

An Examination on The Consistency of Forensic Information in Criminal Courts in India

Deepali S Bhalshankar

Ph.D. Student, Dr. Balasaheb Ambedkar Marathwada University, Aurangabad

Abstract

The study aims to examine how forensic science and law interact, as well as to evaluate the role and significance of forensic evidence in the criminal justice system. The research will emphasise the many uses of incidental evidence. The primary method used to collect the data for this project was a prospective study of official record data that followed criminal cases in two jurisdictions (Los Angeles County, Indianapolis, Evansville, Fort Wayne, and South Bend) from the time police incident reports were filed until the case was finally resolved in court. Municipal, county, and state crime laboratory services are represented by the sites selected. Data for the study were gathered using a random sample of the population of recorded crime occurrences for the year 2021, stratified by crime category and jurisdiction. We solely focused on the violent assault crime episodes out of 4,205 overall instances, which included 859 violent assaults, 1,263 burglaries, 400 homicides, 602 rapes, and 1,083 robberies. An arrest was made in 49% of assault incidents. Bivariate analyses of instances with and without evidence from the crime scene revealed statistically significant increased rates of arrest, prosecutor referral, charge, and conviction in cases with forensic evidence. Using multivariate analysis, it was shown that acquiring physical evidence was a statistically significant predictor of arrest. Despite the increased focus given to forensic evidence in recent years, little empirical information is available about the types of evidence that are often acquired as well as how frequently they are submitted to and analysed in forensic crime laboratories. Even little research has been done to clarify how such evidence affects the criminal justice process.

Keywords: Criminal trials, Evidence, Forensic, Justice, Reliability, India.

1. Introduction

The precise function of forensic evidence in assessing the probability of prosecution and acquittal has to be further investigated. The development of forensic science technology has led to significant advancements in the way criminal cases are decided. It was also necessary to determine which forensic evidence types may be used in certain circumstances. If so, which kind of proof does forensic evidence fall under—substantive evidence or corroborative evidence? Under what conditions did the court evaluate the forensic evidence? Has a conviction been overturned despite the inclusion of forensic evidence, or does doing so often result in a verdict? In this approach, the opinions of several superior courts on the use of forensic evidence in the decision-making phase of criminal cases have been compared. The conventional approach of the eyewitness-based criminal justice system has shown to be almost impossible for effective criminal prosecution. This kind of criminal prosecution degrades the criminal justice system. Judges cannot make a decision in a criminal case or support a fact in question only on the basis of the

testimony of suspects in lying or unreliable witnesses (because witnesses fail to appear on the dates fixed by the courts or might not be subject to the process of the court, which delays justice). The judges have carefully considered the in-chief and cross-examinations, but they are still unable to draw a definitive judgement on the incident. Witnesses no longer testify in court despite believing or having seen the evidence because they worry about being assaulted by suspects or other criminals, which may be fatal. Most crimes are committed in ways that make it difficult to locate even one witness. In other circumstances, decisions in forensic cases are entirely based on circumstantial evidence, such as DNA evidence, findings from ballistic analyzers, fingerprints, or chemical analysis results. Many heinous offenders are deemed guilty or exonerated based on even the slightest suspicion due to a lack of conviction or compelling proof. A significant amount of money is also spent by the prosecution on criminal court procedures.

1.1.Criminal investigation forensic science laws

A FIR's subject is the only person who qualifies for the right against self-incrimination under Article 20(3) of the Indian Constitution. The effectiveness of the right under Article 20(3) is subject to a variety of conditions. It is crucial to force the suspect in a crime to respond to any inquiries or make any declarations that are used against him or her, or to put it another way, to force the suspect to testify against himself. If the confession obtained under duress is ultimately utilised against the accused, the right outlined in Article 20(3) may be used.

Any statement that was obtained by the accused under duress or under fear of harm may not be utilised as evidence by the court. In *Kalawati v. State of HP (1953)*, the Supreme Court of India declared that Article 20(3) cannot be used when an accused testifies voluntarily and without being intimidated or pressured. The protection under Article 20(3) may only be granted in criminal proceedings and not in civil cases, according to the decision in *Vidya Verma v. Shri Narain (1956)*. In accordance with Section 53 of the Criminal Procedure Code, 1973, it is acceptable for a registered medical professional to examine an arrested person at the request of a police officer who must have the rank of sub-inspector or higher if there are good reasons to believe that the medical examination of that person may be used as evidence in court. An accused shall honestly and truthfully reply to all of the questions asked by the examining examiner in accordance with Criminal Procedure Code Section 161(2). However, this clause also forbids the accused from answering to any questions that may be used as evidence against him and result in punishment.

As a consequence, in accordance with Section 161(2) of the Criminal Procedure Code of 1973 and Article 20(3) of the Indian Constitution, the accused is not obligated to respond to inquiries that may be used against him in the future. *State of Bombay v. Kathi Kalu Oghad and Others (1961)* was a case in which the Apex Court determined that any voluntary self-incriminatory statement made by an accused while being questioned by a police official does not constitute coercion and is therefore not protected by Article 20(3) of the Indian Constitution.

1.2.The relevance of forensic evidence in the court system

Forensic analysis is used in the investigation and prosecution of both civil and criminal matters. The guilt or innocence of suspects may frequently be established with its help. Forensic evidence may also be used to establish links between crimes that seem related. DNA evidence, for instance, may link a single perpetrator to several offences and even specific locations (or exonerate the accused). By establishing links between occurrences, police may be able to narrow down the number of possible suspects and

identify recurring criminal behaviours that may be utilised to identify and apprehend those responsible for the crimes. Forensic scientists also work hard to develop novel approaches to data collection and analysis. As a result, forensic scientists may stay at the forefront of research and employ cutting-edge technology to maintain the highest standards of quality and accuracy. Forensic analysis is often performed by experts either alone or in small teams. Certain specialised techniques call for research environments that can be accurately controlled and monitored in a controlled setting. Both public and commercial institutions provide funding and resources to forensic laboratories, both large and small. Forensic evidence analysis is used in the investigation and prosecution of both civil and criminal cases. It may help establish whether a suspect is guilty or innocent. Forensic evidence may also be used to establish a link between crimes that seem to be related. DNA evidence, for instance, may link a perpetrator to several offences and even specific locations (or exonerate the accused). By establishing connections between incidents, police may better identify and track down perpetrators of crime and eliminate leads on lesser-known individuals.

1.3. Objective of the study

- To study and find out the relation between forensic and law.
- To study various laws and constitutional provisions about forensic evidences.
- To find out the importance of forensic evidences in the field of judiciary.
- To study Legal Aspects of Forensics.
- To study some randomly cases in relation with forensic evidences.
- To study The Role and Impact of Forensic Evidence in the Criminal Justice Process.

2. Review of Literature

Greenwood P. et al. When analysed detective operations, they discovered that victims' input to the investigating officers at the crime site had the greatest influence on their ability to predict whether a crime would be solved. Traditional investigative techniques and tangible evidence only play a relatively tiny part in resolving crimes. This study also discovered that although latent fingerprints are present in more than half of cases and physical evidence is present in the majority of cases, just 1% of those cases resulted in the identification of the offender (Greenwood P).

Forst B. et al surveyed after an arrest, case outcomes. This survey found that more than 70% of arrests resulted in no convictions. They identified three elements that contributed to the arrest and subsequent conviction: the presence of "physical evidence," the proximity of the crime to the arrest, and the presence of witnesses. However, the report didn't identify the physical proof, and it wasn't known if it had actually been tested in a lab (Forst B).

Eisenstein and Jacob made an effort to assess how evidence affected actual case results at the court level, and they discovered a correlation between the strength of the evidence and the chance of conviction and the verdict charged. The grouping of different categories of evidence was lacking, preventing study of the influence of any sort of evidence, despite the fact that their processes were crude (Eisenstein J).

Peterson et al. disclosed the uses and impact of scientific evidence during the charging, plea bargaining, trial, and sentencing phases of the criminal justice process. With the exception of narcotics, rape, and arson

cases, the scientific evidence had little impact at the time of charging in the majority of criminal cases. In cases that were tracked from five separate jurisdictions, guilty pleas were the norm in more than 90% of the cases. Prosecutors were less likely to provide a plea deal when the scientific evidence was strongly linked to the crime. In contrast to the consequences of other evidence, a different study examined the relatively little role that scientific evidence played in decisions to convict a culprit. However, forensic evidence played a significant role in the sentencing process (Peterson J R. J.).

Narejo and Avais, forensic science, often known as criminalistics, is the use of scientific methods in the enforcement of criminal laws. It entails using technology and information in legal contexts. Forensic science comprises using cutting-edge technologies for the police's criminal investigative procedure, such as DNA profiling, computer science, and engineering. For instance, the outline structure of the blood scatter can be determined using physics science, but the imprints of the suspect can be determined using biology science, and the chemical makeup of drugs can be determined using chemistry. However, the use of forensic science in a criminal inquiry is restricted and underappreciated in the Indian criminal justice system. Sir William Herschel largely employed forensic science in the form of fingerprinting to identify the culprits in the crime. The fingerprint evidence was initially accepted by an Argentine court in the 1890s, and subsequently by an English court in 1902. Since ancient times, forensic science has been used in India's criminal justice system to examine cases and confirm the facts of crimes. By offering reliable evidence, forensic science aids investigators in identifying evidence against offenders and supports the Indian legal system (Narejo, 2012).

Singh (2013) conducted an inquiry into sexual dimorphism in the human sternum and made a comparison. This analysis was based on studies carried out by a number of researchers using various methodology and procedures. 343 sternums from 252 male and 91 female cadavers from a north Indian population were gathered and studied for this study. Significant variations were observed. When compared to demarking points, limiting points produced substantially greater sex accuracy scores. Among all the criteria and techniques taken into consideration, the combined length and sternal area were judged to be the best metrics. When sterna measures are compared, the changes in body composition, diet, the environment, the climate, etc. may all be attributed to secular changes in sterna measurements. In discriminant function analysis, the accuracy percentage of the accurate sex estimation ranged from 54.2% to 84.8%, and in logistic regression analyses, it ranged from 73.5% to 89.8%. Therefore, while having higher sex-biases, the logistic regression method provides higher levels of sex determination accuracy. Because radiographic investigations have intrinsic flaws that account for the discrepancies in bone measurements, forensic and anthropological research should favour bone specimens over radiographs for determining the sex of the sternum (Singh, 2013).

Rana (2020), as new technologies develop, the definition of forensic science is likewise evolving. It incorporates cutting-edge methods of research, including mass spectrometry, 3D printing, DNA analysis, and liquid chromatography, for the precise examination of the facts from the crime scene where police gathered physical evidence. Forensic science has many subfields, including pathology, odontology, biology, anthropology, and toxicology. While concentrating on Odontology, it also entails applying scientific techniques to locate the victim's body when it is placed in an unrecognizably awkward posture. By looking at the teeth, mouth, or body alignment, the victim is identified. DNA profiling is a technique

used in forensic biology to identify a suspect using hair, blood, semen, or any other bodily tissue. Analyzing fingerprints is another method for locating the suspect. Examining the victim's cause of death and the time it occurred is part of anthropology. It also establishes the age, gender, and ancestry of the skeleton and aids in identifying victims when they are placed in an unrecognizable position. Toxicology involves looking at the victim and is primarily used to look into incidents of accidents, sexual assault, and poisoning. In pathology, the victim's body is examined after death to determine the precise cause of death. So, it can be concluded that forensic science is a very helpful investigative discipline that aids in reviewing the cases by identifying the offenders/victims and methods of crime (Rana, 2020).

Menaker, Campbell, and Wells (2017) investigated how the forensic science and criminalistics scientific and technical literature concentrates on the laboratory techniques used to evaluate and interpret physical evidence gathered from the scenes of crimes. The scientific analysis of physical evidence gathered from crime scenes, victims, and suspects is often done at forensic science and criminalistics laboratories (Menaker, 2017).

Pragati Ghosh's research, forensic science is recognised as expert evidence under the Indian Evidence Act, 1872. An expert is a person with considerable knowledge in a field, knowledge that can be applied to render an expert opinion on the criminal case. The dead was shot and killed at gunpoint by the accused and the co-accused in *Pantangi Balaram Venkata Ganesh v. State of Andhra Pradesh*. The witness stated that the attacker was hurt when the shots were fired and that the accuser was wearing a pink shirt at the time of the incident. The pink clothing, which was fully covered in blood patches, was found by the police after an investigation. In order to identify the offender, the police took it as evidence and sent it to the forensic lab for DNA testing. The police concluded that the accuser was guilty based on the DNA test results they had obtained and other pieces of evidence. By identifying the suspect and supplying evidence for a crime, forensic investigations can thus be said to play a significant part in aiding investigative actions (Pragati Ghosh, 2018).

Chadda (2013), forensic evaluation is a crucial component of psychiatric practise. In many complex instances, forensic psychiatrists help the judiciary, playing a significant role in society. In India, regular psychiatrists perform the majority of the forensic psychiatric practise. For a novice psychiatrist, doing forensic psychiatric evaluations is sometimes fraught with worry or panic. The purpose of the paper is to educate the audience on forensic evaluations so they can use them in practical contexts (Chadda, 2013).

3. Legal Provisions Supporting Criminal Investigation

In India, there are rules that must be followed when forensic science is used in criminal investigations and court cases. There, the primary questions are: 1) To what degree are these procedures lawful and approved by any authority? 2) How effective are these ways? b) How effective are these forensic techniques in resolving crimes? b) How can we persuade the forensic experts to provide us crucial evidence? No one accused of a crime may be forced to provide a testimony against themselves, as stated in Article 20(3) of the Indian Constitution.

Article 20 is based on the legal presumption that an accused person is innocent unless proved guilty (3). It protects the accused by preventing him from the anticipated pain and torture he would endure throughout the investigation and detention. Criminal law holds that a person is deemed innocent unless his guilt is

shown beyond a reasonable doubt. According to Article 11 of the Universal Declaration of Human Rights, "Everyone charged with a criminal Offense has the right to be presumed innocent until proved guilty in a public trial where he has received all the safeguards required for his defence."

Article 20(3) of the Indian Constitution, which also prohibits the coerced testimony of any witness, protects the fundamental right to self-incrimination. Article 20 (3)'s fundamental protection against testimonial compulsion protects persons who are accused of crimes from being compelled to testify against themselves. The protection is given to evidence given earlier in the process as well, not simply during a court trial. Only under force is the protection against self-incrimination envisioned in Article 20(3) accessible; it does not apply to voluntary admissions, disclosures, or the production of papers or other information. 10. This right has been established to guarantee that no one is forced to provide information or documents that would place them at danger of being charged with a crime.

According to Section 73 of the Indian Evidence Act, the court has the authority to force anyone—including an accused person—to consent to having his finger prints taken. Furthermore, the Supreme Court determined that requesting fingerprints does not violate the basic rights established in Art. 20. (3) 12. There are undoubtedly many concerns about whether or not using forensic evidence violates Article 20(3) of the Indian Constitution. The State of Bombay v. KathiKalu Oghad & Others, 13 was the case where the court ruled that the production of the accused's thumb impression, signature sample, blood, hair, semen, etc. did not constitute "giving a witness" in the meaning of the aforementioned Article. Therefore, during an investigation or trial, the accused does not have the right to voice apprehension about DNA testing. In yet another significant decision in the case of Ramchandra Reddy and Others v. State of Maharashtra, the Bombay High Court upheld the legality of the use of the P300 or brain fingerprinting, liedetector test, and the use of truth serum or narcoanalysis (14). The court upheld a special court order allowing the SIT to conduct scientifically-based tests on the suspects in the fake stamp paper conspiracy, including the main suspect, Abdul Karim Telgi. The decision also held that the truth serum-derived evidence is admissible.

4. Function and Influence of Forensic Science Evidence

Aggravated Assaults - The bulk of the assault occurrences from the five jurisdictions that were randomly chosen had similar characteristics. The majority of attacks occurred inside between young, minority men who already knew one another, although a significant percentage (about 40% of the sample) included domestic violence involving men and women. Most cases lacked any eyewitnesses, and most victims got some kind of medical care. In 30% of the cases, physical evidence/substrates were obtained, with firearms/weapons (such as guns, bullets, and shell casings) being the most common kind of evidence. Only around 12% of incidents in which evidence was gathered resulted in the evidence being sent to the crime lab, and the majority of this evidence was related to firearms, weapons, and latent prints. 34 instances had evidence identified after examinations in 79 cases (9.2%) across all crime labs; the majority of them (21) had evidence connected to guns. There were 18 instances with guns individualizations and four additional individualizations using latent prints when it comes to individualizations. A total of 15 searches were conducted on the NIBIN database, but just one (Indianapolis) yielded a find.

Burglary - Young, minority men perpetrated most burglaries against somewhat older, disproportionately female and White victims. The majority of crimes were perpetrated by strangers without witnesses in homes and flats, which presumably explains the low rates of arrest and conviction, 8.2% and 3.2%, respectively. In 19.6% of burglaries, police gathered tangible evidence and supporting materials. 84% of the evidence gathered was in the form of latent prints. 75% of the latent print evidence that was gathered

was sent to the labs, and 72% of those prints were reviewed by crime labs. 52 instances with unique evidence—mostly latent prints—were generated by labs. Evidence of Latent Prints was put into the relevant AFIS systems, and based on 63 enquiries, nine hits were found, yielding a success rate of around 14%.

Homicide - Young male minorities who roughly matched the demographics of their victims made up the majority of the suspects. In 45% of murder cases, the suspects knew the victims. It's interesting to note that at least one witness was present in 76% of killings. 35.5% of instances resulted in an arrest, and 34.5% in a conviction.

Rape - The database for the study included 602 randomly chosen rape episodes. The accused were all men, and all of the victims were women. Almost all of the suspects (45.9%) and slightly more than half (53.9%) of the victims were Black or Latino. The great majority of victims (74.1%) were under the age of 30. Victims tended to be young people. The bulk of suspects (57.7%) were also under the age of 30. The vast majority of rapes occurred between individuals who were acquainted, either intimates or relatives (36.2%) or friends or acquaintances (42.7%). In 68.3% of incidents, victims got medical attention for their wounds. In homes and flats, rapes happened in two-thirds of cases.

Robbery - Most robbery perpetrators were male, under thirty years old, and members of a racial minority (either Black or Latino). The victims were mostly women, more likely to be White, and older than thirty. Victims and suspects were often strangers. The majority of robberies took place on the street, then inside homes and retail establishments. Most robberies happened without any witnesses. Usually, no medical attention was necessary. 22.6% and 12.6%, respectively, of robbery occurrences resulted in arrests and convictions.

In order to better understand how forensic scientific evidence affects the criminal justice system, the NIJ set out the following four objectives:

- (1) Calculate the proportion of crime scenes where one or more types of forensic evidence are gathered;
- (2) Identify and catalogue the different types of forensic evidence collected at crime scenes;
- (3) Follow 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; and
- (4) Determine which types of forensic evidence contribute most frequently (relative to the total amount of evidence) to the investigation.

5. Methodology

The research used a prospective analysis of official record data that tracked criminal cases in 5 jurisdictions (Los Angeles, County Indianapolis, Evansville, Fort Wayne and South Bend) from the time of the police incident report to the final criminal disposition in order to achieve these (previous aims). Sites were chosen to reflect the services offered by local, county, and state crime laboratories.

5.1. Sample Design

Based on data from a random sample of the population of recorded crime occurrences for the year 2021, stratified by crime category and jurisdiction (see Table 1) to ensure that cases have full data, including final dispositions, crime events for 2021 were utilised. The reported incidences for murder and rape in Los Angeles and Indianapolis were oversampled because of the comparatively low yearly frequency of these crimes as well as the higher possibility of forensic evidence. 50% of rape cases and all killings were chosen for study.

Table 1: Reported of Crime Incidents

	Assault
LA	12,452
Indianapolis	3454
Evansville	1450
Fort wayne	281
South Bend	350

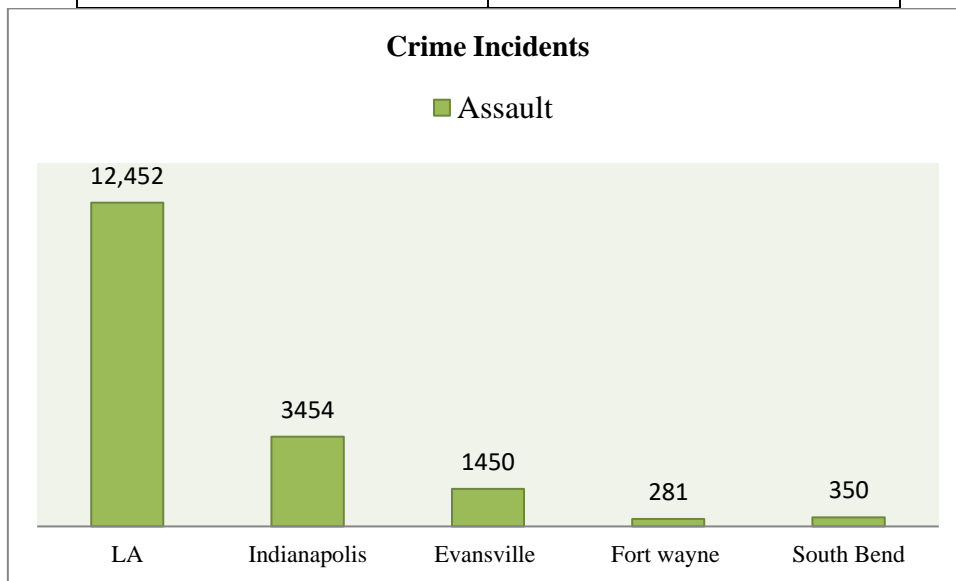


Figure 1: Reported of Crime Incidents

Police incident and investigator reports, crime lab reports, and prosecutor case files were the three sources from which descriptive and result data was gathered. The police incident, crime lab results, and, for the majority of criminal occurrences, the case with the prosecutors' database were all connected by a special case identification. Suspect's name, race/ethnicity, and birth date were utilised to link the case with prosecutor data in circumstances when the unique identifying number could not be used to link the cases.

Table 2: Sample size by Crime and site

	Assault
Los Angeles	230
Indianapolis	323
Evansvile	108
Fort Wayne	95
South Bend	103
Totals	859

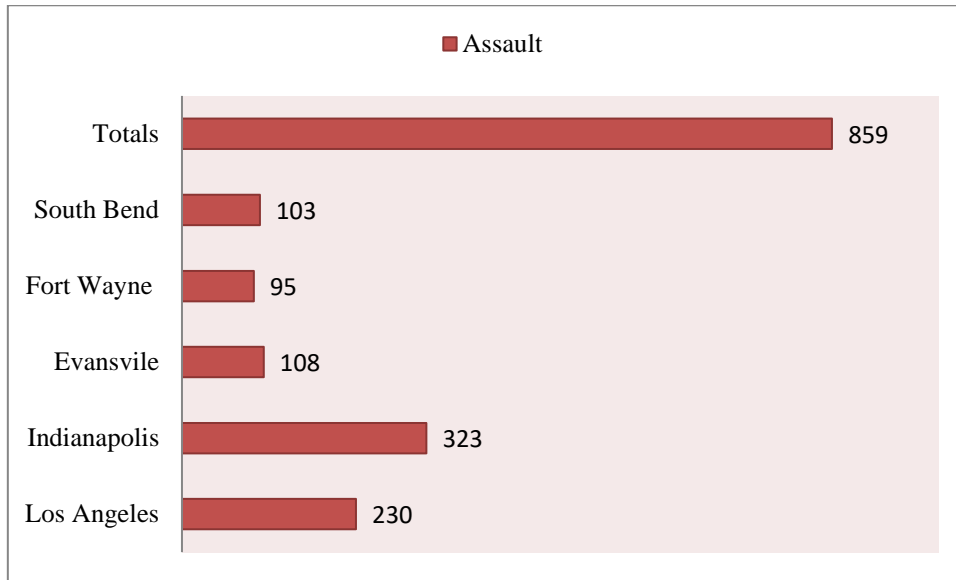


Figure 2: Sample size by Crime and site

5.2. Analytical Models

Results of the criminal justice system were examined using the Heckman two-stage corrective estimate. Probit analyses were performed in the initial phase to estimate selection into each processing stage (i.e., the selection models). The stage two logistic regression models (the substantive or outcome models) were then employed likelihood estimates (inverse Mills ratio) to account for selection bias.

6. Result and discussion

The 859 aggravated assault incidents in the project database came from a random sampling within the five jurisdictions in this study (Table 3). The victims across all sites were typically male (69%) as were the offenders/suspects (86%). Victims and suspects were predominantly Black or Latino (62% and 69%, respectively). In terms of age, the majority of victims and suspects were less than 30 years old (58% and 73%, respectively). The majority (62%) of cases involved persons who knew one another before the offense took place with more than half (57%) of the assaults taking place in houses or apartments. Thus, it is logical to conclude that the majority of assaults in the sample were domestic in nature. Approximately half (52%) the assault victims received medical treatment for their injuries. Sixty-four percent of assaults had at least one witness but only one-third of the witnesses provided reports to the police. On the other hand, victims gave eyewitness descriptions to the police in a high percentage of cases (80%). Incidents were reported to police in an average of 1-2 days and the average time from incident to arrest was approximately 22 days.

Table 3: Descriptive Characteristics

Victim	
% male	69
% <20	25
% 20-29	33.3
% 30+	41.7
White	36.7
Black	50.3

Latino	12.3
Asian	1.5
Others	0.1
Suspect	
% male	86.4%
% <20	43.9%
% 20-29	29.1%
% 30+	26.0
White	29.9
Black	55.7
Latino	13.5
Asian	0.8
Others	0.1
Victim/ Suspect Relationship	
%	
Intimate/ Family	37.1
% Acquaintance	24.9
% Stranger	38.0
Crime Location	
% car	3.4
% bar	5.5
% Park	1.3
% School	0.9
% retail Store	2.8

Physical Evidence Collected, Submitted & Examined

Regarding the physical evidence, the project staff recorded the several kinds of physical evidence/substrates that were gathered by police patrol officers, detectives, and crime scene investigators using the data collecting tool. The variety of evidence gathered at crime scenes, sent to crime laboratories for examination. Only 30% of assault instances, according to the report, had tangible evidence gathered at the site of the crime. The majority of the evidence was in the form of firearms or other weapons, with the distribution of the evidence between firearms, ammunition, and shell casings being reasonably even. It is important to remember that evidence involving firearms may be relevant to the investigation and prosecution of the case, as well as serving as a gauge of the gravity of the act. In around 9% of the attack instances, other weapons—mostly knives—were discovered. In around 6% of occurrences, generic objects and natural/synthetic materials made up the bulk of the evidence gathered. Vehicles and household items (doors, flooring) were the main generic objects gathered, while clothing was the main material collected. In just 4% of attacks was biological evidence (mainly blood) obtained.

Tracking Cases through the Justice System

the progression of assault cases through the legal system while accounting for the availability or lack of physically gathered evidence. The percentages of incidents—both those with and those without tangible

evidence—that proceed to a certain level of the legal system are shown in the boxes. The differences in arrest rates between those involving and those without physical evidence are substantial and statistically significant ($t=4.91, p=.000$). The statistics also reveal important variations in how cases are transferred to higher levels of decision-making. Comparatively, 42% of cases with physical evidence and 33% of instances without physical evidence were reported to the district attorney ($t=2.75, p=.000$). Compared to 27% of instances without physical evidence, 31% of cases with physical evidence resulted in charges ($t=3.52, p=.000$). At the conviction stage, bivariate findings also had a substantial impact. Comparing instances with and without physical evidence, conviction rates were around 27% and 18%, respectively ($t=2.91, p=.004$). However, it is crucial to note that only 48% of convictions using evidence from crime scenes really had evidence that was analysed in crime laboratories.

Table 4: Likelihood of Criminal Justice Outcomes for Assault

	Arrest		Referral		Charges		Conviction	
	Estimate	Odds Ratio	Estimate	Odds Ratio	Odds Ratio	Estimate	Odds Ratio	Estimate
Witness reports to Police	.224	1.25	.681	1.95	-.085	.912	-.712	.412
Victims reports to police	1.06	2.87	.892	2.44	1.08	2.95	-1.42	.255
Direct Arrest			-1.18	.306			.701	2.02
Los Angeles	2.14		.771	2.16			-.523	.555
Indianapolis	.625		1.13	3.10	37.23	3.02	-2.51	.082
Correction factor			.345	1.42	.263	1.32	-.402	.644
Neglekerek R-square	.275		.205		.209		.285	

According to the data in Table 4, the presence of a victim's firsthand account of the incident was a key indicator of arrest. The likelihood of being arrested rose by three times with knowledge of this information. Additionally, compared to strangers, intimates had a twofold increased chance of being detained. Significant variations also existed between the research locations. In comparison to the smaller Indiana locations, arrests were almost nine times more common in Los Angeles. Both the crime scene and the lab-examined evidence were strong predictors of arrest, each of which more than tripled the likelihood of an arrest. More precisely, the main sort of evidence in relation to the outcomes of arrests was guns evidence (both gathered and evaluated). As was previously indicated, the use of weapons in assault cases increases the gravity of the crime and may need additional attention from the police and the legal system. A variety of extralegal characteristics were also strongly correlated with arrest. If the victims were White, elderly

(30+), and the suspects were Black or Latino men or females, arrests were more likely to occur. Why do more arrests result from the gathering of tangible evidence? The information motivated our researchers to look into this issue across the many types of crimes, beginning with severe assaults. The police must first submit the gathered evidence to the lab for processing, and then the lab's analysis must successfully connect the suspect with the crime scene or victim before it can establish a predictive association between physical evidence at a crime scene and an arrest. Only 4.3% of instances in which this link between time and evidence was assessed ultimately resulted in an arrest, according to the report. So why, even if the evidence is not evaluated before an arrest is made, are there greater arrest rates when there is forensic evidence present? It's possible that the gathering of evidence is not exogenous and that another mechanism may forecast the availability of collectible evidence by predicting the possibility of an arrest. The research investigated this possibility by distinguishing between tactile and scientific evidence and by examining the circumstances surrounding arrests. A tangible piece of evidence, such as a driver's licence or a piece of stolen goods, has evidential value in a case without the need for scientific investigation. A "direct arrest" was defined as a suspect's admission, surrender, arrest in another case, police observation of the crime, identification of the suspect, traffic stop that resulted in an arrest, or recovery of evidence from the crime scene. 7.5% more instances had concrete evidence that resulted in an arrest. What's more, 21% of arrests in situations where there was physical evidence were made using direct arrest methods, compared to 12% in cases where there was no physical evidence. Therefore, the fact that the crime scene evidence variable was significant might be explained by the interaction of laboratory-tested evidence, tactile evidence, and direct arrest methods. Additionally, other unobserved characteristics of the crime or the perpetrator (such as their criminal prowess) may also be indicators of arrest, albeit their prevalence varies between situations with and without proof.

Hard To Solve Cases (stranger and no witnesses)

There were 198 "hard to investigate" incidents spread over 2 locations with no known link between the attacker and the victim and no eyewitness to the crime. In 28.3% of these situations, physical evidence was gathered; in 12.6% of those cases, it was submitted to the laboratories; and in 9.6% of those cases, it was actually analysed in the labs. 33.3% of the 198 instances resulted in arrests, while 22.7% were sent to the DA. 15.7% of the complex cases in total ended in convictions. 6 (19.4%) of the 31 convictions had evidence that had undergone laboratory analysis. Unsurprisingly, compared to all other instances, considerably fewer difficult-to-solve cases led to arrests and convictions. For non-hard-to-solve cases, the arrest and conviction rates were 54.2% and 21.9%, respectively. However, the percentage of convictions based on lab-tested evidence (18.6%) did not vary substantially from the percentage of cases that were difficult to solve (19.4%).

6.1. Discussion

There are a few discoveries that need remark. The outcomes of the multivariate analysis often agree with earlier studies. According to earlier research on arrest decisions, the chance of a case being cleared increases when there is a significant crime, a victim injury, witnesses are present, or victim and suspect demographic features. D'Alessio and Stolzenberg (2003) and Stolzenberg, D'Alessio, and Eitle (2004), for instance, discovered that violent episodes involving intimate partners and critically wounded victims dramatically enhanced the chance of criminal clearance. In addition, the aforementioned investigations discovered that the victim's gender and race/ethnicity had no statistically significant impact on the

likelihood of recovery. Tracking assault cases through the legal system while controlling for the existence or lack of physical evidence gathered led to the discovery of statistically significant variations in the rates of arrest, prosecutor referral, charge, and conviction. By using logistic regression analysis, it was discovered that crime scene evidence was a strong predictor of arrest, especially when combined with physical evidence and in cases when arrests were made "directly" (see discussion and table on pages 58 and 60.) The study's findings regarding the decisions to refer and charge a case are also consistent with earlier research showing that prosecutors try to reduce uncertainty by accepting and charging cases where there is a high likelihood of conviction and rejecting cases where there is a low likelihood of conviction. This conclusion is supported by the fact that convictions were obtained in 91% of instances that were prosecuted. The research on the factors that predict referral and billing choices also supports it. In a sizable percentage of instances, the victim's unwillingness to assist in the case's prosecution was a factor in the decision to drop the charges. In other words, the likelihood of a conviction was low (or nonexistent), not because the prosecution lacked proof of the crime, but rather because it could be difficult to go forward with the case if the victim was unavailable or unable to testify. On the other side, when the victims were involved, there was a higher chance of referring and charging a case. Additionally hampered by a lack of staff and resources, prosecutors are compelled to thoroughly review cases. They reject a sizable portion of cases, and they do so for a variety of reasons. But in the present climate, there is obviously little benefit to pursuing cases where the conclusion seems doubtful..

Conclusion

Regarding the victim's demographics, the results did confirm the contentions of conflict theorists (Quinney, 1977; Turk, 1969) and Black (1976), according to which police are less inclined to commit time and resources in cases whose victims are in vulnerable socioeconomic situations. Crime events involving younger, female, and members of ethnic minorities should thus be less likely to be solved. In the current analysis, the likelihood of arrest rose in instances involving White female victims and older victims. In addition to police willingness and investigation effort, variations in clearance by victim characteristics may also reflect variations in victim cooperation with investigators. Perhaps more than any other race, White victims are more eager to help the police. Cases involving White victims likewise had a higher likelihood of being prosecuted; however, in contrast to the conflict theory's claim, White suspects had a higher probability of being charged than minority suspects. According to research, race has mixed influence on punishment. Early research (Hagan, 1974; Kleck, 1981) indicated that race had no real effect on sentence; more recent studies (Chiricos & Crawford, 1995; Spohn, 2000; Spohn & Holleran, 2000; Zatz, 2000) have come to the opposite conclusion. According to recent study exploring the impact of race and ethnicity on sentencing, the differential in punishment when race and ethnicity are combined with other extralegal characteristics (such as gender) is larger than when race and ethnicity are taken into account alone. Due to the interaction of these extralegal elements with race and ethnicity, Black and Latino criminals face harsher penalties (Spohn & Holleran, 2000). The results of the present research provide varying degrees of support for earlier sentencing conclusions. The findings of the study do support the idea that factors that are legally significant have a significant influence in explaining sentence judgements. The main determinants of sentence duration were forensic evidence analysed in a lab and witness accounts. In this sense, the results of the present study are consistent with earlier work by Peterson et al., who discovered that forensic evidence may predict sentence duration. Additionally, the latest statistics are consistent with other studies' conclusions that sentencing inequalities are more pronounced for defendants

of colour who are male. Male Latino defendants in this case were given harsher penalties than male White defendants. Last but not least, the study's findings on assault sentencing ran counter to those of earlier research, which showed that the age of the victim and suspect as well as the defendant's and prosecutors past criminal history are important determinants of sentence length.

References

1. Greenwood P, Chaiken J, Petersilia J, Prusoff L. The criminal investigation process, Volume III: observations and analysis. Santa Monica, CA: The Rand Corporation
2. Forst B, Lucianovic J, Cox S. What happens after arrest? A court perspective of police operations in the District of Columbia. Washington, DC: Institute for Law and Social Research.
3. Eisenstein J, Jacob H. Felony justice: an organizational analysis of criminal courts. Boston, MA: Little, Brown.
4. Peterson J, Ryan J, Holden P, Mihajlovic S. The uses and effects of forensic science in the adjudication of felony cases. *J Forensic Sci* ;32:1730–53
5. Narejo, N., & Avais, M. A. (2012). Examining the Role of Forensic Science for the Investigative-Solution of Crimes. *Sindh Univ. Res. Jour.(Sci. Ser.)* Vol, 44(2), 251-254.
6. Rana, P. (2020). Modern Techniques in Forensic Science and Their Function in Criminal Justice System: An Overview. *Studies in Indian Place Names*, 40(50), 3311-3323.
7. Pragati Ghosh, Evidentiary Value of Expert Evidence under Indian Evidence Act, 1872, <http://www.shareyouressays.com/119180/evidentiary-value-of-expert-evidence-underindianevidence-act-1872>, (accessed on 26.05.2018)
8. Chadda, R. K. (2013). Forensic evaluations in psychiatry. *Indian journal of psychiatry*, 55(4), 393.
9. Menaker, T. A., Campbell, B. A., & Wells, W. (2017). The use of forensic evidence in sexual assault investigations: Perceptions of sex crime investigators. *Violence against women*, 23(4), 399- 425.
10. Singh, J., & Pathak, R. K. (2013). Morphometric sexual dimorphism of human sternum in a north Indian autopsy sample: sexing efficacy of different statistical techniques and a comparison with other sexing methods. *Forensic science international*, 228(1-3), 174-e1.
11. C.E. Pratap, Evaluating the Scientific Validity of Forensic Evidence in Criminal Trials: Issues and Challenges, (2018) 4 MLJ (CRL) pp.5-13.
12. Faculty Working Papers. Paper 23. C.f. C.E. Pratap, Scientific Evidence in Criminal Investigation (2015), CTC Publications Private Limited, Chennai, p.228.
13. Lambert, E.G., Hogan, N.L., Nerbonne, T., Barton, S.M., Watson, P.L., Buss, J. and Lambert, J., (2007). Differences in forensic science views and needs of law enforcement: a survey of Michigan law enforcement agencies. *Police Practice and Research*, 8(5), pp.415- 430.
14. Naicker, K. (2017). The recruitment and Management of Agents in Undercover drug Trafficking criminal Investigations (Cited Dowling, J.L. 1979). Magister Technologies thesis, University of South Africa. Retrieved from .unisa.ac.za/ Retrieved on 11 February 2020
15. Peterson J, Sommers I, Baskin D, Johnson D. The role and impact of forensic evidence in the criminal justice process. Final report to the National Institute of Justice; 2010, Grant No. 2006- DN-BX-0094. Washington, DC: National Institute of Justice, Research Report Digest-Issue 2, 2011.
16. Rana, P. (2020). Modern Techniques in Forensic Science and Their Function in Criminal Justice System: An Overview. *Studies in Indian Place Names*, 40(50), 3311-3323.

17. Saboohi, Misbah. "Fact Finding, Weight of Evidence & Reasonable Doubt in Civil & Criminal Trials." *International Journal of Political Science, Law and International Relations (IJPSLIR)* 7.1 (2017): 11-26.
18. Smith, L.L. and Bull, R., (2014). Exploring the disclosure of forensic evidence in police interviews with suspects. *Journal of Police and Criminal Psychology*, 29(2), pp.81-86.
19. United Nations Office on Drugs and Crime. (2009). Laboratory and Scientific Section,. Crime scene and physical evidence awareness for non-forensic personnel. United Nations Publications.
20. V. R. Dinkar, 'Forensic Scientific Evidence: Problems and Pitfalls in India', 79-84, *IJFSP* Vol. 3 (2015).