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# NCRB JOURNAL

Vol-2 (No.1), October 2019

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The views and opinions expressed in the articles are solely those of the author and do not in any way represent the views of the National Crime Records Bureau, or any other entity of the Government of India.
EDITORIAL

It gives me immense pleasure in bringing out the second issue of NCRB Journal. It will be our continuous endeavour through NCRB Journal to enrich the readers through well researched articles on Police Science, Law, Scientific Investigation, Criminology, Forensic Science, Finger Print Science, Biometric Science, Contemporary Legal Issues, Cybercrime, Cyber Terrorism, Cyber Security, Socio-Economic Crime, Prison etc.,

Various interesting and technology oriented topics are covered in this edition. In the article on Interoperable Criminal Justice System, the writer has given the background, objectives and salient features of the pillars of the ICJS, viz. Police, Prison, Court, Forensic and Finger Print systems.

Through the article “Forensic Science - From Investigation to Court” the writer has examined the use of forensic science in the investigation and the value it holds in the judicial minds when it comes to the judicial proceedings.

In the article, “Automation of Criminal Fingerprints in India”, the author explains the differences between verification and identification of finger prints and different stages involved in the process of finger print enrolment, identification and verification.

The article “Spatial Analysis of the Crime Pattern of the Districts in Madhya Pradesh” discusses about the various factors responsible for the crime and its pattern for all the districts of Madhya Pradesh.

Through the article “Ambient Temperature and Crime in Bihar”, the writer has highlighted relation between crime rate and change in temperature during different seasons. The research paper analyses quantitative data of crime in Bihar.

Lastly through the article “The Phenomena of Parole Absconding - Role of Various Stake Holders in Tamil Nadu” explains various strategy adopted by the prison administration to ease tension in the prison including selective release of prisoners on Parole and examines the reasons why the parole is misused by the prisoners.

I thank all the esteemed authors who submitted papers for this issue of the journal. I thank all the distinguished board of referees for their valuable comments.

I am sure that readers will find these articles interesting and continue to give their support. Suggestions for improving the publication are welcome.

Happy reading!

(Ram Phal Pawar)
Interoperable Criminal Justice System

SUSHIL KANNAN
Joint Assistant Director, NCRB

ABSTRACT

Interoperable Criminal Justice System is an attempt to integrate all pillars of justice to make the justice delivery system speedy and transparent. The lack of transparency, absence of adequate investigation tools, and non-availability of factual data timely, delay in information flow among the pillars of Criminal Justice System like Police, Court, Prison, Forensic, Fingerprint and Prosecution could also be reasons for delay in delivery of Justice. The project also aims towards smart policing which include empowering citizen, investigating agencies and policy makers.

Key words – ICJS, Prison, Forensic, Fingerprint and prosecution

1. Background:

The necessity of implementation of Interoperable Criminal Justice System (ICJS) was initiated during 2013. The scope of the project mainly focused on integration of CCTNS with e-Courts, e-Prisons, Forensic Labs, Fingerprints and Prosecution, the pillars of Criminal Justice System. Broadly the project targets to provide search and visual analytics over various data sets and capacity to achieve “one data once entry” across all the pillars.

For the purpose of implementation of this project, the following administrative decisions were taken:

a) The project would be owned by the Ministry of Home Affairs.

b) NIC would be the developing and implementing agency.

c) NCRB would be the monitoring agency.

MHA included the ICJS project while submitting the proposal for extension of CCTNS project to Cabinet Committee on Economics Affairs (CCEA) in the year 2015. The CCEA approved the MHA proposal for extension of the CCTNS project till March
2018 with budgetary provision to extend the operation & Maintenance of the project till March 2022.

The following are some of the important happenings, which guided the scope of the ICJS project:

1. The ICJS module- National search and dashboard feature has become part of digitalpolice.gov.in portal launched by the then Hon’ble Union Home Minister on 21st August, 2017.

2. NIC has been directed to supply H/W and S/W to Forensic Laboratories and implement Prosecution S/W in selected States.

Integration of CCTNS as a major pillar in ICJS by incorporation of additional fields and features in CAS (State) has been initiated by NIC. This is a major challenge as CAS is a decentralized software and has been managed by multiple System Integrators (SIs). Some of the States have already started consumption of CCTNS, Prison and Courts data. Other important components of Criminal Justice System like Missing Children (Women and Child Department), Vahan and Sarathi data have been included in the ICJS dashboard for facilitation of search in these databases. Immigration and Passport data would also be brought under the ICJS umbrella.

2. Objectives: The broad objective of the project may be given as follows:
   
a) Aggregation of searchable data sets in ICJS database from Court, Prison, Police and Finger prints for carrying out National search for persons of interest and property.

b) Development of Business Intelligence Dashboard for visualization of complete data to display the current status of metrics and Key Performance Indicators for each pillars. The dashboard should include a customizable interface and the ability to pull real time data from multiple sources.

c) Development of data analytics for forecasting/predictive trends in crimes reported region-wise, category-wise, and on the basis of other parameters for effective management & control of crimes and optimum use of resources.

d) The ICJS system should facilitate pulling of permissible data from other pillars by using unique key (like FIR No, CNR No., Prison ID etc.) numbers for its consumption to achieve “one data once entry”.

e) The ICJS should facilitate alerts from pillars to pillars as per the requirements projected by them. The alerts should reach to the receiver through SMS, e-mail and it should also display on their terminal as soon
as they log in to ICJS system. There are several circumstances, where an intimation need to be flashed to the other pillars in advance as soon as some incidents happens in one pillar. For example- A few use cases are as follows:

i) The list of prisoners to be released in next one week may be intimated to corresponding police stations.

ii) The visitor details of an identified prisoner may be intimated to request investigating officer or Police department.

iii) Intimation of lodging FIR to the corresponding Court.

f) The ICJS should facilitate sending all reports online to other pillars.

3. **Project Components and its features:** The major component of ICJS include Police, Court, Prison, Forensic, Fingerprints and Prosecution. A brief on each of these components are given below:

a) **Police:** The Crime and Criminal Tracking Network & System (CCTNS) has been implemented by all State/UT Police for day to day functioning of policing system right from Police Station to Director General of Police. The system aims to capture all the details pertaining to suspects/accused mainly in 7 major Integrated Investigation Forms (IIF). There are 24 IIF forms in all for capturing of information.

   CCTNS has made the functioning of Police more citizen friendly and transparent with improved delivery of citizen centric services, effective use of resources, reduce manual and redundant records etc. Presently the system has no feature to send and receive data from other pillars like Forensic, Prosecution, Court, Prison and Fingerprint. The ICJS aims to fill up these gaps which would increase the efficiency of the Police system.

b) **Prison:** Presently the e-Prison developed by NIC is deployed at major Prison in 24 States (about 700 prisons on-board) and 4 States (namely Goa, Gujarat, Maharashtra and Haryana) are using locally developed IT systems for their day to day functioning of the Prison.

   The e-Prisons Suite is a cloud based application software with easy to use graphical interface and embedded with a comprehensive security features. This is a unified application for all the states of India where states need to configure state specific parameters. It has enhanced the administrative capabilities of the Prisons, country-wide digitization of the prison administration, monitoring various activities of
the prison, improving the efficiency and productivity of the Prisons.

**Salient Features:**

- Integrated central, district and sub jails in a state with its prisons headquarter
- Nation-wide data about crimes and criminals lodged inside the jail across the country
- Access to state police / investigative agencies;
- Facility to integrate with interoperable criminal justice system across the country
- Various alerts / list for courts requirements (CrPC 436, 436“A and Parole Jump etc.)
- Keep track of the progress of the cases, including cases in the courts
- Biometric based identification / verification of prisoners and minimize false impersonation

**e-Prisons Suite subsystems-**

- Prisoner Information Management System (PIMS)
- Visitor Management System (eVisitor)
- Hospital Management System (eHospital)
- Legal Aid Management System
- Inventory Management System
- Prison Management System (PMS)
- Police Intelligence System
- Court Monitoring
- Kiosk for Prisoners
- Mobile Apps

Further, the e-Prisons Suite is already integrated with Interoperable Criminal Justice System where all stakeholders (Prison, Police, Court and Prosecution) can work in an integrated environment.
c) **Court:** All districts and Taluka Courts are using Court Information System (CIS) for their day to day functioning. The High Courts are using different type of S/W in different courts. However, recently the efforts were made to roll out uniform S/W e-Court across all the High Court in the country. The following are the major modules in CIS:

i. To capture FIR detail

ii. Case filing Module-Initiates after receipt of charge sheet.

iii. Case Allocation Module-Used for allocating the judge and first hearing date.

iv. Update hearing date-This module facilitates for updating hearing dates.

v. Under Trail Prison (UTP) Module-This module handles the issue related to judicial custody, police custody, bail, parole, surety details etc.

vi. Final Disposal Module-This module allows the entry/upload details of quantum of punishment etc.

d) **Forensic:** Most of the states in India have Forensic Science Laboratories (FSL) while some of them have also established Regional and District Forensic Science Laboratories. Apart from this, there are seven Central Forensic Science Laboratories (CFSL) in India (Hyderabad, Kolkata, Chandigarh, New Delhi, Guwahati, Bhopal & Pune). However, none of the offices has uniform central application to capture and share information with ICJS. Hence, development of FSL software application for CFSL/RFSL/SFSL offices across the country along with software roll out is the part of the ICJS implementation. The following are the key feature of the proposed software:

i. **Case Registration:** The module allows entry of details on parcel received, messenger, forwarding authority, Classification of the exhibits within the parcel, assigning it to the corresponding division such as ballistics, biology, physics etc.

ii. **Pre-Examination:** Pre Examination starts when the exhibit/packet is opened. Attached Document details are entered. Feasibility details and officers assigned to test the exhibit are entered in this module.

iii. **Post examination entry:** It consists of Updation of the Report Details and Dispatch Detail. Dispatch Details consists of
Messenger's detail to whom report is to be delivered. On saving the details Report ready intimation will be generated and sent to forwarding authority.

iv. **Report Upload:** Reports can be scanned to PDF format and uploaded. The max file size is 2MB. Remarks and file details can be entered.

v. **Court Summons/Attendance Entry:** Summons received from court along with Court attended details can be entered. Details of the Attendance can be made on remarks column.

vi. **Availability Details:** Non-availability of the examiner during examination period can be entered. Absence can be recorded.

vii. **Reports:** Reports can be accessed based on the roles of the User. Several type of Reports such as Master reports, Log reports, Register reports, Enquiry about the case, MIS Reports can be generated under this module.

e) **Prosecution:** Ideally, the department of Prosecution is headed by Directorate of Prosecution (DoP), at the state level to exercise supervision and scrutiny of work relating to various prosecution agencies at Sessions and Asst. Sessions level except at the High Court level. Public Prosecutor is responsible for supervision of work conducted by Additional Public Prosecutors in the Sessions Courts. Chief Prosecutors supervise the work conducted by Assistant Public Prosecutors in the Court of Metropolitan Magistrates, where the Asst. Public Prosecutor officers scrutinize charge sheets and submit discharge/acquittal. There is a slight variance in above mentioned structure for different states as Section 25(8) of the CrPC provides that the Central or State government may appoint a special public prosecutor (SPP) for any case or class of cases. Provisions for appointment of SPPs are also found in special legislation like the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989. A suitable generic software to address the requirement of the prosecution department is proposed to be developed under ICJS project. The key feature of the proposed software are as follows:

i. Data availability from ICJS using webservices to pull details pertaining to FIR, Police station List, District Courts List, CNR, Court Case Details etc.

ii. Online recording of Legal Opinion for FIR & General Diary cases.

iii. Online availability of PP/APP Profile.
iv. Online recording of Scrutiny of Draft charge sheet.

v. Online recording of charge sheet receipts, opinions and approval.

vi. Case Registration with provision to capture Complainant/Petitioner, Respondent/Accused details.

vii. Online updating of Case/ Trial Proceedings, for effective monitoring.

viii. Online Updating of Case Disposal Status with type of disposal for analysis.

ix. Case Discharge/Acquittal

x. Digitizing the relevant documents, Charge sheet, Legal Opinion etc.

xi. Reports

- Generation of daily cause list.
- Case pending report.
- Predefined monthly progress report.
- Report on trial proceeding.
- Case disposal report.

xii. Queries

Search by various parameters like name, FIR No., Case Registration No., etc.

xiii. Other Services

- Manual Recording of legal opinion submitted to various other departments.
- Transfer of case from one court to another due to abolition/creation of Court or otherwise.

f) Fingerprint:

The Finger print biometrics continues to be the most accepted and reliable biometric tool for establishing identity of persons. Fingerprints continued to be a strongest pillar of authenticity. At present Central Finger Print Bureau (CFPB) of NCRB has a collection of over 12 Lakhs
10-digit FP slips (in digitized form) of convicted persons in the Automated Finger Print Identification System. This AFIS is being upgraded for creating National Level database of Finger prints. This database would be available for all States/UTs for capturing and searing of Finger prints.

There are 29 State Finger Print Bureaux in the country in addition to the Central Finger Print Bureau at New Delhi.

Currently Fingerprint database has 31 fields, which include name, alias, father name, address, FIR number etc. As per the LAW, Finger prints can be taken only for certain offences.

Once the new AFIS is implemented all digitized Finger prints of all States/UTs would be available in the National Database. All physical finger prints currently not digitized would also be digitized in phased manner. Some States/UTs having AFIS that are not NIST compliant. Finger prints from such databases would be routed through a bridge software which convert these non-NIST standard finger prints into NIST compliant. There is a proposal to provide finger print scanners to all major police stations and district headquarters for capturing fingerprint of individual sentenced for more than 1 year of imprisonment.

AFIS would be used by all States/UTs for searching and comparing of Finger prints of an accused or a suspect chance fingerprint lifted from the scene of crime.

Once the ICJS is implemented and central fingerprint database is integrated, the State Police can directly match the fingerprint of their arrested person with the central database.

4. **Outcomes:** Once the proposed project is implemented, it is expected that the justice delivery system would become speedy, transparent and accountable. Some of the key outcomes are listed below:

   a) The Investigating Officer (IO) can carry out the national search across the pillars that even if the entries are wrong in one pillar (in case of historical data) other pillar assist the IO to achieve the result.

   b) The redundant data entry across the pillars would be reduced and the possibility of data entry errors would be nullified.

   c) The online availability of report reduces paper communication and wastage of time.

   d) As Courts fixes the hearing dates after examining the availability of Forensic experts and Prosecutors online, the possibility of frequently
postponing the hearing would be drastically reduced.

e) The alerts at one pillar would help the other pillar to make appropriate preparation in advance.

5. Challenges/Issues: Basically, the ICJS system integrates the existing IT systems in Police, Prison, Court and proposed systems for Prosecution, Forensic and Fingerprints. The integration of existing solo IT systems built for multiple stakeholders under the administrative control of different departments/ministries is challenging and raises several issues. Some of the key challenges and issues are listed below:

   a) In the absence of unique key across pillars, linking data from one pillar to other pillar is difficult, particularly, in case of error in historical data.

   b) In the absence of Uniform Master Database across the pillars, data ingestion to ICJS is a challenge.

   c) The data in Court Information System (CIS) is presently stored in about 6500 databases across the country. As CIS was gradually rolled out across the country the versions of the system is different in different Talukas. This makes the data ingestion to ICJS and writing webservice to and from CIS is a challenge.

   d) Handling multi-lingual data at ICJS level with acceptable accuracy while carrying out National search is a challenge.

   e) Even though, the CCTNS is a centrally developed software rolled out across the country, it is observed that there is a considerable version/structural difference among the States, particularly, in the advance States like Gujarat, Karnataka, Andhra Pradesh, Telangana, Tamil Nadu etc. Further, different States are generally handled by different system integrators. This makes the integration of CCTNS with ICJS is time consuming.

   f) For unique identification of a person, using Aadhaar number and Biometrics may become a legal issue.

   g) In the absence of dedicated domain experts in ICJS team, the efforts put by the development team may not always fruitful.

   h) As the law and order are essentially the States subjects, it is difficult to enforce the State to share the data with ICJS and hence, the progress of the project may be slow.

Note: The document has been prepared with inputs from NIC documents available in the public platforms.
Forensic Science - From Investigation to Court
HARSH MALAVIYA

ABSTRACT

Forensic science has come to mean the study and practice of applying natural and physical sciences to the just resolution of social and legal issues. It is used by the legal system distinguishes it from other science; the expectation of routine appearances in a court of law distinguishes a Forensic scientist from other scientists. Hence it is very important to make people aware of the importance of the Forensic science, as it subsists coming together with law and science. This paper is an attempt to explain the gravity and importance of the Forensic science as virtually no limitation exists to the scope of physical evidence that is gist for all Forensic scientists and lawyers. Physical evidence may range in size from the microscopic (for example, a pollen grain) to the macroscopic (for example, a diesel truck). This paper will be focusing on the holistic approach of the Forensic science from its use in the investigation to the value it holds in the judicial minds when it comes to the judicial proceedings.

INTRODUCTION

Forensic Science is basically the application of science to law. Forensic science is used to investigate criminal cases involving a victim, such as assault, robbery, kidnapping, rape, murder and civil cases such as forgeries, fraud, or negligence. Forensic science also determines as to whether laws or policies have been dishonored in the marketing of items relating to food and drink, manufacturing of medicine, agricultural particular use, automobile discharge observance, consumption water cleanliness, and monitoring international secret nuclear weapons etc. The first aspect of applied Forensic Science commence with the recognition or individualization might merely be probable after conducting chemical or scientific test. Kinds of evidence that requires testing to ensure correct recognition comprise bloodstains, body fluid, drugs, arson accelerants and other chemicals. The recognition of unidentified material or object may be attained through comparing their characteristics with those of the known standard and established

1 malaviyaharsh@gmail.com
criteria or data base information. Forensic science is science used for the purpose of the law and thus any branch of science used in the resolution of legal disputes is Forensic science. In the broadest sense, Forensic science is any science used in the resolution of legal conflicts.

The word “Forensic” is rooted in Latin word ‘forensis’. The dictionary meaning of word the “Forensic” is “relating to court or law” or “relating to court of law”. But in legal terminology it may mean “the science which deals with the principles and practice of different branches of science which elucidates doubtful questions in court of justice”. It is a science composing of those matters which may be considered as common ground to both the scientists and the legal practitioners. The ancient Roman forum was the site of debate concerning governmental issues, but it also was the courthouse, where trials were held.

Crime is as old as civilization itself. The day “homo Sapience” became sophisticated crime was defined. Societal norms were set for identifying the do’s and don’ts for the people, if they were to live together. The clear aim was to recognize the people who do not go behind the laid down norms, penalize them and isolate them from the mainstream and therefore keep the society clean. This gave birth to the processes of discovery and investigation of

Crime and administration of criminal justice, which in order, led to the establishment of institution for investigation, trial and for imparting impartiality. Originally, the criminal justice delivery system profoundly depended on the testimony of eyewitness to the crime. The dependence on "eyewitness" did not prove to be effective, as they were found to turn hostile, many a time due to threat to life or lure of money, hence it lacked reliability. The crime investigators then resorted to “third degree methods” for examination of the suspect to reveal the truth, which, due to the cultural change and values accepted generally, were considered cruel, as many innocent people also suffered and sometimes inadvertently. In the meantime, lot of scientific research and development took place, and it was then visualized that the modern scientific techniques could provide quick solution to a majority of problem of human being, and therefore, crime investigation of “Forensic science” got evolved.

OBJECTIVE:

The objective of this paper to enlighten the importance of Forensic science in the criminal investigation. The ultimate aim of crime scene investigation and of Forensic science is aligned: to help enact justice by gathering and analyzing evidence, and utilizing

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Footnotes:


it in order to uncover the truth and take action. It is used to examine the criminal cases connecting the victim, for instance assault, robbery, kidnapping rape, murder and civil cases for example forgeries, fraud or negligence.

The author also aims towards finding the importance of Forensic Science in Forensic Medicine and Toxicology, DNA profiling, Personal identification, Fingerprint, Ballistic and Firearm identification, soil examination, Identification and association of human hair, Blood, serum, hair, saliva etc. Author shall be referring to various case laws as there are various fields relating with Forensic science like as Criminalistics, Engineering Sciences, General, Jurisprudence, Odontology, Pathology/ Biology, Physical Anthropology, Psychiatry & Behavioural Science, Questioned Documents and Toxicology, and making observations through case laws would be the most suitable way of determining the importance and application of this field.

RESEARCH QUESTION:

Q1. What is the importance of the Forensic Science in the process of determining the Crime and its Methodology? Why people should be aware of the Forensic Science while dealing with any criminal or civil feud?

Q2. How Forensic Science helps in deciding whether any laws or regulation were violated in Marketing food and drink, Manufacturing of medicine, Agricultural pesticide use, Automobile emission compliance, Drinking water purity and monitoring International secret nuclear weapon program? What is the role and application of the Forensic Science in the Court of Law?

RESEARCH METHODOLOGY:

The research is based on primary data comprising of the combined reading of The Indian Evidence Act 1872 along with case laws and judicial precedents. The secondary data is referred in the form of articles published in books, Journals, magazines, newspaper and reports including media reports.

ANALYSIS:

Crime Scene and Relevance

In the criminal investigation there is a pressing and awful requirement for the application of Forensic science. The current picture of crime investigation of criminals is a depressing story. A big percentage of the murder trials, lastly, end in acquittals. It is expected that the prosecution agency spends on an average over Rs. 10,000.00 per trial. Therefore, not only a hazardous criminal goes scot free but vast amount of public currency is also wasted. These recurrent acquittals also make confident the criminals. In India investigation of crime and prosecution of persons having committed the crime
are not up to the mark. Even in dreadful crimes large number of criminals could not be prosecuted and a few percentages of trials end in acquittal accordingly of which numbers of criminals as well as crimes are rising gradually. These recurrent acquittals are mainly because of outdated techniques of investigation which depart various loopholes. Thus for effective investigation scientific ways of investigation is very necessary. One of the most important aspects of securing the crime scene is to preserve the scene with minimal contamination and disturbance of physical evidence. The initial response to an incident shall be expeditious and methodical. Upon arrival, the officer(s) shall assess the scene and treat the incident as a crime scene.

Preservation of Evidence:

Scene of Occurrence:

A scene of occurrence can be defined as the meeting place of the persons involved in the crime. Traces are exchanged by the parties amongst themselves and with the scene, leaving odds and ends and mark of tools, wearing apparels, and means of transport, hands and feet. Thus, the scene of occurrence provides a wealth of information which is useful to:

- Establish *corpus delicti*.
- Provide link between the criminal, the victim and the scene of occurrence; and
- Evaluate the pattern of events.

Except in the cases of forgery is less important due to limited utility, the scene is of great importance in almost all crimes. Planning, care and diligence are required in the examination of the scene. The success or failure of the investigation in many cases depends entirely upon the proper handling of the scene. The scene of occurrence cannot be preserved forever and changes rapidly. Some of the evidence gets lost soon after the occurrence; the other evidence disappears, gets contaminated or altered with further passage of time. The opportunity to examine the scene is available only once. If the same is not fully exploited the wealth of information is lost forever.

In *Marachalil Chandra Tukaram Talekar v. State of Gujarat*4 It was argued with great vehemence in the High Court as well as in the court of sessions that there was trial of blood from the front door of the house of the vakil into the corridor rooms marked H and H-1 in the plan and that supported the defense theory that the deceased Kannan received the stab injuries not in or near the house in question but somewhere far away near the railway station. The High Court took the view that if Kannan had received the injuries somewhere outside the house it was impossible for him to have

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4Marachalil Chandra Tukaram Talekar v. State of Gujarat 1980 Cri. L.J.5 (Guj.)
come into the room in view of the doctor’s evidence. It was concluded on the material placed on the record that there could be no room for doubt that Kannan received the injuries in the room itself and not outside, and that he was carried out of the room while life was still lingering and therefore, there would be dripping of the blood from the body during the course of transit as the injuries were very serious and vital arteries had been cut.

**Fingerprints:**

The identification of criminals through fingerprints was the first important breakthrough in the scientific investigation of crime. As usual, the judiciary and the public took some time to believe in the utility of fingerprints as a scientific aid. The same is now recognized throughout the world. The importance of fingerprints in criminal investigation is immense, because they are:

- **Unique**- Ridge pattern of each finger has individuality. The patterns vary not only from one individual to another, but they are different in the same individual on each finger. Duplication of pattern has never been observed. Nor the same is expected.

- **Permanent**- The fingerprints of an individual do not change throughout his life. In fact, the ridges appear before birth. They start appearing during third or fourth month of pregnancy. They remain even after the death of the individual ever till the epidermal skin is destroyed by fire, putrefaction or is eaten by insects or other creatures.

For all practical purposes it may be taken that it is not possible to forge a fingerprint. This is important because no person can deny his or her fingerprints. The identification through fingerprints is certain and infallible.

In **Bazari Hajam v. King Emperor**

The question arose whether it will be safe to act on the uncorroborated testimony of the fingerprints and declare the guilt of the accused. On this point Bucknill, J., observed thus:

I think that apart from the fact that I should be rather sorry without any corroborative circumstances to convict a person of a serious crime solely and entirely upon similarity of thumb marks or finger prints, the very fact of the taking of a thumb-impression from an accused person for the purpose of possible manufacture of the evidence by which he could be incriminated is in itself sufficient to warrant one in setting aside the conviction upon the understanding and upon the assumption that such was not really a fair trial."

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*Bazari Hajam v. King Emperor AIR 1922 Pat.73:23 Cr. L.J 638*
The above view was disapproved of by Schwabe, C.J. in *Public Prosecutor v. Kandasami Thevan* although the point did not directly arise in the case as there were thumb-impressions of the accused in evidence other than that taken by the judge in court for comparison with the thumb-impressions in the document alleged to have been forged.

**FINDINGS AND DISCUSSION:**

As per the analysis, the importance of the Forensic Science can be easily determined. However, it is still important to outline the necessity of the Forensic science in light of the research questions. Also, to discuss the judicial application and importance of the Forensic Science in the court of law which shall be discussed through observed case judgments.

**Necessity of application of Forensic Science**

In criminal investigation, use of Forensic science is the need of the modern times. In India, the investigation of crime and prosecution of persons having committed the crime are not up to the mark. Even in heinous crimes large number of criminals could not be prosecuted and a few percentage of trials end in acquittal as a result of which number of criminals and crimes are increasing day to day. These frequent acquittals are mainly due to obsolete techniques of investigation which leave many loopholes. Thus, for effective investigation scientific ways of investigation is not necessary. The third degree methods used by the investigating agencies in British period are not accepted by the new generation of Criminal Investigating Agencies, judges and public at large. Third degree methods for making confession have not completely vanished but their misuse has increased and to control over this issue, the Human Rights Commissions has been established in India and all over the world. Hence, modern scientific methods for investigation of crimes and connecting the criminals with the overt acts are very much necessary in order to make effective the Criminal Justice System.

**Cases on Forensic Science:**

- **Raghunandan v State of Uttar Pradesh**

  In the above case both the trial court as well as the High Court had brushed aside the objection that the blood recovered from the place of occurrence was not sent for chemical examination. The failure of the police to send the blood for chemical examination is a serious case of murder, such as the one before us, is to be deprecated. In such a case the place of occurrence is often disputed.

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*Public Prosecutor v. Kandasami Thevan AIR 1927 Mad. 696:27 Cr. L. J 1251*

Identity of the scene:

It was argued with great vehemence in the High Court as well as in the court of sessions that there was trial of blood from the front door of the house of the vakil into the corridor rooms marked H and H1 in the plan and that supported the defence theory that the deceased Kannan received the stab injuries not in or near the house in question but somewhere far away near the railway station. The High Court took the view that if Kannan had received the injuries somewhere outside the house it was impossible for him to have come into the room in view of the doctor’s evidence.

It was concluded on the material placed on the record that there could be no room for doubt that Kannan received the injuries in the room itself and not outside, and that he was carried out of the room while life was still lingering and therefore there would be dripping of the blood from the body during the course of transit as the injuries were very serious and vital arteries had been cut.

Vasu v. Santha 1975 (Kerala)\(^9\)

In the above cases the court has laid down certain guidelines regarding DNA tests and their admissibility to prove parentage.

1. That courts in India cannot order blood test as a matter of course;
2. Wherever applications are made for such prayers in order to have roving inquiry, the Forensic evidences in Criminal Trial: Need of the Hour prayer for blood test cannot be entertained
3. There must be a strong prima facie case in that the husband must establish non-access in order to dispel the presumption arising under Section 112.\(^{10}\)
4. The court must carefully examine as to what would be the consequence of ordering the blood test; whether it will have the effect of branding a child as a bastard and the mother as an unchaste woman.
5. No one can be compelled to give sample of blood for analysis. Further the court said Blood-grouping test is a useful test to determine the question of disputed paternity. It can be relied upon by courts as a circumstantial evidence, which ultimately excludes a certain individual as a father of the

\(^6\)Marachalil Chandra Tukaram Talekar v State of Gujrat. 1980 Cri. L.J.5 (Guj)


\(^{10}\)Section 112 of The Evidence Act.
child. However, it requires to be carefully noted no person can be compelled to give sample of blood for analysis against his/her will and no adverse inference can be drawn against him/her for this refusal.

- **Tandoor Murder Case (1995) Delhi**

This was the first criminal case in India solved by the help of Forensics. In this case Shusil Sharma murdered his wife at home by firing three bullets in to his wife Naina Sahni’s body. He killed his wife believing that she had her love affair with her classmate and fellow congress worker Matloob Karim. After murdering his wife Sharma took her body in his car to the Bagiya restaurant, where he and restaurant manager Keshav Kumar attempted to burn her in a tandoor there. Police recovered Sharma’s revolver and blood-stained clothes and sent them to Lodhi Road Forensic laboratory. They also took blood sample of Sahni’s parents, Harbhajan Singh and Jaswant Kaur and sent them to Hyderabad for a DNA test. According to the lab report, “Blood sample preserved by the doctor while conducting the post mortem and the blood stains on two leads recovered from the skull and the neck of the body of deceased Naina are of ‘B’ blood group.” Confirming that the body was that of Sahni, the DNA report said, “The tests prove beyond any reasonable doubt that the charred body is that of Naina Sahni who is the biological offspring of Mr. Harbhajan Singh and Jaswant Kaur.” And finally Mr. Shusil Sharma was found guilty with the help of Forensic evidences.

- **Operation Kahuta, 1975-1978**

Operation Kahuta is regarded as one of the most daring operations conducted by the secret intelligence agencies of India (mainly Research & Analysis Wing). Kahuta is the site of the Khan Research Laboratories, Pakistan’s main nuclear weapons research and development laboratory. It was also a production site of military grade nuclear weapon highly enriched uranium which were capable of excessive degree of fission capacity.

RAW confirmed this information at a very early stage. This was done by the Forensic Analysis of the hair samples that belonged to a scientist working in the nuclear facility at Kahuta. The hairs were retrieved from the barber’s shop and were Forensic tested to determine the radiation that could possibly be present due to exposure to the radioactive element. The test resulted positive and gave a positive lead towards finding this information.
CONCLUSION

There is a unanimity that medical and Forensic evidence plays a crucial role in helping the courts of law to arrive at logical conclusions. Therefore, the expert medical professionals should be encouraged to undertake medico legal work and simultaneously the atmosphere in courts should be congenial to the medical witness. This attains utmost importance looking at the outcome of the case, since if good experts avoid court attendance, less objective professional will fill the gap, ultimately affecting the justice. The need to involve more and more professionals in expert testimony has been felt by different organizations. Though many plans have been brought before the Ministry of Home Affairs which includes formation of Forensic Council where not only the Evidence Act but the Information Technology Act and The Code of Criminal Procedure will become complementary to the Science.

The lack of understanding and critical appraisal of specialists in general, by no specialists, is all pervasive. The field of Forensic Science is no exception. Neither the police, nor the lawyer, nor even the judge appreciates fully the advances or the extensive potentialities of the science.

RECOMMENDATIONS:

✓ Forensic science is an important tool to ease the process whether legal or otherwise, hence author recommends that the infrastructural and expertise lacunas must be taken very seriously in order to develop the means to make this field self-sufficient.

✓ The field should be made strong and robust by facilitating research work and expertise. It should also be spread as an educational and awareness initiative in order makes everyone aware of the means and modes of usage of Forensic studies.
Automation of Criminal Fingerprints in India

A. Mohan Krishna & S. Indira Sudha

ABSTRACT

Fingerprints are one of the most widely used biometrics system of identification because of their uniqueness, consistency, ease in acquisition, numerous sources (Ten Fingers) available for collection, and established laws are in force in majority of the countries. In this work, we have surveyed the origin and development of fingerprint techniques for identification/verification and also listed out the supporting legal provisions. How computerization of Fingerprints was started and the difficulties faced due to lack of standards are described in detail. Then we have surveyed the history of standardization and the current status of inter-operability among different fingerprint identification systems. We have attempted to identify the challenges faced by Central and State Fingerprint Bureaux and how those challenges are addressed in the proposed NAFIS Project. We have concluded this paper by listing out few concerns for which answers will be known after NAFIS is completely rolled out.

Index Terms—Fingerprints, Identification, Verification, Computerization, Interoperability, FPBs, standardization, challenges, NAFIS

INTRODUCTION

Fingerprints are one of the most widely used biometrics system of identification because of their uniqueness, consistency, ease in acquisition, numerous sources (ten fingers) available for collection, and established laws are in force in majority of the countries. The National Institute of Standards and Technology (NIST) Engineers first studied the manual methods used by human fingerprint technicians to make identifications such as minutiae (i.e., ridge endings and ridge bifurcations) of a ridge. If the minutiae from two Fingerprints were determined to be topologically equivalent, the two Fingerprints were declared to be identical—that is, having been recorded from the same finger of the same person. After this review, and after studying additional problems inherent with other processes, they believed that a computerized solution to automatically match could be developed that would operate in a manner similar to the techniques
used by fingerprint examiners to establish identifications.

The fingerprint images are classified into categories as: whorl, right loop, left loop, arch, tented arch and accidental. Finger ridge patterns do not change and persist throughout the life of an individual [1]. This property makes fingerprint an excellent biometric identifier. A fingerprint usually appears as a series of dark lines that represent the high, peaking portion of the friction ridge skin, while the valleys between these ridges appears as white space and are low, shallow portion of the friction ridge skin. The feature values typically correspond to the position and orientation of certain critical points along the direction of ridges known as minutiae.

Verification system compares the fingerprint data captured from a presented individual with a corresponding fingerprint data stored in the database, which means a 1:1 comparison. The purpose of verification system is to confirm the identity of the presented individual by outputting a binary result “True or False”. Whereas Identification system compares the captured fingerprint data from a presented individual with all fingerprint data stored in the database which means a 1:N comparisons, where N is the total number of subjects enrolled in the database.

I. Origin and legal provisions

Fingerprints were used on official documents like a signature in places like ancient Babylon, China, Nova Scotia and Persia in 1000 BC. In India, during the Mughal period, print of the entire hand known as “PANJA” used to be taken as the seal of authority for the purpose of identification[11]. Sir W. Herschel (1833-1917) was one of the first to advocate the use of fingerprinting in the identification of criminal suspects. Dr Henry Faulds (1880) expressed a view of linking criminal with the crime based on scene of crime finger prints. Sir Francis Galton (1892) is often credited with the discovery that everyone’s Fingerprints are unique and that they could therefore be used for identification. Sir Edward Henry, while working in India as an Inspector General of Police in Bengal, developed interest in the works of Herschel and Galton and succeeded in developing a more workable system of classification, which was first adopted in India in 1897, and later in Scotland Yard, in London 1901[2]. Two Bengal Police Officers by name Khan Bahadur Azizul Haque and Rai Bahadur Hem Chandra Bose made significant contribution in the development of this classification system. This Henry ten-digit classification system with certain modifications and extensions is being used in many countries even today.

The first Fingerprint Bureau of the world was established in 1897 at Calcutta [2]. A first case solved through fingerprints wherein 27-year-old Rojas murdered her two children in Buenos Aires Province, in Argentina on June 19, 1892 and she was identified by her fingerprints found at the scene of crime. A criminal case in Bengal in 1898 is considered to be the first case in India in which fingerprint evidence was used to secure a conviction [12]. A burglar by the name of Henry Jackson is the first person in the United Kingdom who was convicted based on the fingerprint evidence on 13th September
Government order No. 2500 dated 21-05-1987 state that Special Officer (Fingerprint Expert) was available in the Office of the Inspector General of Police, Madras to give evidence on fingerprints supplementing the anthropometric evidence [5]. We are unable to trace the origin of the Madras fingerprint Bureau but Bombay fingerprint Bureau was established in 1899. Central Fingerprint Bureau established in 1905 at Shimla was abolished as a result of retrenchment proposals and it was re-established in 1955[3].

The importance of fingerprints due to its uniqueness, permanence, universality gave statutory recognition and the legislators held fingerprint evidence as a valid piece of evidence. The Indian Evidence Act, 1872 contains provisions wherein fingerprints are considered as a valid piece of evidence. Section-45 of Indian Evidence Act says that when the court has to form an opinion on a point of law which includes foreign law, science or art, handwriting, finger impression, the opinion of persons skilled in that particular area will be accepted. Originally the term finger impression was not included in the section. The Amendment Act of 1899, added the phrase finger impression [9].

The Identification of Prisoners Act, 1920 provided legal authority for taking of measurements, finger impressions, footprints and photographs of persons convicted or arrested in connection with certain specific offences. The Act itself recognizes the value of scientific evidence of photographs of finger impressions as agents in the detection of crime and the identification of criminals.

II. Automation of Fingerprints

Vast increase in the volume of finger print records, the challenge of increasing crime rate and criminals, the pressure of expectations of Investigating Officers to provide instant answers to their urgent queries has necessitated the application of computer technology in finger print the world over [3]. In India, computerization of finger prints was taken up during mid seventies & initially ten states started working on it during 1980s. A 40-digit code based semi-automatic system was adopted for the conversion of Finger Print Records to prepare the database. The work went on in all those 10 States at varying pace. The first version of Finger Print Analysis and Criminal Tracking System (FACTS) co-developed by National Crime Records Bureau and Computer Maintenance Corporation was installed at NCRB in March 1992. FACTS 1.0 did not specify any reference print to be an exact 1:1 match against the query print. This issue was resolved to some extent in FACTS 2.0 and there was a significant improvement in the retrieved possible matches. An upgraded and faster FACTS 3.0 was released to CFPB, Andhra Pradesh and Jammu Kashmir in 1996. Separate DB was maintained in FACTS 4.0 for unsolved scene of crime chance prints which can be compared against the future incoming slips and also chance prints. CFPB, Andhra Pradesh, Tamil Nadu upgraded to FACTS 4.0 during 1997-1998. As per the guidelines of Central Fingerprint Bureau, few more States have procured FACTS on nomination basis but in 2002, Karnataka fingerprint Bureau acquired “NET AFIS” developed by M/S Zygox software Pvt Ltd.
Bangalore, Chattisgarh and Odisha procured AFIS from M/S Securemantra in 2004. States like Tamilnadu, Madhya Pradesh, Maharashtra, and West Bengal have upgraded their AFIS to FACTS-5 whereas others have replaced their FACTS with Securemantra, IBIOS etc. As on date, Automated Fingerprint Identification System of CMC Ltd (now TCS) and Securemantra are operational in 9 States each whereas Papillon, NEC, IBIOS systems are operational in two States each.

Over the years, Automated Fingerprint Identification Systems (AFIS) technology evolved into a highly efficient and effective tool capable of scrutinizing vast databases and providing potential fingerprint matches in a matter of seconds. Many algorithms have been developed and enhanced continuously for image enhancement, feature extraction and matching. The Integrated Automated Fingerprint Identification System (IAFIS) of the United States, is a national level fingerprint and criminal history system maintained by the Criminal Justice Information Services (CJIS) Division of Federal Bureau of Investigation (FBI). The IAFIS provides automated fingerprint search capabilities, electronic image storage, latent searching capability, and electronic exchange of fingerprints and responses, 24 hours a day, 365 days a year. As a result of submitting fingerprints electronically, agencies receive electronic responses to criminal ten-print fingerprint submissions within two hours and within 24 hours for civil fingerprint submissions. The IAFIS maintains the largest biometric database in the world, containing the fingerprints and corresponding criminal history information for over 55 million individuals in the Criminal Master File. The fingerprints and corresponding criminal history information are submitted voluntarily by state, local, and federal law enforcement agencies [8 FBI website].

Necessity of Fingerprint vendors following some standards to ensure interoperability of devices and algorithms to avoid vendor lock-in was felt worldwide. The matching of the fingerprints needs to be done by extracting the minutiae of fingerprint data already stored in the enrolment stage.

Different vendors used different coordinate systems, location and angle definitions to describe the same minutia. These differences have resulted in lower accuracy of fingerprint matching systems that exchange minutiae extracted using different methods rather than exchange of finger images. Consequently, to improve interoperability, standards have been developed to specify the location and formatting of minutiae data, (i.e. minutiae template), for matching purposes [7].

III. Standardization in Digitization of Fingerprint

As stated in the Economist, "Without standards, a technology cannot become ubiquitous, particularly when it is part of a larger network."[6]. These standards allow a technology to be used easily and also create the possibility of a fully interoperable multivendor marketplace for applications involving fast, economic, and accurate interchange of compact biometric templates. To assess the sufficiency and performance
of these standards, several evaluations have been organized to quantify interoperability and performance degradation of fingerprint matching systems using standard templates compared with proprietary templates. Biometric standards have come a long way from their humble beginnings in 1986 with the first law enforcement fingerprint standard called ANSI/NBS-ICST-1-1986 for the exchange of fingerprint data by National Institute of Standards and Technology (former National Bureau of Standards). NIST was tasked to accelerate the development of the needed biometric standard in 2001 but in parallel, the United States proposed a new biometrics subcommittee within International Organization for Standardization in June 2002 as SC37. This SC37 subcommittee was chaired by the US and was composed of six working groups. The task allotted for workgroup -1(WG1) was harmonized biometric vocabulary and UK was its Convener. WG2 was entrusted with Biometric Technical Interfaces and Korea was its Convener. WG3 was entrusted with Biometric Data Interchange Formats with Germany as its Convener. US was Convener for WG4 and the subject was Biometric Profiles. WG5 was entrusted with Biometric Performance Testing and Reporting with UK as its Convener. WG6 was entrusted with Cross-Jurisdictional and Societal Aspects of Biometrics with Italy as its Convener.

The most well known informal biometric standards organization was the BioAPI that developed a common biometric application programming interface to allow software applications to communicate with biometric technologies in a platform and device independent manner. This group produced a specification in 2001 and it was later adopted as an ANSI standard in 2002 and an ISO standard in 2006.


Catherine J. Tilton in her White Paper on “Biometric Standards Overview" comprehensively surveyed and listed out the Standards that have been published by different countries. These standards are useful only, if they are adopted by vendors to build standards compliant products. It is not possible for any vendor to release quickly standards compliant products because they have to incorporate the desired changes in their manufacturing process. Sometimes, vendors wish to see the customer demand for conformance which further adds the delay in implementing the standards.

The Unique Identity Authority of India (UIDAI) adopted ISO/IEC 19794-4:2005(E) as Fingerprint Image standard, and ISO 19794-2:2005(E) as Minutiae data format
standard to meet specific needs of e-Governance applications in Indian context. Aadhaar, the world’s largest identity platform, is all set to transform how Government and Enterprises across various verticals identify and authenticate Indian citizens. On the other hand, most of the security organizations including Interpol have adopted ANSI-NIST ITL-1 ((Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information) Standards.

Fortunately, many third party tools are available for converting the data from one standard to another standard. CFPB recently conducted performance evaluation by providing 0.5 million NIST compliant and 0.5 million non-NIST compliant data. All the participating vendors successfully loaded this 1 million data into their systems without any data loss.

Gujarat has procured FACTS-7 and maintaining about 16,50,000 FP slips. Andhra Pradesh and Telangana procured Papillon System and their database size is about 8,00,000 FP Slips. Installation of Morpho System is under progress in Maharashtra who have digitized about 6,16,000 FP Slips. More than 6 million FP slips are available in different States/UTs that can be stored at center for making national level search which is compelling CFPB to procure latest NAFIS.

IV. Current Challenges

In 2009, Government of India has conceptualized “Crime and Criminal Tracking and network systems (CCTNS)” and it was proposed to procure National Automated Fingerprint Identification System (NAFIS) for centre that would integrate with all State AFIS. However, it was substantially delayed and therefore States started replacing their obsolete Systems with the latest available AFIS.

The presently functioning AFIS at Central Fingerprint Bureau, known as FACTS 5.0 employs image processing and pattern recognition technique to capture, encode, store and match fingerprints including comparison of chance fingerprints/scene of crime fingerprints. As per the product literature, capacity of FACTS 5.0 is 10,00,000 whereas NCRB made some operational changes for accommodating more data. Current database size is 12.4 lakhs but CFPB claim that search results are not being retrieved as expected after operational changes were made to FACTS 5.0. Vendor has stopped support for FACTS 5.0 and suggested to go for FACTS 7.0 which is NIST compliant.

Four States namely Gujarat, Goa, Tamilnadu have upgraded their AFIS to FACTS-7. Maharashtra replaced their AFIS by IDEMIA. Andhra Pradesh, Telangana have replaced their AFIS to Papillon System and these two states are exchanging their data. All these AFIS Systems are NIST Compliant and hence these are interoperable but CFPB is unable to import their data as FACTS 5.0 installed at CFPB is not NIST Compliant.

By the end of 2018, database size of CFPB was 12,12,429 whereas the database
size of Gujarat was 17,31,361. As per Fingerprint India-2018, number of FP Slips available across India is 77,65,783. Further, according to “Crime in India-2016”, total number of persons convicted under various laws is 20,60,822 persons whereas only 65,972 Fingerprint Slips were received in all States/UTs during 2016. Thus fingerprint enrollment has to improve for getting more meaningful results.

V. National Automatic Fingerprint Identification System

The proposed centralized National Fingerprint Automated Identification System (NAFIS) will have configurable virtual partitions for each State/UT and other Units. Fingerprints enrolled from any particular Unit will be stored in the space exclusively designated for that Unit and only the users of that Unit are allowed to enroll/edit/modify/delete that information. However for performing national search and matching of fingerprints, all authorized users would be permitted to read the data maintained in all the virtual partitions.

Another important feature of NAFIS is that States may continue their own NIST Compliant AFIS or discard their AFIS System. If any State wishes to continue their own AFIS then their data will be replicated to the NAFIS system at periodical intervals so that all other States can perform national level matching. States who preferred this option can make extensions on their own without depending on CFPB but it has a burden of additional costing in terms of server hardware, software licenses, and annual maintenance charges.

The RFP released for procurement of NAFIS clearly state that NAFIS should be integrated with the Core Application Software of CCTNS at Centre and State level for exchange of relevant crime and criminal information. CCTNS will share the Criminal demographic data based on provisional criminal number to the NAFIS and National Criminal number allotted in NAFIS will be provided to CCTNS. RFP also made a provision to integrate with other applications such as ICJS [10].

Another interesting information in the proposed NAFIS RFP is about digitization and migration of legacy data. NCRB has invited all the bidders and conducted performance demonstration with 10,00,000 FP slips data. Both NIST and non-NIST data was provided to the bidders and all the bidders have successfully imported the data provided by NCRB into their systems. From this exercise, it has been ensured that both NIST and non-NIST data available in different States/UTs will be easily migrated into the NAFIS system. Solution provider have to digitize the physical slips of about 15,00,000 FP slips available in different States/UTs.

Another important aspect of NAFIS RFP is about insisting NIST standards, certifications such as Appendix-F for scanners, Business Intelligence (BI) Tool for generation of desired analytics.
VI. Issues not addressed and our recommendations

Some States do not have Fingerprint Bureau and also Fingerprint cadre. Such States are unlikely to make timely enrolment which will have an impact on the national level search. CFPB has already sent several advisories for establishment of Fingerprint Bureau and for creation of Fingerprint cadre. Primarily these are very small States (or UT) and they have alternate arrangements. UT Chandigarh is sending their FP slips to Punjab Fingerprint Bureau at Phillaur. Both Punjab and UT have separate data centers under CCTNS and NAFIS solution provider will be integrating CCTNS with NAFIS. Hence, Punjab Bureau will not be in a position to enroll UT Chandigarh FP slips as CCTNS data of UT Chandigarh will be coming from the UT data center. Some kinds of arrangements have to be made in consultation with Punjab and UT Chandigarh authorities.

Another major issue of fingerprint fraternity is manpower. In the All India conference of Director’s of Fingerprint Bureaux held every year, this issue is being deliberated but practically there is no change is visible in any of the Fingerprint Bureaux. Central Fingerprint Bureau conducts All India level examination once a year to certify Fingerprint Experts and it has a mandatory clause of 3 years of experience in the selected fingerprint establishments which are totally in Government sector. Because of this restriction, only Government employees are eligible to appear for this examination. In many Bureaux, vacancies raised due to retirement of Fingerprint Experts are not filled. We recommend that concerned authorities should pay attention to this aspect.

NCRB has been publishing Crime in India every year and the number of criminals convicted is very large in all most every State compared to the fingerprints enrolled in States/UTs. All these years, AFIS installed at CFPB did not have capability to accommodate such a large number but once NAFIS is installed, scenario would completely change. We recommend that all the stakeholders have to review their weaknesses and have to initiate suitable measures for increasing the enrollment.

NAFIS is currently aimed to provide Fingerprint infrastructure to all the Commissionarates/District Headquarters. It is proposed to provide similar infrastructure to all Police Stations and other associated offices like Courts in the next phase. Some States are contemplating to provide this infrastructure immediately. We are of the opinion that such States have to study the crime rate and to decide the offices where fingerprint related infrastructure can be provided.

Staff responsible to lift the fingerprints from the scene of crime is not uniform across the country. In some States, proficient constable is entrusted with this task whereas in other States, scene of crime prints are lifted by fingerprint expert. We recommend that regular police constable must be trained in developing prints at the scene of crime and at least 2 such police constables must be available in each police station. CFPB & State FPBx should conduct such trainings regularly.
VII. Conclusion

Our research made us to feel that computer hardware and software for fingerprint enrolment, verification, identification has fairly been stabilized. We are the opinion that proposed NAFIS architecture and digitization/migration of legacy data should make very positive impact. As the quantity of central database is going to increase at least 5 times, trace percentage should improve drastically. Amount of interpol data maintained at CFPB is very minimum and we recommend to examine the issue in detail and to widen the scope for increasing the trace percentage.

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[8] FBI website


Spatial Analysis of the Crime Pattern of the Districts of Madhya Pradesh

Mahinder Bawaria
Ph.D. Research Scholar
Department of Architecture and Planning, IIT Roorkee

Dr. Ram Sateesh Pasupuleti
Assistant Professor
Department of Architecture and Planning, IIT Roorkee

ABSTRACT

Crime is inevitable more over with the current pace of development leading to urbanization crime is proliferating. Researches on crime has always been investigated in statistical form with major emphasis on the numbers. But, there are a very few researches who have emphasized on the spatial attributes. In eighteenth and nineteenth century researches on crime pattern were mainly focused subject of criminology, philosophy, sociology and anthropology, but in early twentieth century researches on crime pattern has focused their concern also on urban planning (socio-economic and demographic) aspects, with many researches explaining why crime vary, why some social, economic, demographic and spatial characteristics are correlated with variations in crime pattern. In the top highest crime rate states 2012-2014 NCRB [crime rates of IPC (Indian Penal Code)] in India Madhya Pradesh reported the highest crime rate followed by Maharashtra and Uttar Pradesh.

This study briefly discusses about the various responsible factors for the crime and its pattern for all the districts of Madhya Pradesh.

Key Words— Crime, Crime Rate, Social Factors, Economic Factors, Demographic Factors.

INTRODUCTION

Crime is no longer a case of existence between an offender and a victim it has impact on whole society. Historically, crime is an integral part of any society, and origins of crime have been the subject of investigation in many disciplines such as criminology, philosophy, sociology, anthropology and urban planning and urban design (K von Lampe - 2006). However, no definitive conclusions on the causes and effects have yet been reached. Instead, a number of factors affecting the rate and type of crime that occurs
from place to place have been described. Some of these factors are population density and its surrounding area, variations in composition of the population, particularly age, race, sex structure and family type/marital status, economic conditions, including job availability, cultural conditions, such as educational, recreational, lifestyle/routine activities, and religious characteristics etc.

UN-HABITAT report, Enhancing Urban Safety and Security: (Global Report on Human Settlements 2007) states “the rapid pace of urbanization coupled with the growth in city size and density is associated with increased crime and violence. Poor urban planning, design and management play a role in the shaping of urban environments that put citizens and property at risk. The urbanization, socio-economic and demographic factors impact on the crime pattern too (Gupta, 2016). In eighteenth and nineteenth century researches on crime pattern were mainly the focused subject of criminology, philosophy, sociology and anthropology, but in early twentieth century researches on crime pattern has focused their concern also on urban planning (socio-economic and demographic) aspects, with many researches explaining why crime vary, why some social, economic, demographic and spatial characteristics are correlated with variations in crime pattern.

According to the National Crime Record Bureau’s (NCRB) report 2014 & 2012 - In the top highest crime rate states [crime rates of IPC (Indian Penal Code)] in India Madhya Pradesh reported the highest crime rate followed by Maharashtra and Uttar Pradesh. “MP clocks highest crime rate in country, murder cases on rise” Indore and Bhopal of Madhya Pradesh has topped the list of cognizable crimes in the country, reveals the latest National Crime Record Bureau (NCRB) report for 2014, states The Times of India.
"Changing landscape shuffles crime trends (Gupta 2016) the primary reason behind the change in the crime scene is the shift in the nature of landscape from rural to urban. The number of crime of rural areas has come down while the incidents of crime have gone up in urban areas manifold.

OBJECTIVES METHODOLOGY

This study aims to analyse the relation between crime pattern and social, economic, demographic factors of all districts of Madhya Pradesh. The methodology of

![Diagram of methodology of analysis]
the study is divided into 2 parts: Primary data collection, Secondary research and Empirical analysis. Secondary research comprised of articles by various publications, books along with web search and data from various agencies, portals and scholars. The procedure adopted in this research work forms the qualitative and quantitative assessment of crime pattern. The methodology also included to identify the general factors influencing the crime. Also, to create choropleth maps of crime pattern and analyzing them spatially and temporally followed by the overlay analysis with the various responsible factors and also to find the correlation between the crime and the responsible factors. Brief structure of methodology is mentioned below:

**LITERATURE REVIEW**

**Defining the Crime:** Crime in Indian context is defined by the IPC-1860 as “any activity that involves breaking the law and enforcements. The concept of crime involves the idea of a public as opposed to a private wrong with the consequent intervention between the criminal and the injured party by an agency representing the community as whole.

**Crime Pattern** is a group of two or more crimes reported to or discovered by police. A crime pattern is not defined only by statistics. Pattern identification is more than just counting and summarizing crimes that are similar in characteristics and/or location. A crime pattern is not simply a list or count of all crime within a defined date range, nor is it simply a cluster of incidents on a map. (Johnson, 2000).

**Crime Analysis** is the qualitative and quantitative study of crime and police related information in combination with socio-demographic and spatial factors.

**Crime Rate** per 10,000 population is calculated as: \[
\text{Crime Rate} = \frac{\text{Number of crime}}{\text{Population}} \times 10,000
\]

**Types of Crime Analysis**
- Tactical Crime Analysis
- Strategic Crime Analysis
- Administrative/Academic Crime Analysis
- Operations Analysis
- Intelligence Analysis
- Investigative Analysis

In this study administrative/academic crime analysis is used.

Used for: The study of crime records and law enforcement information integrated with socio-demographic and spatial factors to determine long term “patterns” of activity, as well as to research and evaluate responses and procedures. And for making Reports or statistical summaries & public domain interface.
Past Observations & Case Studies:

Case Study Review:

Spatial Patterns of Crimes in India:

**Overall Crime-rate Cluster**

![Map showing overall crime rate clusters](image1)

Natural Breaks: CRIME_RATE

- [0.0477 : 0.1274] (8)
- [0.1334 : 0.12065] (12)
- [0.2166 : 0.2988] (11)
- [0.4558 : 0.4558] (1)

**Figure 4 Overall Crime Rate Cluster**

**Population density Cluster**

![Map showing population density clusters](image2)

Natural Breaks: POPDENSITY

- [17:550] (20)
- [555:1102] (7)
- [2013:2598] (3)
- [9252:9340] (2)

**Figure 5 population Density Cluster**
Spatial Analysis of the Crime Pattern of the Districts of Madhya Pradesh

Employment-rate Cluster

Murder-rate Cluster

Riot-rate Cluster

GDP Cluster

Figure 6 Employment Rate Cluster

Figure 7 Murder Rate Cluster

Figure 8 Riot Rate Cluster

Figure 9 GDP Cluster
The above Study focused:
1) To check spatial autocorrelation between various crimes
2) To compare various attribute clusters and its relation.

Outcome of the Study:
The outcome of the study reveals that the crimes of Indian states’ has positive spatial correlation among the states and also found spatial disparity in crime distribution between local states.
The spatial distribution of various crimes in the states of India using spatial analysis methods.

Desktop Study Review:
Table 1 Desktop Study Review

<table>
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<tr>
<th>Parameters</th>
<th>Case Study 1</th>
<th>Case Study 2</th>
<th>Case Study 3</th>
<th>Case Study 4</th>
<th>Case Study 5</th>
</tr>
</thead>
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<tr>
<td>Title</td>
<td>Planning For Crime Reduction: Analysis of Social, Economic, And Physical Variables on U.S. Cities</td>
<td>Spatial and temporal dynamics of neighborhoods and crime</td>
<td>Employment, Crime, and Context: A Multi-Level Analysis of the Relationship Between Work and Crime</td>
<td>Relationship between socioeconomic and demographic Factors and crime victimization in urban areas In the united states of America,</td>
<td>Urban Form Correlates of Crime</td>
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<td>United States of America</td>
<td>Seattle</td>
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<td>City Council</td>
<td>Multi-level</td>
<td>Multi-level</td>
<td>Metropolis</td>
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<tr>
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<td>&gt;1,000,000</td>
<td>616,627</td>
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<td>Factors</td>
<td>Social, Economic, And Physical Variables</td>
<td>Demographic variables</td>
<td>Mediating variables, exogenous variables, demographic variables</td>
<td>Socio-economic variables, demographic variables</td>
<td>urban form-nodes, paths, and edges</td>
</tr>
</tbody>
</table>
Selection of Factors for Analysis:

Based on the literature review the following factors were selected for analysis with crime pattern.

- Population Density
- Urban Population
- Slum Population
- WFPR (work force participation rate)
- HDI (human development index)
- Literacy Rate

STUDY AREA DATA ANALYSIS

Location and History:

Figure 10: Madhya Pradesh Location Map

Source: MPGIS-Mapped database on Madhya Pradesh
Madhya Pradesh, with an area of 3,08,000 sq.km and Population: 73.34 million (2012), is the second largest state in India after Rajasthan. It is a part of peninsular plateau of India lying in north central part, whose boundary can be classified in the north by the plains of Ganga-Yamuna, in the west by the Aravali, east by the Chhattisgarh plain and in the south by the Tapti valley and the plateau of Maharashtra. The topography of Madhya Pradesh is defined by the Narmada Sone valley. It is a narrow and long valley extending through almost the whole of the state from east to west. Sone valley forms the upper part; Shahdol and Sidhi districts lie in this valley. The lower part forms the Narmada valley. It has an average elevation of 300 m above MSL and is covered with alluvial soil. Jabalpur, Mandla, Narsinghpur, Hoshangabad, Raisen, Khandwa, Khargone and Barwani districts lie in this region. The Sone valley is narrower than Narmada valley and alluvial deposit is also comparatively poor and thin, therefore Narmada valley is more important than Sone valley for agricultural activities. To the north of this valley lie the Central Highlands, to the south the Satpura-Maikal ranges and to the south-east, the eastern plateau. These three form the natural physiographic regions-into which the state is divided. The Central Highlands are spread between the Narmada-Sone valley and the Aravali ranges to the west in a triangular form. The highlands slope towards the north and drain into the Yamuna. Madhya Pradesh, a large state in central India, retains landmarks from eras throughout Indian history. Begun in the 10th century, its Hindu and Jain temples at Khajuraho are renowned for their carvings of erotic scenes, most prominently Kandariya Mahadeva, a temple with more than 800 sculptures. The eastern Bandhavgarh and Kanha national parks, noted Bengal tiger sanctuaries, offer guided safaris.

Crime Analysis:

Crime data from 2001 to 2014 has been represented in the graph for the state of Madhya Pradesh.

Figure 11: Crime data of MP from 2001 to 2014
For more than a decade Madhya Pradesh has been the highest crime rate state from 2001 to 2014.

The highest crime rate districts are Bhopal, Guna, Indore, Shahdol, Ujjain for 2001 (rate 57-38) and Indore, Bhopal, Gwalior, Dindori, Jabalpur for 2014 (rate 73-52) and lowest crime rate districts are Seoni, Sheopur, Harda, Badwani, Dindori for 2001 (rate 57-38) and Sheopur, Damoh, Mandla, Panna, Badwani for 2014 (rate 22-16)
Crime Data Analysis:

Crime V.S Population Density-

Legend

Crime Rate

<table>
<thead>
<tr>
<th>Crime Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
</tr>
<tr>
<td>16-30</td>
</tr>
<tr>
<td>31-45</td>
</tr>
<tr>
<td>46-60</td>
</tr>
<tr>
<td>61-75</td>
</tr>
</tbody>
</table>

Madhya Pradesh District Boundary

Figure 14: IPC Crime Map of MP 2011
From the above two maps when comparing population density with crime rate it is evident that districts having higher population density are having higher crime rate as compared to the low population density districts.

- **Crime V.S Slum Population**

![Population Density Map of MP 2011](image1)

**Figure 15: Population Density Map of MP 2011**

![IPC Crime Map of MP 2011](image2)

**Figure 16: IPC Crime Map of MP 2011**
From the above two maps when comparing slum population with crime rate it is evident that districts having higher slum population are having higher crime rate as compared to the low slum population districts.

**Crime V.S WFPR**

![Slum Population Map of MP 2011](image17.png)

**Figure 17: Slum Population Map of MP 2011**

![IPC Crime Map of MP 2011](image18.png)

**Figure 18: IPC Crime Map of MP 2011**
From the above two maps when comparing workforce participation rate with crime rate it is evident that districts having lower workforce participation rate are having higher crime rate as compared to the districts having higher workforce participation rate.

Crime V.S Urban Population-

Figure 19: Work Force Participation Rate Map of MP 2011

Figure 20: IPC Crime Map of MP 2011
From the above two maps when comparing percentage of urban population with crime rate it is evident that districts having higher percentage of urban population are having higher crime rate as compared to the districts having lower percentage of urban population.

**Crime V.S HDI-**

![Urban Population Map of MP 2011](image1)

*Figure 21: Urban Population Map of MP 2011*

![HDI-Human Development Index Map of MP 2011](image2)

*Figure 22: HDI-Human Development Index Map of MP 2011*
From the above two maps when comparing Human development index with crime rate it is evident that districts having higher Human development index are having higher crime rate as compared to the districts having lower Human development index.

Crime V.S Literacy Rate-

Figure 23: IPC Crime Map of MP 2011

Figure 24: Literacy Rate Map of MP 2011
From the above two maps when comparing literacy rate with crime rate it is evident that districts having higher literacy rate are having higher crime rate as compared to the districts having lower literacy rate. The reason behind this is that the number of literates are more but the jobs opportunities are less, which is evident from the WFPR map hence they are vulnerable condition to commit crime.

**Correlation between Crime and Planning Factors:**

**Table 2 Correlation of Crime and Responsible Factors**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Crime 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Density</td>
<td>0.87</td>
</tr>
<tr>
<td>Slum Population</td>
<td>0.93</td>
</tr>
<tr>
<td>WFPR</td>
<td>-0.41</td>
</tr>
<tr>
<td>% Urban Population</td>
<td>0.87</td>
</tr>
<tr>
<td>HDI</td>
<td>0.51</td>
</tr>
<tr>
<td>Literacy</td>
<td>0.53</td>
</tr>
</tbody>
</table>

There is a strong and positive correlation between urban populations, density, slum population and negative correlation between WFPR with the crime, whereas there is very less or no correlation between human development index and literacy rate.
CONCLUSION

In this paper the procedure of analyzing the crime pattern with various planning factors have been described through the temporal analysis and overlay analysis of the layers of planning factors and the crime. The correlation analysis shows a strong and positive correlation between urban population, population density, slum population and negative correlation between WFPR with the crime with HDI and literacy rate showing very less are no correlation with crime. The spatial over lay of the crime map of the districts and planning factors has visually justified the results obtained from the correlation analysis. Study also concludes that there is an intercorrelation between planning factors and crime when linked with each other as seen in the case of literacy rate and WFPR. Crime approaches human settlements as general unconscious products that emerge over long periods, through the accrual of successive generations of ill development activities, mismanagement of the urban areas and lack of equitable development among the districts, which highlights another regional planning issue of disparities among the regions in this case districts. There is further scope of study in these similar aspects that can be carried out investigating and analyzing the different types of crime with the various other responsible factors.

References


Ambient temperature and Crime in Bihar

ANITA MANDAL

Project Assistant
School of Planning and Architecture, New Delhi

ABSTRACT

Crimes are always been common in many parts of India. But, now a days, they have been increased in number. It has been noticed that number of crimes against person remain higher than number of crime against property during summer season in comparison to winter season. According to National Crime Records Bureau (NCRB) Report, 2016, Uttar Pradesh, Maharashtra, Madhya Pradesh, Rajasthan, Bihar and West Bengal are some of the most vulnerable states in India. This study focuses on finding relation between crime rate and change in temperature during different season. This research paper analyzes quantitative data of crime in Bihar. According to research, change in temperature and crime have been found to have a significant correlation. After analyzing data from different research paper, this was found that increase in temperature was directly proportional to crime against person.

Key Words - correlation, crime type, quantitative data, temperature, Bihar

INTRODUCTION

Everyday crimes such as murder, dacoity, burglary, robbery, rape, kidnapping, and theft have become prevalent in most parts of the country. The rate of crime is growing with every passing day. Though survey shows no healthy statistics in all parts of the country, some states are more vulnerable than others. According to National Crime Records Bureau (NCRB) Report, 2016, Uttar Pradesh, Maharashtra, Madhya Pradesh, Rajasthan, Bihar and West Bengal are some of the most vulnerable states in India.
Figure 1: Crime in India during 2016
Along with criminal activities, the factors driving them need same level of attention as well. There are number of factors such as quality of life indices, economic growth, and property prices etc. One of the factors that are believed to influence criminal activities is change in temperature. Change in temperature and crime have been found to have a significant correlation. This paper investigates whether this relationship holds in India. Bihar state has been chosen for the research study due to limited availability of data.

This paper employs secondary data collection on monthly crime activities in Bihar from 2009 to 2017. Two broad categories of crime are analyzed: property crime and violent crime. Violent crimes include crimes against persons, also called personal crimes, murder, aggravated assault, rape, kidnapping and robbery. Property crimes include crimes against property i.e. theft of property without bodily harm, such as burglary, larceny, auto theft. Evidence is found to suggest that temperature has a significant effect on criminal activity.

**LITERATURE REVIEW**

“Crime against persons are more numerous in summers, crime against property are more numerous in winters.” (Falk, 1952). The probability of a riot increased steadily with temperature rising up to 85 °F. Cohn also found a positive relationship between temperature and assault rate (Rodrigo Murataya, Daniel R. Gutiérrez, 2013). Evidence showed a positive relationship between heat and crime when the probability of riot steadily increased with the temperature rise up to the mid-90’s which gave the conclusion that collective violence tends to increase with the rise of temperature (Cohn, 1990). Cohn (1990) also analyzed the relationship between heat and robbery, homicide, domestic violence, and rape. Robbery and homicide did not show relevant correlation with heat in the studies (Cohn, 1990).

Feldman and Jarmon (1979) found no significant correlations between ambient temperature and homicide in Newark over twelvemonth and fifteen-year periods (Feldman H. S., Jarmon R. G., 1979). Michael and Zumpe (1983a, 1983b) found no significant correlations between monthly temperature and the monthly mean number of homicides in thirteen of the sixteen locations they examined (Michael R. P., Zumpe D., 1983). Perry and Simpson (1987) found no significant relationship between the monthly homicide rate and the monthly minimum temperature in Raleigh during a ten-year period (J. D. Perry, M. E. Simpson, 1987).

Michael and Zumpe (1983a, 19836) found significant positive correlations between the monthly mean temperature and the monthly mean number of rapes (Spearman r = 0.64 to 0.97) in thirteen of their sixteen locations (Michael R. P., Zumpe D., 1983). Perry and Simpson (1987) also found a significant positive correlation between the monthly average minimum temperature and the monthly rape rate (r = 0.26) (J. D.
Perry, M. E. Simpson, (1987). Anderson and Anderson (1984) have suggested that this may be because robbery is motivated primarily by economic need and is not a truly aggressive crime (Anderson, C. A., and Anderson, D. C., 1984). DeFronzo (1984) also found a significant positive association between temperature and burglary (Defronzo, 1984).

Jacob, Lefgren, and Moretti (2006) find that a 10 °F increase in average weekly temperature is associated with a 5% increase in violent crime (B. Jacob, L. Lefgren, E. Moretti, 2006). Using monthly data from England and Wales, Field (1992) finds that temperature is positively and significantly correlated with violent crime, sexual offences, and criminal damage (Field, 1992). Cohn and Rotton (2000b) use data on complaints about disorderly behavior from Minnesota over two years and find that temperature is significantly correlated with the number of complaints (Cohn E and Rotton J, 2000b).

Jacob, Lefgren, and Moretti (2006) find that a 10°F increase in the average weekly temperature is correlated with a 3% reduction in property crime (B. Jacob, L. Lefgren, E. Moretti, 2006). Field (1992) finds that burglary, theft and robbery are all positively and significantly correlated with temperature (Field, 1992). Cohn and Rotton (2000a) analyzed theft, burglary and robbery in Minneapolis over two years using calls for service to measure criminal activity and found that theft is negatively correlated with temperature and that both burglary and robbery are positively correlated with temperature (Cohn E and Rotton J, 2000a). The temperature has a significant effect on the number of violent crimes recorded and temperature has a significant effect on the number of property crimes recorded (J. Horrocks, A. K. Menclova).

**METHOD OF THE RESEARCH & DATA COLLECTION**

Quantitative approach is used to analyze the relationship between crime rate and season. The hypothesis of this research is to see whether the crime rates increases/ decreases as the temperature increases/ decreases.

Secondary data, collected from different sources is used in this research. Nine years (2009-2017) of month wise data is collected from Bihar Police Website. Month wise temperature data is also collected for nine years (2009-2017) to find the correlation.

**DATA ANALYSIS**

The data collected for this research was analyzed using MS – excel. The values of the research variables used in this study are listed in Table 1 to 9.

1. **Correlation in 2009**

Generally, r>0 indicates positive relationship, r<0 indicates negative relationship while r = 0 indicates no relation. Here r = +1.0 describes a perfect positive correlation
and \( r = -1.0 \) describes a perfect negative correlation. As a thumb rule, the following guidelines on strength of relationship are often used.

<table>
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<th>Value of ( r )</th>
<th>strength of relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.0 to -0.5 or 1.0 to 0.5</td>
<td>strong</td>
</tr>
<tr>
<td>-0.5 to 0.3 or 0.3 to 0.5</td>
<td>Moderate</td>
</tr>
<tr>
<td>-0.3 to -0.1 or 0.1 to 0.3</td>
<td>Weak</td>
</tr>
<tr>
<td>-0.1 to 0.1</td>
<td>none or very weak</td>
</tr>
</tbody>
</table>

**Table 1: Month-wise crime and temperature data of Bihar, 2009**

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**Graph 1: Month-wise crime and temperature data of Bihar, 2009**
In the Year 2009, murder ($r=0.54$), riot ($r=0.46$), kidnapping ($r=0.39$) are showing strong positive correlation. However, theft ($r=-0.75$) is showing strong negative correlation.

2. Correlation in 2010

Table 2: Month-wise crime and temperature data of Bihar, 2010

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Graph 2: Month-wise crime and temperature data of Bihar, 2010
In the Year 2010, murder (r=0.74), riot (r=0.76), kidnapping (r=0.72) and rape (r=0.73) are showing strong positive correlation. However, theft (r= -0.68) is showing strong negative correlation.

3. Correlation in 2011

Table 3: Month-wise crime and temperature data of Bihar, 2011

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Total

Graph 3: Month-wise crime and temperature data of Bihar, 2011
In the Year 2011, murder \( (r=0.61) \) and riot \( (r=0.90) \) are showing strong positive correlation, kidnapping \( (r=0.47) \) and rape \( (r=0.43) \) are showing moderate positive correlation However, theft \( (r=-0.67) \) is showing strong negative correlation.

4. Correlation in 2012

Table 4: Month-wise crime and temperature data of Bihar, 2012

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Graph 4: Month-wise crime and temperature data of Bihar, 2012
In the Year 2012, murder \((r=0.97)\), riot \((r=0.80)\), kidnapping \((r=0.85)\) and rape \((r=0.55)\) are showing strong positive correlation. However, theft \((r=-0.76)\) is showing strong negative correlation.

5. Correlation in 2013

Table 5: Month-wise crime and temperature data of Bihar, 2013

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Graph 5: Month-wise crime and temperature data of Bihar, 2013
In the Year 2013, murder (r=0.74), riot (r=0.73), kidnapping (r=0.85) and rape (r=0.85) are showing strong positive correlation. However, theft (r= -0.76) is showing no relation.

6. Correlation in 2014

Table 6: Month-wise crime and temperature data of Bihar, 2014

<table>
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<th>May</th>
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Murder: 247 211 312 281 341 373 304 317 258 282 242 235 0.861 0.841 0.890
Dacoity: 52 51 41 40 44 55 58 41 41 33 43 56 -0.162 -0.214 0.063
Robbery: 120 127 123 93 146 195 147 142 136 120 128 123 0.460 0.647 0.318
Burglary: 390 340 352 336 370 425 463 416 413 424 391 354 0.260 0.011 0.562
Theft: 2153 1896 1895 1457 1701 1904 2033 1939 2013 1792 1926 2179 -0.633 0.252 0.328
Riots: 767 881 1251 971 1186 1548 1384 1203 1051 1181 1244 899 0.693 0.596 -0.144
Kidnapping: 424 429 524 484 538 630 601 520 466 758 676 520 0.292 -0.140 0.660
Rape: 75 97 113 76 130 115 115 106 97 86 75 53 0.705 0.687 0.123
Total: 4225 4022 4611 3758 4456 5245 5205 4686 4458 4676 4725 4419 0.330 0.637 0.496

Graph 6: Month-wise crime and temperature data of Bihar, 2014
In the Year 2014, murder \((r=0.86)\), riot \((r=0.70)\), and rape \((r=0.73)\) are showing strong positive correlation. However, theft \((r=-0.59)\) is strong negative correlation.

7. **Correlation in 2015**

Table 7: Month-wise crime and temperature data of Bihar, 2015

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Graph 7: Month-wise crime and temperature data of Bihar, 2015
In the Year 2015, murder (r=0.88), riot (r=0.80), kidnaping (r= 0.63) and rape (r=0.89) are showing strong positive correlation.

8. Correlation in 2016

Table 8: Month-wise crime and temperature data of Bihar, 2016

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Graph 8: Month-wise crime and temperature data of Bihar, 2016
In the Year 2016, riot ($r=0.57$), kidnaping ($r= 0.66$) are showing strong positive correlation. Rape cases are showing ($r= 0.29$) no relation.

### 9. Correlation in 2017

Table 9: Month-wise crime and temperature data of Bihar, 2017

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<td>368</td>
<td>355</td>
<td>403</td>
<td>451</td>
<td>414</td>
<td>446</td>
<td>428</td>
<td>523</td>
<td>389</td>
<td>375</td>
<td>0.222</td>
</tr>
<tr>
<td>Theft</td>
<td>1963</td>
<td>2003</td>
<td>2056</td>
<td>2077</td>
<td>2244</td>
<td>2256</td>
<td>2285</td>
<td>2392</td>
<td>2453</td>
<td>2410</td>
<td>2672</td>
<td>2672</td>
<td>0.300</td>
</tr>
<tr>
<td>Riots</td>
<td>750</td>
<td>728</td>
<td>1084</td>
<td>959</td>
<td>1201</td>
<td>1211</td>
<td>1048</td>
<td>1008</td>
<td>870</td>
<td>1101</td>
<td>882</td>
<td>861</td>
<td>0.601</td>
</tr>
<tr>
<td>Kidnaping</td>
<td>548</td>
<td>637</td>
<td>801</td>
<td>845</td>
<td>846</td>
<td>802</td>
<td>762</td>
<td>770</td>
<td>739</td>
<td>747</td>
<td>753</td>
<td>636</td>
<td>0.825</td>
</tr>
<tr>
<td>Rape</td>
<td>78</td>
<td>81</td>
<td>120</td>
<td>89</td>
<td>127</td>
<td>112</td>
<td>95</td>
<td>102</td>
<td>138</td>
<td>113</td>
<td>24</td>
<td>89</td>
<td>0.515</td>
</tr>
<tr>
<td>Total</td>
<td>3968</td>
<td>4094</td>
<td>4763</td>
<td>4689</td>
<td>5078</td>
<td>5384</td>
<td>4938</td>
<td>5019</td>
<td>5165</td>
<td>5368</td>
<td>4903</td>
<td>5027</td>
<td>0.311</td>
</tr>
</tbody>
</table>

Graph 9: Month-wise crime and temperature data of Bihar, 2017
In the Year 2017, murder ($r = 0.603$), rape ($r = 0.754$), riot ($r = 0.654$), theft (0.62) and robbery (0.508) are showing strong positive correlation. However, Dacoity ($r = -0.59$) and Burglary are negative correlation. Kidnapping cases are showing ($r = 0.29$) no relation.

CONCLUSION

On one hand, in each of the above table dacoity and theft are showing negative (-) correlation, that means as the temperature increases the number of dacoity and theft decreases in the state of Bihar. On the other hand, in each of the above table murder, robbery, burglary, kidnapping and rape are showing positive (+) correlation that means as the temperature increases the number of murder, robbery, burglary, kidnapping and rape also increases. This research suggests that temperature is an important determinant of the number of criminal offences recorded in any place. Temperature have a significant effect on the number of violent crimes as well as on the number of property crimes recorded. The monthly data of crime and temperature will help in finding the correlation between them of other cities and states which is not available in present day.

Temperature increase or decrease is dependent on the location, geography and urbanization. However, crime happening in states and cities may also depend on the behavior change or aggressiveness of a person due to too high and low temperature. Everyone must have recognized the general fact that certain atmospheric conditions, such as the dryness of the air, stimulates the human system while other conditions, such as moist air, relax the human system. This is not only experienced by man, but, also with other animals and plants. As an Environmental Planner I would say that we can maintain temperature in our cities by reducing consumption of resources which results in decreasing temperature as we all want a safe city.

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The Phenomena of Parole Absconding: Role of Various Stakeholders in Tamil Nadu

P.VIDHYASAGAR (Research Scholar)
TATA Institute of Social Science (TISS), Mumbai

ABSTRACT

Prison is a state subject according to the VII Schedule of the Indian Constitution; hence every state has its own kind of correctional administration. There are various strategies adopted by the Prison administration to ease tension in the prison, including the selective release of prisoners on parole. But many times, the parole is misused by the parole absconders which affect the correctional administration.

According to the Tamil Nadu Prison Manual, 1982- there are two types of Parole given to the prison inmates in Tamil Nadu; they are Emergency parole and ordinary parole. The emergency parole is granted 15 days in a year, given over a span of four spells and ordinary parole is given to the prisoners demonstrating good conduct once in two years, in a span of one month. Even though parole granted to them, is not a right of a prisoner, but the prison department considers the same for the psychological well-being of the inmates and welfare of the family of the inmates. But sometimes these inmates during their parole abscond and are often recaptured after few years.

The major objective of this study is to explore the reason behind parole absconding. This research study adopts mixed method. This research profiles the Parole absconders in Tamil Nadu and describes the social, demographic and nature of crime committed by them. This research also provides the status of parole absconders in Tamil Nadu also the reasons behind their absconding. Additionally, the viewpoints of various stakeholders like police, Prison Authorities and Probation Officers on parole absconding are also discussed in this study. The study thus aims to provide a holistic view on the phenomena of parole absconding in Tamil Nadu.

Key words: Parole, parole absconders, stakeholders

Introduction:

Prisons in India established during the British regime served as detention center for the safe custody of prisoner. However, imprisonment is believed to a feature of
punishment in ancient India. References to prisons are found in Hindu scriptures. Kautilya in his Arthashastra has spoken of a well-organized system of prisons. The Indian jail committee 1919-20 report is said to be the foundation stone of modern prison reforms in India, because it stressed the need for shifting the emphasis from punishment of offenders to their reformation and recommended the community correctional measures like probation and parole, to modify and re-check the behaviours of prisoner (Tiwari, 2000:93). Thus, the community correctional ideology started to spread in India. There are many devices adopted by the prison administration to ease tension in the prison. One of the most important devices for reducing pressure on prison is the selective release of prisoners on parole or ticket of parole. It is a treatment program. It seeks to protect society and assist the prisoner in readjusting himself to a normal free life in the community. The offender after serving part of a term, in a correctional institution is conditionally released under supervision and treatment. Penological innovations in the shape of parole is claimed to be a success in the rehabilitation and checking recidivism but many times the parole is misused by the parole absconders which affects the correctional administration.

**Definition of Parole:**

Professor Gillin has defined parole as the release from a penal or reformatory institution of an offender who remains under the control of correctional authorities, in a way to find out whether he is fit to live in the free society without supervision (Munot, 2017). Eminent criminologist Sutherland considers parole as the liberation of an inmate from prison with or a correctional institution on conditions, restoration of the original penalty if those conditions of liberation are violated. Parole is a progressive measure of correctional services. According to the Model Prison Manual-2016 BPRD – "Parole means a temporary release of a prisoner for short period so that he may maintain social relations with his family and the community in order to fulfill his familial and social obligations and responsibilities". It is an opportunity for a prisoner to maintain regular contact with outside world so that he may keep himself updated with the latest developments in the society.

**Parole in India:**

In India, the grant of Parole is largely governed by the rules made under the Prison Act, 1894 and Prisoners Act, 1900. Each of the States has its own parole rules, which have minor variations with each other. There are two types of parole- custody and regular. The custody parole is granted in emergency circumstances like death in the family, serious illness or marriage in the family regular parole is allowed for a maximum period of one month, except in special circumstances, to convicts who have served at least one year in prison. It is granted on certain grounds such as, marriage of a member of the family, delivery of child by wife of the convict, maintain family or social ties, serious damage to life or property of the family of convict by natural calamities, etc.
Definition of Parole Absconder:

The person who is misusing his parole or ticket of leave granted to him by the prison authority and not surrendered to the prison back is said to be a parole absconder.

Parole Absconders in India:

In India, many prisoners have misused the parole granted to them. There are some famous cases evident for parole absconders in India such as –

In Manu Sharma v. State (NCT of Delhi), (2010) 6 SCC 1, Manu Sharma, a murderer, asked for parole on three grounds: to attend religious rites for his late grandmother, to tend to his ageing mother and, to take care of the family’s business interest. He misused parole and returned to Jail only after he was traced to a Delhi pub enjoying his night life with friends, drinks and dance.

In BittiHotraMohanti @ B.H… vs. State of Rajasthan (8-July-2015) the convict, the son of a DGP, Odisha, was sentenced for rape of a German national. He was sentenced to seven years rigorous imprisonment along with fine. He was granted fifteen days parole to visit his ailing mother. He escaped, and his father pleaded ignorance about his whereabouts. A significant period of seven years elapsed, the police caught him from Kerala. The convict changed his identity. His father refused to accept that the person arrested was his son. A court has recently ordered the DNA test to establish his identity.

Parole also provides a dangerous opportunity to a criminal to engage in criminal activities while on parole. As in Saibanna Vs State of Karnataka (2005) case and also, in the case of Krishna & Ors vs State of Haryana & Ors (7 May 2013) (Murthy & Srinivas, 2015:303).

Fig. 1.1
Parole Absconders in India

Source: Prison Statistics of India: NCRB

64
The above chart denotes the parole absconders and parole absconders re-arrested in India.

Fig. 1.2

Parole Policy in Tamil Nadu

- The parole policy in Tamil Nadu is quite tough, when compared to other neighboring states like Andhra Pradesh, Telangana, Kerala, and Karnataka. They follow 30 days of parole for prisoners in year, but in Tamil Nadu-they give only 15 days emergency parole in a year, which is granted in four spells (3+3+3+6), in an interval of 3 months. Similarly the ordinary parole is granted for convicts who have served minimum 3 years from the initial year of imprisonment and ordinary parole is granted once in every two years, but many states like Kerala, grant the ordinary parole for two months, throughout India- the liberal Parole policy is followed in Madhya Pradesh, they grant for 60 days parole in a year, hence it will help the prisoner to work during the parole period, and solve the debt faced by their family.

- The emergency parole is granted by the Superintendent of the Prison, and the ordinary parole is granted by the Range DIG of the prisons

- The emergency parole is granted by analyzing the reports of police, Probation Officer, and psychologist of the prison, and sureties issued by relation or family member but the discretion is vested with the Superintendent of the Prison. Further emergency parole is divided into two types, emergency parole with normal condition – where the prisoner is allowed to go in parole freely and come back, another kind is emergency parole with Police Escort.

- The Ordinary parole is recommended by the Superintendent of the Prisons, to the DIG of the prisons, by verifying the probation officers report and two demand drafts of rupees thousand is to be submitted to the tahsildar where the prisoner resides, and with sureties, the prisoner is granted ordinary parole.

- The emergency parole with police escort is given to the high risk prisoners who have threat to their life, or some law and order problem due to their release on parole. The escort is provided by the Tamil Nadu Armed Police, based on the requirement by the prison authorities like – there are three types of escort, they are minimum, medium and strong, based on the gravity of offence, and threat faced by the prisoner, the escort is provided, in strong escort at least ten to twelve police personnel’s including Inspector, sometimes Assistant Commissioner of Armed Police, etc. mostly strong escort is given for gangsters, aluma-terrorist, etc.
Status of Parole Absconders in Tamil Nadu

The above chart denotes the parole absconders and parole absconders arrested in Tamil Nadu.

Objective of the Study:

- To understand the socio-economic background of Parole absconders
- To explore the reason for Parole absconding
- To assess the number of Parole absconders in Tamil Nadu who are still absconding.
- To understand the views of jail authorities and probation officers on the reason behind Parole absconding.
- Research Questions:
  - What is the demographic profile of the offenders who jumped Parole?
  - What is the nature and extent of Parole Absconding?
  - What are the causative factors responsible for misuse of Parole?
  - What is the perception of probation officers, police and prison authorities on parole absconding?

Methodology:

Broadly the study aims to explore the phenomenon behind parole absconding
and the profile of parole absconders in Tamil Nadu. This study uses both primary and secondary data for analysis. Thus, the mixed method (a combination of quantitative and qualitative approaches) has been adopted for the present study.

**Universe of the study:**

Universe of the study comprises of recaptured parole absconders who are lodged at the central prison Puzhal (37 parole absconders), and central prison Vellore (23 parole absconders) and rest are the criminal justice functionaries like police, probation officers, lawyers and public prosecutors.

**Locale of the Study:**

The study is conducted in the state of Tamil Nadu. There are totally 8 central prisons in Tamil Nadu. But for the present study only 2 prisons are chosen, namely

- Central Prison Puzhal
- Central Prison Vellore

The rationale behind selecting the above two prisons are that: The central prison Puzhal is the largest newly constructed prison in the year 2006 and also, it’s the largest prison in Tamil Nadu. The central prison of Vellore is the oldest prison of Tamil Nadu.

**Data Analysis**

**Socio-Economic and Demographic Profile of Parole Absconders:**

This section deals with the socio-economic profile of parole absconders which gives the details about their age, religion, caste, nativity, marital status, educational background, work before incarceration, number of children to the parole absconders in Tamil Nadu.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-40</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>41-50</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>51-60</td>
<td>18</td>
<td>30%</td>
</tr>
<tr>
<td>61-70</td>
<td>9</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The above table shows that 50% of the parole absconders are in the age group of 41-50 years, and 30% of parole absconders are in the age group of 51-60 years, the
most vulnerable parole absconders who are senior citizens in the age group of 61-70 years comprises 15% in the prison. The young parole absconders who are in the age group of 31-40 years are comprising only 3% of the prison population which clearly draws the inference, the middle age group of 41-50 years tends to abscond more in parole, when compared to other age groups of parole absconders. And also, there are no parole absconders below the age group of 30 years.

Table No. 1.2
Nativity of Parole Absconders

<table>
<thead>
<tr>
<th>Native Place</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside Chennai</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>Outside Chennai</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The above table shows that 50% of parole absconders hailing from Chennai city, and remaining 50% of the parole absconders are from the neighboring districts like Thiruvallur, Kancheepuram, Vellore, Tiruvanamalai and Krishnagiri.

Table No. 1.3
Religion of Parole Absconders

<table>
<thead>
<tr>
<th>Religion</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindu</td>
<td>50</td>
<td>83.3%</td>
</tr>
<tr>
<td>Muslim</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Christian</td>
<td>9</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The above table shows that majority of the parole absconders are from Hindu Religion (83.3%) and very few parole absconders are from Christianity (15%) and Muslim (1.7%) Religion. It is not to represent that most parole absconders are from Hindu Religion, but to convey the population of Hindu is more in Tamil Nadu. As per the Census
2011, Tamil Nadu has the population of 87.6% of Hindus, 6.1% Christians, 5.9% Muslims, 0.1% Jains and 0.3% other religions. Thus, it clearly draws the inference, that majority of parole absconders are from Hindu Religion, because it’s largely practiced in Tamil Nadu.

**Table No. 1.4**

Caste of Parole Absconders

<table>
<thead>
<tr>
<th>Caste</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>OBC</td>
<td>39</td>
<td>65%</td>
</tr>
<tr>
<td>SC</td>
<td>21</td>
<td>35%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The table above shows that the numbers of parole absconders are from the marginalized sections of the society. Most of the parole absconders are from the other backward class (65%) and the remaining parole absconders are from the scheduled caste (35%), which clearly denotes that majority of the parole absconders are from socially and politically ignored communities.

**Fig. No. 1.3**

Educational Background of Parole Absconders
The above chart shows that most of the parole absconders are illiterate (63.3%) and not even completed their elementary education and 6.7% of parole absconders have completed their secondary education and 10% of them have completed their higher secondary and graduation, and very few parole absconders have completed their post-graduation, remaining 6.7% of parole absconders have done their Diploma.

**Table No. 1.5**

Marital Status of Parole Absconders

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>45</td>
<td>75%</td>
</tr>
<tr>
<td>Unmarried</td>
<td>11</td>
<td>18.3%</td>
</tr>
<tr>
<td>Widowed</td>
<td>4</td>
<td>6.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The above table shows that majority of the parole absconders are married (75%), and only few parole absconders are unmarried (18.3%) and widowed (6.7%), which clearly reveals that married person tends to abscond in parole, when compared to other groups, because married persons have more attachment to their family and children.

**Table No. 1.6**

No. of Children for Parole Absconders

<table>
<thead>
<tr>
<th>No. of Children’s</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>11</td>
<td>18.3%</td>
</tr>
<tr>
<td>Two</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td>Three</td>
<td>16</td>
<td>26.7%</td>
</tr>
<tr>
<td>Four</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Four and above</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td>Unmarried</td>
<td>11</td>
<td>18.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Field Work, 2017
The above table explains that majority of the parole absconders has two (25%) or three children (26.7%). Very few inmates have four (5%) and more than four (3.3%) children, and remaining parole absconders have one child (18.3%). There are parole absconders who have no children which comprises of 3.3% but the parole absconders with three children have absconded the parole more when compared to other groups.

**Table No. 1.7**

### Work before Incarceration

<table>
<thead>
<tr>
<th>Nature of work</th>
<th>No. of Inmate</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Sector</td>
<td>13</td>
<td>21.7%</td>
</tr>
<tr>
<td>Government Service</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td>Self employed</td>
<td>43</td>
<td>71.7%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The above table shows that - majority of the parole absconders are self-employed (71.7%) before entering into prisons, and from private sector (21.7%), Government service (3.3%). It clearly denotes most of the parole absconders were bread winners of the family, and thus self-employed people absconded the parole, when compared to other groups. There are even unemployed people, which comprises of 3.3%, which draws the inference that they committed the crime and came in to prison at their young age.

**Table No. 1.8**

### Monthly Income of Parole Absconders

<table>
<thead>
<tr>
<th>Monthly Income</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 10,000</td>
<td>49</td>
<td>81.7%</td>
</tr>
<tr>
<td>10,000 to 20,000</td>
<td>8</td>
<td>13.3%</td>
</tr>
<tr>
<td>20,000 to 30,000</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017
The above table shows that around 81.7% of the parole absconders are from lower income groups of earning rupees ten thousand per month, remaining are middle income group which comprises of 13.3%, among the parole absconders the high-income group is very less which comprises of 1.7%. Thus, it clearly reveals majority of the parole absconders are from the economically weaker sections of the society.

4.2 Criminal Background and the Reason behind Absconding:

This section talks about the criminal background of the parole absconders i.e. the type of offence committed by the prisoner, and the type of sentence serving inside the prison, and the reason behind absconding and also sufferings faced by him due to the absconding in parole.

Fig. No. 1.4

Type of Offence Committed

The above chart reveals that most of the parole absconders are Murder convicts (95%), and from among the rest have committed Rape (1.7%), Rape and Murder (1.7%) and Robbery (1.7%). Thus it gives the clear picture that Murder convicts tends to abscond more in parole, when compared to other type of prisoners.

<table>
<thead>
<tr>
<th>Reason behind Absconding</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Problem</td>
<td>37</td>
<td>61.7%</td>
</tr>
<tr>
<td>Alcoholic Influence</td>
<td>8</td>
<td>13.3%</td>
</tr>
<tr>
<td>Torture inside the Prison</td>
<td>5</td>
<td>8.3%</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td>16.7%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>
The above table reveals that majority of the leave absconders abscond due to family problem (61.7%), which shows their attachment to their family and children. There are other problems (16.7%) like health problems where prisoner tends to abscond during their leave. There are leave absconders absconded due to alcoholic influence (13.3%), which clearly draws the inference that when they are in leave, they get the opportunity to have alcohol, thus it changes their mind, with lower self-control, they abscond. Very few leave absconders have absconded due to torture inside the prison (8.3%), which reveals that prison environment is more stress generating than normal conditions of human life.

Fig. No. 1.5

Type of Sentence Serving inside the Prison

The above chart explains that majority of the parole absconders are Life convicts (98%), and the remaining 2% is of the parole absconders are serving rigorous imprisonment in the prison. The Life Convicts tends to abscond in parole more when compared to other types of prisoners, because the Lifers don’t know their release date, and according to our Indian Law, Life Imprisonment means till life, hence due to fear of life, the Life convicts abscond more when compared to other types of prisoner.

Table No. 1.9

Incarceration Period of Parole Absconders

<table>
<thead>
<tr>
<th>Incarceration Period</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>4</td>
<td>6.7%</td>
</tr>
<tr>
<td>5 to 10 years</td>
<td>7</td>
<td>11.7%</td>
</tr>
<tr>
<td>10 to 15 years</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td>15 to 20 years</td>
<td>21</td>
<td>35%</td>
</tr>
<tr>
<td>20 to 25 years</td>
<td>10</td>
<td>16.7%</td>
</tr>
<tr>
<td>25 to 30 years</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017
The above table explains that most of the parole absconders have spent half of their life time in jail (35%), and the remaining parole absconders have spent more than 10 years (25%), there are even prisoners who spent more than 20 (16.7%) years and 30 years (5%). Thus due to stress generating environment in the prison, the longer duration they stay, they have more propensity to abscond in the parole.

Table No. 1.10

<table>
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<tr>
<th>No. of Times Jumped Parole</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only once</td>
<td>53</td>
<td>88.3%</td>
</tr>
<tr>
<td>Twice</td>
<td>6</td>
<td>10%</td>
</tr>
<tr>
<td>Thrice</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017

The above table explains that most of the parole absconders have absconded only once (88.3%), during their parole period, rarely very few parole absconders have absconded twice (10%), and thrice (1.7%). Thus it clearly draws the inference, that majority of the parole absconders have absconded only once due to their personal problem, but there is no records of parole absconders re-engage in crime in Tamil Nadu.

Table No. 1.11

<table>
<thead>
<tr>
<th>Type of Suffering</th>
<th>No. of Inmates</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denial of Parole</td>
<td>13</td>
<td>21.7%</td>
</tr>
<tr>
<td>Further Punishments (224 IPC)</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Impact in General Amnesty</td>
<td>24</td>
<td>40%</td>
</tr>
<tr>
<td>All the above</td>
<td>22</td>
<td>36.7%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Work, 2017
The Phenomena of Parole Absconding: Role of Various Stakeholders in Tamil Nadu

The above table reveals about the sufferings faced by the inmates after parole absconding, 40% of the inmates say that parole absconding affected their premature release/general amnesty, and 22% of the absconders were denied parole, and 36% of the inmates say that they faced all the problems like denial of parole, further punishments, cellular confinement for a short period, interview cut with family members for a short period, impact in general amnesty etc. Thus it clearly draws the inference, that parole absconding has greater impact on the prisoner.

Fig. No. 1.6
Magnitude of Parole Absconders Still Absconding in Tamil Nadu

The below chart explains the magnitude of still absconding prison inmates in Tamil Nadu. There are still 105 parole absconders yet to be recaptured from the period, 1995 to 2015. In central Prison-I Puzhal, there are 14 parole absconders yet to be recaptured, and Central Prison Vellore-there are 17 parole absconders, yet to be recaptured. There is no female parole absconders yet to be recaptured in Tamil Nadu. The highest number of parole absconders yet to be recaptured is highest in Central Prison Madurai (38 parole absconders) and the lowest in Central Prison Coimbatore.
The above table denotes the premature release/ general amnesty granted for prisoners in Tamil Nadu, there is no large scale premature release for prisoners in Tamil Nadu for the past ten years, the last large scale release was - during the 100th birth centenary of former late CM. Annadurai, totally 1401 lifers from Tamil Nadu were released, the judiciary is taking measure for under trial prisoners by releasing them through prison adalats, but there is no step being taken for the release of life convicts, which also one of the influencing factor for absconding.

**Fig. No. 1.8**

Viewpoints of prison authorities

Source: TN Prison Headquarters

granting parole liberally to the prisoners to reform them
The above chart reveals that majority of the Prison Personnel’s and official strongly agree that parole is granted to the prisoners liberally. The remaining prison personnel equally agreed (10) and disagreed their view points on granting of parole in Tamil Nadu. It clearly draws the opinion that a mixed opinion revolves among the prison authorities in Tamil Nadu.

**Fig. No. 1.9**

**Viewpoints of Police**

![Chart showing viewpoint of police on parole absconders]

The above chart reveals that majority of the Police personnels disagree that the parole absconders are great threat to the society. Remaining respondents have equally agreed and strongly agreed that the parole absconders are great threat to the society. It clearly draws the inference that the parole absconders in Tamil Nadu, rarely re-engage in crime, when compared to other states, thus majority of the police have disagreed that the parole absconders are threat to the society.

**Fig. No. 1.10**

**Viewpoints of probation officers**

![Chart showing types of parole absconders]
The above chart reveals that majority of the Probation officers (87%) have said, that most of the parole absconders abscond in emergency parole, and only 13% of the Probation officers have responded that they abscond in ordinary parole. Thus, it clearly draws the inference, majority of the parole absconders abscond during emergency parole.

**Fig. No. 1.11**

**Viewpoints of lawyers and public prosecutors**

The above chart explains that majority of the lawyers and public prosecutors (70%) have said that the parole is granted in Tamil Nadu, in a liberal manner, but 30% have said parole is not granted in a liberal manner, which clearly depicts that there are more bottlenecks for a prisoner to get parole in certain condition in Tamil Nadu.

**Case Studies on Parole Absconding**

**Case I: Lifer (Recaptured parole absconder in Central Prison Puzhal-I)**

In this case- the prisoner was sentenced to life imprisonment for involving in a political murder of Mr. M.K. Balan (Manickam @ PoongaManickam vs State on 6 October, 2007), former MLA in December 2001. This prisoner is 57 years old and native of Vysarpadi and languishing inside the prison for more than 25 years. He has not been granted general amnesty due to parole absconding. During 2004, he absconded and recaptured in the year 2013, due to family problems and the sufferings of the children, he absconded. But after 10 years he was recaptured by the anti-gangster squad of Tamil Nadu Police when he was living with his second wife.

**Case II: (Still Absconding parole absconder in Central Prison Puzhal-I)**

In this instant case, the prisoner was given rigorous imprisonment for 7 years in the year 2011, but the prisoner absconded during his emergency parole in the year
2013, he gave his address as a native of Trichy, but the prison officials and probation officers says he produced bogus documents and absconded, since he was a native of Sri Lanka.

**Case III: (Recaptured Parole absconder committed Suicide in Central Prison-I)**

In this instant case- the prisoner was involved in a murder for gain, and his death sentence was commuted to life. He was a bakery master inside the prison; he had only a girl daughter whom he loved very much. He absconded during the year 2016, to help his family but after 3 months he was caught in CMBT bus stand and sent to jail, but later he approached the prison authorities to grant him parole, since his family was in debt, but they denied him since he threatened a police inspector for killing. Since he denied parole, he committed suicide inside the Prison.

**Case IV: (Recaptured Parole Absconder in Central Prison Vellore)**

The 57 years old inmate is a life-convict –and having three children. He is a murder convict and absconded during the ordinary parole in the year 1996. He absconded due to fear and torture inside the prison, because the prison riot in Madurai central prison happened in the year 1995, so many prisoners involved in that were tortured inside the prison. So due to fear of life, and other health problems he absconded in the year 1996 and recaptured in the year 2007. Due to the breach of prison rules by absconding, he is not considered for the benefit of premature release.

**Results and Discussion:**

Most of the parole absconders are murder convicts and hailing from marginalized sections of the society. Generally, the prisoners abscond in emergency parole, and they do not get the benefit of general amnesty and there are no female absconding cases in Tamil Nadu. The parole policy in Tamil Nadu is tough since the prisoners must produce lot of documents and sureties to avail parole.

There are many problems faced by the prisoner inside the prison, since he is away from the family bonding. As observed, in one of the case, it shows that when the prisoner is not granted the parole, he committed suicide and ended his life inside the prison, while another case highlights the importance of conjugal right of a prisoner who is unable to maintain his marital relationship with his wife. Parole absconding is not a single phenomenon, and it is important to look at multiple factors that explore the underlying reasons for the problem of absconding.

**Conclusion**

The prisoners are sent in parole to re-organize their personality and behavior, but sometimes due to their family situation, they abscond in Parole. The study findings reveal that most of the parole absconders have absconded due to their family problems.
and sufferings of children. Majority of the parole absconders are murder convicts, but they are hardened criminals they have indulged in their criminal activity due to sudden provocation. Most of the parole absconders have absconded due to the fear of their future life, since there was no large-scale premature release in Tamil Nadu for the past 10 years. The Tamil Nadu Government may follow the regular premature release policy that is followed in the other neighboring states like Kerala, Karnataka and Andhra Pradesh, Telangana, etc. The present study reveals that 95% of parole absconders in Tamil Nadu have not re-engaged in crime, thus the parole absconding of the prisoner should not be judged very harshly by not granting them general amnesty/premature release. Hence the prison department should understand that parole is a form of restorative justice which seeks the prisoner to re-integrate in to the society, hence the parole policy should liberalized in Tamil Nadu, because a nation can be judged not by the condition of its citizens of higher strata but by the citizens of lower strata.

Recommendations:

- The Tamil Nadu Government may consider the release of life convicts (who served more than 10 years or 14 years) by setting advisory board on a regular basis in time bound manner.
- The wages of the prison inmates should be increased, at present for skilled labor, they are getting Rs.100 but for their up keeping and compensation only 30% remains with them. Hence the wages should be increased- because when they go in parole without money, their family considers them as a burden.
- The probation officer should check genuineness of the documents produced by the prison inmate, before recommending for parole.
- The awareness about parole absconding and its impact on general amnesty should be given to the inmates by the Prison department.
- With the help of advanced technologies like GPS and CCTNS, the electronic monitoring or tagging should be done to avoid parole absconding.
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The Phenomena of Parole Absconding: Role of Various Stakeholders in Tamil Nadu

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*****
NCRB ACTIVITIES AND ACHIEVEMENTS

1. Nodal Officer Meeting on 5/3/2019 to discuss the issues being faced by States/UTs in the implementation of CCTNS project

2. XXth All India Conference of Directors of Finger Print Bureaux
3. **34th Inception Day celebration at NCRB Auditorium**

4. **XXth All India Conference of Directors of Finger Print Bureaux**
5. Training on Cyber Crime Prevention against Women & Children (CCPWC) Scheme

6. XXth All India Conference of Directors of Finger Print Bureaux
7. Signing of MOU between National Crime Records Bureau and National Centre for Missing & Exploited Children (NCMEC), United States.

8. Workshop on Role of Technology in Reuniting Missing Children and Trafficked Persons.
9. SWACHHATA ABHIYAAN at NCRB premises

10. Participants of Finger Print Training at NCRB
Note for Contributors

The NCRB Journal is intended to encourage practitioners, academics, and aspiring writers to submit their original and previously unpublished work in English /Hindi for publication. Articles ranging from short vignettes to fully-developed articles written in a reader-friendly style on topics but not limited to Police Science, Law, Scientific Investigation, Criminology, Forensic Science, Finger Print Science, Biometric Science, Contemporary Legal issues, Cyber crime, Cyber terrorism, Cyber security, Socio-economic crime, Prisons and Analytical study may be sent. The submission of any solid research or practical methodology that would speak to the needs of those in the police service is also solicited. The journal will also encourage articles of serious nature supported by references and articles written by an academic pair with a police officer to write an academic article.

The manuscript should be typed in 12 point, double space with at least 1 inch margin in MS-Word. The manuscript normally should not exceed 5,000 words, however, lengthy articles may also be considered for publication on the discretion of editorial board. In articles of scientific nature and research, the manuscript should include an abstract of approximately 150 words and 4-5 keywords. All photos and illustrations should be of high quality, with good contrast and sharpness. Electronic images are required and must be saved as separate files in JPG, PNG or TIF format, with 300 dpi or higher resolution and a minimum of four inches wide. Bar charts, diagrams, and sketches, etc., should be drawn accurately and clearly. If a chart has supporting data, supply it in Excel format. A caption should accompany each graphic and should accurately describe what is represented in the graphic. For manuscript in Hindi, please use Unicode font (Mangal). The Manuscripts are subject to both review and editing. All manuscripts accepted for publication shall be property of NCRB Journal. No article or part of it shall be reproduced or used by author without permission. Please provide a brief biographical sketch for each author, describing their training and expertise in the subject area. Include the correct name, title, affiliation and contact information including a phone number and email address.

The article may be sent through e-mail (journal@ncrb.nic.in) or post to, Editor, NCRB Journal, National Crime Records Bureau, N.H.-8, Mahipalpur, New Delhi-110037.
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