



National DNA Database Strategy Board Annual Report 2017/18

National DNA Database Strategy Board Annual Report 2017/18

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Ministerial Foreword

The Government is committed to ensuring that the National DNA Database (NDNAD) and the National Fingerprint Database are instrumental in supporting policing and that they continue to be an effective tool for the police in helping to solve crimes and also to prove people's innocence.

In 2017/18 the NDNAD provided 30,780 routine matches, including to 716 homicides and 694 rapes, and 301 urgent matches, including to 83 homicides and 54 rapes. This is a slight decrease in the number of matches reported compared to the previous year, but it continues to demonstrate the effectiveness of the NDNAD. The percentage of crime scene profiles which matched a subject profile on load to the NDNAD (referred to as the match rate) was 66%. This has remained the same as the previous year.

This report includes information on the National Fingerprint Database (policing collections) and the National DNA Database. Work on the Home Office Biometrics (HOB) DNA Strategic Project has continued this year. This project will deliver a replacement platform on which the NDNAD will sit with enhanced functionality and increased international capability, creating better links with similar databases in other countries. In addition there has also been significant progress made by HOB on improving fingerprint checking and searching.

Baroness Susan Williams

Minister of State for Countering Extremism and Minister for Equalities

Chair of the Strategy Board's Foreword

I am pleased to present this report on behalf of the Chair of the Forensic Information Database (FIND) Strategy Board. Gary Pugh chaired the FIND Strategy Board until April 2018 when he retired and I would like to acknowledge his significant contribution both as chair and, throughout his service, to forensics. ACC Ben Snuggs has recently taken over as the new FIND Strategy Board chair.

During the year the work on the governance and oversight of the Fingerprint database and the work to align the management of this function with that for DNA has continued. This supports the aims of the Government's strategy for forensic science including clearer and more transparent governance.

The Home Office Biometrics (HOB) Programme project to deliver a replacement (with enhanced capability) to the technology on which NDNAD is based has continued this year. Once complete, the new technology will enable NDNAD and the National Fingerprint Database to make better links with the comparable database in other countries enabling the police, not just in this country, but abroad, to bring even more offenders to justice.

There has also been significant work carried out by HOB to improve fingerprint matching and checking; this report outlines these pieces of work and provides further information on them. Other technological developments this year have seen the Contamination Elimination Database project continuing to progress with these searches now being carried out as business as usual and several rapid hit pilots being undertaken. Work has been carried out on the NDNAD and the National Fingerprint Database to ensure they were ready for the implementation of the new GDPR.

The NDNAD has continued to show its effectiveness as a tool for policing with the match rate, following the loading of a crime scene profile, remaining at 66%.

James Vaughan

Chief Constable

NPCC Forensic Portfolio Board

The Forensic Information Database Strategy Board

Governance and oversight of the National DNA Database¹ is provided by the Forensic Information Database (FIND) Strategy Board, referred to in statute as the NDNAD Strategy Board. Following the publication of the government's Forensic Science Strategy, the governance role of the Strategy Board was expanded from the NDNAD alone to cover the National Fingerprint Database, during 2016/2017 and the name was changed accordingly. Since 31st October 2013, the Board has operated on a statutory basis.² The Board has a number of functions:

- To provide governance and oversight for the operation of the National DNA and Fingerprint Databases
- it must issue guidance about the destruction of DNA profiles and fingerprints retained under the Protection of Freedoms Act 2012 (PoFA)³;
- it may issue guidance about the circumstances under which applications for retention under PoFA⁴ may be made to the Commissioner for the Use and Retention of Biometric Material ('The Biometrics Commissioner')^{5 6};
- it must publish governance rules which must be laid before Parliament⁷; and
- it must make an annual report to the Home Secretary about the exercise of its functions⁸.

The governance rules⁹ set out in more detail the way in which the Board operates, these are being rewritten to reflect the change in remit of the Board, and include its objectives¹⁰ which are to implement strategy and policy to ensure that:

- the most effective and efficient use of DNA and fingerprint databases to support the purposes laid down in the legislation (and no other), these are;
 - the interests of national security;
 - terrorist investigations;
 - the prevention and detection of crime;
 - the investigation of an offence or the conduct of a prosecution; and
 - the identification of a deceased person.
- the public are aware of the governance, capability and limitations of the NDNAD and fingerprint databases so that confidence is maintained in its use across all communities;

¹ As set out under section 3 of the governance rules.

² As set out under section 63AB of the Police and Criminal Evidence act 1984 (PACE) as inserted by section 24 of PoFA.

³ Section 63AB(2), Police and Criminal Evidence Act 1984.

⁴ Ibid 2, section 63G.

⁵ Ibid 2., section 63AB(4).

⁶ The Biometrics Commissioner's latest annual report is available at:

<https://www.gov.uk/government/publications/biometrics-commissioner-annual-report-2017>

⁷ Ibid 2, section 63AB(6).

⁸ Ibid 2, section 63AB(7).

⁹ The governance rules are published at: <https://www.gov.uk/government/publications/national-dna-database-strategy-board-governance-rules>.

¹⁰ As set out under section 4 of the governance rules.

- That the future use of the NDNAD and fingerprint databases takes account of developments in science and technology and delivers improvements in efficiency and effectiveness across the Criminal Justice System.
- The most proportionate, ethical and transparent use of the NDNAD and fingerprint databases across the Criminal Justice Service.
- The most ethical and effective use of international searching of UK DNA profiles and fingerprints.

The core members of the Board are:

- a representative of the National Police Chiefs' Council
- a representative of the Home Office;
- a representative of the Association of Police and Crime Commissioners;

Additional members¹¹ include:

- the Chair of the Biometrics and Forensics Ethics Group ¹²
- the Information Commissioner (or representative);
- the Forensic Science Regulator¹³ (or representative);
- the Biometrics Commissioner (or representative);
- representatives from the police and devolved administrations of Scotland and Northern Ireland; and
- such other members as may be invited.

The rules go on to specify:

- the responsibilities of the Board;
- the appointment of the Chair;
- rules around audits;
- the delegation of functions; and
- the proceedings of the Board.

They may be added to, repealed or amended with the agreement in writing of the Home Secretary.

¹¹ As set out under section 5 of the governance rules .

¹² The Ethics group annual report is available at The report is available at: [The 2016 National DNA Database Ethics Group annual report has been published - GOV.UK](#)

¹³ The Regulator's latest annual report is available at: <https://www.gov.uk/government/publications/forensic-science-regulator-annual-report-2017>

The Biometrics and Forensics Ethics Group

The NDNAD Ethics Group was established in 2007; an independent group that was set up to provide advice to Ministers and the Strategy Board on the ethical operation of NDNAD. On 20th July 2017 the NDNAD Ethics Group was replaced by the Biometrics and Forensics Ethics Group (BFEG) following recommendations made within the Triennial Review of Home Office Science Bodies. The remit of the BFEG expands beyond that of the NDNAD Ethics Group and includes ethical issues associated with all forensic identification techniques including, but not limited to, facial recognition technology and fingerprinting. The final Annual Report of the NDNAD Ethics Group was published on 30th October 2017¹⁴.

In its report, the future work plan for the Ethics Group was outlined;-

- To ensure that all police and supplier databases containing biometric information are subject to robust governance requirements and to provide ethical advice on their operations.
- To provide support and advice on ethical matters to the Biometrics Commissioner and others as required, including police forces.
- To embed new governance arrangements and responsibilities for the EG in light of the findings of the Triennial Review of the Group¹⁵.
- To develop a set of principles and ethical values to be considered by the EG when undertaking ethical reviews for the use and retention of biometric identifiers.
- To continue to monitor and assess potential disproportionate or discriminatory effects that the use and operation of biometric databases may have on ethnic minority groups and vulnerable people.
- To review the policies and safeguards that are developed if the UK rejoins Prüm and to ensure that the international exchange of biometric information is ethical.
- To continue to monitor the treatment of children and young people in relation to DNA and fingerprint sampling and retention to ensure that they are safeguarded and their distinct rights are recognised.
- To monitor the development of Next Generation Sequencing (DNA) technologies and their applications for the investigation of crimes.
- To monitor developments and consider the ethical issues surrounding rapid DNA testing at crimes scenes.
- To monitor the retention and use of custody images and the implementation of governance structures.
- To monitor the implementation of elimination databases.
- To monitor the review of errors in the DNA and Fingerprint supply chains.
- To review the annual report of the FIND Strategy Board and other policy and consultation documents prepared by the Home Office.

¹⁴ The report is available at: [The 2016 National DNA Database Ethics Group annual report has been published - GOV.UK](#)

- To review policy on the Forensic Information Databases access and usage and review opportunities for research using the NDNAD and the National Fingerprint Database.

1. The National DNA Database (NDNAD)

1.1 About NDNAD

1.1.1 Introduction

NDNAD was established in 1995. It holds electronic records of deoxyribonucleic acid (DNA), known as profile records, taken from individuals and crime scenes, and provides the police with matches linking an individual to a crime scene or a crime scene to another crime scene. Between April 2001 and March 2018, it produced **675,395**¹⁵ matches to unsolved crimes.

1.1.2 DNA profile records

NDNAD holds two types of DNA profile:

i. Individuals

The police take a 'DNA sample' from every individual that they arrest. This consists of their entire genome (the genetic material that every individual has in each of the cells of their body) and is usually taken by swabbing the inside of the cheek to collect some cells. The sample is then sent to an accredited laboratory, known as a 'forensic service provider' (FSP), who look at discrete areas of the genome (which represent only a tiny fraction of that individual's DNA) plus the sex chromosomes (XX for women and XY for men¹⁶) and use these to produce a 'subject' profile consisting of 16 pairs of numbers (which correspond to the 16 areas analysed) and a sex marker derived from the sex chromosomes. The profile is almost unique; the chance of two people having identical profile records is less than one in a billion¹⁷. Aside from sex, a DNA profile does not reveal any other characteristics of the individual it is taken from such as their race or physical appearance.

An example profile would be:

X,Y; 14,19; 9.3,9.3; 12,15; 22,23; 28,30; 11,14; 19,20; 9,12; 13,15; 18,18; 15,15; 10,13; 14,16; 18,21; 15,16; 24,29

The DNA profile is loaded to NDNAD where it can be searched against DNA profile records recovered from crime scenes.

¹⁵ This figure includes matches between individuals and crime scenes and between different crime scenes.

¹⁶ An individual's DNA is contained within discrete structures within a cell known as chromosomes. Men have a copy of an X and Y chromosome whereas women have two copies of the X chromosome.

¹⁷ As agreed with the Forensic Science Regulator and the Crown Prosecution Service, in order to give a conservative figure, routine statistical reporting of DNA evidence in court continues to be reported as 'one in a billion'. This is to ensure that the courts continue to understand the likelihood that the DNA found could match to a different individual than the one on trial. Certain cases might be reported with a more precise probability; this is assessed on a case-by-case basis.

ii. Crime scenes

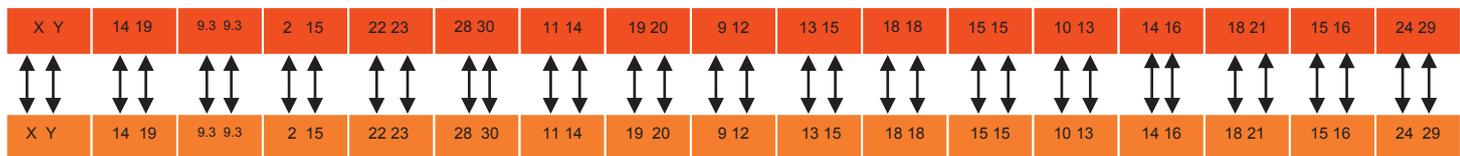
DNA is recovered from crime scenes by police Crime Scene Investigators (CSIs). Nearly every cell in an individual's body contains a complete copy of their DNA so there are many ways in which an offender may leave their DNA behind at a crime scene (for example, in blood or skin cells left on clothing or surfaces) even just by touching something. CSIs examine places where the perpetrator of the crime is most likely to have left traces of their DNA behind. Items likely to contain traces of DNA are sent to an accredited laboratory for analysis. If the laboratory recovers any DNA, they will produce a crime DNA profile which can be loaded to NDNAD.

1.1.3 Matches

NDNAD searches the DNA profile records from crime scenes against the DNA profile records from individuals or other crime scenes. A match occurs when the 16 pairs of numbers (and sex marker) representing an individual's DNA are an exact match to those in the DNA left at the crime scene or when a crime scene profile matches another crime scene profile.

i. Full Match

The diagram below illustrates a match between a subject profile (in red) and a crime scene profile (in orange).

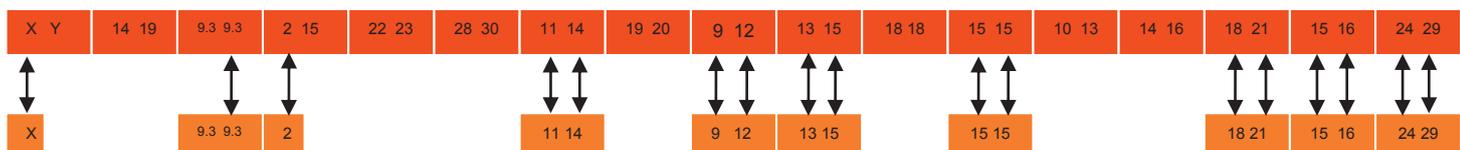


Where a match is made, this indicates that the individual may be a suspect in the police's investigation of the crime. It may also help to identify a witness or eliminate other people from the police investigation.

ii. Partial Match

Sometimes it is not possible to recover a complete DNA profile from the crime scene; for instance where the perpetrator has tried to remove the evidence or because it has become degraded. In these circumstances, a partial crime profile is obtained, and searched against individuals on NDNAD, producing a partial match.

The diagram below illustrates a partial match between a subject profile (in red) and a crime scene profile (in orange).



Partial matches provide valuable leads for the police but, depending on how much of the information is missing, the result is likely to be interpreted with less certainty than a full match.

1.1.4 Familial searches

One half of an individual's DNA profile is inherited from their father and the other half from their mother. As a result, the DNA profile records of a parent and child, or two siblings, will share a significant proportion of the 16 pairs of numbers. This means that, in cases where the police have found the perpetrator's DNA at the crime scene, but they do not have a profile on NDNAD, a search of the database, known as a 'familial search', can be carried out to look for possible close relatives of the perpetrator. Such a search may produce a list of possible relatives of the offender. The police use other intelligence, such as age and geography, to narrow down the list before investigating further. The search is computerised and involves only the DNA profile records on NDNAD.

Due to the cost and staffing needed to carry out familial searches, they are used only for the most serious of crimes. All such searches require the approval of the FINDS Strategy Board. A total of **13** familial searches were carried out in 2017/18.

1.1.5 Identical siblings

The inherited nature of DNA means that identical siblings will share the same DNA profile. However, even identical siblings have different fingerprints so these can be used to differentiate them. Fingerprints may be taken by the police electronically from any individual that they arrest. They are then scanned into IDENT1, the national fingerprint database. Unlike DNA (where samples have to be sent to a laboratory for processing) fingerprints can be loaded instantly allowing police to verify a person's identity at the police station, thereby ensuring that their DNA profile and arrest details are stored against the correct record.

As at 31st March 2018, **9,424** sets of identical twins and **13** sets of identical triplets have been identified on the NDNAD.

1.1.6 Who runs NDNAD?

Since 1st October 2012, NDNAD has been run by the Home Office on behalf of UK police forces. 36¹⁸ vetted Home Office staff have access to it. Police forces own the profile records on the database, and receive notification of any matches, but they do not have access to it.

¹⁸ This includes 8 administration accounts.

1.2 Who is on NDNAD?

1.2.1 Number of profile records held on and deleted from NDNAD

As at 31st March 2018, NDNAD held **6,196,278** subject profile records and **590,404** crime scene profile records. In 2017/18, **259,099** new subject profile records were loaded to NDNAD, together with **40 078** new crime scene profile records.

Some individuals have more than one profile on NDNAD. This can occur where the force choose to load another record or where they are sampled twice under different names. **13.3%**¹⁹ of the profile records on NDNAD are duplicates of an individual already sampled. Allowing for these duplicates, the estimated number of individuals on NDNAD is **5,374,062**.

In 2017/18 **130,520** subject profile records were deleted from NDNAD (including **180** under the 'Deletion of Records from National Police Systems guidance ('the Record Deletion Guidance'); see '2.4 Early Deletion'). Additionally, **4,983** crime scene profile records were deleted.

Figure 1: Number of subject profile records held on NDNAD (in millions) (2008/09 to 2017/18)^{20 21}



¹⁹ This figure is based on the assumption that a subject profile record that matches a second subject profile record is one individual (unless determined to belong to identical twins or triplets).

²⁰ Source: NDNAD management information.

²¹ The deletion of profiles which did not meet the retention criteria for profile records brought in by PoFA was completed by 30th September 2013 hence the drop in the number of profile records.

Figure 2a: Number of subject profile records loaded onto NDNAD per year (in thousands) (2008/09 – 2017/18)^{22 23 24}

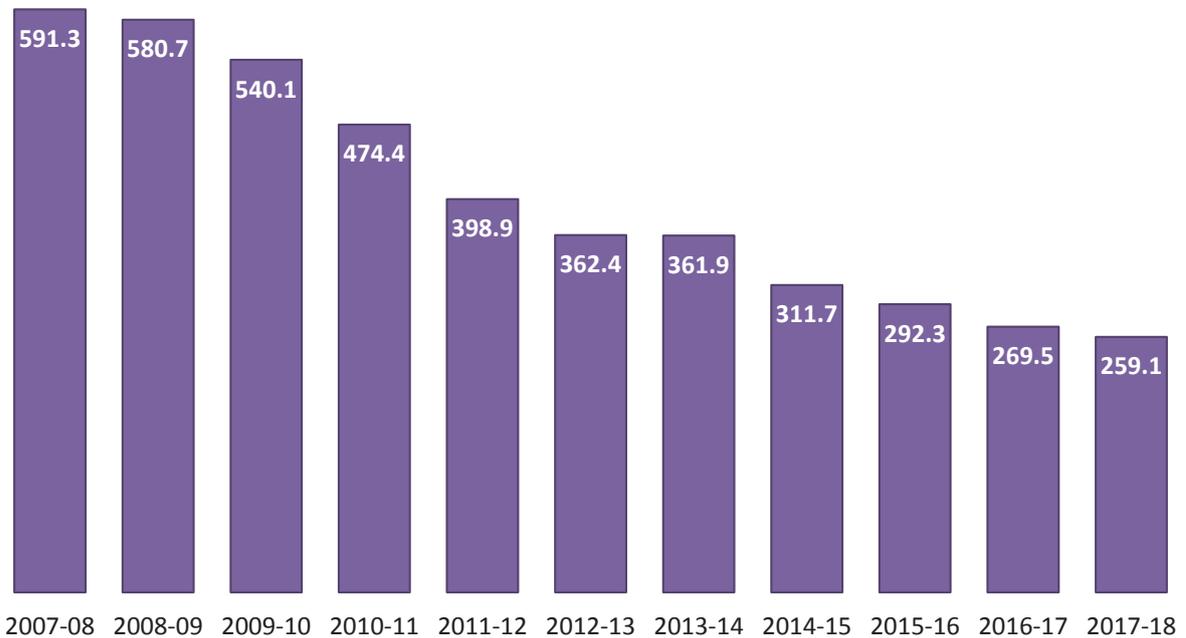
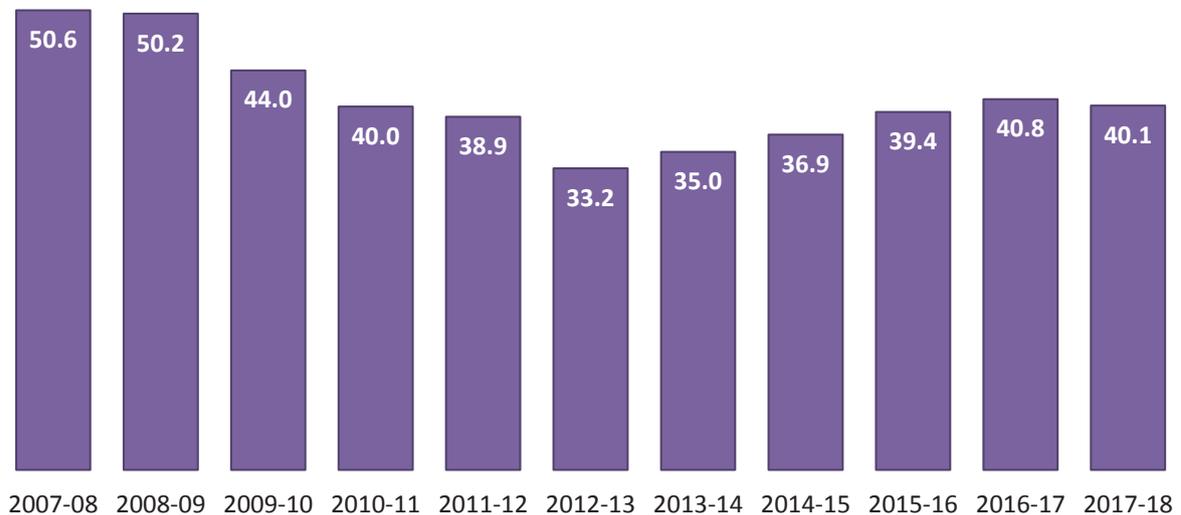


Figure 2b: Number of crime scene profile records loaded onto NDNAD per year (in thousands) (2008/09 – 2017/18)^{25 26}



²² Due to technical difficulties accessing the management information system used to record data on NDNAD, the figures for 2014/15, 2015/16 & 2016/2017 has been calculated using a different methodology from previous years.

²³ There are some NDNAD profile records held for which the load date is unknown; these are not included in these figures.

²⁴ Source: NDNAD management information.

²⁵ Source: NDNAD management information.

²⁶ Due to technical difficulties accessing the management information system used to record data on NDNAD, the figures for 2014/15, 2015/16 & 2016/2017 has been calculated using a different methodology from previous years and are not directly comparable with the figures used in Table 1

Table 1: Number of crime scene profile records loaded by crime type (2017/18)^{27 28 29}

Crime type	Number of crime scene profile records loaded	Proportion of total number of crime scene profile records loaded (%)
Burglary (including aggravated)	17,096	45%
Vehicle Crime	6,228	16%
Criminal Damage	2,251	6%
Violent Crime	1,942	5%
Drugs	1,918	5%
Robbery	1,740	5%
Theft	700	2%
Rape	841	2%
Murder (including attempted) and manslaughter	953	2%
Traffic (including fatal)	519	1%
Firearms	573	1%
Other sexual offences ²⁷	238	1%
Arson and fire investigations	254	1%
Fraud	122	0%
Public Order	136	0%
Abduction and kidnapping	146	0%
Blackmail	12	0%
Explosives	13	0%
Other	2,524	7%
TOTAL	38,206	100%

²⁷ Source: NDNAD management information.

²⁸ Offence types are recorded by forensic staff processing the DNA sample and do not correspond to police recorded crime codes.

²⁹ Due to technical difficulties accessing the management information system used to record data on NDNAD, these figures have been calculated using a different method to the methodology used prior to 2014/15 and are not directly comparable to the figures used in Figures 2b.

1.2.2 Geographical origin of subject profile records on NDNAD

NDNAD holds profile records from all UK police forces (as well as the Channel Islands and the Isle of Man) but only profile records belonging to England and Wales forces are subject to PoFA³⁰. Scotland and Northern Ireland also maintain separate DNA databases; however, due to the likelihood of offenders moving between UK nations, profile records loaded to these databases are also loaded to NDNAD.

Table 2: Number of subject and crime scene profile records retained on NDNAD by nation (as at 31st March 2018)^{31 32}

Nation	Subject profile records	Crime scene profile records	TOTAL
England ³³	5,320,254	539,972	5,860,226
Scotland	336,286	24,122	360,408
Wales	353,614	18,038	371652
Northern Ireland	145,573	5,882	151455
Other ³⁴	40,551	2,390	42941
TOTAL	6,196,278	590,404	6,786,682

1.2.3 Sex, age and ethnicity of individuals on NDNAD

The subject profile records held on NDNAD all come from people who have been arrested for an offence, so the composition is different from that of the general population. For example, only half the UK population is male but the majority of DNA profile records belong to men, because the majority of those arrested are male.

³⁰ Scotland and Northern Ireland have their own retention regime.

³¹ Source: NDNAD management information.

³² NDNAD does not hold individuals' addresses. The geographical information provided is based on the location of the police force that submitted the profile record.

³³ Includes the British Transport Police

³⁴ Includes Isle of Man, Guernsey, Jersey, Channel Islands, Ministry of Defence police forces, Criminal Records Office, National Crime Agency, Her Majesty's Revenue and Customs, Criminal Cases Review Commission and the Prisoner Sampling Programme.

Figure 3a: Proportion of subject profile records on NDNAD by sex (as at 31st March 2018)³⁵

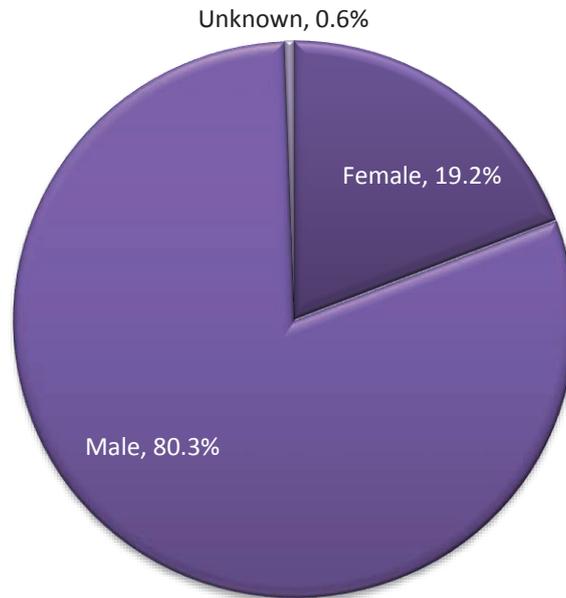
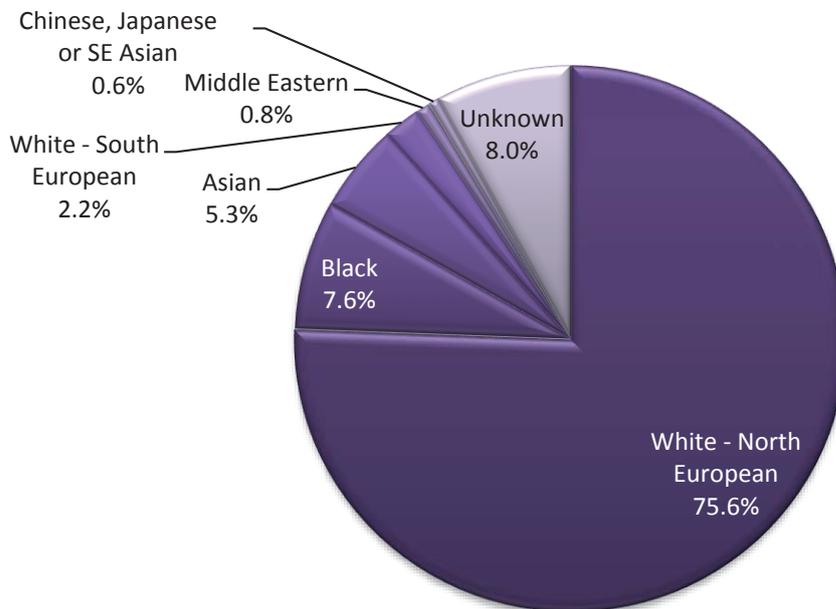


Figure 3b: Number of subject profile records on NDNAD by ethnicity, as determined by the sampling officer (as at 31st March 2018)^{36 37}

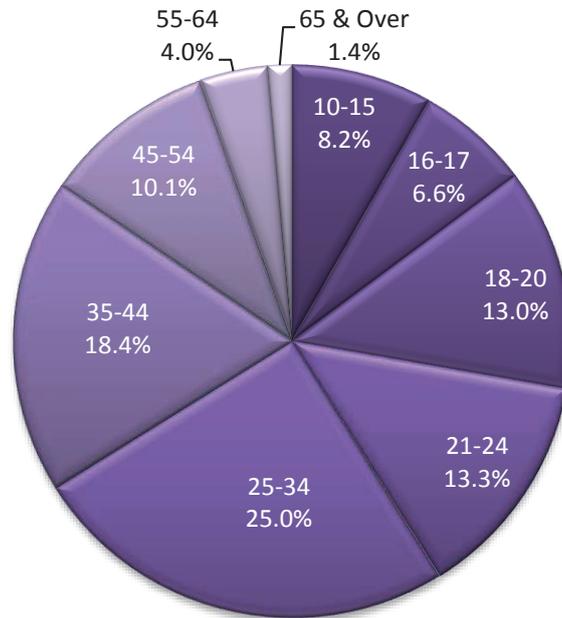


³⁵ Source: NDNAD management information.

³⁶ Source: NDNAD management information.

³⁷ The ethnicity of the individual is determined by the police officer who took the DNA sample. Unknown profile records refer to those where the officer either selected 'ethnicity unknown' on the recording form or where there was no ethnicity data accompanying the profile record.

Figure 3c: Number of subject profile records by age at time of loading onto NDNAD (as at 31st March 2018)^{38 39}



These data are published quarterly on NDNAD web page on www.gov.uk⁴⁰. The age of criminal responsibility in England and Wales is 10; there was 1 profile from a children aged under 10 on NDNAD. This was a Scottish Sample which was taken from a 'Vulnerable person' (an individual who was believed to have the potential to come to harm and / or go missing) and was loaded with appropriate consent and authorisation for retention and searching on the NDNAD.

³⁸ Source: NDNAD management information.

³⁹ This is calculated from the date of birth provided by the individual to the police officer at the time of arrest.

⁴⁰ The data are available at: www.gov.uk/government/organisations/home-office/series/dna-database-documents

1.3 How many crimes does NDNAD help solve?

1.3.1 Introduction

NDNAD matches crime scene profile records against subject profile records and other crime scene profile records, providing the police with invaluable information that helps them to identify possible suspects and solve crimes (albeit that a DNA match in itself is not sufficient to secure a conviction so not every match will lead to a crime being solved).

1.3.2 Types of searches

i. Routine loading and searching

As described at paragraph 1.1.2, samples are usually profiled and the profile records are then loaded to NDNAD for routine searching. Routine matches made from profile records loaded to NDNAD are shown in table 3a below.

ii. Non-Routine and urgent searches

In order for a profile to be uploaded to NDNAD, it must consist of a minimum of four pairs of numbers and a sex marker (for crime scene profile records) and a full profile⁴¹ (for subject profile records). Where this criterion is not met, for crime scene records, it is nonetheless possible to carry out a non-routine search of NDNAD. For the most serious crimes, NDNAD provides an urgent non-routine search service which is available 24 hours a day.

Matches made following non-routine searches are shown in table 3b and those made following urgent searches in table 3c.

1.3.3 Match rate

i. Overall match rates

In 2017/18, the chance that a crime scene profile, once loaded onto NDNAD, matched against a subject profile stored on NDNAD was **65.5%**⁴². It does not include crime scenes that match another crime scene on loading, or where a profile was deleted in the same month as it was loaded.

Further matches will occur when a new subject profile is added to NDNAD and matches to a crime scene profile already on it. As at 31st March 2018, there were **200,357**⁴³ crime scene profile records on NDNAD that had not yet been matched. The crimes relating to these crime scenes might be solved if the perpetrator's DNA was

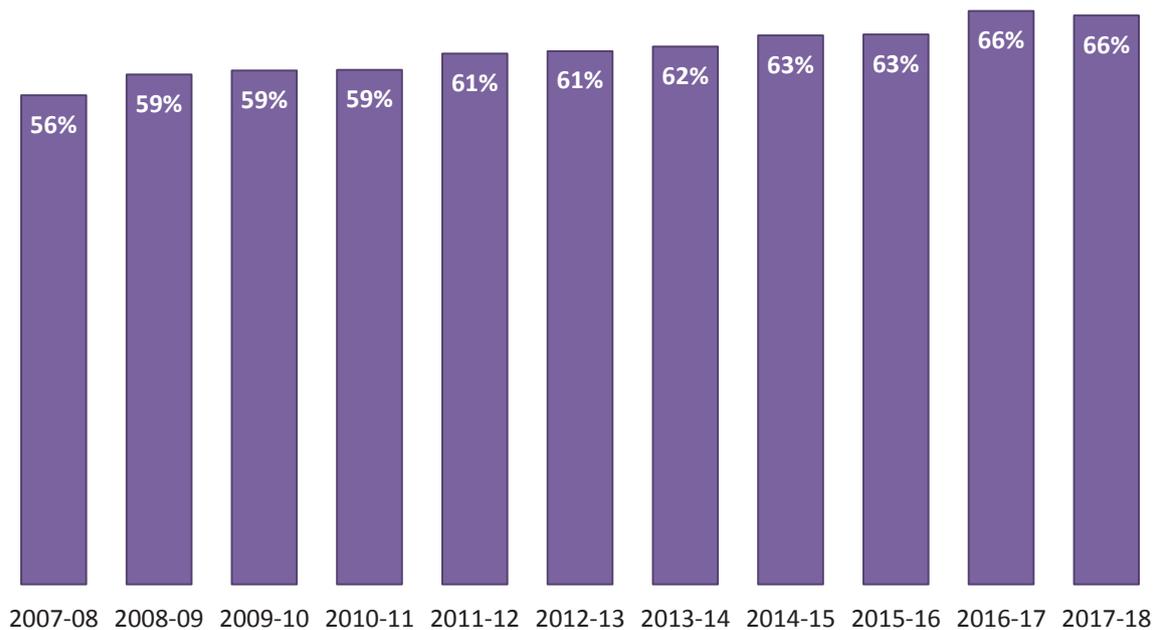
⁴¹ The profile record may either be from DNA-17 (i.e. 16 numbers plus a sex marker) or from the previous system SGMPlus (i.e. 10 numbers plus a sex marker).

⁴² Excludes crime scene to crime scene matches.

⁴³ More than one crime scene profile record may be held for a single crime. Crime scene profile records that matched before 2002 are included in this figure.

taken and added to NDNAD. Every individual who is arrested will have their DNA searched against existing crimes on NDNAD, even if their profile is subsequently deleted.

Figure 4: Match rate on loading a crime scene profile (2003/04 to 2017/18)⁴⁴



ii. Number of matches

In 2017/18, NDNAD produced **301** subject to crime scene matches following on from an urgent search of NDNAD, including to **83** homicides and attempted murders⁴⁵ and **54** rapes. It also produced **30,780** routine subject to crime scene matches, including to **716** homicides⁴⁶ and **694** rapes. It provided **1,466** crime scene to crime scene matches (this information is useful in helping to identify serial offenders). It also provided **2,708** partial matches following a non-routine search. Although a partial match has less evidential value than a full match, it can nonetheless provide the police with useful intelligence about a crime.

⁴⁴ Source: NDNAD management information.

⁴⁵ This includes murder and manslaughter.

⁴⁶ Due to issues with the NDNAD Management Information system in 2014/15, matches were counted at sample (rather than case level) in this year.

Table 3a: Number of routine subject to crime scene matches made by crime type (2017/18)^{47 48 49}

Crime	Matches
Burglary (including aggravated)	13,049
Vehicle crime	5,227
Criminal damage	2,015
Violent crime	1,697
Drugs	1,538
Robbery	1,380
Theft	619
Rape	694
Murder (including attempted) and manslaughter	716
Traffic (including fatal)	501
Firearms	473
Other sexual offences	185
Arson and fire investigations	193
Fraud	99
Public order	118
Abduction and kidnapping	121
Blackmail	6
Explosives	12
Other ⁵⁰	2,137
TOTAL	30,780

⁴⁷ Source: NDNAD management information.

⁴⁸ Offence types are recorded by forensic staff processing the DNA sample and do not correspond to police recorded crime codes.

⁴⁹ Because of the way in which the data is recorded and because all profiles loaded to the NDNAD are routinely searched against all profiles held on the NDNAD it is not possible to provide figures for the number of searches or the match rate for this table as has been provided for tables 3b & c.

⁵⁰ Includes other volume, serious and terrorism offences.

Table 3b: Number of non-routine search matches made by crime type (2017/18)⁵¹

Crime	Searches	Matches	Matches (%)
Burglary (including aggravated)	1380	747	54%
Vehicle crime	116	66	57%
Criminal damage	76	48	63%
Violent crime	165	102	62%
Drugs	279	192	69%
Robbery	324	190	59%
Theft	60	37	62%
Rape	355	164	46%
Murder (including attempted) and manslaughter	228	123	54%
Traffic (including fatal)	400	254	64%
Firearms	204	127	62%
Other sexual offences	112	44	39%
Arson and fire investigations	36	16	44%
Fraud	11	5	45%
Public Order	13	8	62%
Abduction and kidnapping	15	9	60%
Blackmail	3	1	33%
Explosives	2	1	50%
Other ⁵²	1939	574	30%
TOTAL	5718	2708	47%

⁵¹ Source: NDNAD management information.

⁵² Includes other volume, serious and terrorism offences.

Table 3c: Number of urgent non-routine search matches by crime type (2017/18)⁵³

Crime	Searches	Matches	Matches (%)
Burglary (including aggravated)	44	33	75%
Vehicle Crime	6	4	67%
Criminal Damage	6	4	67%
Violent Crime	16	9	56%
Drugs	9	2	22%
Robbery	31	22	71%
Theft	3	2	67%
Rape	110	54	49%
Murder (including attempted) and manslaughter	123	83	67%
Traffic (including fatal)	3	2	67%
Firearms	23	14	61%
Other sexual offences	26	16	62%
Arson and fire investigations	2	1	50%
Fraud	0	0	0%
Public Order	1	1	100%
Abduction and kidnapping	15	4	27%
Blackmail	1	0	0%
Explosives	0	0	0%
Other ⁵⁴	191	50	26%
TOTAL	610	301	49%

⁵³ Source: NDNAD management information.

⁵⁴ Includes other volume, serious and terrorism offences..

1.3.4 Convictions

The number of offenders convicted with the help of DNA evidence is not recorded. However, DNA evidence is instrumental⁵⁵ in the conviction of the perpetrators of many serious crimes. For example:-

Case 1

John Taylor was serving a minimum of 30 years in prison for the abduction and murder of 16-year-old Leanne Tiernan in 2000. After a cold case review and advances in DNA sciences he was identified as a suspect in a rape from 1977 via a match on the National DNA Database. The 62-year-old pleaded guilty to 16 offences against five victims between 1977 and 1996. On Friday 26 October he was given an additional whole life sentence with no minimum tariff.

Further information on this case can be found at:-

<https://www.westyorkshire.police.uk/news-appeals/murderer-john-taylor-given-further-life-sentence>

Case 2

In March 2018 Andrew Pennington was convicted of a rape which occurred in 1988 in York. He was identified following a DNA match on the National DNA Database; as part of a cold case review of the case a DNA 17 profile from a semen stain on the victims skirt was loaded to the NDNAD which provided a match to his sample. The offender was not featured in the original investigation and was only identified through this match. The police force did have a suspect for this crime who was ruled out following this match thus showing the use of the NDNAD in protecting the innocent as well as identifying the offender.

Further information on this case can be found at:-

<https://www.bbc.co.uk/news/uk-england-york-north-yorkshire-43487340>

⁵⁵ Prosecutions are very rarely based on DNA evidence alone.

1.4 Missing and Vulnerable Persons Databases

NDNAD holds DNA profile records taken from arrested individuals and crime scenes. Previously, it also held profile records taken in relation to missing persons, and from individuals at risk of harm, for the purposes of identifying a body should one be found. In order to separate DNA profile records held for identification purposes (which are given with consent), those taken from individuals who have been arrested are now held on their own databases.

1.4.1 Missing Persons Database (MPDD)

The MPDD holds DNA profile records obtained from the belongings of people who have gone missing or from their close relatives (who will have similar DNA). If an unidentified body is found that matches their description, DNA can be taken from it and run against that on the MPDD to see if there is a match. This assists with police investigations and helps to bring closure for the family of the missing person. Profile records on the MPDD are not held on NDNAD.

As at 31st March 2018, there were **1,999** records on the MPDD. In 2017/18, the MPDD produced **three** matches.

1.4.2 MPDD Cases

Below are some examples of cases involving the MPDD, further examples of cases can be found in appendix 1 at the end of the report.

Case 1.

Subject A was reported missing in late December 2017. He was considered high risk and vulnerable as he suffered from many mental Health issues including social phobia. He left the home address in Essendon on the 16th December 2017 with a small bag, leaving his telephone behind. He was last seen near Potters Bar train station and there was reason to believe he may have caught a train to London. He rarely told his family where he was going and when he went out, always returned home within a day. He had been missing for four days when the report was filed with Hertfordshire Police so there were obviously serious concerns for his welfare.

On the 3rd January 2018, a leg and a hand washed up on the coastline around Seaford, Sussex over a three day period. A torso was also seen but was washed back out to sea before it could be recovered. There were no visible tattoos, marks or scars on the remains which could assist with identification. An initial investigation into the remains estimated that the person had entered the sea around a week previously but there was no other evidence on the remains which could be used to assist identification. DNA was taken and uploaded to the MPDD on the 30th January and a

full DNA -17 match was confirmed with the missing man from Essendon. The record has remained open on the MPDD in case other remains are found but family have been notified and are being supported.

Case 2.

At 13.43 on 20/10/17 the body of a deceased male was located by walkers having washed up on the beach area of Chilton Chine, Brightstone, Isle of Wight. The body appeared to be of a male white person. Due to decomposition of the face it was very difficult to give an age of this male but it was provisionally estimated as between 40 – 50 years of age. The body was wearing jeans, underwear and socks but no other clothing. In the front pocket of the jeans, a set of three keys was located. An initial inspection did not reveal any particular traumatic injury or evidence of foul play. There did not appear to be any tattoos on the body or any distinguishing marks or scars. Fingerprints could not be taken due to decomposition. A post mortem was completed but the cause of death remained unknown due to the time the body had spent in the water. On the 7th December 2017, the DNA from the remains was uploaded to the MPDD and provided a match to a 67 year old man high risk missing person who had been missing from Salcombe, Devon since September 2017. The gentleman was reported missing by family after he had become depressed after the death of his mother. He was a very private man and very little was known about him. His car had been located at Beesands, Devon with a note left in his rucksack which listed his next of kin and indicated he intended to end his life. A lot of investigative work had been conducted in an attempt to trace him but had generated no results. The DNA comparison by the MPDD enabled us to conclusively identify the male and provide closure to the family who were seriously concerned for the individual's welfare.

1.4.3 Vulnerable Persons DNA Database (VPDD)

The VPDD holds the DNA profile records of people who are at risk (or who consider themselves at risk) of harm (for instance due to child sexual exploitation or honour based violence) and have asked for their profile to be added. If the person subsequently goes missing, their profile can be checked against NDNAD to see if they match to any biological material (such as blood or an unidentified body found at a crime scene) helping the police to investigate their disappearance. Profile records on the VPDD are not held on NDNAD.

As at 31st March 2017, there were **4,384** records on the VPDD. In 2017/18, there were **no** requests to compare records held on the VPDD with records held on NDNAD.

1.5 Technology and business process developments on the NDNAD in 2017/18

NDNAD is constantly being adapted to incorporate new developments in technology. This involves significant work in developing and testing these changes to ensure they meet the necessary standards. The Home Office also responds to any developments that could impact on its effectiveness.

1.5.1 Home Office Biometrics Programme

The Home Office Biometrics Programme (HOB) is a programme in the Government Major Projects Portfolio. HOB is delivering a core platform for biometrics matching and identification services for the UK. HOB's focus is on three biometric modes: fingerprints, DNA and facial matching. These services enable the capture, authentication, verification, and searching and matching of individuals' biometrics and forensics for the purposes of solving crime, protecting the border and preventing terrorism.

The HOB Strategic DNA Project is focused on delivering a replacement (with enhanced capability) for the current technology platform on which NDNAD is based, and developing international connectivity to create better links with similar databases in other countries. To make it easier to deliver, the new database will be delivered in stages.

1.5.2 Contamination Elimination Database

The current Police Elimination Database (PED) contains DNA profile records taken from police officers and staff known as "elimination profile records". Where a police force suspects that a crime scene sample may have been contaminated with DNA from a police officer, or a member of police staff, they can request that a direct comparison is made of DNA obtained from the crime scene against the Police Elimination profile. Each incident must be reported separately; FINDS (DNA) are not permitted to carry out full searches of the PED.

FINDS (DNA) is currently leading a project in developing a Contamination Elimination Database (CED). The Regulator has recommended that a contamination elimination database be established to identify any contamination events on the NDNAD⁵⁶; this will allow FINDS (DNA) to carry out regular, national, searches of crime stain profile records against elimination profile records enabling easier identification of DNA profile records that are due to contamination⁵⁷.

On transfer of a PED profile record to the CED, a check is made for matches against crime scene profile records retained on NDNAD. Following any necessary quality

⁵⁶ The recommendation is at paragraph 8.1.5, p18 of the protocol [The Management and Use of Staff Elimination DNA Databases \(FSR-P-302\)](#) published by the FSR in 2014.

⁵⁷ This change was brought in via [The Police \(Amendment\) Regulations 2015](#) and [The Special Constables \(Amendment\) Regulations 2015](#). The regulations were signed off on 1st April 2015.

assurance checks by the FSP which processed the crime scene sample, matches are investigated by police forces and any crime scene profile records shown to originate from contamination by police officers or staff (rather than from the crime scene from which the DNA samples were obtained) are then deleted from NDNAD. As at 31st March 2018, 1,344 contamination events had been identified for investigation. Forces have been investigating these matches and 935 have been concluded. This has resulted in the removal of 658 unsolved crime stains from the NDNAD. As forces conclude their investigations it is expected this figure will rise

Once the CED is fully established, profile records taken from serving police officers and special constables will be able to be retained for elimination purposes for up to 12 months after they leave a police force (except where they transfer to another force)⁵⁸. In line with the Police and Criminal Evidence Act 1984 (PACE), DNA samples will be destroyed within 6 months of the sample being taken. In the future, the CED will be expanded to include the profile records of staff from other organisations who may potentially contaminate the crime scene or a sample taken from the crime scene.

1.5.3 Rapid DNA

Using standard DNA processing methods, it can take several days to generate a DNA profile from a DNA sample. However, Rapid DNA technology now exists which allows a sample to be processed in a matter of hours rather than days.

Processing is carried out by a small device that has the potential to be deployed at a crime scene. A number of rapid DNA devices have been produced by different companies, using these devices police forces continue to conduct pilots. The former rapid DNA Project Board has now closed.

There is approval in place for DNA profile records generated using Rapid DNA technology to be retained (appropriately caveated) on NDNAD and as of 31st March 2018, 777 such records were retained.

1.5.4 DNA mixture profile differentiation on the NDNAD

An NDNAD change implemented on the 1st March 2018 has allowed for increased differentiation for DNA mixture profiles retained on the NDNAD. Prior to this change, all DNA mixture profiles were assigned the same caveat on generation of a NDNAD Match Report, which required the police force in receipt of the match report to confirm with the processing Forensic Unit for the status of the mixture. This status is relevant as currently the only DNA Mixture profiles permitted to be assigned an illustrative figure on match probability for Streamlined Forensic Reporting (SFR) purposes (on the basis of the generation of a NDNAD Match Report) are for a full profile, designated as a clear, complete, major profile (where any minor alleles are not interfering with the major components). Partial and more complex DNA Mixtures are not able to be assigned an illustrative figure.

⁵⁸ This change was brought in via [The Police \(Amendment\) Regulations 2015](#) and [The Special Constables \(Amendment\) Regulations 2015](#). The regulations were signed off on 1st April 2015.

The change allows differentiation of mixtures which are designated as a clear, complete, major profiles (from all other mixtures profiles), and applies a specific caveat which instructs the police force that an illustrative match probability figure (of 1 in a billion) is able to be applied for SFR purposes without the necessity to contact the Forensic Unit for further clarification, which has time saving and efficiency benefits.

1.6 Security and Quality Control

1.6.1 Access to NDNAD

Day-to-day operation of NDNAD is the responsibility of FINDS (DNA). Data held on NDNAD are kept securely and the laboratories that provide DNA profile records to NDNAD are subject to continuous assessment.

FINDS (DNA) is responsible for ensuring that operational activity meets the standards for quality and integrity established by the NDNAD Strategy Board. 36 vetted staff have access to the NDNAD, this is made up of 28 with day to day operational access and 8 with system administrator access (as at 12/10/18)⁵⁹. No police officer or police force has direct access to the data held on NDNAD but they are informed of any matches it produces. Similarly, forensic science providers who undertake DNA profiling under contract to the police service, and submit the resulting crime scene and subject profile records for loading, do not have direct access to NDNAD.

1.6.2 Error rates

Police forces and FSPs have put in place a number of safeguards to prevent any errors from occurring with the processing and interpretation of DNA samples and FINDS (DNA) carry out daily integrity checks on the profile records loaded to NDNAD. Despite these safeguards, errors do sometimes occur with both samples taken from individuals and from crime scenes. The Police Elimination Database, which contains the profile records of police officers and staff, helps to reduce errors. FINDS (DNA) is currently leading a project to incorporate the profile records of other professionals who might have come into contact with crime scene DNA (see paragraph 1.5.2).

There are four types of errors which may occur; these are explained below:

i. Force sample or record handling error:

This occurs where the DNA profile is associated with the wrong information. For example, if person A and person B are sampled at the same time, and the samples are put in the wrong kits, person A's sample would be attached to information (PNC ID number, name etc.) about person B, and vice versa. Similarly, crime scene sample A could have information associated with it which relates to crime scene sample B.

ii. Forensic science provider sample or record handling error:

As above, this occurs where the DNA profile is associated with the wrong information. It could involve samples being mixed up as described above or contaminating DNA being introduced during processing.

iii. Forensic science provider interpretation error:

⁵⁹ The 12 system administrator accounts have not been included in previous annual reports.

This occurs where the forensic science provider has made an error during the processing of the sample.

iv. FINDS (DNA) transcription or amendment error:

This occurs where FINDS (DNA) has introduced inaccurate information.

The table overleaf shows the error rate for subject and crime scene profile records for each organisation. No miscarriage of justice arose from these errors. However, had they remained undetected, they could have affected the integrity of the NDNAD.

Table 5: Error rates

Organisation	Error types	Sample Type	April to June 2017	July to September 2017	October to December 2017	January to March 2018
Profile records loaded		Subject	64,167	68,812	62,702	63,418
		Crime scene	10,716	10,641	9,948	8,773
Police Forces	Sample or record handling	Subject	30	35	33	24
		Subject (%)	0.047	0.051	0.053	0.038
		Crime scene	0	1	0	0
		Crime scene (%)	0	0.009	0	0
Forensic Service Providers	Sample or record handling	Subject	0	1	1	1
		Subject (%)	0	0.001	0.002	0.002
		Crime scene	0	0	0	8
		Crime scene (%)	0	0	0.	0.091
	Interpretation	Subject	2	1	2	2
		Subject (%)	0.003	0.001	0.003	0.003
		Crime scene	12	17	23	23
		Crime scene (%)	0.112	0.160	0.231	0.262
FINDS (DNA)	Transcription or amendment	Subject	1	0	0	0
		Subject (%)	0.002	0	0	0
		Crime scene	0	3	0	0
		Crime scene (%)	0	0.028	0	0

1.6.3 FSP accreditation

Any FSP carrying out DNA profiling work for loading to NDNAD must be approved by FINDS (DNA) and the FIND Strategy Board. This involves continuous monitoring of standards. As at 31st March 2018, **13** laboratories were authorised to load profile records to NDNAD from standard processing. There was 1 laboratory which ceased loading profiles to the NDNAD in 17/18 and one new laboratory accredited to load profiles to the NDNAD which commenced loading. In addition to the 13 laboratories which were authorised to load profiles from standard processing there were also 4 sites which were authorised to load profiles to the NDNAD which were generated via the rapid hit process for a pilot project.

1.6.4 Forensic Science Service (FSS) Archive

From April 2012, following the closure of the FSS, FINDS (DNA) became responsible for investigating any integrity issues raised concerning the results from profile records loaded to NDNAD by the FSS before they closed. In 2017/18, **156** investigations were raised on FSS data already loaded to NDNAD, demonstrating the value of the archive.

FINDS-DNA has also taken on responsibility for holding the archive of the original, raw DNA profiling results generated by the FSS. Case files from investigation work carried out by the FSS are managed by Forensic Archive Ltd. (FAL)

1.6.5 Forensic Science Regulator

In 2008, an independent Regulator⁶⁰ was established to set and monitor standards for organisations carrying out scientific analysis for use in the criminal justice system. The current Regulator is Dr Gill Tully.

The required standards are published in the Regulator's Codes of Practice and Conduct⁶¹ and include accreditation of FSPs to international standards. Every company supplying the police with forensic services as part of the national procurement framework is required to meet the standards set out in the Codes.

⁶⁰ For further information on the Regulator, see www.gov.uk/government/organisations/forensic-science-regulator.

⁶¹ These are available at www.gov.uk/government/collections/forensic-science-providers-codes-of-practice-and-conduct.

1.7 Finance 2017/18

In 2017/18, the Home Office and policing spent **£1.54m⁶²** running NDNAD on behalf of the criminal justice system.

⁶² This does not include IT costs.

2. National Fingerprint Database

2.1 Introduction

The National Fingerprint Database / National Automated Fingerprint Identification System (NAFIS), now referred to as IDENT1, was established in 1999 and holds fingerprint images obtained from persons and crime scenes by Law enforcement agencies of the United Kingdom. It provides the ability to electronically store and search fingerprint images to manage person identity and provide fingerprint matches to unsolved crimes.

2.1.1 Fingerprint records

The skin surface found on the underside of the fingers, palms of the hands and soles of the feet is different to skin on any other part of the body. It is made up of a series of lines known as ridges and furrows and this is called friction ridge detail.

The ridges and furrows are created during foetal development in the womb and even in identical siblings (twins, triplets) the friction ridge development is different for each sibling. It is generally accepted that given sufficient friction ridge detail is unique to each individual, although this cannot be definitively proved.

Friction ridge detail persists throughout the life of the individual without change, unless affected by an injury causing permanent damage to the regenerative layer of the skin (dermis) for example, a scar. The high degree of variability between individuals coupled with the persistence of the friction ridge detail throughout life allows for the confirmation of identity and provides a basis for fingerprint comparison as evidence.⁶³

The national fingerprint database holds two types of fingerprint record:

i. Individuals.

UK Law Enforcement Agencies routinely take a set of fingerprints from all persons they arrest.

Fingerprints are usually obtained electronically on a fingerprint scanning device but are occasionally obtained by applying a black ink to the friction ridge skin and an impression recorded on a paper fingerprint form.

A set of fingerprints is known as a Tenprint and comprises:

- Impressions of the fingertips taken by rolling each finger from edge to edge.
- An impression of all 4 fingers taken simultaneously for each hand and both thumbs

⁶³ Cited Forensic Science Regulator Codes- Fingerprint comparison 24.3 & 24.4

- Impressions of the ridge detail present on both palms.

ii. Crime scenes.

Sweat pores located along the ridges of friction ridge skin constantly exude sweat which is transferred onto surfaces when friction ridge skin comes into contact with an object. This contact leaves an invisible impression of the friction ridge detail on the surface known as a latent finger mark (or palm or barefoot print). Police Crime Scene Investigators (CSIs) examine surfaces which the perpetrator of the crime is most likely to have touched and use a range of techniques to develop latent finger marks to make them visible. Finger marks developed and recovered from crime scenes are searched against the Tenprints obtained from arrested persons to identify who touched the surface the finger marks were recovered from. Latent marks can also be developed by subjecting items potentially touched by the perpetrator (exhibits) through a series of chemical processes in an accredited laboratory by sufficiently trained and competent laboratory staff.

2.1.2 Fingerprint Matches

a) Fingerprint Examination

The purpose of fingerprint examination is to compare two areas of friction ridge detail to determine whether they were made by the same person or not.⁶⁴

The comparison process is subjective in nature and the declared outcomes are based on the knowledge, training and experience of the fingerprint practitioner. The qualified practitioner gives an opinion based on their observations, it is not a statement of fact, nor is it dependent upon the number of matching ridge characteristics.⁶⁵

A process of analysis, comparison and evaluation is undertaken by the fingerprint practitioner, known as ACE this is followed by an independent verification process (ACE-V). The process is described sequentially, but fingerprint practitioners will often go back and repeat parts of the process in order to reach their conclusion.

There are four possible outcomes that will be reported from a fingerprint examination *Insufficient, Identified, Excluded or Inconclusive*.⁶⁶

⁶⁴ Cited from Forensic Science Regulator Codes – Fingerprint Comparison 24.5.1

⁶⁵ Cited from Forensic Science Regulator Codes – Fingerprint Comparison 24.5.4

⁶⁶ Cited from Forensic Science Regulator Codes – Fingerprint Comparison 24.5 – 24.11.1

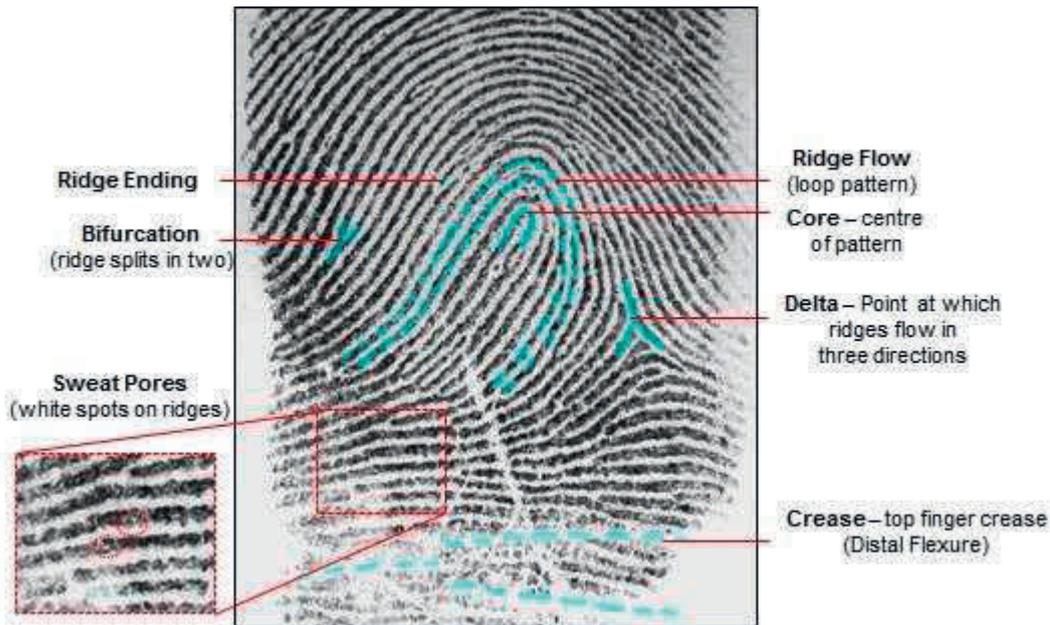


Image courtesy of Lisa J Hall, Metropolitan Police Forensic Science Services; permission to reproduce granted.

Figure 5: Friction ridge detail observable at the top of a finger. The black lines are the ridges and the white spaces are the furrows. The ridges flow to form shapes or patterns. This is an example of a loop pattern exiting to the left. There are natural deviations within the ridge flow known as characteristics such as ridge endings or forks/bifurcation. There are white spots along the tops of the ridges known as pores and there are other features present for example creases, which are normally observed as white lines.

b) Analysis

The practitioner establishes the quality and quantity of detail visible within the mark to determine its suitability for further examination by looking at ridge flow and the way ridges form shapes or patterns and how the ridges naturally deviate from their ridge paths to form characteristics such as ridge endings or forks/bifurcations. The practitioner takes into account a number of variables, for example, the surface on which the mark was left, any apparent distortion, etc.

c) Comparison

The practitioner will systematically compare two areas of friction ridge detail, for example in a print or mark with that of a print. This process consists of a side-by-side comparison to determine whether there is agreement or disagreement based upon features, in particular the sequence of ridge characteristics and spatial relationships within the tolerances of clarity and distortion. The practitioner will establish an opinion as to the level of agreement or disagreement between the sequences of ridge characteristics and features visible in both.

d) Evaluation

The practitioner will review all of their previous observations and come to a final opinion and conclusion about the outcome of the examination process undertaken.

The outcomes determined from the examination will be one of the following:

Identified to an individual: A practitioner term used to describe the mark as being attributed to a particular individual. There is sufficient quality and quantity of ridge flow, ridge characteristics and / or detail in agreement with no unexplainable differences that in the opinion of the practitioner two areas of friction ridge detail were made by the same person.

Excluded for an individual: There are sufficient features in disagreement to conclude that two areas of friction ridge detail did not originate from the same person.

Inconclusive: The practitioner determines that the level of agreement and / or disagreement is such that, it is not possible to conclude that the areas of friction ridge detail originated from the same donor, or exclude that particular individual as a source for the unknown friction ridge detail. The outcome may be inconclusive for a number of reasons; those reasons are documented in the practitioners report.

Insufficient: The ridge flow and / or ridge characteristics revealed in the area of friction ridge detail are of such low quantity and/or poor quality that a reliable comparison cannot be made. The area of ridge detail contains insufficient clarity of ridges and characteristics or has been severely compromised by extraneous forces (superimposition, movement etc) to render the detail present as unreliable and not suitable to proffer any other decision.

Verification

Is the process to demonstrate whether the same outcome is obtained by another qualified practitioner or practitioners who conduct an independent analysis, comparison and evaluation, therefore verifying the original outcome.

2.1.3 Convictions using Fingerprints.

The number of offenders convicted with the help of Fingerprint evidence is not recorded. However here are some examples of cases using fingerprint evidence:-

Case 1

On 13th March 2018 00.30, the victim was attacked on a Stage Coach Bus by a male after a verbal altercation, in Lewisham. He was repeatedly stamped on the head. The suspect left the scene with his companion and the police/ambulance were called by the bus driver. The victim was put on life support but died from his injuries 11 days later.

The bus was examined on the 14th March, isolating areas for examination via the CCTV. The police had the perpetrator on CCTV but did not know the identity of the man. Fingerprint marks recovered from the front of the bus where the suspect entered the vehicle were brought by hand to the MPS Fingerprint Bureau at 18.00 on 14th March. These fingermarks were searched immediately by examiners on IDENT 1 and verified by examiners. The subsequent identification was communicated to the investigating team at 18.30.

Enquiries were ongoing at this stage but there were no leads. The fingerprint result directly led to the identification of the suspect and his subsequent arrest where he made admissions of the assault. Further examination of the bus and further comparison work, led to additional identifications which corroborated CCTV footage and provided the identity of the perpetrator.

The suspect was charged with murder and later found guilty and sentenced to 19 years.

Case 2

In June 2015 Police arrested two males with 40kg of high purity Cocaine in Wembley, London. A number of search warrants were also executed which resulted in the recovery of further evidence for the wider conspiracy to import Cocaine offence under investigation. A fingerprint examiner made early contact with the Officer in Charge in relation to a fingerprint identification made between one offender and other submissions from Op Dante. A fingerprint examiner reviewed all submissions from Op Dante and uncovered other possible persons of interest and 191 fingermarks.

Further fingerprint identifications were established and were sent to the Immigration Fingerprint Bureau for searching as the crimes involved Foreign Nationals.

In August 2017 an examiner found a print to mark Identification for Operation Dante on a new set of offender prints. This information was passed to the operational team, who had no information on his identity other than surveillance imagery and fingerprints. This prompt notification allowed officers to immediately produce him from prison and put to him the criminal matters. He pleaded guilty to all counts and received 8 years for his role in the network.

In total the operation led to the following results:

Total Drugs Seized - 204kg Class A (A further 666kg of Class A is used in indictments where drugs have not been seized but presented as a case basis)

Total Sentences - 368 years custodial

Total Cash Seized - £546,000

2.1.4 Who runs the National Fingerprint Database?

Since 2012 the National Fingerprint Database has been operated by the Home Office. Law enforcement agencies have direct access to the system and they own the data they enrol upon it.

Home Office Forensic Information Database Services - National Fingerprint Office: The Home Office is responsible for assuring the quality and integrity of policing data held on the National Fingerprint Database and other Forensic Information Databases as described in the FIND Strategy Board rules. To discharge this function on the National Fingerprint Database, FINDS - National Fingerprint Office are continuing to develop a data assurance strategy to monitor the activities of the agencies that provide the inputs to the fingerprint database and its supply chain. The strategy will ensure compliance of those agencies to the FSR codes and conformance to ISO 17025, as well as identifying and correcting data errors and unexpected results. With the application of trend analysis techniques, the NFO will monitor the performance of the agencies that contribute to and use the national fingerprint database from March 2018. Through interaction with the user community, the NFO will coordinate improvements to business and system processes to improve data quality further.

2.1.5 Access to National Fingerprint database

The number of IDENT1 active users is 915. Fingerprints are captured electronically on a device called Livescan and electronically transmitted to the fingerprint database for search and the number of active livescan accounts is 4,617 as at 12/10/2018.

2.2 Who is on IDENT1?

2.2.1 Number of profile records held on IDENT1 System⁶⁷

As at 31st March 2018, IDENT1 held **8,012,521** subjects that are associated with one or more fingerprint forms.

As at 31st March 2018, IDENT1 held **24,822,939** unique Fingerprint Forms associated with all subjects held on the system.

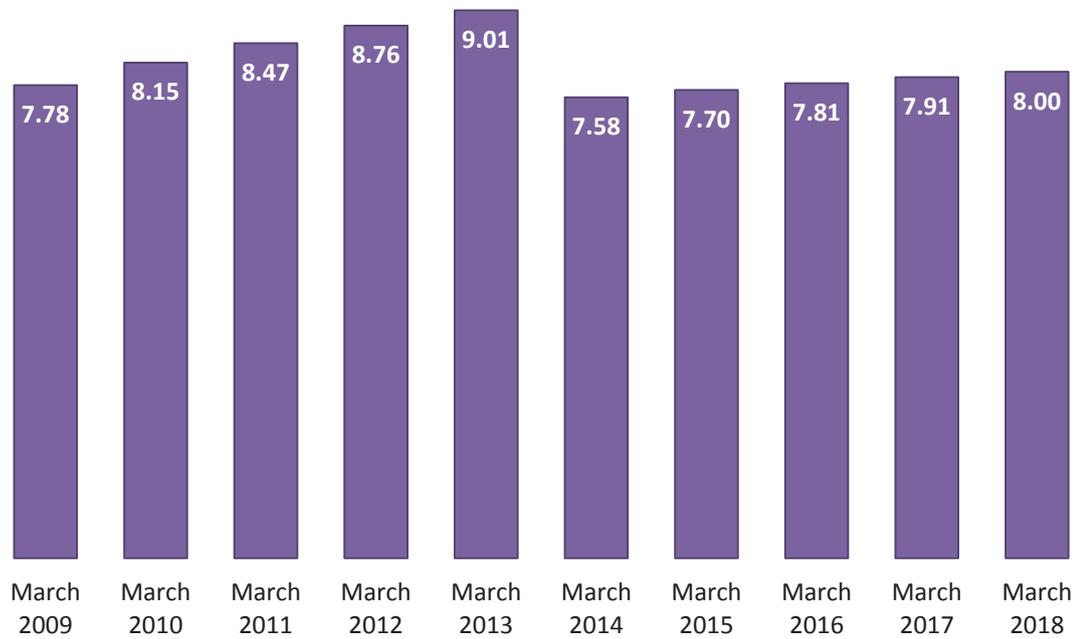
As at 31st March 2018, IDENT1 held **2,259,139** unidentified crime scene marks

Table 6. Records held on IDENT 1.

Month End and Year	Number of Individuals on IDENT1	Number of Fingerprint Identification Forms held on IDENT 1	Number of unidentified crime scene marks held on IDENT1
March 2009	7,777,645	16,800,474	1,785,568
March 2010	8,148,624	18,397,648	1,864,853
March 2011	8,471,960	19,906,978	1,896,885
March 2012	8,759,820	21,303,201	1,971,938
March 2013	9,006,957	22,508,260	2,029,028
March 2014	7,578,717	21,702,050	2,110,962
March 2015	7,695,129	22,571,529	2,303,565
March 2016	7,814,041	23,364,390	2,318,576
March 2017	7,905,419	24,059,907	2,285,669
March 2018	8,012,521	24,822,939	2,259,139

⁶⁷ Source: FINDS - National Fingerprint Office in consultation with the IDENT1 supplier

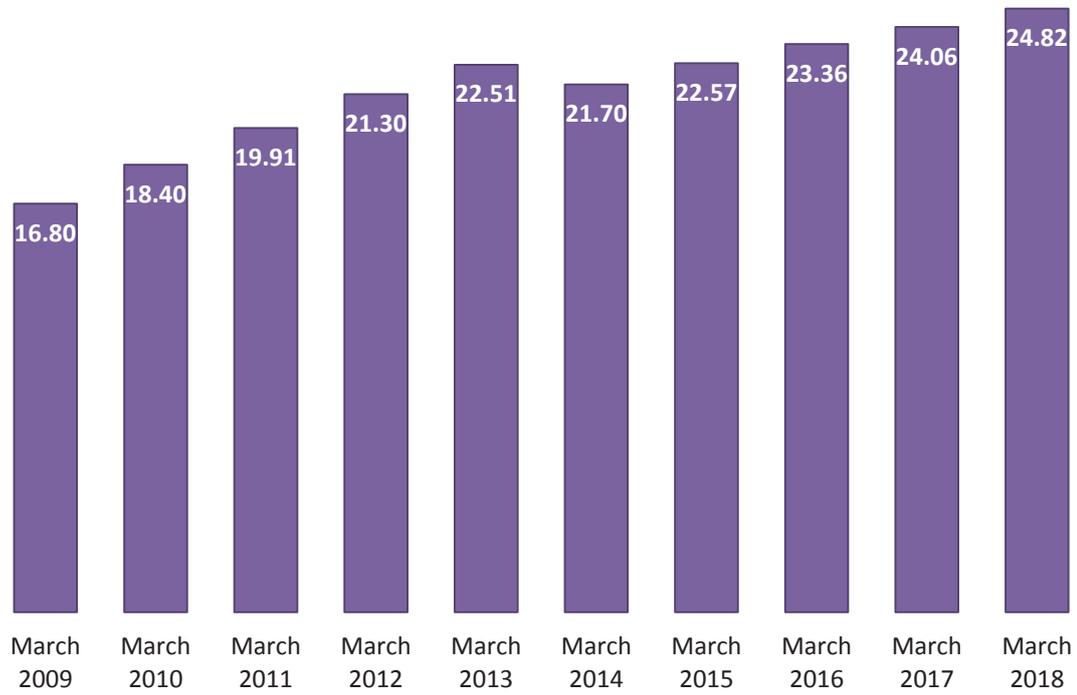
Figure 5: Number of individuals on IDENT 1 (in millions) (March 2009 to March 2018)^{68 69}



⁶⁸ Source: FIND - National Fingerprint Office in consultation with the IDENT1 supplier

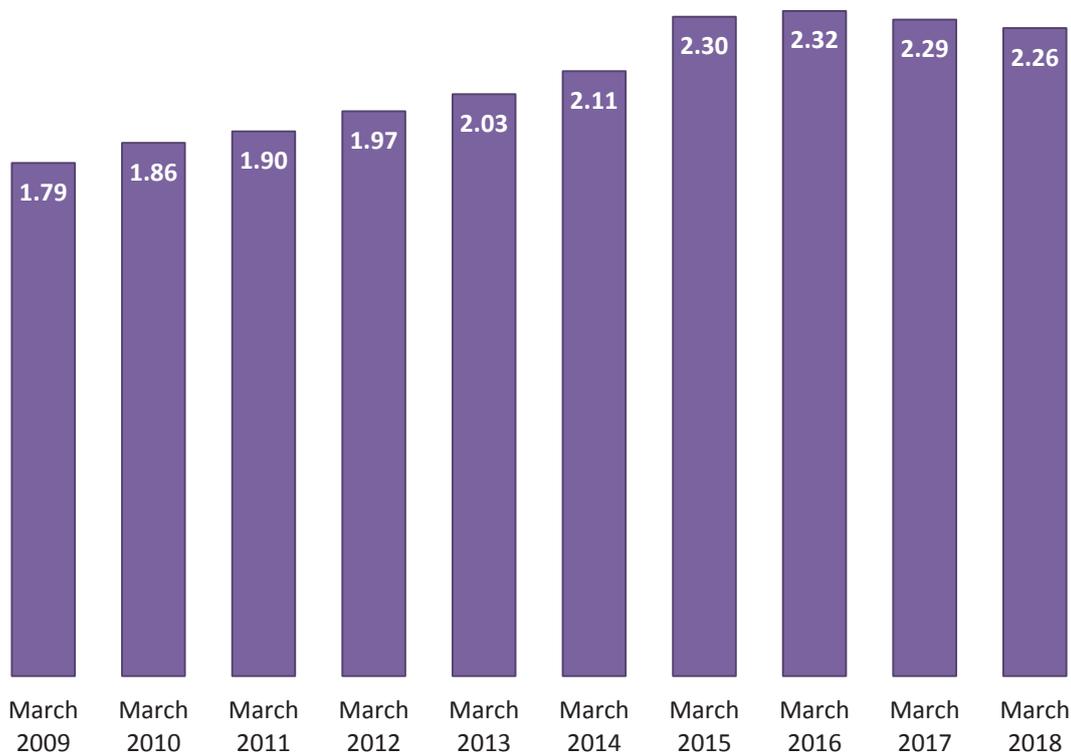
⁶⁹ The deletion of records which did not meet the retention criteria for records brought in by PoFA was completed during 13/14 hence the drop in the number of criminal records held for subjects on IDENT 1.

Figure 6: Number of Fingerprint Forms Held for all Subjects on IDENT1 (in millions) (March 2009 to March 2018)⁷⁰



⁷⁰ Source: FINDS - National Fingerprint Office in consultation with the IDENT1 supplier

Figure 7: Number of unique unidentified mark submissions held on IDENT 1 (in millions) (March 2009 to March 2018) ⁷¹



2.3 Vulnerable persons.

The National Fingerprint Database contains fingerprints obtained with consent from vulnerable persons, specifically those defined at risk of Honour Based Assault, Forced Marriage or Female Genital Mutilation. The taking of fingerprints and DNA samples is a key protective measure advised by the NPCC guidance to practitioners. This is a two-fold measure, aimed at addressing identification issues in potential investigations and to protect potential victims from serious acts of violence, abduction and homicide.⁷² Fingerprints donated by vulnerable persons are available for search on the national fingerprint database and as such provide means to identify a vulnerable person when they come to police notice. There were 5,666⁷³ sets of fingerprints relating to vulnerable people held on the database as at 31st March 2018.

⁷¹ Source: FINDS - National Fingerprint Office in consultation with the IDENT1 supplier

⁷² 1.5 – ACPO Guidance on Taking of Fingerprints, DNA & Photographs of Victims / Potential Victims of Forced Marriage – Handling Procedures

⁷³ FABrIC Service Performance Monitoring Report (April 2017 Service Period)

2.4 Missing persons.

Fingerprints relating to unidentified bodies, and unidentified or missing persons investigations are searched on the National Fingerprint Database in an attempt to establish identity or locate a missing person. Where the investigation allows the fingerprints obtained are stored in the Missing Persons Fingerprint Collection and as such are only searchable by request. Fingerprints obtained from the belongings of a missing person are also searched against both the National Fingerprint Collection and the Missing Persons Fingerprint Collection to assist with police investigations and to help to bring closure for the family of the missing person. There were 312 print sets relating to missing persons held on the database as at 31st March 2018. There were two Fingerprint identifications for MPU cases during 17/18 the details of which are below.

Case 1.

The case involves the body of a male which was located on the Spanish island of Tenerife inside a residential property in June 2017. The only documentation was from a medical prescription and a police report. The documents suggested the body may be of an Irish national born in Ireland in 1959. Fingerprints were emailed to FINDS (Fingerprints) on the 19th July 2017 for checks against UK databases and in the event of a negative response, for a direct comparison against the named individual detailed in the medical notes found on the body. A search was completed that day and it was confirmed that the fingerprints were indeed a match to the individual listed on the medical notes found on the body.

Case 2.

This case related to an individual who was found asleep in an elevator on 1st August 2017 in Switzerland. He was unable to identify himself and made contradictory statements concerning his true identity. Fingerprints were taken and forwarded from Interpol Bern to FINDS (fingerprints) on the 4th August 2017 for a comparison UK databases. Through this fingerprint check, it was established that the individual had indeed provided Police with false details and was in fact a medium risk missing individual from Hertfordshire who was reported missing by his sister after having last been seen in early July 2017. The individual had previous missing episodes where he has travelled to Europe and later been located. The rapid and successful resolution of this case was of particular importance as the individual suffered from Mental Health issues and was consequently considered vulnerable. Identifying this individual also enabled the Missing Persons Unit to close the long term missing report we had for this individual.

2.5 Technology and business process developments on the National Fingerprint Database in 2017/18

As mentioned previously HOB is delivering a core platform for biometrics matching and identification services for the UK.

Programme highlights in relation to fingerprints over the last year include

- The design, build and operation of the Biometric Services Gateway which has already facilitated simpler cross checking between the two key national fingerprint databases (law enforcement- IDENT1 and immigration- IABS) and will also enable them to be integrated in to one single service progressively from Spring 2019.
- Installation of over 370 Livescan 3 machines to police forces across the whole of the UK providing faster, more accurate, and easier to operate equipment in custody suites. The new capability to additionally capture details of the upper palm of the hand, for the first time, will increase the likelihood of the right outcomes for investigations (whether greater arrests or removal of individuals from suspicion).
- Rolling out replacement strategic mobile biometric capability to police forces across England and Wales. This capability allows officers in the field to verify identities by using an app on their corporate smart phone to search both the law enforcement and immigration fingerprint databases. More forces are wishing to take advantage of this service, which is cost substantially less than the previous capability and is already having a real operational impact. There have been notable successes including identifying individuals wanted for murder and kidnap, aiding rapid identification of bodies and resolving cases in the field. It also is an enabler for increased efficiency by avoiding the need to spend time returning to the custody suite for both officers and members of the public.

Future developments

- A new matcher platform and matching algorithms for fingerprints which will realise a significant uplift in performance improvement. It will also result in less time preparing marks for searches (less manual encoding) and reduce the number of potential matches the experts need to check.
- HOB is in the process of transitioning the contracts for both of the UK's biometric databases (IDENT1 used by law enforcement and Immigration and Asylum Biometrics System (IABS) supports immigration, borders and HMPO) to a single supplier to manage both services and ultimately transform the services to a single "Strategic Central and Bureau Platform".

An individual's biometric information is very sensitive personal information and as such HOB works within a strict data protection and legal environment in managing

this data. HOB has developed a process to ensure that the balance between technical developments and future innovation with the public appetite and what is politically acceptable is maintained. To be as transparent as possible HOB has published its DPI's⁷⁴ .

⁷⁴ <https://www.gov.uk/government/publications/home-office-biometrics-hob-programme-privacy-impact-assessments>

3. Legislation governing DNA and Fingerprint retention

3.1 Overview

PoFA and the Anti-Social Behaviour, Crime and Policing Act 2014 (ASBCPA) amended PACE to establish the current retention framework for DNA and fingerprints.

3.2 Protection of Freedoms Act 2012

3.2.1 Introduction

PoFA includes detailed rules on how long the police may retain an individual's DNA sample, profile and fingerprints.

3.2.2 DNA profile records and fingerprints

Depending on the circumstances, a DNA profile and fingerprint record may be retained indefinitely, held for three to five years and then destroyed or destroyed immediately.

3.2.3 DNA samples

PoFA requires all DNA samples taken from individuals to be destroyed as soon as a profile has been obtained from them (or in any case within 6 months) unless it is retained under the Criminal Procedure and Investigations Act 1996 (CPIA)⁷⁵. This allows sufficient time for the sample to be analysed and a DNA profile to be produced and uploaded to NDNAD.

3.2.4 Biometrics Commissioner

PoFA also established the position of Commissioner for the Retention and Use of Biometric Material ('the 'Biometrics Commissioner')⁷⁶. The position is independent of Government. The current Biometrics Commissioner is Professor Paul Wiles.

As indicated in Table 6b, one of the Biometrics Commissioner's functions is to decide whether or not the police may retain DNA profile records and fingerprints obtained from individuals arrested but not charged with a qualifying offence. He also has a general responsibility to keep the retention and use of DNA and fingerprints, and retention on national security grounds, under review.

⁷⁵ Under the Criminal Procedure and Investigations Act 1996 (CPIA) (and its associated code of practice) evidence can be retained where it may be needed for disclosure to the defence. This means that, in complex cases, a DNA sample may be retained for longer. This sample can only be used only in relation to that particular offence and must be destroyed once its potential need for use as evidence has ended.

⁷⁶ For more information on the work of the Biometrics Commissioner see <https://www.gov.uk/government/organisations/biometrics-commissioner>.

3.2.5 Extensions

Where an individual has been arrested for, or charged with, a qualifying offence and an initial, three year period, of retention, has been granted, PoFA allows a chief constable to apply to a district judge for a two year extension of the retention period if the victim is under 18, a vulnerable adult, is associated with the person to whom the retained material relates or if they consider retention to be necessary for the prevention or detection of crime.

3.2.6 Speculative searches

PoFA allows the DNA profile and fingerprints taken from arrested individuals to be searched against NDNAD and IDENT1, to see if they match any subject or crime scene profile already stored. Unless a match is found, or PoFA provides another power to retain them (for example because the person has a previous conviction) the DNA and fingerprints are deleted once the 'speculative search' has been completed unless there is a match in which case the police will decide whether to investigate the individual or not.

Table 6a: Retention periods for convicted individuals

Situation	Fingerprint & DNA Retention Period
Any age convicted (including given a caution or youth caution) of a qualifying offence	Indefinite
Adult convicted (including given a caution) of a minor offence	Indefinite
Under 18 convicted (including given a youth caution) of a minor offence	1st conviction: five years (plus length of any prison sentence), or indefinite if the prison sentence is for five years or more. 2nd conviction: indefinite

Table 6b: Retention periods for unconvicted individuals

Situation	Fingerprint & DNA Retention Period
Any age charged with but not convicted of a qualifying ⁷⁷ offence	Three years plus a two year extension if granted by a District Judge (or indefinite if the individual has a previous conviction for a recordable ⁷⁸ offence which is not excluded)
Any age arrested for but not charged with a qualifying offence	Three years if granted by the Biometrics Commissioner plus a two year extension if granted by a District Judge (or indefinite if the individual has a previous conviction ⁷⁹ for a recordable offence which is not excluded ⁸⁰)
Any age arrested for or charged with a minor ⁸¹ offence	None (or indefinite if the individual has a previous conviction for a recordable offence which is not excluded)
Over 18 given a Penalty Notice for Disorder	Two years

⁷⁷ A 'qualifying' offence is one listed under section 65A of the Police and Criminal Evidence Act 1984 (the list includes sexual, violent, terrorism and burglary offences).

⁷⁸ A 'recordable' offence is one for which the police are required to keep a record. Generally speaking, these are imprisonable offences; however, it also includes a number of non-imprisonable offences such as begging and taxi touting. The police are not able to take or retain the DNA or fingerprints of an individual who is arrested for an offence which is not recordable.

⁷⁹ Convictions include cautions, reprimands and final warnings.

⁸⁰ An 'excluded' offence is a recordable offence which is minor, was committed when the individual was under 18, for which they received a sentence of fewer than 5 years imprisonment and is the only recordable offence for which the individual has been convicted.

⁸¹ A minor offence is a 'recordable' offence which is not also a 'qualifying' offence.

3.3 Early Deletion

PoFA requires the FIND Strategy Board to issue guidance about the destruction of DNA profile records⁸². This guidance, known as the 'Deletion of Records from National Police Systems', covers DNA profile records and samples, fingerprints and PNC records and was published in May 2015. It replaces both the 'Early Deletion Guidance and Exceptional Case Procedure'. The guidance is only statutory in relation to DNA profile records and only applies to those:

- with no prior convictions, whose biometric material is held because they have been given a Penalty Notice for Disorder;
- who have been charged with, but not convicted of, a qualifying offence; or
- who receive a simple or conditional caution.

The guidance states that Chief Officers may wish to consider early deletion if applied for on specified grounds. These include:

- a recordable offence has not taken place (e.g. where an individual died but it's established that they died of natural causes);
- the investigation was based on a malicious or false allegation;
- the individual has a proven alibi;
- the status of the individual (e.g. as victim, offender or witness) is not clear at the time of arrest;
- a magistrate or judge recommends it;
- another individual is convicted of the offence; and
- where it is in the public interest to do so.

The Record Deletion Process provides an application form and specifies the evidence that the Chief Officer should consider.⁸³

⁸² As set out under section 63AB(4) of the Police and Criminal Evidence act 1984 (PACE) as inserted by section 24 of PoFA.

⁸³ The Record Deletion Process is available at <https://www.gov.uk/government/publications/dna-early-deletion-guidance-and-application-form>.

Appendix 1 – Further DNA MPDD cases.

Case 3.

Subject B, aged 20, originally from Sandbach, Cheshire was on his first holiday without his family and went missing in September 2005 after a night out with friends in the resort town of Malia. He was last seen in Malia town between the hours of 02:00 and 04:00 asking in a pub for directions back to his hotel. A DNA sample was taken from his belongings at the time and searched against all against all unidentified bodies/ crime stains but no match was obtained. His family looked extensively for him, even circulating posters around Malia and creating a website to assist with their investigation. Despite their efforts, the Greek Police failed to find any concrete leads in their investigation as to why he went missing.

His whereabouts remained a mystery until human remains were found in a deep well in Crete in February 2017.

DNA was taken from the remains and compared the MPDD on the 11th May 2017 and a match to Subject B was confirmed. Previous statements from family had stated that 'until we have absolute proof that he is no longer with us, we will never stop believing he is alive' and had carried out extensive work to help locate him. His family were notified and they finally received some closure.

Case 4.

On the 14th December 2016, a male was found collapsed on the pavement on the Coroner of Howe Street/Parliament Road Middlesbrough. A member of the public called for an ambulance and commenced CPR. He was rushed to A&E James Cook University Hospital Middlesbrough and pronounced dead at 13:45 hours. The only possessions he has on his person were a blank William Hill betting slip and a Yale key. Nearby William Hill branches were contacted and staff recognised the Police description as a known customer but did not know name or address details. Local publicity was carried out and all enquiries with immigration and housing proved negative. Officers who attended the scene checked key in lock of all nearby properties without success. CCTV in local area was also checked and generated no leads. In January 2017, the individual's DNA profile was uploaded to the MPDD and no matches were obtained. In September 2017, Cleveland Police received a call from the family of an Iraqi man who were concerned as they had been unable to contact him and fitted the description of the unidentified male. His sister was shown a photo of the unidentified male and confirmed it was him. She also stated she was willing to provide familial DNA if required. On the 19th October 2017, whilst the plans for obtaining this DNA were being finalised, a routine search was carried out against the NDNAD and a hit against a PNCID address was obtained. The match was for the

same Iraqi man who had been arrested in London in November 2007. Family were notified of the match and informed that familial DNA was no longer required.

The match was a full SGMplus profile match.

Case 5.

In October 2017, whilst walking along a beach, a dog walker discovered a torso with no head but partial leg and arm bones still attached. It was apparent that the body had been in the water for a long time although there was still a great deal of flesh remaining. It was impossible to conclude the age or cause of death due to the extent of decomposition. Initial reports concluded that the remains had washed ashore from a Burial at Sea site located nearby and little other investigative work was being done to progress the case.

A partial DNA profile was taken from the remains and the profile was uploaded to the MPDD on the 8th December 2017 but no matches were obtained. The NCA assisted with the case and in early July 2018, a Black notice was issued via Interpol to assist with the identification of the remains. On the 31st July, the UKMPU were notified that the Black Notice had proven to be a potential match to familial DNA for a missing Belarusian man who was reported missing by his son in 2009. We have been informed that further DNA work needs to be done to either confirm or exclude him from our enquiries as the sample was taken was only a partial profile but if it a proven to be a match, it may hopefully ensure forces make more use of the circulation of DNA via the Black Notice as an investigative tool in the future.

Glossary

Accreditation: This is the independent assessment of the services that an organisation delivers, to determine whether they meet the appropriate standards. Following the assessment, a statement will be published which states whether or not the standards have been met.

All Forensic Science Providers and laboratories which process DNA samples are required to be accredited to ISO17025; a standard set out by the International Standard Organization which requires that samples are processed under appropriate laboratory conditions and that contamination is avoided.

Anti-Social Behaviour Crime and Policing Act 2014 (ASBCPA): ASBCPA amended PACE to make three changes in the operation of PoFA, namely in relation to retention of samples under the CPIA, retention of profile records not linked to the offence for which a DNA sample was taken and resampling. See 'Protection of Freedoms Act 2012'.

Biometrics and Forensics Ethics Group: The DNA Ethics Group was established in 2007 and in July 2017 it was replaced by the Biometrics and Forensics Ethics Group; the Ethics Group is an independent group which provides advice to ministers and the Strategy Board on ethical issues associated with all forensic identification techniques.

Contamination Elimination Database: A database containing profile records from police officers, police staff, manufacturers and Sexual Assault Referral Centre (SARC) staff who come into regular contact with crime scenes, so that any DNA inadvertently left at a crime scene can be eliminated from the investigation.

Commissioner for the Retention and Use of Biometric Material ('the Biometrics Commissioner'): The Biometrics Commissioner is responsible for keeping under review the retention and use by the police of DNA samples, DNA profile records and fingerprints; and for agreeing or rejecting applications by the police to retain DNA profile records and fingerprints from persons arrested for qualifying offences but not charged or convicted for up to three years.

Crime scene investigator (CSI): A member of police force staff employed to look for DNA and other forensic evidence left at a crime scene.

Deoxyribonucleic Acid (DNA): Genetic material contained within most of the cells of the human body which determines an individual's physical characteristics such as sex, eye colour, hair colour etc.

DNA-17: The current method used to process a DNA sample which analyses a sample of DNA at 16 different areas plus a sex marker.

DNA profile: A series of 16 pairs of numbers plus a sex marker which are derived following the processing of a DNA sample. There are two types of DNA profile records:

- **crime scene profile:** this is a profile derived from a crime scene sample
- **subject profile:** this is a profile derived from a subject sample

Once derived, profile records are usually loaded onto the National DNA Database. See 'DNA sample'.

DNA sample: There are two main types of DNA sample:

- **crime scene sample:** this is a sample of DNA taken from a crime scene e.g. from a surface, clothing or bodily fluid (such as blood) left at a crime scene.
- **subject sample:** this is a sample of DNA taken from an individual, often from their cheek, by way of a 'buccal swab' though it can be taken from hair or a bodily fluid such as blood, urine or semen.

In the case of missing persons, DNA samples may also be taken from the belongings of that person or their family for the purposes of identifying a body should one be found.

Early deletion: The Record Deletion Guidance sets out certain, limited, circumstances under which an individual whose DNA profile is being retained by the police can apply to have it destroyed sooner than normal.

Excluded offence: Under the retention framework for DNA and fingerprints, an 'excluded' offence is a recordable offence which is minor, was committed when the individual was under 18, for which they received a sentence of fewer than five years imprisonment and is the only recordable offence for which the individual has been convicted.

Familial search: A search of NDNAD carried out where DNA is found at a crime scene but there is no subject profile on NDNAD to look for relatives of the perpetrator. Such a search may produce a list of possible relatives of the offender. The police use other intelligence, such as age and geography, to narrow down the list before investigating further.

Because of the privacy issues, cost and staffing involved in familial searches, they are only used for the most serious crimes. All such searches require the approval of the FIND Strategy Board.

Force sample or record handling error: This occurs where the DNA profile is associated with the wrong information. For example, if person A and person B are sampled at the same time, and the samples are put in the wrong kits, so person A's sample is attached to information (PNC ID number, name etc.) about person B, and vice versa. Similarly, crime scene sample A could have information associated with it which relates to crime scene sample B.

Forensic Archive Ltd. (FAL): A company established following the closure of the Forensic Science Service (FSS), to manage case files from investigation work which it had carried out. See 'Forensic Science Service'.

Forensic Information Database Service (FINDS): The Home Office unit responsible for administering NDNAD, Fingerprint Database and Footwear database.

Forensic Information Database (FIND) Strategy Board: The FIND Strategy Board provides governance and oversight over NDNAD and the Fingerprint Database. It has

a number of statutory functions including issuing guidance on the destruction of profile records and producing an annual report.

Forensic service provider (FSP): An organisation which provides forensic analysis services to police forces.

FSP interpretation error: This occurs where the FSP has made an error during the processing of the sample.

FSP sample and/or record handling error: As above, this occurs where the DNA profile is associated with the wrong information. It could involve samples being mixed up as described above or contaminating DNA being introduced during processing.

Forensic Science Regulator: The Regulator is responsible for ensuring that the provision of forensic science services across the criminal justice system is subject to an appropriate regime of scientific quality standards. Although her remit applies only to England and Wales, the Scottish and Northern Irish authorities collaborate with her in the setting of quality standards.

Forensic Science Service (FSS): The FSS was the body which used to have responsibility for most forensic science testing in relation to forensic evidence. In March 2012, the FSS closed and its work was transferred to private forensic science providers and in-house police laboratories.

Match: There are three types of matches:

- **crime scene to subject:** Where a crime scene profile matches a subject profile
- **crime scene to crime scene:** Where a crime scene profile matches another crime scene profile (i.e. indicating that the same individual was present at both crime scenes).
- **subject to subject:** Where a subject profile matches a subject profile already held on NDNAD (i.e. indicating that the individual already has a profile on NDNAD).

Match rate: The percentage of crime scene profile records which, once loaded onto NDNAD, match against a subject profile (or subject profile records which match to crime scene profile records).

Minor offence: Under the retention framework for DNA and fingerprints, a minor offence is a 'recordable' offence which is not a 'qualifying' offence.

Missing Persons DNA Database (MPDD): The MPDD holds DNA profile records obtained from the belongings of people who have gone missing or from their close relatives (who will have similar DNA). If an unidentified body is found which matches their description, DNA can be taken from it and run against that on the MPDD to see if there is a match. This assists with police investigations and helps to bring closure for the family of the missing person. Profile records on the MPDD are not held on NDNAD.

National DNA Database (NDNAD): A database containing both subject and crime scene profile records connected with crimes committed throughout the United Kingdom. (Subject profile records retained on the Scottish and Northern Irish DNA Databases are copied to NDNAD; crime scene profile records retained on those databases are copied to NDNAD if a match is not found).

Non-Routine search: A search made against a DNA profile which has not been uploaded onto NDNAD.

NDU transcription or amendment error: This occurs where NDU have introduced inaccurate information.

Partial match: Where, for instance, the perpetrator has tried to remove the evidence, or DNA has been partially destroyed by environmental conditions, it may not be possible to obtain a complete DNA profile from a crime scene. A partial DNA profile can still be used to obtain a partial match against profile records on NDNAD. Partial matches provide valuable leads for the police but, depending on how much of the information is missing, the result is likely to be interpreted with less certainty than a full match. See 'Match'.

Police and Criminal Evidence Act 1984 (PACE): PACE makes a number of provisions to do with police powers, including in relation to the taking and retention of DNA and fingerprints.

Protection of Freedoms Act 2012 (PoFA): Prior to the coming into force of the DNA and fingerprint sections of PoFA on 31st October 2013, DNA and fingerprints from all individuals arrested for, charged with or convicted of a recordable offence were held indefinitely. PoFA amended PACE to introduce a much more restricted retention schedule under which the majority of profile records belonging to innocent people were destroyed. See 'Police and Criminal Evidence Act 1984 (PACE)'.

Qualifying offence: Under the retention framework for DNA and fingerprints, a 'qualifying' offence is one listed under section 65A of the Police and Criminal Evidence Act 1984 (the list comprises sexual, violent, terrorism and burglary offences).

Recordable offence: A 'recordable' offence is one for which the police are required to keep a record. Generally speaking, these are imprisonable offences; however, it also includes a number of non-imprisonable offences such as begging and taxi touting. The police are not able to take or retain the DNA or fingerprints of an individual who is arrested for an offence which is not recordable.

SGMPlus: The previous method used to process a DNA sample which analysed a sample of DNA at ten different areas plus a sex marker. In July 2014, SGMPlus was upgraded to DNA-17.

Routine search: A search made against a DNA profile uploaded onto NDNAD.

Urgent match: A search made using FINDS's urgent speculative search service which is available 24 hours a day. This service is reserved for the most serious of crimes.

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