



**Forensic Information
Databases
Strategy Board
Annual Report
April 2022 - March 2023**

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Presented to Parliament pursuant to Section 63AB(8) of the Police and Criminal Evidence Act 1984

May 2024



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ISBN 978-1-5286-4882-0

E03125357 05/2024

Printed on paper containing 40% recycled fibre content minimum.

Printed in the UK by HH Associates Ltd. on behalf of the Controller of His Majesty's Stationery Office.

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Chair of the Strategy Board's Foreword

I am delighted to be able to present this report as Chair of the Forensic Information Databases (FIND) Strategy Board for the period 1st April 2022 - 31st March 2023. The report highlights the continued value of fingerprints and DNA in solving crimes and the part these biometrics play in bringing offenders to justice, keeping the public safe and preventing harm to potential future victims.

The overall DNA match rate - following the loading of a crime scene profile to the National DNA Database (NDNAD) - was 64% in 2022/23, demonstrating the continuing effectiveness of the NDNAD as a vital and effective tool in policing investigations.

There have been additional connections made between the UK and EU Member States for the international exchange of biometrics under the Trade and Cooperation Agreement (formerly the Prüm exchange) in 2022/23; with there now being live connections to 12 countries for fingerprints and 15 countries for DNA. The matches generated from this exchange continue to aid criminal investigations and assist with missing person or unidentified body investigations.

The Home Office Biometrics Programme (HOB) has delivered further improvements in biometrics matching and identification services at the national level. Key activities for fingerprints in 2022/23 include the progression of the replacement platform which hosts the algorithms utilised for biometric matching in fingerprint (and face) biometrics, and an enhanced mobile biometric capability for police forces.

FINDS have also continued to work with the Forensic Capability Network (FCN) in 2022/23 on DNA enhancements with a focal point being a workplan for development of a UK specific Y-chromosome STR (male specific) reference database. This database will enhance the UK's capability to investigate sexual and other serious offences where male DNA is often masked, thus supporting the national strategy on rape and serious sexual offences, and reducing violence against women and girls.



B D Snuggs KPM
Deputy Chief Constable
National Police Chiefs' Council (NPCC) Chair of the Forensic Information Databases
Strategy Board

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 2023, it produced 799,974 matches to unsolved crimes, an average of 38,094 per year.

1.2 Who is on NDNAD?

1.2.1 Number of profile records held on and deleted from NDNAD

As at 31st March 2023, NDNAD held **7,045,155** subject profile records and **670,817** crime scene profile records. The number of subject records held on the NDNAD is shown in Figure 1. In Financial Year 2022/23, **307,937** new subject DNA profile records were loaded to NDNAD, together with **26,956** new crime scene DNA profile records. Figures 2a and 2b show the number of profile records loaded to the NDNAD per year. Table 1 shows the breakdown of crime scene records loaded in 2022/23 by offence type.

Some individuals have more than one profile on NDNAD. This can occur where the police force chooses to load another record or where an individual is sampled twice under different names. Approximately **16%**¹ of the DNA profile records on NDNAD are duplicates of an individual already sampled. Allowing for these duplicates, the number of individuals on NDNAD as at 31st March 2023 was **5,911,703**.

In 2022/23 **133,175** subject DNA profile records were deleted from NDNAD. This includes **322** under the 'Deletion of Records from National Police Systems' guidance ('the Record Deletion Guidance'); see '3.3 Early Deletion'. Additionally, **41,202**² crime scene DNA profile records were deleted.

¹ This figure is based on the assumption that a subject profile record that matches a further subject profile record(s) is sourced from just one individual.

² Higher figure than previous years due to multiple forces conducting data cleansing exercises for crime scene records.

Figure 1: Number of subject profile DNA records held on NDNAD (in millions) (2013/14 to 2022/23)

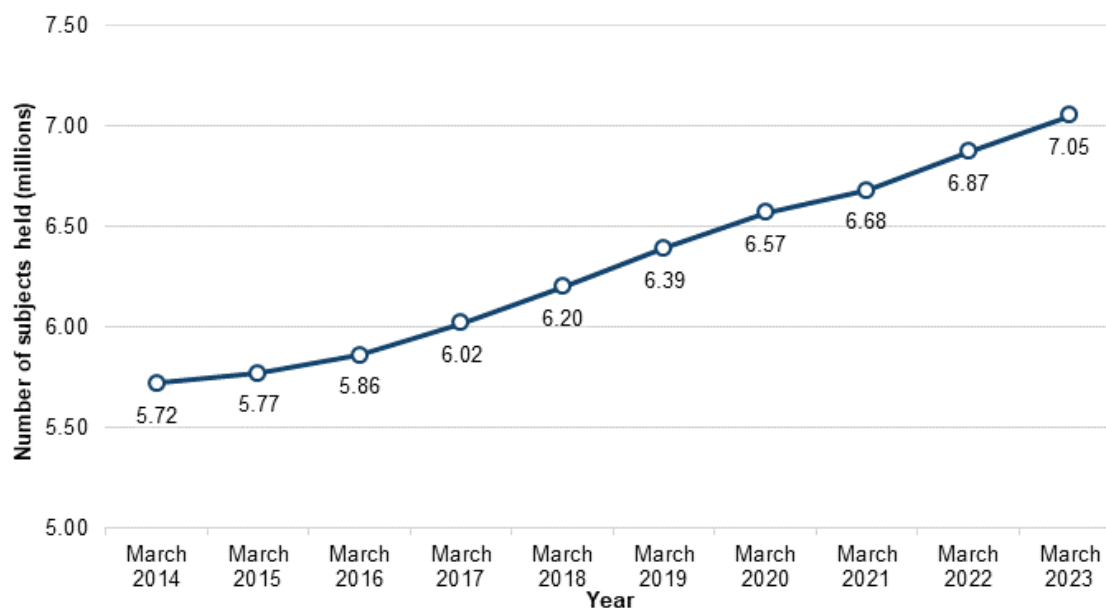
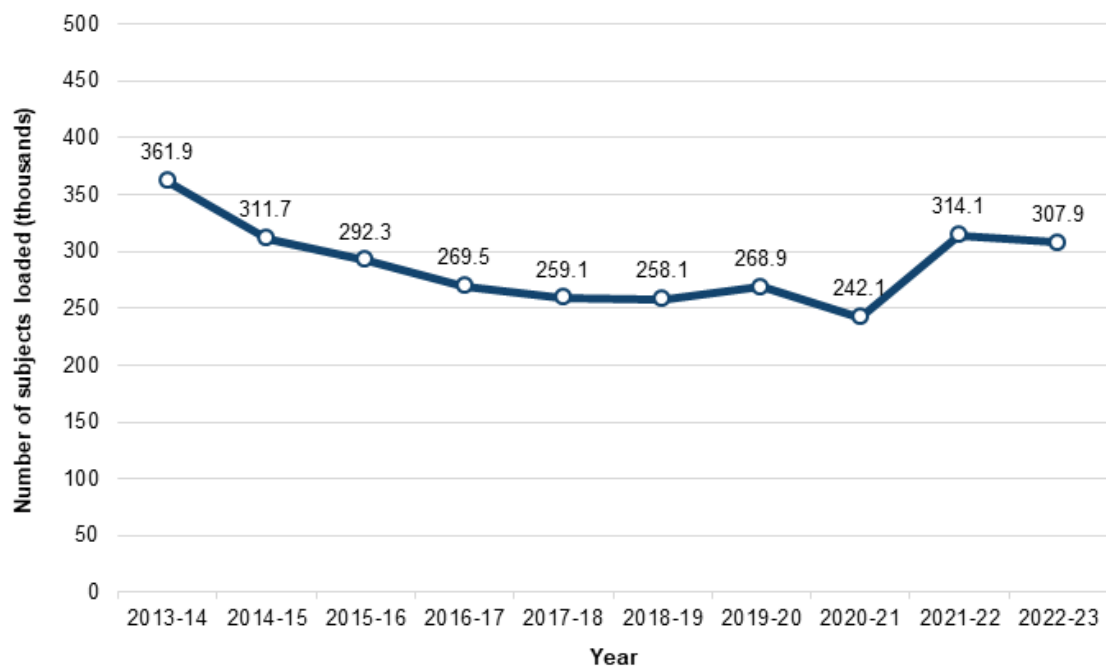


Figure 2a: Number of subject profile DNA records loaded onto NDNAD per year (in thousands) (2013/14 – 2022/23)^{3 4 5 6}



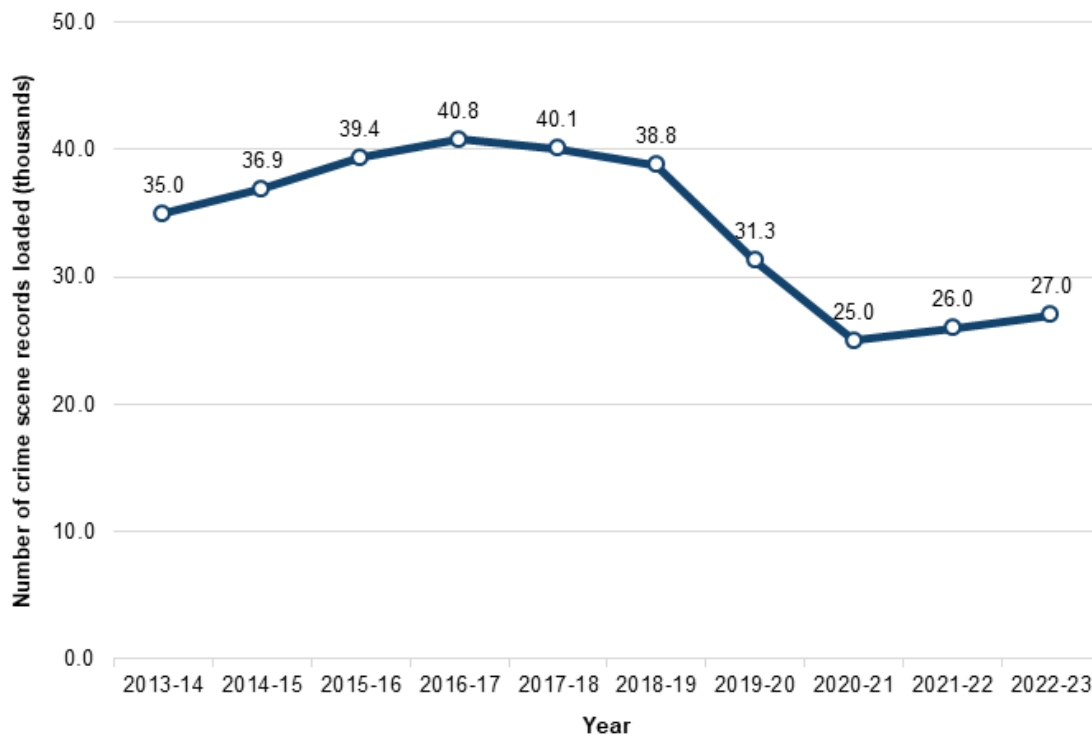
³ Due to technical difficulties accessing the management information system used to record data on NDNAD, the figures for 2014/15, onwards have been calculated using a different methodology from previous years.

⁴ There are some NDNAD profile records held for which the load date is unknown; these are not included in these figures.

⁵ Source: NDNAD management information.

⁶ A new management information tool was implemented in 2021/22 which was able to better inform on all loaded profile statistics.

Figure 2b: Number of crime scene DNA profile records loaded onto NDNAD per year (in thousands) (2013/14 – 2022/23) ^{7 8}



⁷ Source: NDNAD management information.

⁸ Due to technical difficulties accessing the management information system used to record data on NDNAD, the figures for 2014/15, onwards have 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 DNA profile records loaded by crime type (2022/23)^{9 10 11}

Crime type	Number of crime scene profile records loaded	Proportion of total number of crime scene profile records loaded (%)
Burglary (including aggravated)	11,493	42.64%
Vehicle Crime	4,304	15.97%
Criminal Damage	1,358	5.04%
Violent Crime	1,593	5.91%
Drugs	2,373	8.80%
Robbery	1,034	3.84%
Theft	432	1.60%
Rape	629	2.33%
Homicide (including attempted) and manslaughter	618	2.29%
Traffic (including fatal)	548	2.03%
Firearms	612	2.27%
Other sexual offences	138	0.51%
Arson and fire investigations	164	0.61%
Fraud	58	0.22%
Public Order	103	0.38%
Abduction and kidnapping	167	0.62%
Blackmail	14	0.05%
Explosives	3	0.01%
Other	1,314	4.87%
TOTAL	26,955	100%

⁹ Source: NDNAD management information.

¹⁰ Offence types are recorded by forensic staff processing the DNA sample and do not correspond to police recorded crime codes.

¹¹ 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 Protection of Freedoms Act 2012 (PoFA)¹². 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 DNA profile records retained on NDNAD by nation (as at 31st March 2023)^{13 14}

Nation	Subject profile records	Crime scene profile records	TOTAL
England ¹⁵	6,008,249	611,366	6,619,615
Scotland	390,711	20,308	411,019
Wales	395,588	28,244	423,832
Northern Ireland	204,227	8,188	212,415
Other ¹⁶	46,380	2,711	49,091
TOTAL	7,045,155	670,817	7,715,972

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 were male¹⁷.

¹² Scotland and Northern Ireland have their own retention regime.

¹³ Source: NDNAD management information.

¹⁴ NDNAD does not hold individuals' addresses. The geographical information provided is based on the location of the police force that submitted the profile record.

¹⁵ Includes the British Transport Police

¹⁶ 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, and the Prisoner Sampling Programme.

¹⁷ 51.0% women and 49.0% men in England and Wales) - [Population and household estimates, England and Wales - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/population-and-household-estimates)

Figure 3a: Proportion of subject DNA profile records on NDNAD by sex (as at 31st March 2023)^{18 19 20}

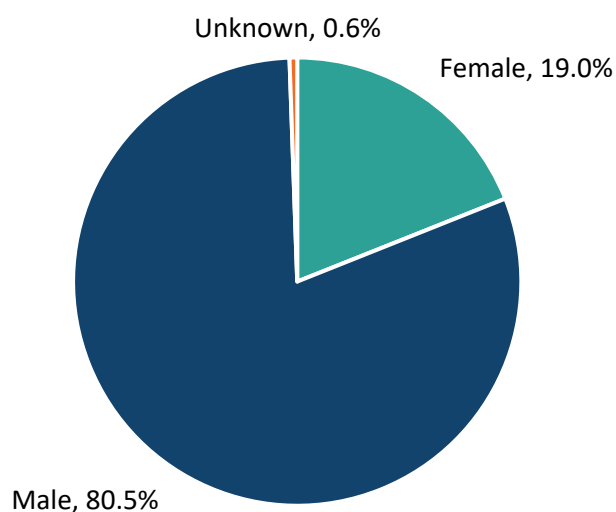
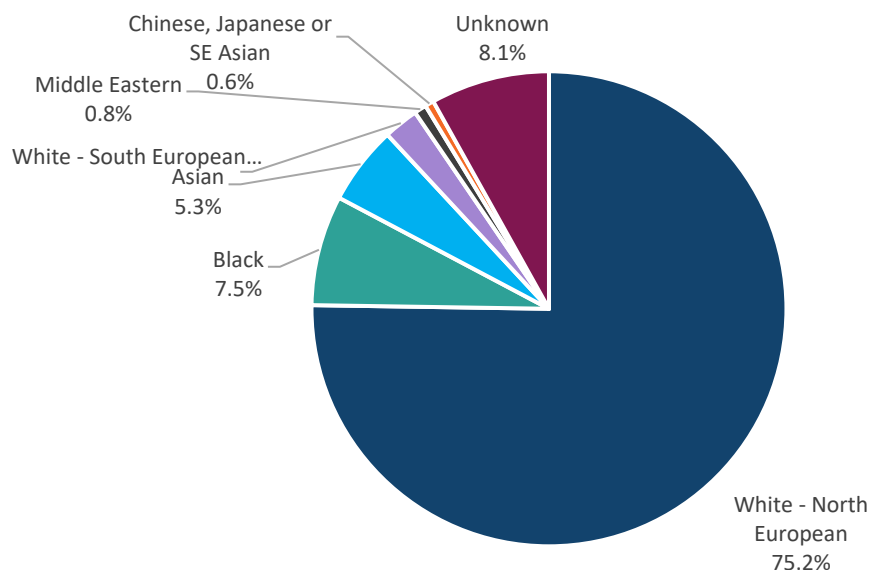


Figure 3b: Number of subject DNA profile records on NDNAD by ethnicity, as determined by the sampling officer (as at 31st March 2023)^{21 22}



¹⁸ Source: NDNAD management information.

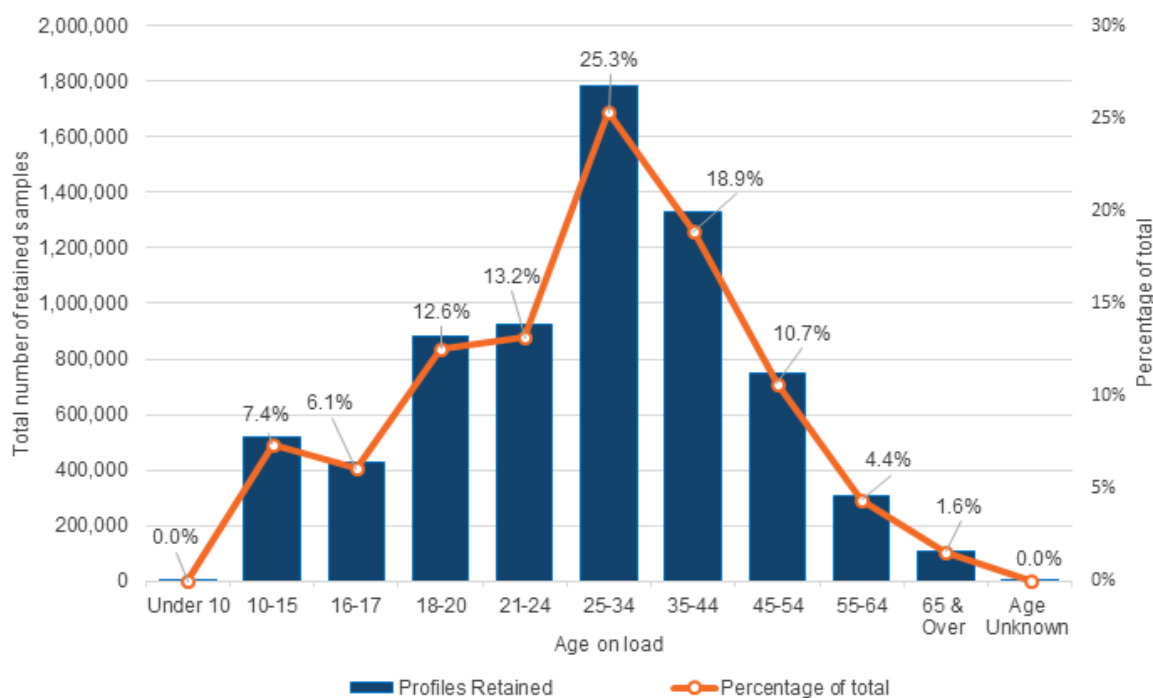
¹⁹ Unknown is where the sex was recorded as unknown on the Police National Computer (PNC) or on the sampling DNA kit card.

²⁰ Due to the rounding figures do not equal 100%.

²¹ Source: NDNAD management information.

²² 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 DNA profile records by age at time of loading onto NDNAD (as at 31st March 2023)^{23 24 25}



These data are published quarterly on NDNAD web page on www.gov.uk²⁶. The age of criminal responsibility in England and Wales is 10. There were 11 profiles from children aged under 10 on NDNAD, all of these being generated from Scottish samples taken from ‘Vulnerable persons’ (an individual who was believed to have the potential to come to harm and / or go missing) and were loaded with appropriate consent and authorisation for retention and searching on the NDNAD²⁷.

²³ Source: NDNAD management information.

²⁴ This is calculated from the date of birth provided by the individual to the police officer at the time of arrest.

²⁵ Due to rounding, the figures do not equal 100%

²⁶ The data are available at: www.gov.uk/government/organisations/home-office/series/dna-database-documents

²⁷ The age of criminal responsibility in Scotland is 12 years of age [Age of Criminal Responsibility \(Scotland\) Act 2019 \(legislation.gov.uk\)](http://legislation.gov.uk)

1.3 How many crimes does NDNAD help solve?

1.3.1 Introduction

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

It must be acknowledged with the following description of NDNAD matches, that only a low proportion of all overall crimes²⁸ investigated by the police in the UK were assisted by DNA evidence, and indeed setting the total number of NDNAD matches²⁹ in the context of all recorded crime in 2022/23 would yield a figure of just 0.45%. However, this comparison is made in isolation of the fact that there are certain offence types (such as burglary, vehicle crime, serious violence, and sexually motivated crime) where DNA may have a higher likelihood of being utilised to generate intelligence through matches - for the purpose of identifying or eliminating suspects. The same consideration is in place for fingerprint matches generated from IDENT1.

1.3.2 Types of searches

i. Routine loading and searching

Samples are usually profiled, and the DNA profile records are then loaded to NDNAD for routine searching. Routine matches made from DNA profile records loaded to NDNAD are shown in Table 3a below.

ii. Non-routine searches

In order for a DNA profile to be uploaded to NDNAD, it must consist of a minimum of four pairs of numbers and a sex marker (for crime scene DNA profile records) and a full profile³⁰ (for subject profile records). Where this criterion is not met, for crime scene DNA records, it is nonetheless possible to carry out a non-routine search of NDNAD; the breakdown for these matches shown in Table 3b below.

iii. Familial searches

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 (parents, children, or siblings) of the perpetrator. All such searches require the approval of the FIND

²⁸ In 2022-23, the numbers of recorded crime by country were:

- [5.5 million for England and Wales](#)
- [289,352 for Scotland](#)
- [111,571 for Northern Ireland](#)

²⁹ As the sum total of NDNAD matches (Table 3a and 3b)

³⁰ 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).

Strategy Board chair or their nominee. A total of **13** familial searches were carried out in 2022/23,

1.3.3 Match rate

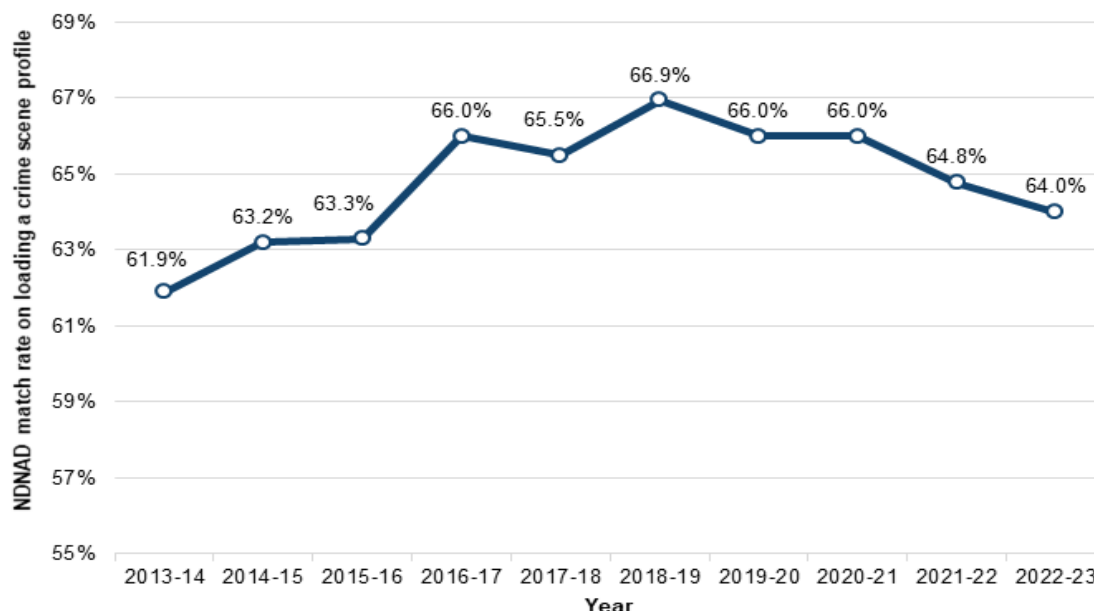
i. Overall match rates

In 2022/23, the chance that a crime scene DNA profile, once loaded onto NDNAD, matched against a subject DNA profile stored on the NDNAD was **64.0%**³¹. Figure 4 shows the yearly match rate on loading a crime scene DNA profile to the NDNAD.

These do not include crime scene DNA profiles that match another crime scene on loading, or where a DNA profile was deleted in the same month as it was loaded.

Further DNA profile matches will occur when a new subject DNA profile is added to NDNAD and matches to a crime scene DNA profile already on the database. As at 31st March 2023, there were **217,690**³² crime scene DNA 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 taken and their DNA profile added to NDNAD. Every individual who is arrested will have their DNA profile searched against existing crime scene DNA profiles on NDNAD, even if their profile is subsequently deleted.

Figure 4: Match rate on loading a crime scene profile (2013/14 to 2022/23)³³



³¹ Excludes crime scene to crime scene matches. This figure has decreased slightly (0.8%) on the previous reporting year. Due to the number of contributing factors affecting the match rate, it is not possible to provide an explanation for the observed reduction.

³² Source: NDNAD management information.

³³ Source: NDNAD management information.

ii. Number of matches³⁴

In 2022/23, NDNAD produced **22,371** routine crime scene to subject DNA profile matches, including to **476** homicides³⁵ and **519** rapes; the offence breakdown of these matches is shown in Table 3a³⁶. It provided **1,115** crime scene to crime scene matches (this information is useful in helping to identify serial offenders). It also provided **4,308** matches following a non-routine search. A large number of the non-routine searches will produce a partial match. Although a partial match has less evidential value than a full match, it can nonetheless provide the police with useful intelligence about a crime. The offence breakdown of these non-routine searches can be seen in Table 3b.

Table 3a: Number of routine subject to crime scene matches made by crime type (2022/23)^{37 38 39}

Crime	Matches
Burglary (including aggravated)	9,105
Vehicle crime	3,747
Criminal damage	1,341
Violent crime	1,430
Drugs	1,786
Robbery	938
Theft	399
Rape	519
Homicide (including attempted) and manslaughter	476
Traffic (including fatal)	493
Firearms	486
Other sexual offences	144
Arson and fire investigations	153
Fraud	37
Public order	82
Abduction and kidnapping	150
Blackmail	6
Explosives	9
Other ⁴⁰	1,070
TOTAL	22,371

³⁴ Due to issues with the NDNAD Management Information system in 2014/15, matches since then have been counted at the sample rather than case level.

³⁵ This includes murder, manslaughter and attempted murder.

³⁶ Enhancements in reporting matches partially are planned for inclusion in the 2022-23 Annual Report.

³⁷ Source: NDNAD management information.

³⁸ Offence types are recorded by forensic staff processing the DNA sample and do not correspond to police recorded crime codes.

³⁹ 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 the data in this table. This data has been provided in tables 3b.

⁴⁰ Includes other volume, serious and terrorism offences.

Table 3b: Number of non-routine search matches made by crime type (2022/23)⁴¹

Crime	Searches	Matches	Matches (%)
Burglary (including aggravated)	1,318	1,182	90%
Vehicle crime	404	385	95%
Criminal damage	58	54	93%
Violent crime	214	191	89%
Drugs	431	376	87%
Robbery	315	269	85%
Theft	42	37	88%
Rape	568	443	78%
Homicide (including attempted) and manslaughter	317	204	64%
Traffic (including fatal)	47	42	89%
Firearms	252	227	90%
Other sexual offences	146	129	88%
Arson and fire investigations	31	27	87%
Fraud	6	3	50%
Public Order	12	12	100%
Abduction and kidnapping	46	35	76%
Blackmail	3	3	100%
Explosives	0	0	0%
Other ⁴²	1,597	689	43%
TOTAL	5,807	4,308	74%

⁴¹ Source: NDNAD management information.

⁴² Includes other volume, serious and terrorism offences.

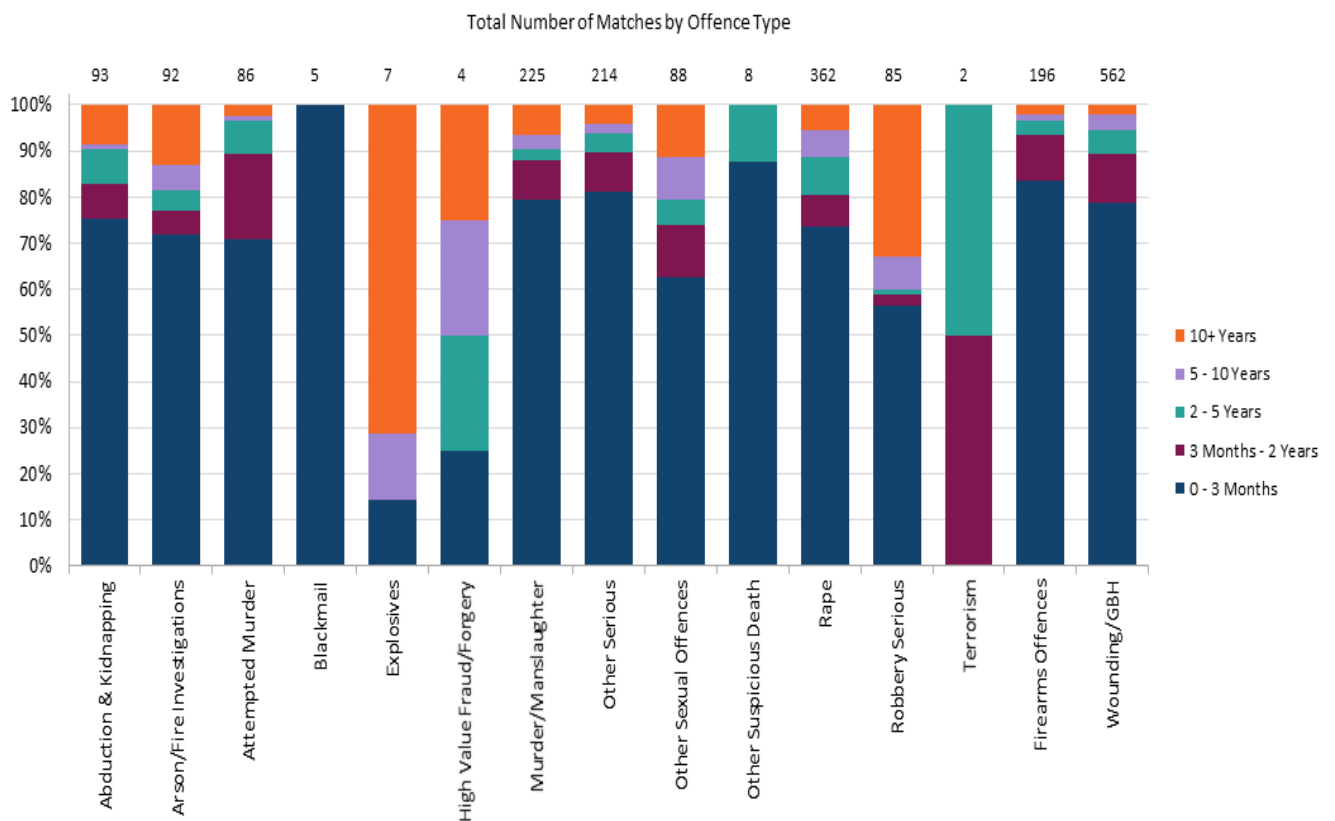
1.3.4 Timing of first subject match to a crime scene DNA profile

The time interval between the first subject match to an existing NDNAD retained crime scene, can potentially be indicative of the status of the match type, for example:

- An ‘investigation match’ – where the subject is under active investigation, or a person of interest, for the offence and where the time interval between the crime scene to subject DNA profile leads to the NDNAD may be minimal; and
- A ‘cold hit’, where the subject to crime scene linkage is first made by a NDNAD match (i.e. in the absence of any prior investigative leads), where the time interval could stretch to many years.

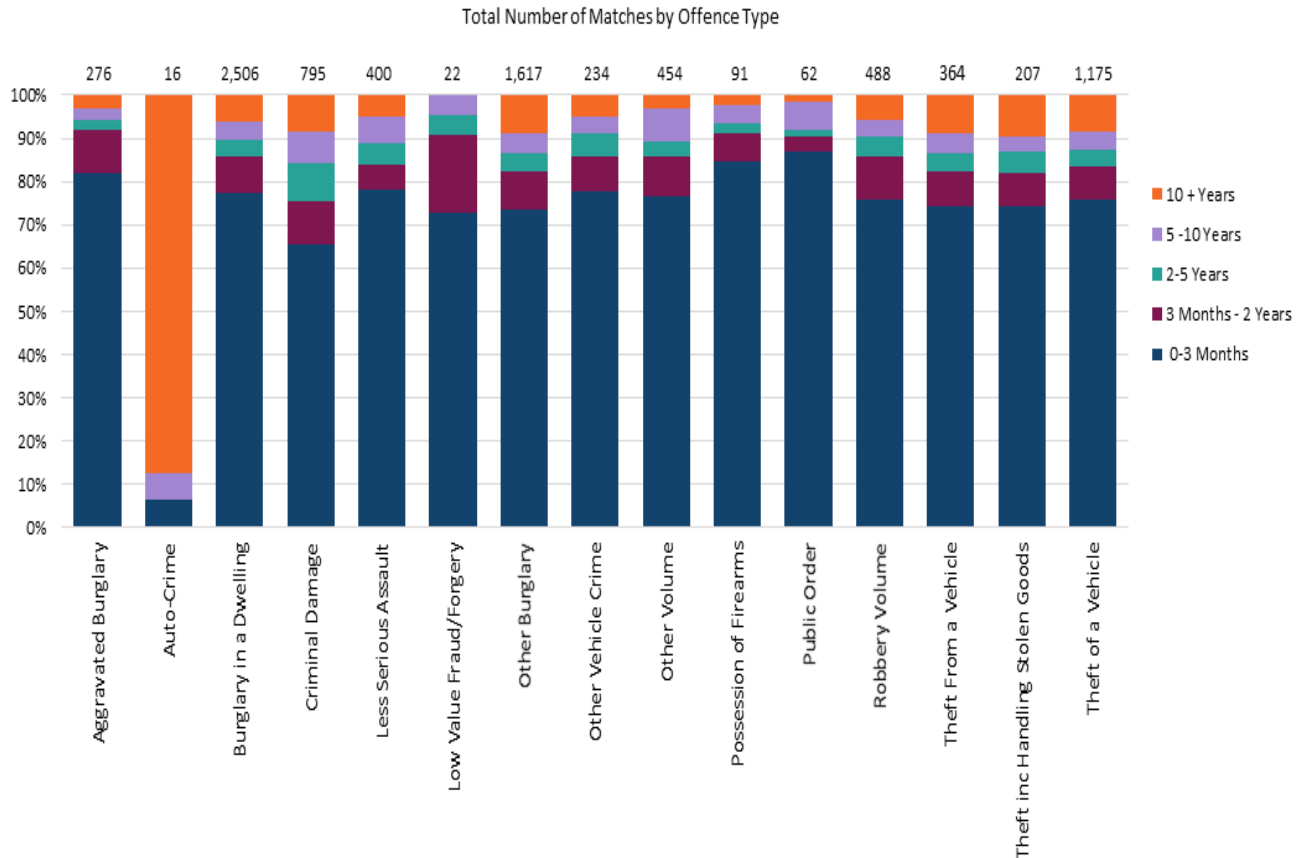
An initial analysis of the time intervals for the NDNAD matches generated in 2022-23 was undertaken. The only matches eligible for inclusion were those for which the crime scene first matched to a subject record in 2022-23 and had not been deleted or eliminated through scientific checks when the analysis took place⁴³.

Figure 5: Timing for match to a crime scene profile – serious crime



⁴³ October 2023

Figure 6: Timing for match to a crime scene profile – volume crime



1.3.5 Outcomes

The number of offenders convicted with the help of DNA evidence is not recorded. However, DNA evidence has been found to be significant⁴⁴ in the conviction of the perpetrators of many serious crimes. For instance, for the relevant time period in 2022/23 the following case examples illustrate this below:

Case 1 – Metropolitan Police

A man was jailed for rape after a DNA hit enabled officers to solve a historical case from over 20 years ago.

The offender targeted the woman, in her 20s, as she tried to get a taxi home following a night out in Leicester Square on 6th March 1999. Although officers carried out an extensive investigation at the time, they were unable to trace the suspect, until years later in 2020 where he was arrested for an unrelated matter and his DNA was placed onto the NDNAD. This resulted in a match to the DNA from the rape submitted more than 20 years prior. The case was then reopened, investigated and the suspect was found guilty on 23rd June 2022 following a trial at Snaresbrook Crown Court. The NDNAD match enabled the conviction following more than 20 years, bringing some justice and closure for the victim.

⁴⁴ Prosecutions are very rarely based on DNA evidence alone.

The 52-year-old male was sentenced to 10 years' imprisonment for the rape and indecent assault.

Case 2 – Nottinghamshire Police

A robber who stole cash from a petrol station was caught after police found traces of his DNA on a cigarette left behind at the scene. DNA recovered from both the cigarette and a black bin bag / makeshift mask found at the scene matched the suspect. The suspect also bore a distinctive tattoo on his hand which had similarities to that worn by the masked robber. The suspect initially denied any involvement in the robbery, however, eventually pleaded guilty on attendance to Nottingham Crown Court where he was sentenced to 4 years 6 months imprisonment.

1.4 Missing and Vulnerable Persons Databases

NDNAD holds DNA profile records generated from DNA samples taken from arrested individuals and crime scenes. In order to separate DNA profile records for individuals who have been arrested, from records for missing persons and vulnerable people (which are given with consent), there are separate databases for missing and vulnerable persons.

1.4.1 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 that matches the description of a missing person, DNA can be taken from the body and compared to the relevant record 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 23, there were **2,226** records on the MPDD. In 22/23, the MPDD produced 15 matches⁴⁵.

⁴⁵ Match figures now include matches to one off speculative searches against the MPDD

1.4.2 MPDD Cases

Below are some examples of cases involving the work of the MPDD.

Case 1

In December 2022, Police found a piece of skull on a railway line near Hull. On investigation, further bones were located in the area. Due to the decomposition of the remains, only DNA was available to aid identification. Upon loading the profile to the MPDD, no matches were obtained. However, in February 2023, kinship DNA (a sample from a relative) was loaded to the MPDD in relation to a high-risk elderly male who had been missing since 2009. The male was suffering from memory loss and had left his home address in the local area in April 2009 and had not been seen since. The MPDD allowed for the successful identification of this male after over 14 years.

Case 2

In February 2022, a skeletal foot within a trainer was located on the riverbank of the River Severn in Chester. DNA was loaded to the MPDD and matched to a missing male from Nottinghamshire was obtained. Later that year in August 2022, additional partial human remains were found in the River Severn, near Shrewsbury by a kayaker. DNA was loaded to the MPDD in August 2022 and matched the previously located foot and DNA held for the missing male from Nottinghamshire. The missing male had left his home address in May 2021 and there were concerns for him as he was described as being suicidal. The remains were located a distance away from where the male was reported missing and therefore without the MPDD he would not have been identified.

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 assault) 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. The taking of fingerprints and DNA samples is a key protective measure advised by NPCC guidance. This is aimed at addressing identification issues in potential investigations and to protect potential victims from serious acts of violence, abduction, and homicide⁴⁶.

As at 31st March 2023, there were **6,776** records on the VPDD. During 2022/23 there were **0** requests to compare records held on the VPDD with records held on NDNAD.

⁴⁶ ACPO Guidance on Taking of Fingerprints, DNA & Photographs of Victims / Potential Victims of Forced Marriage – Handling Procedures.

1.5 Contamination Elimination Database

FINDS administers a Contamination Elimination Database (CED) from which regular, national searches of crime stain profile records submitted to the NDNAD are checked against elimination profile records. These elimination profiles are generated from DNA samples provided by police officers and police staff, and from other individuals with potential to introduce contamination into the DNA supply chain, such as staff employed by manufacturers of products used in the DNA sampling and processing. This searching allows identification of those crime stain records with potential to relate to contamination (rather than the crime scene material actually sampled) for further integrity investigation to establish whether the DNA profile should be deleted from the NDNAD.

On load to the CED, a check is made for matches against all newly submitted crime scene profile records added to the NDNAD. Following any necessary quality assurance checks by the Forensic Service Providers (FSPs) which processed the crime scene DNA sample, matches are investigated by police forces. Any crime scene DNA profile records concluded to originate from contamination by, for example, police officers or police staff, are then deleted from NDNAD. As at 1st April 2023, **2,811** potential contamination events had been identified for investigation. Forces have been investigating these matches and **2,352** have been concluded. This has resulted in the removal of **2,145** crime stain profile records from the NDNAD⁴⁷. As Law Enforcement Agencies (LEAs) conclude their investigations the number of crime stain records deleted from the NDNAD will increase.

DNA profile records taken from serving police officers and police staff are retained for elimination purposes for 12 months after they leave a police force (except where they transfer to another force)⁵⁹. In line with the Police and Criminal Evidence Act 1984 (PACE), DNA samples will be destroyed within 6 months of the sample being taken.

The Police Elimination Database (PED) was a legacy database⁴⁸ used for intelligence purposes, to identify potential contamination incidents and remained functional for specific checks. Where a police force suspected that a crime scene sample may have been contaminated with DNA from a police officer or police staff, they could request that a direct comparison was made of DNA obtained from the crime scene against the PED profile. Each incident was required to be reported separately; FINDS were not permitted to carry out full searches of the PED. In February 2018 system changes were made to cease loading new records to the PED, as it has now been superseded by the CED.

⁴⁷ Forces deemed that following investigation the remaining 201 crime stain records could remain on the NDNAD.

⁴⁸ Following agreement at the March 2023 FIND Strategy Board, and intense activities with Forces to ensure that all eligible records were transferred to the Contamination Elimination Database (CED), the PED was formally decommissioned on 4th August 2023, with the remaining records contained being deleted and the IT system taken offline.

1.6 Technology and business process developments on the NDNAD in 2022/23

NDNAD is regularly 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 scientific and technological developments that could impact on its effectiveness.

1.6.1 Home Office Biometrics Programme

The Home Office Biometrics Programme (HOB) is a programme in the Government Major Projects Portfolio. HOB is delivering changes and improvements to biometrics matching and identification services for the UK. The HOB Programme focuses 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 identifying criminal offenders, protecting the border, and preventing terrorism.

HOB continue to support the NDNAD application and platform. In 2022/23, security patching and minor functionality enhancements to the NDNAD were delivered on a quarterly basis. Throughout the year, HOB and FINDS continued activities to provide a replacement IT platform for the current CED.

1.6.2 DNA Futures

The 'DNA Futures' project is led by FINDS and Forensic Capability Network (FCN) and brings together key stakeholders from across police forces, FSPs, and criminal justice partners for the purposes of prioritising areas of work and development of a strategic plan for DNA service delivery.

DNA Futures are leading the development of a UK Y-Chromosome reference database that will enable the estimation of the frequency of Y-STR profiles specifically in the UK population. This reference database will enhance the UK's capability in the investigation of sexual offences as well as other serious/major criminal offences, where often the male DNA profile is masked due to a mixed DNA profile. A collection exercise of approximately 10,000 buccal samples to obtain Y-STR profile data for the reference database was commenced by FINDS and FCN in 2023.

1.7 Error Rates

Table 4 shows the error rate for subject and crime scene profile records held on NDNAD for each type of organisation in 2022/23. These errors have been identified through FINDS integrity checks. No known miscarriage of justice arose from these errors; they were detected by the routine integrity checks in place. However, had they remained undetected, they could have affected the integrity of the NDNAD.

Table 4: Error rates 2022/2023

Organisation	Error types	Sample Type	April to June 2022	July to September 2022	October to December 2022	January to March 2023
Profile records loaded		Subject	75,733	78,724	72,190	81,290
		Crime scene	6,709	6,755	6,809	6,683
Police Forces	Sample or record handling	Subject	48	58	74	52
		Subject (%)	0.06%	0.07%	0.10%	0.06%
Forensic Service Providers	Sample or record handling	Subject	0	19	0	2
		Subject (%)	0.00%	0.02%	0.00%	0.00%
		Crime scene	2	4	1	8
		Crime scene (%)	0.03%	0.06%	0.02%	0.12%
	Interpretation ⁴⁹	Subject	7	2	4	5
		Subject (%)	0.01%	0.00%	0.01%	0.01%
		Crime scene	17	15	9	19
		Crime scene (%)	0.25%	0.22%	0.13%	0.28%
FINDS (DNA)	Transcription or amendment	Subject	0	0	0	0
		Subject (%)	0.00%	0.00%	0.00%	0.00%
		Crime scene	0	0	0	0
		Crime scene (%)	0.00%	0.00%	0.00%	0.00%

⁴⁹ It should be noted that the percentage error rates for record/sample handling are not directly equivalent to those for interpretation: a record/sample handling error will affect a complete DNA profile while an interpretation error will affect (generally) one area of the DNA analysed by the Forensic Service provider (a single allele or locus).

1.7.1 FSP accreditation

FSPs carrying out DNA profiling work for loading to NDNAD must be approved by FINDS and the FIND Strategy Board and must hold accreditation to ISO/IEC 17025 as defined in the Forensic Science Regulator's Statutory Code of Practice⁵⁰. This involves regular monitoring of standards. As at 31st March 2023, **16** laboratories were authorised to load profile records to NDNAD from standard processing. In addition to these, the Rapid DNA Units (under one authorised laboratory) are housed at several police custody suites for processing samples authorised for NDNAD loads, with there being **14** machines authorised for this purpose.

1.8 Finance 2022/23

In 2022/23, the Home Office and policing spent **£2.56m**⁵¹ running NDNAD on behalf of the Criminal Justice System (and **£0.25m** for the DNA Proficiency Testing schemes run by FINDS).

⁵⁰ The Accreditation of Forensic Service Providers Regulations 2018 require (inter alia) competent law enforcement authorities to use Forensic Service Providers (FSPs) accredited to ISO/IEC 17025 or otherwise accredited in accordance with the EU/UK Trade and Cooperation Agreement, in order to conduct laboratory activities (including DNA profile activities or fingerprint data) for the prevention, detection or investigation of a crime.

⁵¹ This does not include IT costs.

2. National Fingerprint Database

2.1 Introduction

The National Fingerprint Database and National Automated Fingerprint Identification System (NAFIS), now collectively 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 compare fingerprints from known individuals with fingermarks from unsolved crimes.

2.1.1 Outcomes using Fingerprints.

The number of offenders convicted with the help of Fingerprint evidence is not recorded.

Within IDENT1 it is possible to search Tenprints and fingermarks to investigate links between a person and unidentified scene of crime fingermarks.

During the period 2022 / 23 there were **413,997** scene of crime fingermark to Tenprint searches resulting in **14,110** matches.

For all Tenprint records obtained from persons arrested in the UK there is a search of the arrestee Tenprint collection to confirm whether a person has a previously obtained fingerprint set on the database. This search confirms a person's identity and is linked to the person's arrest event, biometrically validating a person's arrest history.

2.2 Who is on IDENT1?

2.2.1 Number of profile records held on IDENT1 System⁵²

As at 31st March 2023, IDENT1 held **27,748,542** fingerprint forms relating to **8,665,793** individuals. Figure 6 shows the yearly number of individuals on IDENT 1. Figure 7 shows the yearly number of individuals retained on IDENT 1.

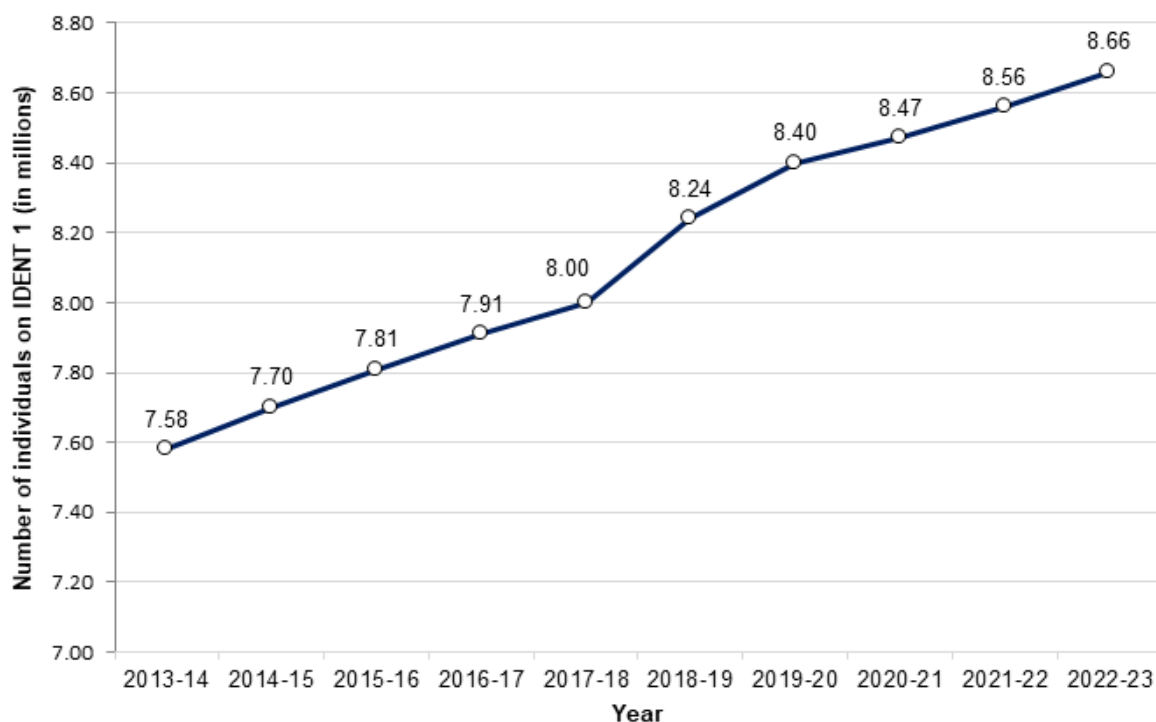
As at 31st March 2023, IDENT1 held **1,969,492** unidentified crime scene marks. Figure 8 shows the yearly number of unique unidentified mark submissions held on IDENT 1.

⁵² Source: FINDS - National Fingerprint and PNC Office in consultation with the IDENT1 supplier

Table 5. Records held on IDENT 1 by Year

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 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
March 2019	8,240,881	25,477,499	2,240,580
March 2020	8,397,761	26,298,205	2,203,279
March 2021	8,468,335	26,651,175	2,060,567
March 2022	8,562,878	27,168,685	2,009,989
March 2023	8,665,793	27,748,542	1,969,492

Figure 8: Number of individuals on IDENT 1 (in millions) (March 2014 to March 2023)⁵³



⁵³ Source: FINDS - National Fingerprint and PNC Office in consultation with the IDENT1 supplier

Figure 9: Number of Fingerprint Forms Held for all Subjects on IDENT1 (in millions) (March 2014 to March 2023)⁵⁴

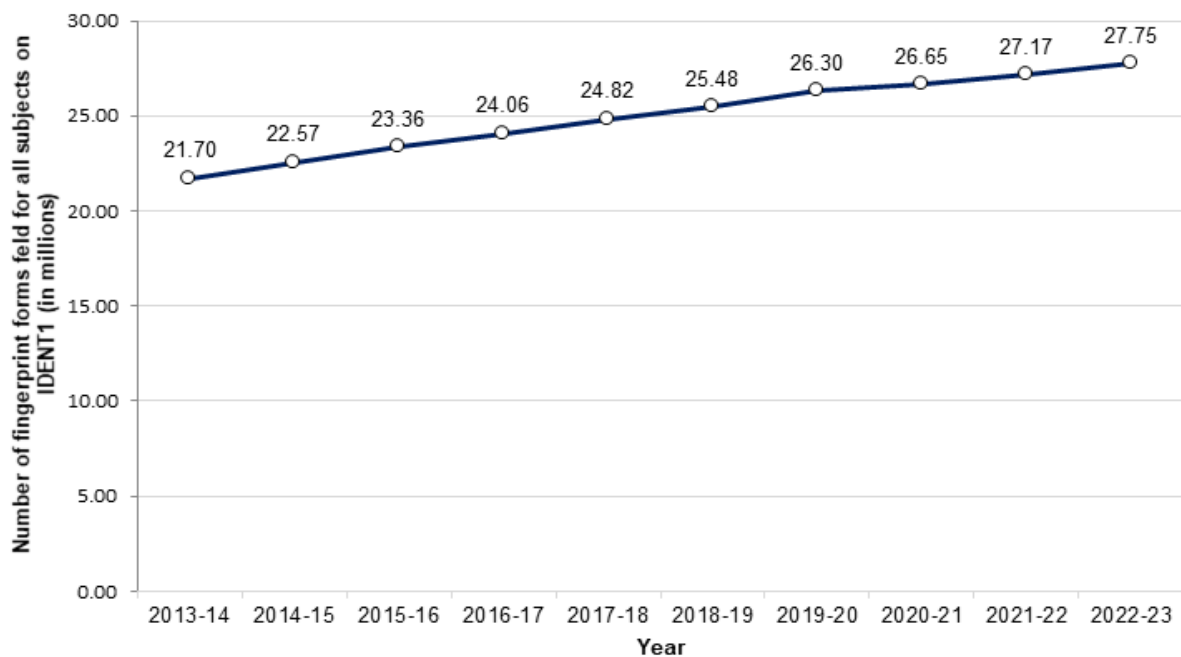
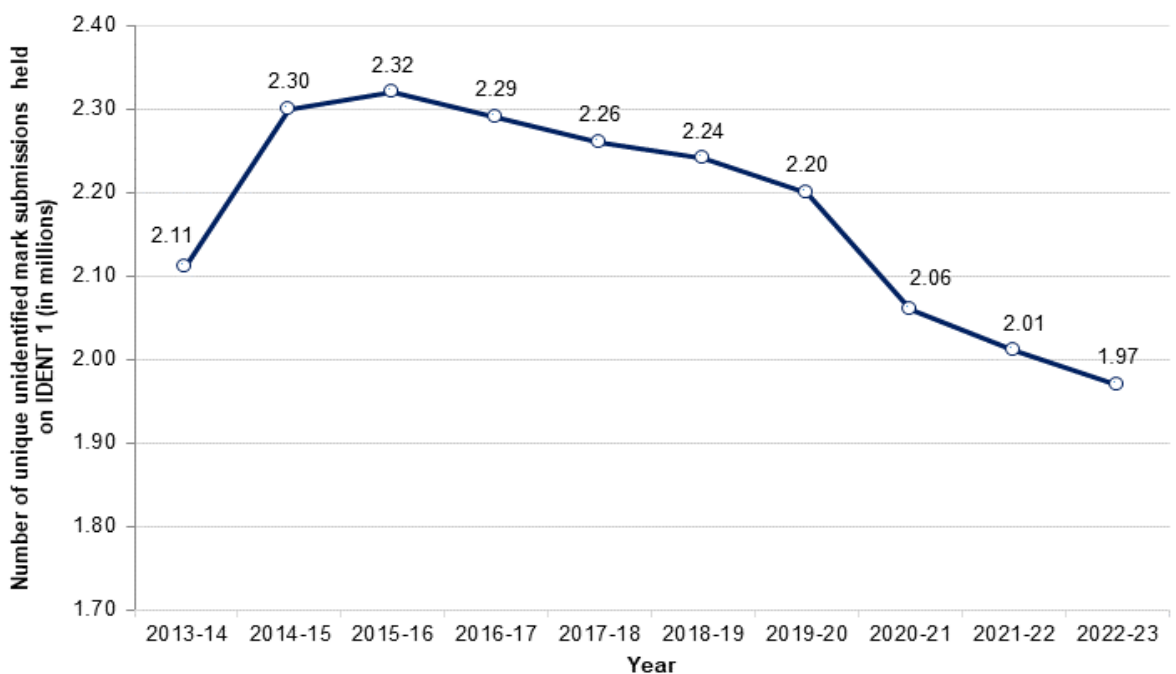


Figure 10: Number of unique unidentified mark submissions held on IDENT 1 (in millions) (March 2014 to March 2023) ⁵⁵



⁵⁴ Source: FINDS - National Fingerprint and PNC Office in consultation with the IDENT1 supplier

⁵⁵ Source: FINDS - National Fingerprint and PNC Office in consultation with the IDENT1 supplier

2.3 Vulnerable persons

IDENT1 also 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 (like 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, , and homicide.⁵⁶ Fingerprints donated by vulnerable persons are stored on IDENT1 and as such provide means to identify a vulnerable person when they come to police notice.

There were **8,611**⁵⁷ sets of fingerprints relating to vulnerable people held on the database as at 31st March 2023.

2.4 Missing persons

Fingerprints relating to unidentified bodies, and unidentified or missing persons investigations are searched on the IDENT1 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 **80** sets of fingerprints relating to missing persons searched on the database as at 31st March 2023. There were **2** Fingerprint identifications for Missing Persons Unit cases during 2022/23.

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

⁵⁷ Strategic Central & Bureau Platform (SCBP) Service Performance Monitoring Report (April 2023 Service Period).

2.5 Technology and business process developments on the National Fingerprint Database in 2022/23

The HOB Programme has provided the following developments in relation to fingerprints capture, searching and storage over the last year:

- Continued to roll out the replacement strategic mobile biometric capability, called Rapid Search, to police forces across England and Wales as mentioned in previous annual reports. At the end of 2022/23, 33 forces had joined the service with 3 other agencies in the pipeline.
- The re-procurement of the Strategic Matcher contract to cover the delivery of the Strategic Matcher Platform is almost complete. The platform will host the algorithms that enable biometric matching in fingerprint (and face) biometrics, replacing matching services that operate on legacy technology.
- HOB have continued to support police organisations to move their IDENT1 equipment or assisted configuring IDENT1 hardware to allow police organisations to collaborate when processing fingerprint data.
- Various IDENT1 hardware and software components have been updated and refreshed to ensure business continuity.

2.5.1 Future developments

- Work on the test, delivery and roll out the IDENT1 Strategic Matcher is underway with go live expected in 2024. The upgraded fingerprint matcher will provide more accurate fingerprint search results to users.
- HOB is working with Police Digital Services to explore the benefits of integration with the Digital Fingerprint Capability. Integration of the two systems would streamline the IDENT1 user workflow and allow a digital 'end to end' user journey offering time saving efficiencies.
- A proof of concept to refresh the IDENT1 bureau desktop concluded, and the concept is progressing to a feasibility study during 2024. Within the chosen approach there are opportunities to virtualise the bureau desktop and refresh the central architecture will improve system process and user experience.
- Additional technical refreshes are planned across the IDENT1 estate to ensure continuity of service until a larger replacement of the IDENT1 bureau desktop and central architecture is completed.
- In October 2020, the UK began exchanging fingerprint data through the Prüm treaty, with the list of connected countries stated in section 3.3; during the period of the next annual report, we aim to connect to: Estonia, Romania, Poland, Croatia, Netherlands, Portugal, Malta, France, and Latvia.

An individual's biometric information is sensitive personal information and is handled in accordance with the Data Protection Act 2018. To ensure transparency, HOB completes Data Protection Impact Assessments for all areas of the Programme. These are subject to independent ethical review by the Biometric and Forensic Ethics Group (BFEG) and it continues to review the assessments already published on GOV.UK.⁵⁸

⁵⁸ <https://www.gov.uk/government/publications/home-office-biometrics-hob-programme-privacy-impact-assessments>

2.5.2 Custody facial image retention on IDENT1

In the September 2022 FIND Strategy Board meeting, it was agreed that there should be a national data controller for the proposed retention of custody facial images on IDENT1, and that the governance should sit with the FIND Strategy Board. In the remainder of the reporting year, there were Board updates given for the service requirements to allow the custody image dataset to be copied from their current position within the Police National Database (PND) to the new IDENT1 Unified Collection of Custody Images (UCCI) database. Acknowledging the necessary approvals required to be in place, the configuration and population of the UCCI is planned to commence in 2023-24.

2.6 Finance 2022/23

In 2022/23 the Home Office and policing spent **£1.21m**⁵⁹ running IDENT1 on behalf of the Criminal Justice System.

⁵⁹ Does not include IT costs

3. International Data exchange

3.1 Overview

DNA and fingerprints are exchanged with other countries to aid criminal investigations and in connection with missing person or unidentified body investigations. All exchanges must abide by national and international law and all exchanges of DNA and Fingerprint data are made via the NCA UK International Crime Bureau.

3.2 International requests for DNA & Fingerprint exchange

i DNA

FINDS recorded **159** requests from other countries for DNA profiles from their jurisdictions to be searched against the NDNAD between April 2022 and March 2023. Of these, **one** was in connection with a missing person and **158** were in connection with an unidentified body / body part(s) investigation.

ii Fingerprints

FINDS has recorded **42** requests from other (non-UK) countries for search of fingerprints from their jurisdictions to be searched against IDENT1 between April 2022 and March 2023. All of these requests were in connection with missing persons or identification / unidentified body investigations.

3.3 Exchanges under Title II of Part 3 of the Trade and Cooperation Agreement (Prüm exchange)

Title III of the UK-EU Trade and Cooperation Agreement (TCA) provides for the continued exchange of biometric data with EU Member States to improve cross-border cooperation between law enforcement agencies to combat terrorism and cross-border crime. Cooperation prior to EU exit was governed by the Prüm Council Decisions and the biometric exchange mechanisms and governance framework continue to be referred to as 'Prüm'.

Prüm allows the sharing of biometric data (DNA profiles and fingerprints) with EU Member States on a reciprocal basis through a two-step process. Step one is an anonymised search of biometric data against national databases providing a 'hit/no hit' result. Step two involves the sharing of demographic data (e.g. name, date of birth) and policing intelligence where there has been a verified match against the anonymised data.

3.3.1 DNA Profile Exchange

The UK began sharing DNA profiles in July 2019 and as of 31st March 2023 was connected to 15 EU Member States: Austria, Germany, France, the Netherlands, Spain, Romania, Poland, Czech Republic, the Republic of Ireland, Latvia, Sweden, Belgium, Malta, Lithuania, and Finland. The UK's connection to Prüm DNA has produced positive results for both the UK and the EU partners connected to so far. During 2022/23, we connected with Finland, during which, the member state received 1,162 matches on initial search with the UK and the UK obtained 421 matches from Finland's database. During 2022/23 the UK obtained 29,788 matches to our subjects and 2,480 matches to our crime stains. During this period 878 Incoming requests were reported out as matches to requesting member states and 1,522 reports were sent out to UK police forces to request the intelligence from the member states.

3.3.2 Fingerprint Exchange

Following a positive peer evaluation and unanimous support from the EU Member States, the UK began exchanging fingerprint data under the Prüm treaty in October 2020. The evaluation of the UK's Prüm fingerprints architecture concluded that the UK's work on Prüm fingerprints was professional and structured; and that the UK's legislation was fit for purpose.

As of 31st March 2023, the UK was connected to **15** countries for fingerprints; Austria, Belgium, Czechia, Finland, France, Germany, Ireland, Latvia, Lithuania, Malta, Netherlands, Poland, Romania, Spain & Sweden.

UK Law Enforcement (UKLE) has conducted over **9,000** fingerprint searches across the connected EU countries since we connected and recorded the search data.

From 1st April 2022 up to 31st March 2023 the UK undertook **8,420** fingerprint searches that has resulted in **144** Step 2 intelligence packages being received from the EU and **53** outbound intelligence packages sent from the UK.

Since the UK's involvement in the Prum fingerprint exchange, the UK have made a total of **777** outbound requests to EU Member States. The EU states have responded to over 90% of all requests, providing over **650** subject profiles that have assisted UKLE in criminal investigations.

The EU Member States have made a total of **372** inbound requests to the UK. The UK have responded to over 93% of EU Member state requests and have provided over **150** UK subject profiles that have assisted in EU Member State investigations.

ISBN 978-1-5286-4882-0

E03125357