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Jurisprudence

The role of DNA in criminal indictments in Israel

Esther Buchnik MA¹ | Barak Ariel PhD^{1,2} | Avi Domb PhD^{3,4} | Nir Treves MSc⁵ | Ron Gafny PhD⁶

¹Institute of Criminology, The Hebrew University of Jerusalem, Jerusalem, Israel

²Institute of Criminology, University of Cambridge, UK, University of Cambridge, Cambridge, UK

³Department of Medicinal Chemistry and Biopolymers, School of Pharmacy, Faculty of Medicine, Jerusalem, Israel

⁴Department of Forensic Sciences, Faculty of Law, Institute of Criminology, The Hebrew University of Jerusalem, Jerusalem, Israel

⁵Division of Clinical Pharmacy, School of Pharmacy, Faculty of Medicine, The Hebrew University of Jerusalem, Jerusalem, Israel

⁶DNA and Forensic Biology Laboratory, Division of Identification and Forensic Science, Israel Police, National HQ, Jerusalem, Israel

Correspondence

Esther Buchnik MA, Institute of Criminology, The Hebrew University of Jerusalem, Mt. Scopus, Jerusalem 9190501, Israel.

Email: esther.buchnik@mail.huji.ac.il

Abstract

In their investigations of criminal cases, law enforcement agencies rely heavily on forensic evidence. Numerous studies have examined the scientific and technological advancements of DNA testing, but little evidence exists on how the availability of DNA evidence influences prosecutors' decisions to move cases forward in the criminal justice system. We created a new database by juxtaposing data from the Forensics Division of the Israel Police, which recorded the presence (or not) of DNA profiles in criminal cases ($n=9862$), and data on the indictment decision for each case (2008–2019). Rates of indictments are computed for each case, and trend lines are used to present variations in the rates of indictment decisions with and without DNA profiles. Approximately 15% of all criminal cases without DNA presented to the prosecutor's office are subsequently prosecuted, compared with nearly 55% of cases with DNA profiles. The presence of DNA evidence influences the prosecutor's decision to move a case forward in the criminal justice system. Utilizing a scientific approach to prosecute offenders is a welcome development; however, DNA evidence is not infallible, and caution must be exercised in regard to DNA's overuse in the legal system.

KEYWORDS

confessions, decision-making, DNA evidence, indictments

Highlights

- A unique database of criminal cases with and without DNA hits was established.
- DNA evidence triples the likelihood of indictment in criminal cases.
- Differences in indictment proportions are not conditional on yearly fluctuations in the number of criminal cases.

1 | INTRODUCTION

Legal scholars have long observed that the “Queen of Evidence” in police investigations is the confession [1, 2]. The criminal justice system broadly consented to this view, and when suspects admitted guilt, the case was substantially more likely to be prosecuted in a court of law, and the courts (and juries) were equally likely to convict based on a confession. The fundamental view was that the innocent

does not take responsibility for crimes they did not commit [3, 4]; therefore, a case where the suspect confessed was usually a guarantee for a conviction, especially if accompanied by a plea bargain.

It was not until the influential movement of the global “Innocence Project” (<https://innocenceproject.org>) that we got a closer look at the making of justice and the potential for wrongfully convicting people based on their confessions. This movement systematically reviewed cases where forensic samples were available and from which

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DNA samples were recovered. The results show compelling evidence that casts doubt over the conclusiveness of the court's outcome when the suspect signs a self-incriminating admission. A myriad of reasons why a person who is not guilty might nonetheless declare wrongdoing were unearthed, including unlawful duress during police interrogations, the mental incapability of the suspect, intoxication, and routine investigation "tricks" by police detectives to convince the innocent suspect to confess—at unacceptable rates [5].

Of course, the risk of an admission of guilt by the innocent has always been recognized, from Jewish Sanhedrin law, which has always cast doubt over self-incriminating confessions, through the American realist movement at the turn of the twentieth century, who reminded us that what judges had for breakfast can affect their judicial decisions more than the facts of the case, and all the way to influential cases in late modernity that led to increasing criticism over admissions of guilt—especially racialized wrongful convictions [6]. Thus, a degree of skepticism formed over the ability to secure a free and willing confession. Today, more than ever, the confession—the "Queen of Evidence"—reigns no more [7–9].

In recent years, with the advent of forensic sciences, a new contender to the throne has emerged. Specifically, DNA matches are now considered more reliable by the scientific and legal communities than ever before. When expert testimony supports the argument that a sample taken from the suspect has accurately, validly, and reliably matched them with the crime, the criminal justice system frequently views the forensic evidence as *le coup de grâce* [10]. The public may have a more negative (or positive) view of the conclusive nature of strong forensic evidence [11], but court decisions are nevertheless affected by its presence. The aforementioned Innocence Project fundamentally relies on DNA evidence to correct errors, thus providing support for DNA as a robust piece of evidence.

However, our impressions of the fall in the status of confessions and the rise in the status of DNA are largely based on court decisions or high-profile case studies in which the admission of guilt has been squandered or reversed. To show a systemic turning point, we need evidence of an effect on the front end of police practices and prosecutorial decisions, specifically at the point of indictment: Are suspects more likely to be prosecuted in the presence of DNA evidence?

We are not aware of any prior research, largely because access to such records is limited. At least in Israel, the decision to prosecute and the type of evidence available to prosecutors are not publicly available or digitized. Previous studies (reviewed below) have indicated broader trends—for example, that prosecutors are driven by the likelihood of conviction—but objective indicators such as the type of evidence retrieved in each case are missing from the literature. In this paper, we fill this void with a unique dataset.

1.1 | The role of DNA in pretrial decision-making

Prosecutors have extensive discretion, which makes it essential to examine the considerations that influence their decision-making when presenting forensic evidence [12]. A central consideration weighed by prosecutors when deciding whether to indict is the degree of

certainty of obtaining a conviction [13–15]. Therefore, Henry and Jurek [16] contended that prosecutors are heavily influenced by the presence of DNA evidence in some criminal cases, such as sexual assault cases. DNA may be viewed as strong legal proof that the offender is tied to the scene of the crime and represents a compelling piece of incriminating evidence. Accordingly, it is plausible that DNA evidence would strongly affect the prosecutor's decisions.

Furthermore, prosecutors are forced to deal with an omnipresent backlog of cases, budget constraints, agency policies, and politics, all of which make the indictment decision based on "strong" evidence a heuristic (see more broadly Tversky & Kahneman [17]): DNA evidence becomes synonymous with a potentially effective prosecution. This implies that when prosecutors are presented with cases featuring credible DNA evidence, they are likely to identify the case as a "slam dunk" [18]. Some studies have considered this view (e.g., [15]), yet they have not utilized official data to substantiate the extent to which DNA is indeed a heuristic that dictates the degree to which cases will progress through the criminal justice system.

2 | METHODS

2.1 | Data and procedure

We obtained data from the Forensics Division of the Israel Police, which took months of data-sharing negotiations as records on DNA at the level of the indictment decision are not made public. Furthermore, the original records were not collated in one electronic warehouse; therefore, data collection was a laborious procedure during which we manually built a dataset of 9862 cases in which there was a visible DNA "profile" between the years 2008 and 2019; that is, a profile sample was drawn from a crime scene for which a suspect with a matching DNA profile was found.

To examine the strength of the DNA evidence compared with other evidence, we used the statistical yearbooks of the Israel Police as published on the police website [19]. This database includes all decisions to indict on a yearly basis. Therefore, each DNA profile had to be juxtaposed with the case and subsequently juxtaposed again with a document that included the prosecutor's decision on whether to indict.

2.2 | Variables

Our dataset contained several key variables: (a) The number of criminal cases opened by the Israel Police 2008–2019 [our data purposely end prior to COVID-19 lockdowns, which have caused disruptions through the criminal justice system (see Nivette et al. [20])]. A "case" is an investigation opened following the suspicion of a criminal offense. An investigation case can include one or more criminal offenses. (b) The number of indictments filed in all the criminal cases opened by the Israel Police throughout the years of the study. An indictment is a document submitted to the court at the beginning of the legal process, detailing the acts and evidence that substantiate the suspicion

that the suspect committed a criminal offense. This document is submitted when the prosecuting authority decides there is sufficient evidence in the investigation file to prima facie prove guilt and the circumstances of the matter are suitable for prosecuting the suspect. (c) The number of cases in which DNA tests were conducted by the Israel Police in each year of the study. This variable refers to the number of cases in which DNA profiles were produced by the Israel Police throughout the years of the study. These are cases in which a match between the profiles was produced from a sample taken from an exhibit at a crime scene and linked to the suspect.

3 | RESULTS

Figure 1 shows that there were only several dozen indictments in cases with a matched DNA profile in the years 2008–2010. However, from 2011 onward, we saw a sharp increase, which reached a record number of 775 cases resulting in an indictment in 2016. From 2017 onward, we see a slight decline, with 618 indictments in 2019, approximately a 20% reduction from the peak in the dataset.

Figure 2 illustrates the main findings of our analysis. Over the study period, the average rate of indictment in all cases was approximately 15.1%, with a relatively stable variance [standard deviation (SD) of 0.8%]. However, 45.9% of criminal cases with DNA were subsequently indicted, with a steady yet clear increase over time (from 26.3% to 53.6% in 2019; SD = 11.8%).

Examining Figures 1 and 2 holistically, the contributing power of DNA is steadily increasing and presently strong, until the final year in the dataset, where there is a nearly 4:1 likelihood of indictment when DNA evidence is present. In other words, whereas approximately 1.5 of every 10 criminal cases without DNA presented to the prosecutor's office are prosecuted, more than half of cases with DNA are prosecuted.

4 | DISCUSSION

The use of DNA tests as evidence by law enforcement agencies, prosecutors, and the courts began in the 1980s, when they were broadly recognized as having the "highest rank" in criminal law [21]. This mirrors the high certainty of conviction whenever DNA evidence is featured in a case. In subsequent years, technological and

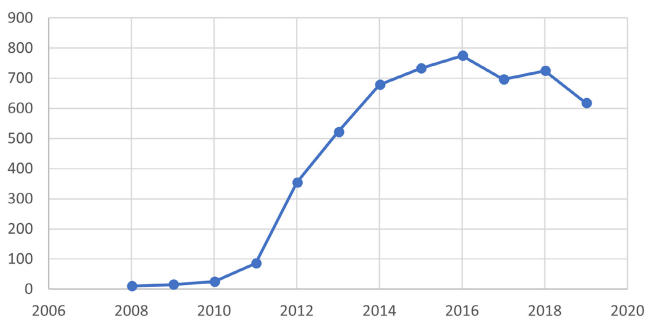


FIGURE 1 Indictments with DNA evidence (Israel, 2008–2019).

scientific advancements have enabled the testing and extraction of DNA profiles from minute amounts of biological matter deposited on items by way of touch [22, 23]. These developments have led to higher probabilities of discovering perpetrators—and with them, the belief that DNA is a powerful piece of evidence.

Despite these perceptions, the role of DNA at an institutional level has remained unknown—likely due to a lack of access to the necessary data. Thus, our findings present the explicit status of DNA evidence at a crucial juncture of the criminal justice system: the decision of prosecutors to take the case to court. We show a sharp rise in the number of indictments and that the odds of indictment in criminal cases with matched DNA profiles are approximately 55%, whereas the overall odds of indictment in all criminal cases without matched DNA are approximately 15%.

On the one hand, we view the reliance on scientific evidence as an encouraging step, especially given the system's long-lasting reliance on confessions. Between the concerns associated with the validity of DNA matching and the dire concerns associated with wrongful confessions, unscientific evidence, and reliance on witnesses, DNA evidence appears to be a more preferable method of incriminating (or exonerating). DNA evidence is less susceptible to psychological biases and prejudice (however, cf. [24]); it is blind to the background characteristics of the accused and is less contestable than other forensic evidence, including the previous Queen of Evidence, the confession. Instead, a new King of Evidence was born.

On the other hand, we caution against blindly relying on DNA as it remains a circumstantial type of evidence, meaning that even when there is a positive match between a sample taken from the accused and a sample found at the scene of the crime, the match does not prove culpability. In addition, whereas more than one out of two police cases with DNA evidence will be indicted by prosecutors, DNA evidence is not a panacea. Not all DNA evidence is created equal, and there are evidentiary differences between samples identified on movable objects versus fixed objects; profiles produced from bodily fluids or other biological parts such as hair, indoor or outdoor surfaces; and many other features of the crime scene—all of which yield different levels of assuredness for the match [25]. Therefore, although DNA is considered a strong piece of incriminating evidence, there are additional factors that affect the decision to prosecute, including considerations about the validity of the DNA evidence itself.

We also express reservations about the ubiquity of our conclusions. There may be specific circumstances that characterize the Israeli criminal justice system that do not appear elsewhere. For example, the timing of the presentation of DNA evidence is not identical in all jurisdictions. In Israel, the decision to file an indictment lies with the police prosecutor or the Ministry of Justice's prosecutor. There is no grand jury system in place, and an indictment is submitted by the prosecution directly to the court. Moreover, in most DNA cases, the match results come from a suspect's identification in the police DNA database rather than from the investigating unit's recommendation. As a result, in many instances, the case is transferred to the prosecutor's office after a DNA match is found. However, it is

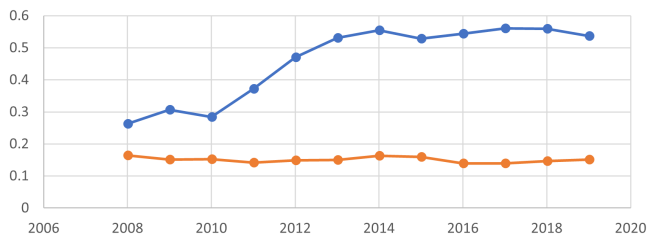


FIGURE 2 Indictment proportion in cases with DNA findings compared with the indictment proportion in all cases. The blue curve reflects the indictment proportion in cases with DNA findings in 2008–2019. The orange curve reflects the indictment proportion in all investigated cases, during the same years.

not common in many areas of the United States to have DNA results readily available at the time of indictment, so the impact on prosecutorial decision-making at the pretrial stage may be limited. Future research in such legal systems should therefore attempt to establish a correlation between DNA evidence and cases that resulted in prosecution, rather than tying the decision to indict to forensic evidence.

Furthermore, we are cognizant that there are additional variables that may affect the relationship between the decision to indict and forensic evidence. On the one hand, as shown in Figure 2, the relative rate of indictment in cases with and without DNA remains stable, despite possible extraneous variables—which somewhat strengthens our conclusions. However, our study is observational, not causal [26]. The increase in evidence submitted to the crime laboratory may indicate a rise in the use of DNA testing in new types of cases, such as touch DNA as opposed to DNA found on the victim in sexual assault cases. It could also be the result of additional funding for testing specific types of evidence, such as sexual assault kits, which yield more conclusive results than mixture cases in property crimes. Furthermore, changes in the composition of the prosecutor's office may also affect their reliance on forensic evidence. These and other additional variables should be controlled for in further studies in this area of research.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

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