological	2.04*	.142	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	0.85	.035	*Weapons/firearms*	--	--
Fingerprints	1.63	.075	*Fingerprints*	--	--
Electronic/document	--	--	*Electronic/document*	--	--
Trace	--	--	*Trace*	--	--
Other	--	--	*Other*	--	--
Burglary					
All	1.26	.024	*All*	--	--
Biological	2.39***	.134	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	--	--	*Weapons/firearms*	--	--
Fingerprints	0.57**	.091	*Fingerprints*	--	--
Electronic/document	--	--	*Electronic/document*	--	--
Trace	--	--	*Trace*	--	--
Other	--	--	*Other*	--	--
Robbery					
All	1.50	.059	*All*	--	--
Biological	1.12	.027	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	3.24***	.233	*Weapons/firearms*	--	--
Fingerprints	1.05	.013	*Fingerprints*	--	--
Electronic/document	1.25	.028	*Electronic/document*	--	--
Trace	1.55	.056	*Trace*	--	--
Other	--	--	*Other*	--	--

*p<.05, **p<.01, ***p = .000

Examined evidence type	Odds ratio	Cramer's V	Report generated before arrest	Odds ratio	Cramer's V
Rape					
All	--	--	*All*	--	--
Biological	2.08	.086	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	--	--	*Weapons/firearms*	--	--
Fingerprints	--	--	*Fingerprints*	--	--
Electronic/document	--	--	*Electronic/document*	--	--
Trace	--	--	*Trace*	--	--
Other	--	--	*Other*	--	--
Homicide					
All	2.55	.103	*All*	--	--
Biological	2.27**	.182	*Biological*	--	--
Pattern	--	--	*Pattern*	--	--
Weapons/firearms	0.59	.119	*Weapons/firearms*	--	--
Fingerprints	2.48**	.220	*Fingerprints*	--	--
Electronic/document	1.39	.051	*Electronic/document*	--	--
Trace	1.74	.107	*Trace*	--	--
Other	2.07	.082	*Other*	--	--

*p<.05, **p<.01, ***p = .000