

National DNA Database

ANNUAL REPORT 2007-09





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Contents

Chairman's Introduction	2
Foreword	4
Summary of Key Facts and Figures	5
The contribution of the NDNAD to crime investigation and detection	6
NDNAD statistics	10
NDNAD matches and detections	27
Security and Data Protection	36
Research Requests	38
Technological changes and improvements to DNA profiling and the NDNAD	42
Support to Parliament	43
Financial Overview	45
NDNAD Strategy Board Members 2007-2009	46
Appendix A: The crime scene to court room rich picture	48
Glossary	50

Note The National DNA Database is a registered trademark

Chairman's Introduction

I am pleased to introduce the Report of the National DNA Database (NDNAD) covering two years from April 2007 through to March 2009. This is the first report since I took over as Chair from Chief Constable Tony Lake and on behalf of the Board I would like to thank him for his contribution to the effective operation of the NDNAD.

On taking over the Chair I inherited a governance structure that was based on the tripartite governance of policing in England and Wales, with core membership of The Association of Chief Police Officers (ACPO), the Association of Police Authorities (APA) and the Home Office representing the Secretary of State and lay membership. It is clear that the governance of the NDNAD needs to be more broadly based and recognise the individuals and organisations that can input and contribute to the effective operation of the NDNAD. I have proposed that membership of the Board should be extended to include the DNA Ethics Group, Human Genetics Commission (HGC), National Policing Improvement Agency (NPIA), Forensic Science Regulator and representation from Northern Ireland and Scotland and the Information Commissioner Office (ICO) as an observer. Whilst accepting the independent and separate reporting line to Ministers and Parliament of other members, I believe that a collaborative approach by all the relevant agencies is the most effective way to provide oversight and direction for the NDNAD.

During the period covered by this Report, the European Court of Human Rights considered the case of *S and Marper v the UK*. The European Court judgement delivered in December 2008 in this case is probably the most significant legal judgement affecting policing in England and Wales in decades. In particular it has helped to shape the debate, not just in Europe but also around the world, on the balance to be made between the right to privacy of the individual and the benefits to society of the use of DNA

The Government will bring forward proposals to ensure that powers given to the police by Parliament to take, use and retain DNA (and fingerprints) are fully compliant with the provisions of the European Convention on Human Rights

in policing. Nobody is in any doubt about the enormous contribution DNA has made to the prevention and detection of crime since the NDNAD was established in 1995. However, this has not been without an equal measure of concern about the effect this has had on the right to individual privacy, and those concerns have been reflected not only in the European Court judgement but also in reports from the House of Lords Committee on Science and Technology, the Rowntree Trust and the Nuffield Foundation as well as countless articles by academics and the media, and questions in both Houses of Parliament. This level of scrutiny is unprecedented in the history of policing in this country and underlines the importance that society places on the proper and ethical use of DNA analysis. On 7 May 2009 the Government published for public consultation, details of the changes it is proposing to make in response to the European Court judgement and, following consideration of the response to that consultation, the Government will bring forward proposals to ensure that powers given to the police by Parliament to take, use and retain DNA (and fingerprints) are fully compliant with the provisions of the European Convention on Human Rights.

We also saw the publication in April 2008 of the first Annual Report of the NDNAD Ethics Group. This group was formed in the previous July and under its Chair, Professor Peter Hutton from Birmingham University, it set about identifying and considering those issues which it felt touched upon the balance between the interests of public protection through the forensic use of DNA and the right to privacy of the individual. Their Report made eleven recommendations to which the NDNAD Strategy Board gave very careful consideration and which the Board accepted.

Gary Pugh
Chair, NDNAD Strategy Board





Foreword



The NDNAD continues to provide the police with the most effective tool for the prevention and detection of crime since the development of fingerprint analysis over 100 years ago. Since DNA was first used to secure a conviction in the Colin Pitchfork case in 1988, the science behind DNA analysis has continued to develop, and consequently it is vital to ensure that the science is robust and does not lead to any possible miscarriages of justice. This is why I particularly welcomed the creation in 2007 of the post of the Forensic Science Regulator for England and Wales. The first permanent Forensic Science Regulator, Andrew Rennison MSc, is responsible for setting, and monitoring compliance with, quality standards for forensic organisations, processes and forensic practitioners.

As with the development of the NDNAD itself, the UK is leading the world in the creation of this single point of regulation of forensic science for policing purposes from the scene of crime right through to the court process. Other EU member states have already shown considerable interest in the creation of this post and the role of the Forensic Science Regulator and it remains to be seen whether this will develop into a pan European model of regulation. The adoption of common quality standards for forensic science across Europe has become ever more important as the international exchange of DNA profiles offers greater potential to increase public safety in a significantly more mobile society.

In the NDNAD Annual Report for 2006/07, I reported that the NPIA had taken over Custodianship of the NDNAD. When the NDNAD was first set up in 1995, this role was undertaken by the Forensic Science Service (FSS) under the terms of the Memorandum of Understanding between the FSS and ACPO. However, the decision to transition the FSS to become a Government Owned company resulted in a re-think on Custodianship and ownership of this sensitive and critical national system. As an interim measure the Custodianship role was transferred to the Home Office in 2005 and following the launch of the NPIA in 2007, the Custodianship role came across to the new organisation. This ensures that control and ownership of the DNA data remains within a wholly Government organisation. A decision has now been taken, endorsed by the NDNAD Strategy Board and given Ministerial approval in March 2008, to take this process one stage further and to physically transfer the NDNAD itself from the FSS into an NPIA secure environment together with its associated staff and services. This project is being delivered as part of the NPIA Forensics 21 programme and is on course for completion by the end of 2009.

Chief Constable Peter Neyroud QPM
Chief Executive Officer
National Policing Improvement Agency

Summary of key facts and figures

As at 31 March 2009:

- There were an estimated 4,859,934 individuals whose DNA profile was held on the database, an 11 % increase on a year earlier, with slightly fewer profiles added in 2008/09 than in 2007/08
- 36,093 of the subject profiles related to volunteer samples
- 4 out of 5 profiles held on the database were from males
- The breakdown of subject profile records by ethnic appearance based on the judgement of the sampling police officer was: Asian (5.2 %), Black (7.3 %), Chinese, Japanese, or any other South East Asian (0.6 %), Middle Eastern (0.7 %), Unknown (9.4 %), White North European (74.8 %) and White South European (1.9 %)
- The majority (58 %) of subject profiles at the time they were added to the database related to those aged 16-34 (9 % aged 16-17, 13.2 % aged 18-20, 12.9 % aged 21-24, 23.1 % aged 25-34)
- 350,033 crime scene profiles were retained on the database
- During 2008/09, almost 6 in 10 crime scene profiles loaded to the NDNAD were matched to a subject profile.

The contribution of the NDNAD to crime investigation and detection

What is a DNA sample?

Before considering the effect that the establishment of the NDNAD has had on crime detection, it is important to be clear about the process involved in the collection and analysis of genetic material from suspects and crime scenes.

Deoxyribonucleic acid, generally abbreviated as DNA, is a complex molecule found in virtually every cell of the human body and indeed in all living organisms¹. DNA carries the genetic instructions in the form of a code, used for development and functioning of both the cells and the organism as a whole and is the mechanism whereby this genetic information is passed from one generation to the next. The vast majority of human DNA is exactly the same between individuals but small variations in the code are responsible for differing physical characteristics such as height, eye, skin and hair colour etc. Half our DNA is inherited from our mother and half from our father. Non-identical siblings will inherit different combinations of DNA from the same parents and are therefore similar but different. Except for identical siblings, each person's DNA is unique.

In policing, a sample of a person's DNA is usually taken by gently scraping the inside of the cheek with a cotton swab. It is non-intrusive and not painful. A person's DNA sample can also be obtained by taking plucked hair roots or a blood sample.

A DNA sample may be taken from a person arrested for, charged with or convicted of a recordable offence. Recordable offences are generally the more serious offences punishable with imprisonment but also include some other offences as set out in the National Police Records (Recordable Offences) Regulations 2000 (S.I. 2000 No 1139).

DNA samples retrieved from crime scenes comprise biological material, typically blood, hair, semen or saliva, found on articles such as clothing, weapons, and cigarette butts or on surfaces at the scene of crime itself. DNA can also sometimes be extracted from skin cells within fingerprints left at the crime scene.

1 DNA is not found in red blood cells or in some viruses

What is a DNA Profile?

DNA profiling targets areas of the DNA that are known to differ widely between individuals. Apart from a gender test, these areas do not code for any physical characteristic or allow definitive determination of any medical condition.

The current system of DNA profiling used in the UK, known as SGM Plus² examines ten areas of DNA plus a gender test and produces a numeric DNA 'profile' which can be loaded electronically onto the NDNAD. This contains two numerical representations of the DNA at each area examined, one inherited from the mother and the other from the father.

An example of an SGM Plus profile:

15, 18; 6, 9; 11, 13; 22, 22; 31, 32.2; 14, 17; 17, 20; 11, 12; 13, 16.3; 15, 16; X,Y

Although each person's DNA is unique (apart from identical siblings) DNA profiling does not examine all variations between individuals and is therefore not unique to an individual. It does however examine those areas of the DNA that discriminate widely between individuals and the chance of two unrelated individuals having matching full SGM Plus profiles is less than 1 in a 1000 million.

Attached at Appendix A is an illustration of the DNA analytical process from the crime scene through to the court room.

DNA leading to detections

Sally Ann Bowman, an eighteen year old, was murdered close to her home in South London in September 2005. A large-scale police investigation followed which included an intelligence-led DNA screening exercise, with some 1700 men giving DNA samples voluntarily, but the investigation drew a blank. Then in June 2006, Mark Dixie was arrested following a brawl in a pub and had his DNA taken. This was a fairly minor incident and he was released with no further action taken. However, when his DNA profile was loaded onto the NDNAD it produced a match to the DNA evidence retrieved from the murder victim and he was arrested. In February 2008 he was charged, convicted and sentenced to life imprisonment with a minimum term of thirty four years. DNA evidence had been crucial in tracking down and convicting Dixie.

Steve Wright was sentenced to life imprisonment in February 2008 for the murder of five prostitutes in Ipswich in December 2006. In 2003, Wright had been arrested on suspicion of stealing a small sum of money while working as a hotel barman and a DNA sample taken from him. He was subsequently convicted of theft. When the five prostitutes were murdered within a very short space of time, the police were able to recover samples from one of the bodies which were sent for analysis and produced a match with Wright's DNA profile. Wright was subsequently charged and convicted of the five murders and sentenced to life imprisonment. If he had not been identified by his DNA, he might have gone on to commit even more offences.

In 1987, Paul Taylor attacked and raped a twenty two year old woman who had the mental age of a three year old and who was cared for in a residential home. In 2004, Taylor was arrested for shoplifting and had his DNA taken and the profile was added to the NDNAD. When West Yorkshire Police did a 'cold case' review of the 1987 rape, they sent the original evidence for further tests and a match was found between DNA retrieved from the evidence and Taylor's profile on the database. When Taylor was arrested he initially tried to pretend that the woman – who died in 1996 – had been a short term girl friend but he pleaded guilty to rape when faced with evidence that she could not have given consent because of her mental age. Taylor pleaded guilty in October 2008 and was sentenced to six years' imprisonment in January 2009. The Judge at Taylor's trial branded his actions appalling and said that he might have got away with it had it not been for advances in science.

In October 1975, eleven year old Lesley Molseed was abducted on her way to the shops in Rochdale. Her body was found three days later after she had been sexually assaulted and stabbed. Crucially a semen stain was recovered from

her clothing. Stefan Kiszko, who had the mental and emotional age of a twelve year old, was found guilty of her murder in 1976 after a confession was made during a two day intensive round of questioning without a solicitor. In 1992, Stefan Kiszko was cleared on appeal after it was proved he was impotent and could not have been responsible for the semen stain on Lesley's clothing. Had this happened today, his DNA would have categorically eliminated Stefan Kiszko from the enquiry.

In 2005, Ronald Castree was arrested on suspicion of the rape of a female who had been found in a drink and drug induced state. Castree had his DNA taken but was later released with no further action taken. When his DNA profile was loaded onto the database it matched the semen stain recovered from Lesley's clothing. He was found guilty of Lesley's murder in November 2007 and sentenced to life imprisonment.

In April 1997, David Newton raped a 16 year old girl in Leeds and in 2006 tried to rape and murder a 52 year old woman on Ilkley Moor. Both offences were linked by DNA retrieved from the victims but the attacker was not on the NDNAD. Two years later, a male relative of Newton's was arrested and his DNA profile added to the Database. Using a technique called familial searching, scientists were able to search the Database for profiles similar to the one retrieved at both crime scenes and from those profiles the police drew up a family tree of their male relatives. This finally led to Newton being asked to provide a DNA sample and the following day he left his home and fled to Cornwall. His DNA provided a match to those taken from the victims and the police later released his name and details to the media. As a result of intensive publicity, he finally gave himself up to the police. He later pleaded guilty to both offences and was jailed for life in December 2008.

National DNA Database Statistics

The NDNAD contains just over 5.6 million profile records. Because the data on the NDNAD is constantly changing and records are continually being added and removed, it is generally only possible to provide a “snapshot” of its contents at a single moment in time.

Subject profiles

Subject profiles derive from biological samples taken from suspects following arrest for a recordable offence and samples from persons who volunteer to have their profiles added to the Database (Volunteer profiles).

At 31 March 2008, 5,056,740 subject profiles were retained on the NDNAD.

At 31 March 2009, 5,617,604 subject profiles were retained on the NDNAD.

The information which accompanies the subject profile loaded onto the NDNAD holds very little information about a subject’s identity – only their name, date of birth, gender and ethnic appearance; the latter is determined by the police officer who took the sample, consequently this is not the same as ethnicity.

It is important to note that the number of subject profiles held on the NDNAD does not equate to the actual number of individuals on the NDNAD. The number of subject profiles on the NDNAD is higher than the number of individuals because some of the profiles held are replicates. Some causes of replication are unavoidable, for example, the existing profile on the Database may be under an alias. Equally a pre-existing profile on the Database may relate to an individual sampled outside of England and Wales. Samples taken by police forces outside of England and Wales cannot be identified through the Police National Computer (PNC) when the police are taking a sample. A police force may also choose to resample someone to improve the discriminating power or evidential value of the sample. Please note that the figures for subject profiles in this report includes replicates.

It is important to emphasise, however, that the presence of these replicate profiles on the NDNAD does not impact on its effectiveness and integrity.

As at 31 March 2008 it was estimated that approximately 13.3% of subject profiles held on the NDNAD were replicates. The number of different individuals represented on the NDNAD at that time was approximately **4,383,650** (for all UK forces).

As at 31 March 2009 it was estimated that approximately 13.5 % of subject profiles held on the NDNAD were replicates. The number of different individuals represented on the NDNAD as at 31 March 2009 was approximately **4,859,934** (for all UK forces).

Subject Profiles loaded to the National DNA Database

Since 1995, over 5.76 million subject profiles have been loaded to the NDNAD. During 2007/08, 591,028 new subject profiles records were added to the NDNAD, a decrease of 18 % compared to 2006/07. During 2008/09, 580,174 new subject profiles records were added to the NDNAD, a decrease of 2 % compared to 2007/08.

Figure 1. Number of subject profiles loaded to the NDNAD annually as at 31/03/09 for all forces

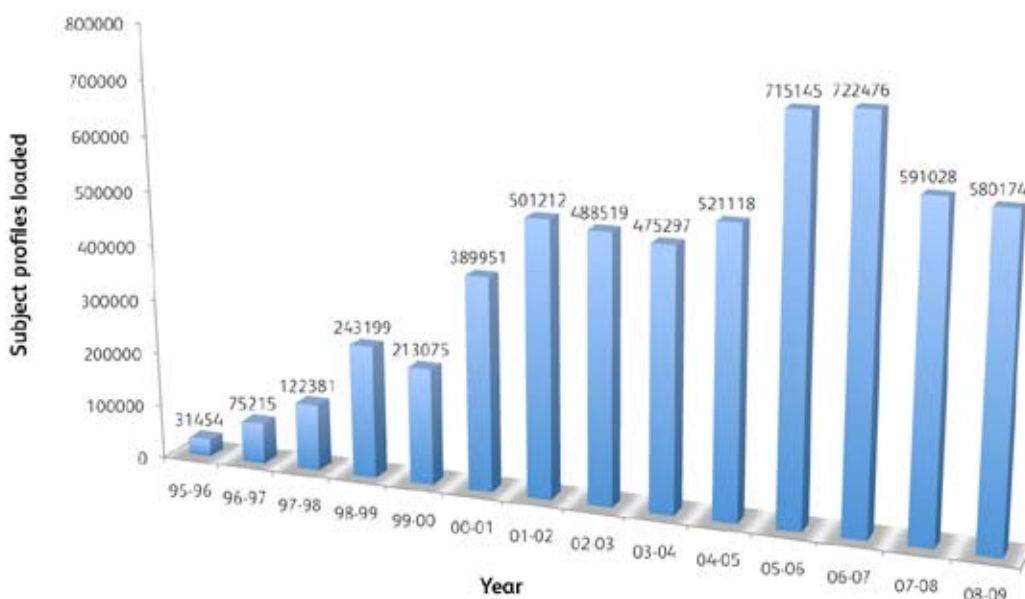


Figure 1 is slightly different to the chart produced for the 2006/07 Annual Report. The date loaded has changed for some records, usually as a result of the records having been removed from the NDNAD and then re-loaded, when the original date loaded will have been overwritten with the most recent date, causing historic counts to be reduced. This chart also includes casework reference samples (from a subject); these were not included in the graphs featured in previous reports. There are a number of records held on the NDNAD for which the load date is unknown; these will not be included in this chart.

Subject Profiles removed from the National DNA Database

The legal provisions governing the taking and retention of DNA samples and fingerprints for the NDNAD are set out in the Police and Criminal Evidence Act 1984, as amended by the Criminal Justice & Police Act 2001 and the Criminal Justice Act 2003. They currently provide that DNA (and fingerprints) may be taken from a person arrested for a recordable offence and retained indefinitely; irrespective of whether or not the person is charged or convicted of that offence.

As explained in the Introduction, the law on the retention of DNA and fingerprint records is being reviewed in the light of the judgement of the European Court of Human Rights in the case of *S and Marper v the UK*. Currently, the discretion whether or not to remove a DNA record from the database is exercised by the Chief Officer of the force that took the DNA sample.

In January 2006, ACPO issued guidance to Chief Officers on the consideration of applications for the removal of DNA samples, fingerprint records and PNC records taken by forces in England and Wales. The ACPO 'Retention Guidelines' recommend that records be retained until the individual is deemed to have reached their 100th birthday, whether living or dead. Although the decision whether to remove a DNA profile from the NDNAD rests with the Chief Officer of the force that took the sample, the expectation is that DNA profiles which have been taken lawfully will be removed in exceptional cases only. The "Exceptional Case Procedure" in the ACPO Guidelines sets out the process for such a removal.

These Guidelines will need to be reviewed in the light of the outcome of the proposals that the Government bring forward in response to the *S and Marper* judgement.

During 2007/08, 162 subject profiles were deleted from the NDNAD under the Exceptional Case Procedure and during 2008/09 the figure was 283 profiles.

In Scotland the legislation differs from that in England and Wales. In Scotland, DNA profiles obtained from samples taken on arrest may only be retained on the NDNAD if:

1. A conviction is obtained in the case for which the sample was taken. In this case the profile is retained on the NDNAD indefinitely.

2. A person is arrested for a relevant sexual or violent crime and the case results in a verdict other than guilty, or if no court verdict, providing proceedings are formally commenced and abandoned by the Crown. In this case the profile can be retained for a period of three years, repeatedly extendable for an additional two years on application to a sheriff.

Subject to the exception at (2) above, once a case has been completed or proceedings have been dropped, Scottish subject profiles must be deleted from the NDNAD. During 2007/08, 19,211 Scottish subject profiles were deleted from NDNAD and during 2008/09 the figure was 16,562.

Volunteer Profiles

As at 31 March 2008, 28,625 of the subject profiles held on the database related to volunteer samples and as at 31 March 2009 the figure was 36,093.

Most volunteer samples are obtained from victims, third parties (other people who could have legitimately been present at the crime scene) or persons who have come forward voluntarily, as a result of the police setting up an intelligence-led screening exercise, for elimination purposes in relation to the investigation of a specific offence. Prior to 2001 they could only be used for that purpose and the profiles could not be loaded to the NDNAD. The 2001 change in legislation for England, Wales and Northern Ireland enabled these profiles to be added to the NDNAD, but only if the person provides separate written consent. The consent form explains that once such consent is given it cannot then be withdrawn. Equivalent legislation introduced in Scotland in 2003 differed only in that it allowed volunteers to withdraw their consent and the position in England and Wales in respect of volunteer samples is again being currently reviewed.

Analysis of subject profiles retained

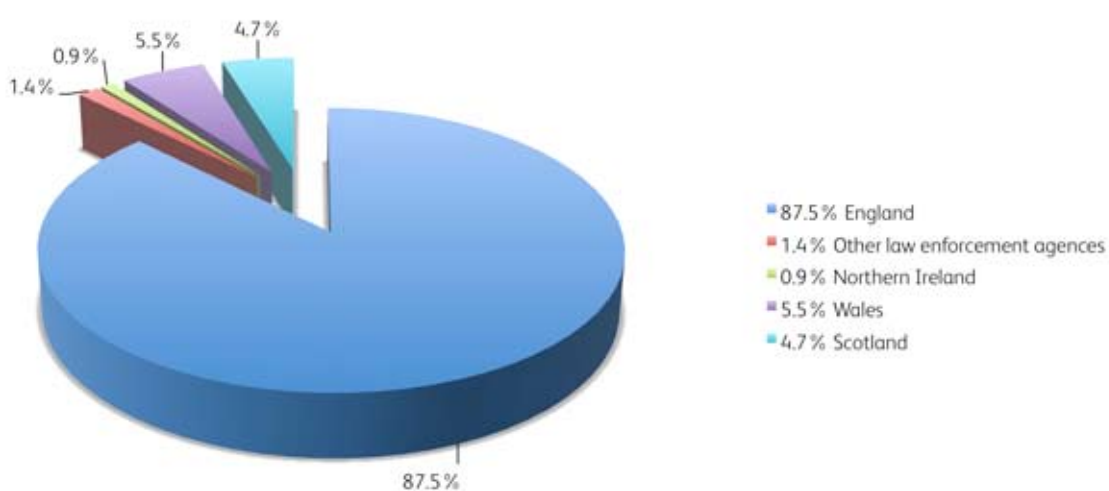
The figures represent profiles on the NDNAD, not individuals. There may thus be some duplication, but this should not make any material difference to the % breakdowns.

Location of Police Force/Law Enforcement Agency providing Subject Sample Record

The NDNAD does not hold any address information concerning those sampled. The only geographical information held is the Police Force that submitted the sample. This breakdown is therefore based on the geographical location of the police force that submitted the sample.

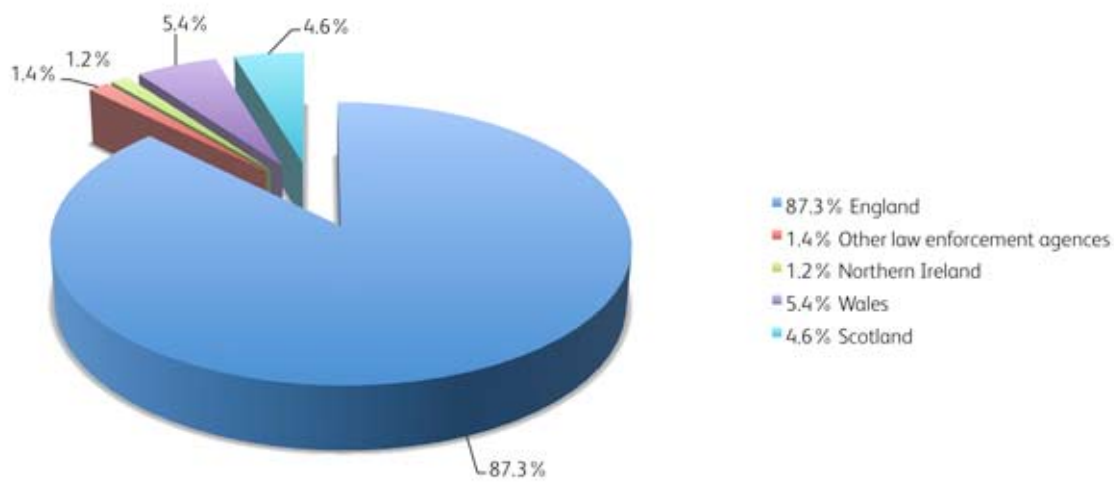
The breakdown by location of the Police Force/Law Enforcement Agency providing the subject sample record at the end of March 2008 is set out below in Figure 2:

Figure 2. The breakdown of the subject profiles retained on the NDNAD by location of the police force/law enforcement agency submitting the subject sample record as at 31/03/08



The same breakdown at the end of March 2009 was:

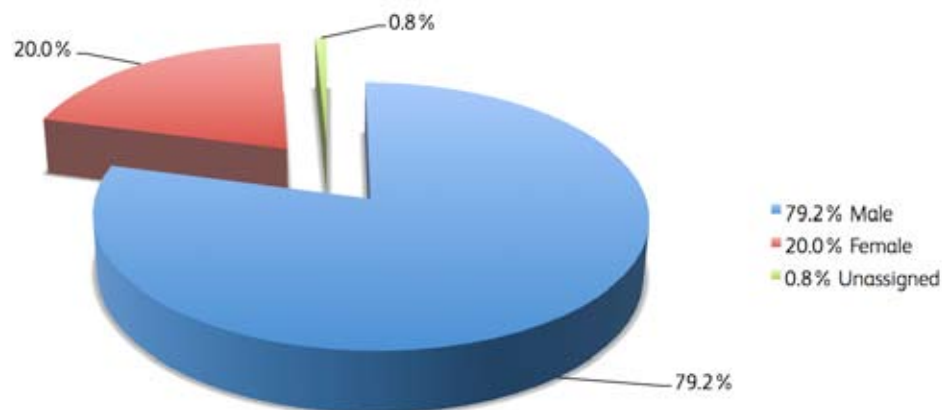
Figure 3. The breakdown of the subject profiles retained on the NDNAD by location of the police force/law enforcement agency submitting the subject sample record as at 31/03/09



By Gender

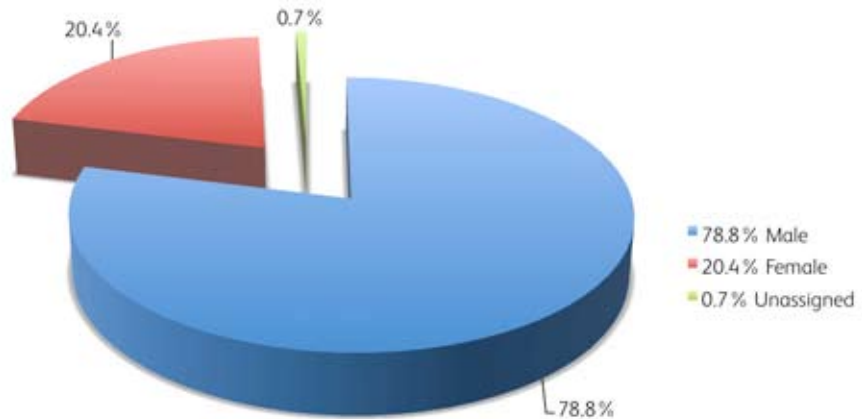
The breakdown by gender at the end of March 2008 was:

Figure 4. The breakdown of subject profiles held on the NDNAD by gender as at 31/03/08



The same breakdown at the end of March 2009 was:

Figure 5. The breakdown of subject profiles held on the NDNAD by gender as at 31/03/09



By Ethnic Appearance

Ethnic data held on the NDNAD reflects the ethnic appearance of the individual, and is based on the judgement of the police officer taking the sample as to which of seven broad ethnic appearance categories they consider the individual belongs. The purpose of collecting information on ethnic appearance is to assist with identification.

Concern has been expressed by some organisations about the proportion of Black persons on the NDNAD. The report of the Home Affairs Select Committee Inquiry: Young Black People and the Criminal Justice System, published in October 2007, recommended that the Government should conduct a study to determine the implications of the presence of a high proportion of the black male population on the NDNAD. In the light of this recommendation, the National Policing Improvement Agency (NPIA) has carried out an Equality Impact Assessment (EIA) of the NDNAD and the ACPO DNA Good Practice Guide which provides guidance for police forces on the use of DNA, including the taking of DNA samples from persons in custody.

Stage 1 Equality Impact Assessments (EIAs) of the NDNAD and the ACPO DNA Good Practice Manual were undertaken and completed by the NPIA in 2007. These were initial screening assessments to identify any potential equality issues in NDNAD processes.

Following on from the initial Stage 1 EIAs, the NPIA has completed a Stage 2 Equality Impact Assessment (EIA) review of the NDNAD and ACPO DNA Good Practice Manual. The Stage 2 EIA looked in greater depth at any potential equality issues that were identified in the initial Stage 1 EIAs. Copies of the Stage 1 EIAs and the Stage 2 EIA have been published on the NPIA website.

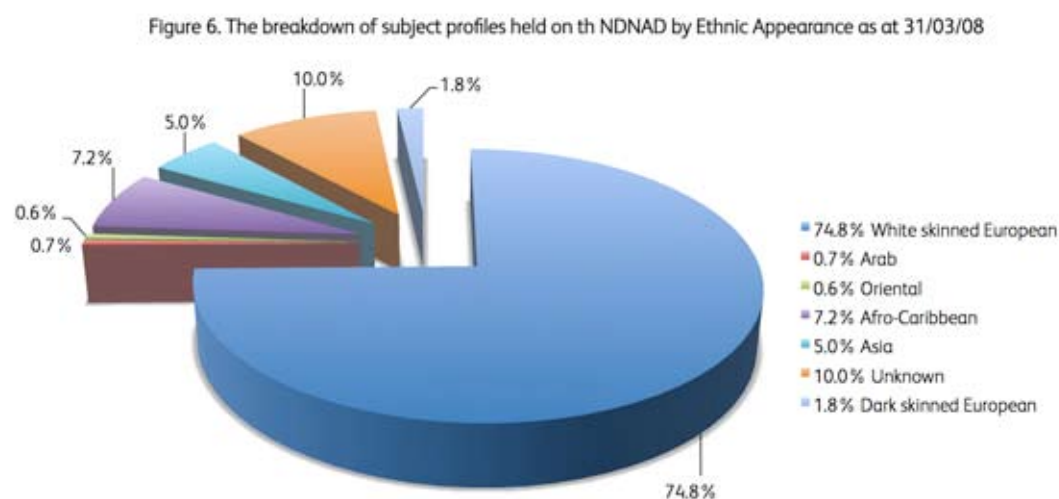
The EIAs have highlighted areas that may have an adverse impact on different under represented groups and made a number of recommendations to improve NDNAD operations and processes. The EIA recommendations are being considered and progressed by a working group comprising NPIA officials and representatives from ACPO and the NDNAD Ethics Group. The NDNAD EIA Working Group meets quarterly to review progress.

The work undertaken to date on the EIAs suggests that any bias in proportionality reflected on the NDNAD is likely to result from over-representation in the Criminal Justice System (CJS) as a whole and is not the result of inherent bias in NDNAD processes.

The NPIA will also be looking to work better with members of the community to identify any further areas of concern about the NDNAD. This work will also support a wider remit of informing the public about the NDNAD and making information more accessible via the website.

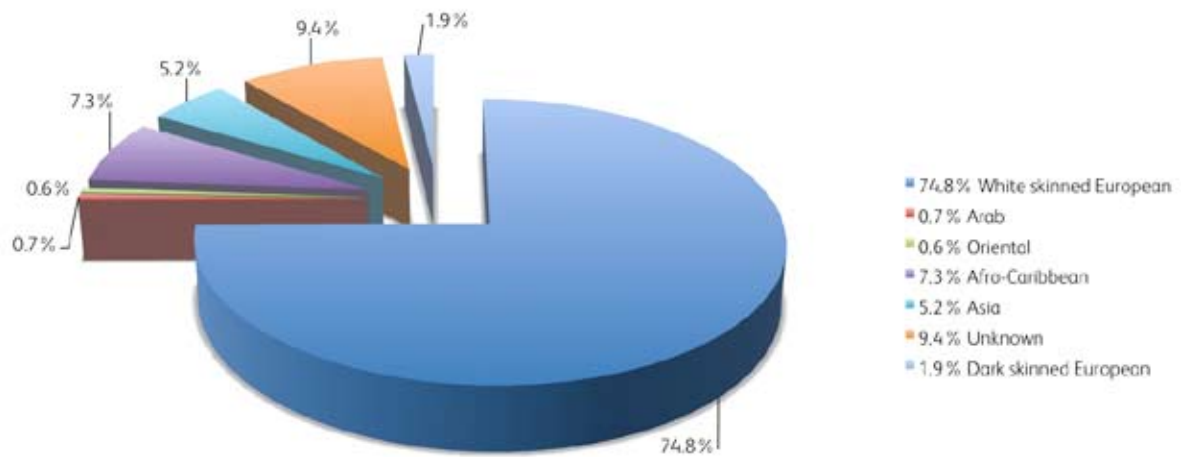
Work on the NDNAD EIA recommendations will continue. It will also address any further issues arising following the implementation of the new DNA retention framework in conjunction with the NDNAD Strategy Board to ensure that equality issues are identified and considered as early as possible.

The breakdown by ethnic appearance at the end of March 2008 was:



The same breakdown at the end of March 2009 was:

Figure 7. The breakdown of subject profiles held on the NDNAD by Ethnic Appearance as at 31/03/09



Note: Ethnic appearance is not normally included in the data submitted from Scotland and accounts for 43 % of the 'unknowns'. Until April 2005, the ethnic appearance of volunteers was not recorded; volunteers thus account for a further 4 % of the 'unknowns'.

The ethnic appearance categories were renamed during 2008/09 and this is reflected in the charts.

By age

When considering the age of people held on the NDNAD, the date of birth (DOB) recorded for a subject on the NDNAD is used. The DOB recorded on the NDNAD for a subject is provided by the individual to the police officer at the time of arrest. On occasions, of course, this may not be their true DOB and for a very small percentage of records the DOB is unknown.

Age analysis of a profile held on the NDNAD can be carried out either based on the age that the person was when their profile was loaded to the NDNAD or their current age on a given date. Both types of age breakdown of the NDNAD are provided below in figures 8 - 11.

The position at 31 March 2008 was:

Figure 8. The breakdown of subject profiles held on the NDNAD by age on load as at 31/03/08

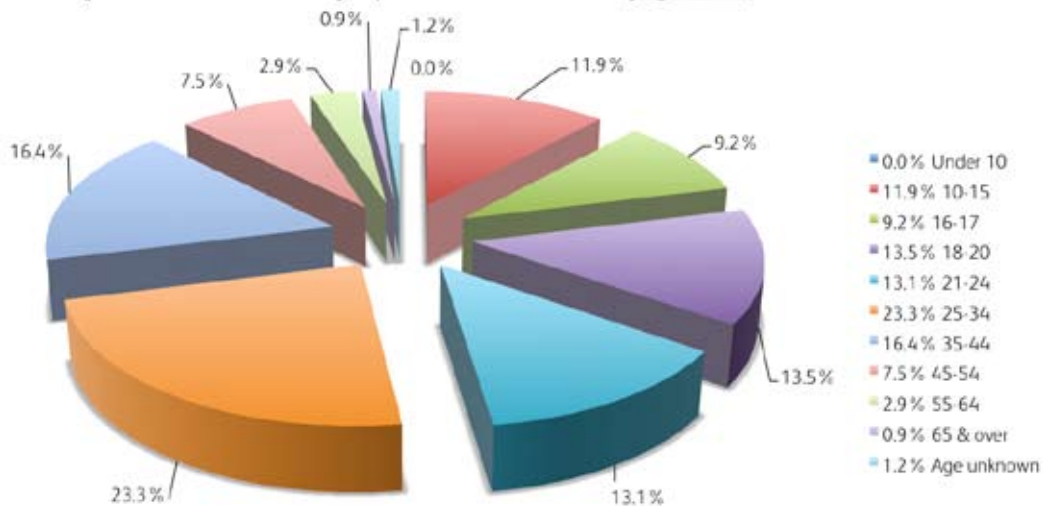
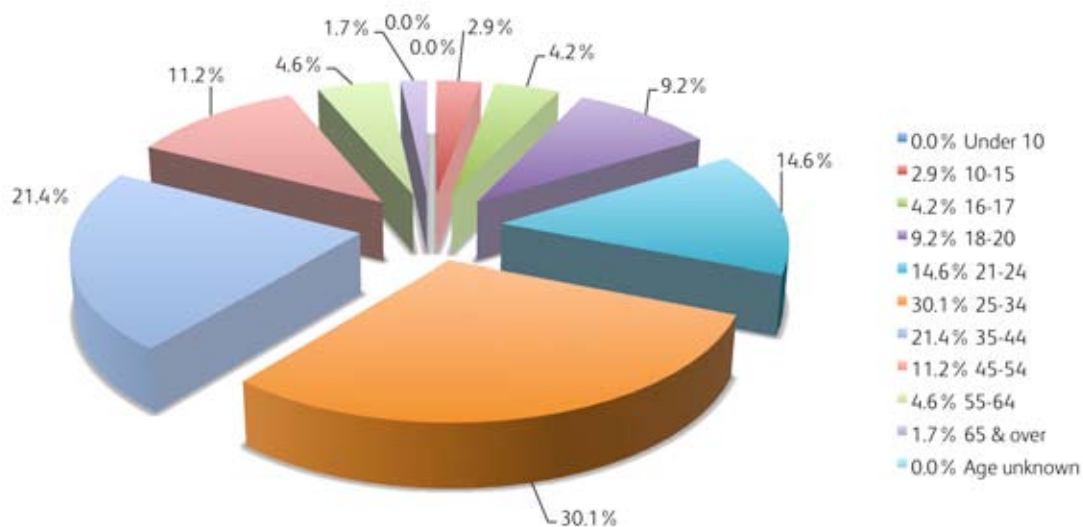


Figure 9. The breakdown of subject profiles held on the NDNAD by current age as at 31/03/08



The position at 31 March 2009 was:

Figure 10. The breakdown of subject profiles held on the NDNAD by age on load as at 31/03/09

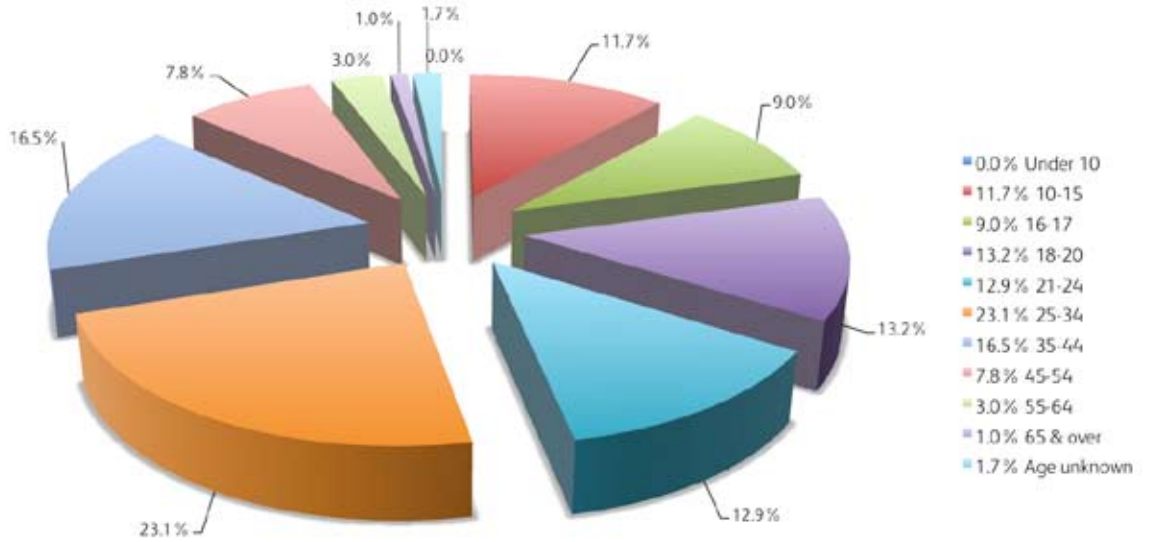
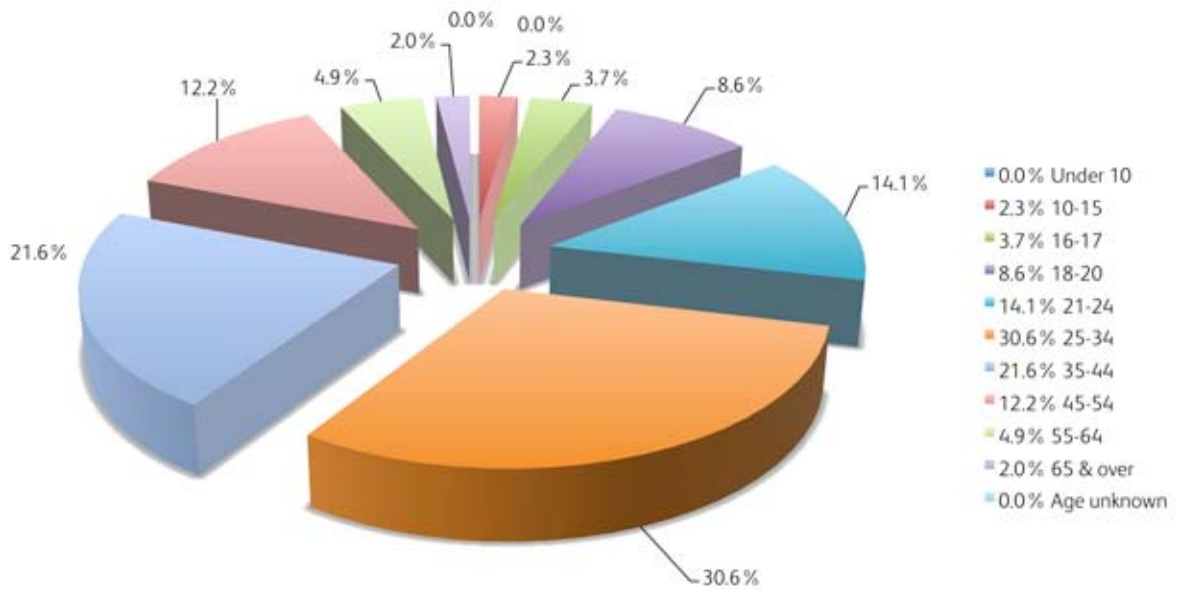


Figure 11. The breakdown of subject profiles held on the NDNAD by current age as at 31/03/089



Children under ten years

DNA profiles from children under 10 have been added to the NDNAD only with the consent of their parent or guardian, in accordance with the provisions of the Police and Criminal Evidence Act. The then Home Secretary however announced on 16 December 2008 that the DNA profiles of all children aged under ten would be removed from the NDNAD.

Following the Home Secretary's announcement, the Chair of the NDNAD Strategy Board wrote to the Chief Constables of all forces in England and Wales asking them to remove the profiles of any children aged under ten on the NDNAD. The removal of these profiles has now been completed and all DNA profiles taken from children aged under ten submitted by police forces in England and Wales have been deleted from the NDNAD. The final profile taken from a child aged under ten was removed from the NDNAD on 5 March 2009. At 5 March 2009, the youngest person whose profile was held on the NDNAD taken by England and Wales forces was aged ten when the profile was taken and loaded to the Database. The Home Secretary stated on 30 March 2009 that 96 profiles of children under 10 had been deleted from the NDNAD following her earlier announcement.

The Home Secretary's December announcement related to profiles taken by forces in England and Wales, as the Home Secretary is responsible for policing policy in England and Wales, while responsibility for policing in Scotland and Northern Ireland rests with the local administrations. Scotland has its own DNA Database and powers to retain DNA taken by Scottish forces differ from powers in England and Wales, although it does also load records to the NDNAD.

On 31 March 2009, there were thirty three profiles of children aged under ten on the NDNAD taken by Scottish forces. The age of criminal responsibility is eight years of age in Scotland. All thirty three subjects were aged eight or over when samples were taken.

Crime scene profiles

Crime Scene samples (e.g. blood, hair, semen and saliva) are recovered from a scene of crime. They are analysed by a forensic science laboratory to potentially obtain a DNA profile. Only crime scene samples, for which there is no immediate suspect, are added to the NDNAD.

Crime Scene profiles loaded to the NDNAD

Since 1995, 556,794 crime scene profiles have been loaded to the NDNAD

Figure 12. Number of crime scene profiles added to the NDNAD annually, all forces as at 31/03/09

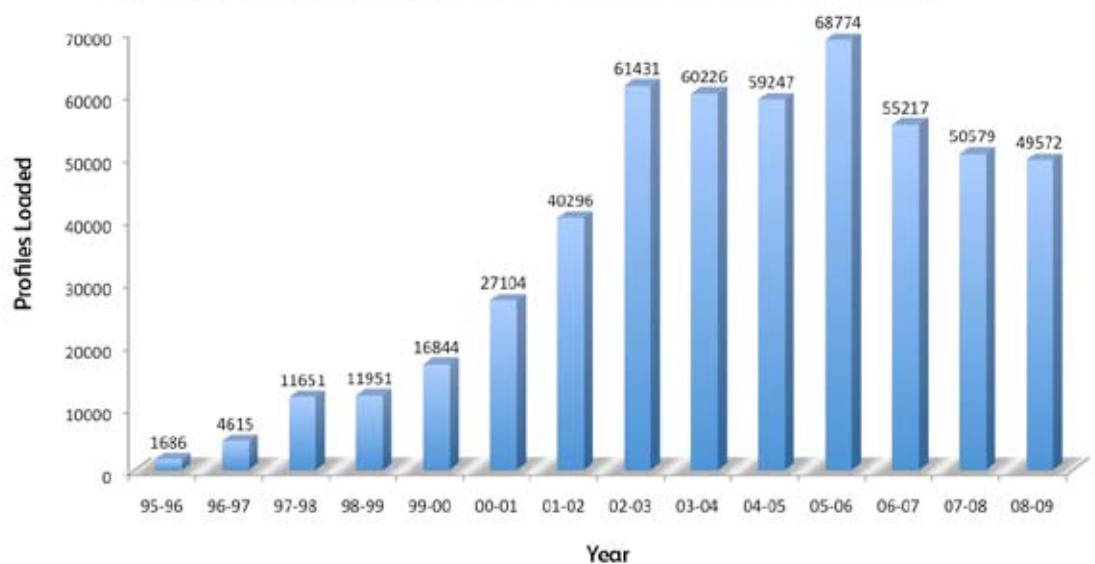


Figure 12 is slightly different to the chart produced for the 2006/07 Annual Report because the date loaded has changed for some records, usually as a result of the records having been removed from the NDNAD and then re-loaded, when the original date loaded will have been overwritten with the most recent loaded date, causing historic counts to be reduced. There are a number of records held on the NDNAD for which the profile load date is unknown; these will not be included in this chart.

Figures 13 - 16 below show the breakdown by offence types of the crime scene profiles loaded in 2007/08 and 2008/09. The total number of serious and volume crime scene profiles loaded each year is less than the total number of crime scene profiles loaded for that year. This is because some crime scene profiles are loaded with 'unknown' offence classes.

Figure 13. Serious Offences loaded to the NDNAD 2007/2008 (Total: 5,731)

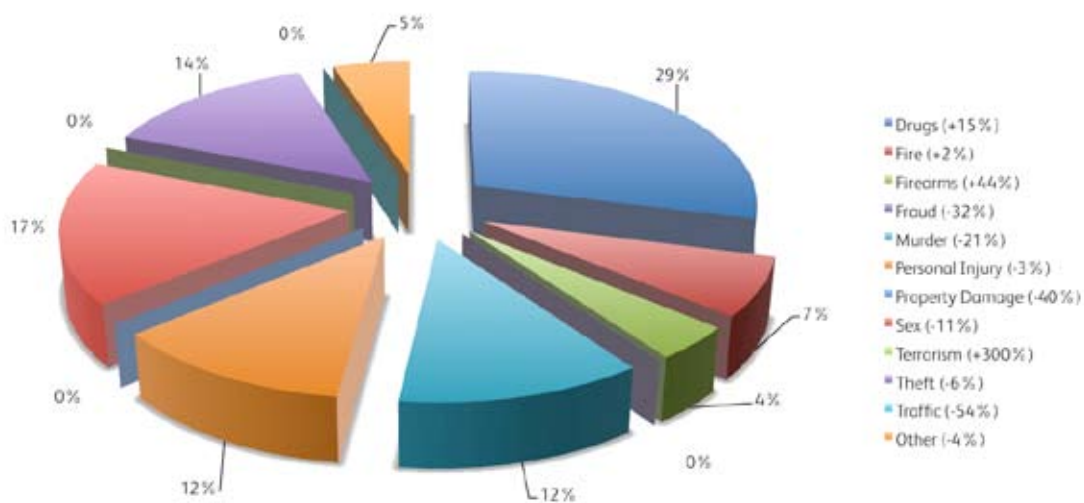


Figure 14. Volume Offences loaded to the NDNAD 2007/08 (Total 44,817)

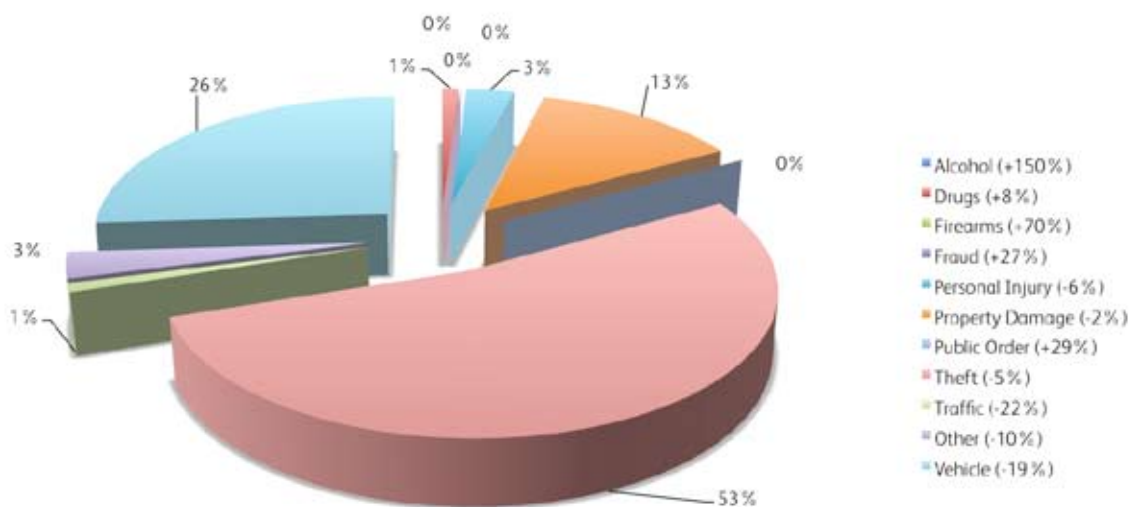


Figure 15. Serious Offences loaded to the NDNAD 2008/09 (Total: 5,765)

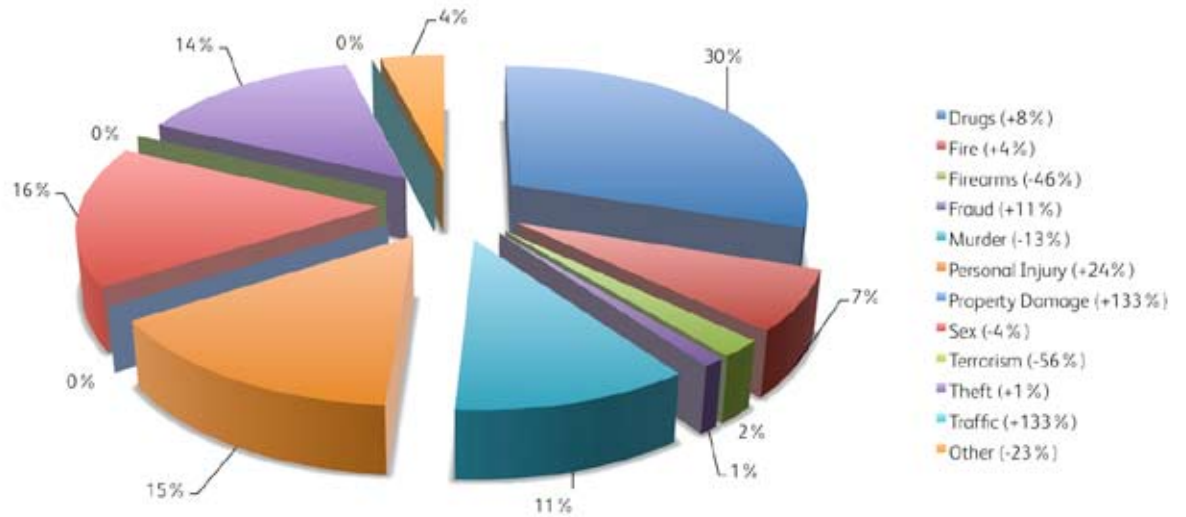
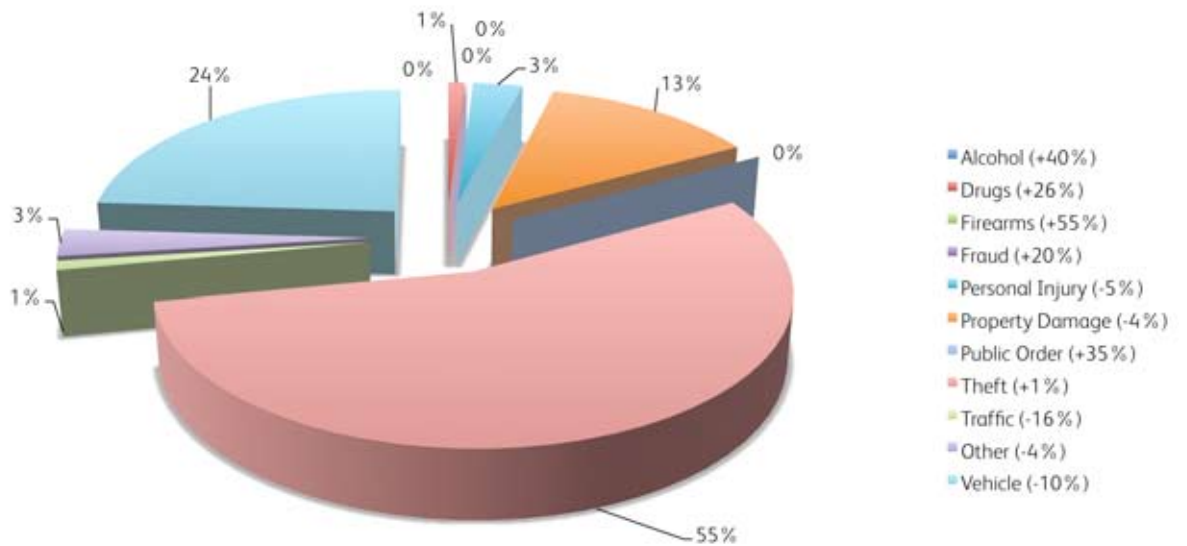


Figure 16. Volume Offences loaded to the NDNAD 2008/09 (Total: 43,765)



Crime Scene Profiles removed from the NDNAD

Crime scene profiles are removed from the NDNAD at the request of the police following a conviction for the offence or when a decision has been made that it will not be investigated further.

During 2007/08, 28,306 crime scene profiles were removed from the NDNAD.

During 2008/09, 24,382 crime scene profiles were removed from the NDNAD.

Crime scene profiles retained on the NDNAD

At 31 March 2008, 324,400 crime scene profiles were retained on the NDNAD.

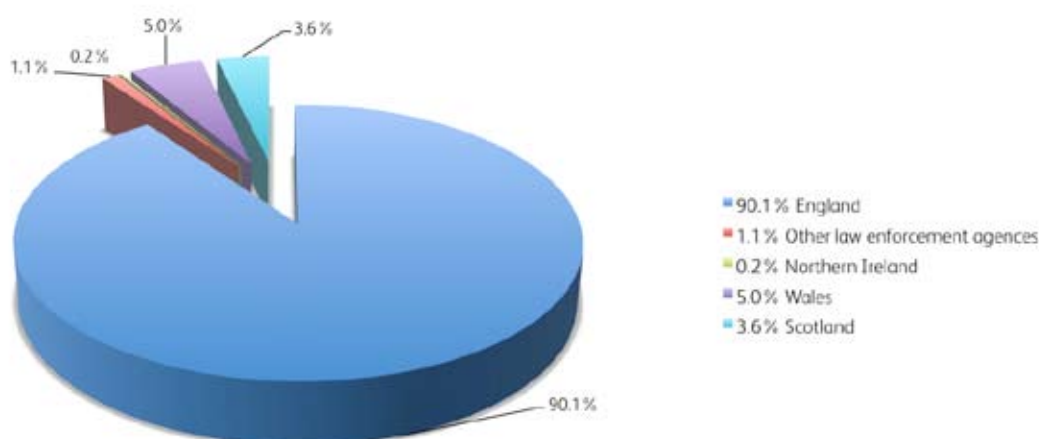
At 31 March 2009, 350,033 crime scene profiles were retained on the NDNAD.

Breakdown by location of police force/law enforcement agency submitting the crime scene sample

Figures 17 and 18 are based on the geographic location of the police force that submitted the sample.

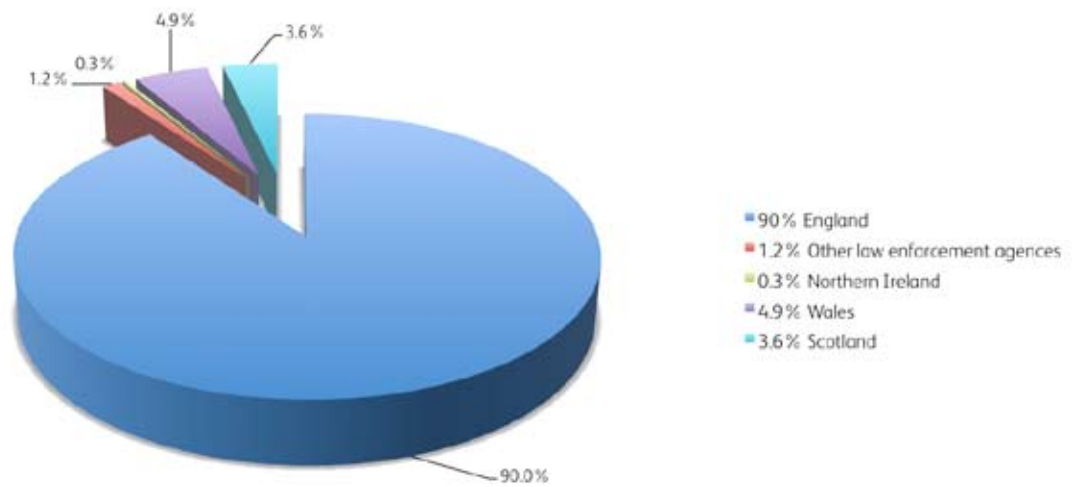
The position at 31 March 2008 was:

Figure 17. Breakdown of crime scene profiles held on the NDNAD by location of police force/law enforcement agency submitting the crime scene sample at 31/03/08



The position at 31 March 2009 was:

Figure 18. Breakdown of crime scene profiles held on the NDNAD by location of police force/law enforcement agency submitting the crime scene sample at 31/03/09



NDNAD Matches and Detections

DNA profiles from crime scenes may match against individuals or other crime scenes. Such matches are transmitted securely from the Database to the owning force(s).

A crime is said to have been detected when a suspect has been identified for that crime and there is sufficient evidence to charge the suspect. DNA matches are a powerful aid to crime investigation and detection: where DNA profiles from crime scenes are added to the Database the rate of detection can be significantly increased. Importantly, a crime scene DNA profile can also assist police investigation by eliminating innocent persons from the investigation.

In the very first case involving DNA, Richard Buckland, the initial prime suspect in the murder of two schoolgirls confessed to murdering one of them. Pioneering work on DNA showed that semen samples taken from the girls did not match Richard Buckland but indicated that the cases were linked as the semen in both cases came from the same person. The real offender was later identified as Colin Pitchfork and in 1988 he was jailed for life for the two murders.

The National Policing Improvement Agency collects data on behalf of the Home Office from police forces in England and Wales on their forensic activity and related detections. This data includes the number of crimes that have a crime scene examination, the number of crimes where forensic material is collected, the number of crimes where DNA is loaded to the NDNAD, the number of crimes with a DNA match and the number of crimes with a DNA match detected etc. In some serious crimes, two or more DNA crime scene sample profiles may be loaded to the NDNAD and both may result in a scene-subject match on the NDNAD (i.e. there can be more than one scene-subject match on the NDNAD in a serious crime).

The majority of recorded crimes do not have a crime scene (for example, minor assault, drugs offences, theft, fraud etc) and do not have a crime scene examination. In 2008-09, 796,780 crimes had a crime scene examination (only 17% of recorded crimes)¹. In those crimes which have a crime scene examination, some do not yield any forensic material (DNA or fingerprints).

1 Source: Police data on forensic activity and related detections

Crime scene to subject matches

Matches between a DNA profile from crime scenes and subjects play a crucial role in providing the police with a possible suspect for the offence. However, police only act upon DNA matches in conjunction with other information from the investigation.

Since May 2001, 306,379 crime scene profiles have been identified in 282,861 match groups linking crime scene and subject profiles generated by the NDNAD². For 226,393 of these crime scene to subject matches, a single subject was reported as being linked to the crime scene(s) by their DNA. The identification of more than one potential suspect can be due to the crime scene profile being a partial profile or due to the number of replicate subject profiles held on the Database.

During 2007/08, one or more subject profiles were matched with 40,406 crime scene profiles. The total represents a decrease of 8.6% of the total number of crime scenes for which one or more suspects were nominated in the previous year. The fall is due to fewer new crime scene profiles being loaded within the period.

Of these matches in 2007/08, 787 were crime scene profiles from Scottish forces and 44 were crime scene profiles from Northern Ireland. 1,119 related to subjects from Scottish forces and 66 to subjects from Northern Ireland.

During 2008/09, one or more subject profiles were matched with 40,687 crime scene profiles. The total represents an increase of 0.7% of the total number of crime scenes for which one or more suspects were nominated in the previous year.

Of these matches in 2008/09, 880 were crime scene profiles from Scottish forces and 110 were crime scene profiles from Northern Ireland. 1,357 related to subjects from Scottish forces and 131 to subjects from Northern Ireland.

2 **Match group** – A match group consists of two or more profiles that are indistinguishable or compatible, insofar as comparison is possible. A match group may comprise any combination of profiles e.g. two or more subject profiles, two or more crime scene profiles or a mix of subject and crime scene profiles.

By offence type

2007/08

Figure 19 below shows the number of cases where a crime scene profile has matched to one or more subject profiles for the main offence types. Figure 20 shows the number of cases where a crime scene profile has been matched to one or more subject profiles for serious offences.

Figure 19. Number of cases which have been linked to one or more subjects in 2007/08

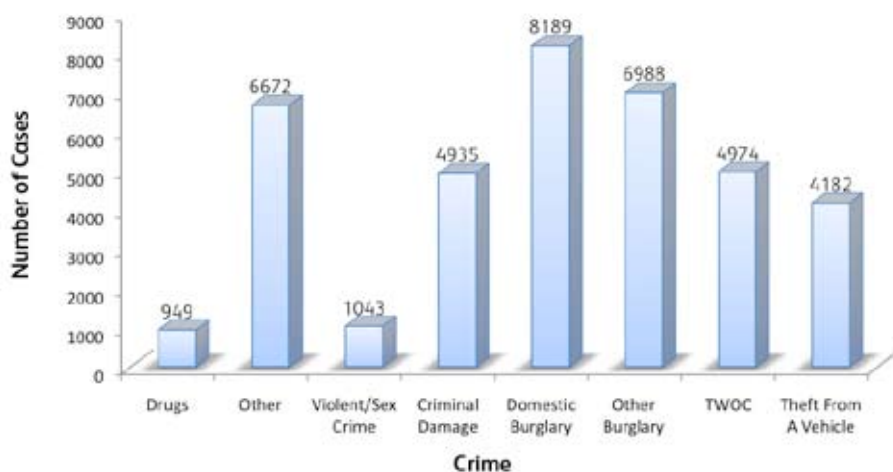
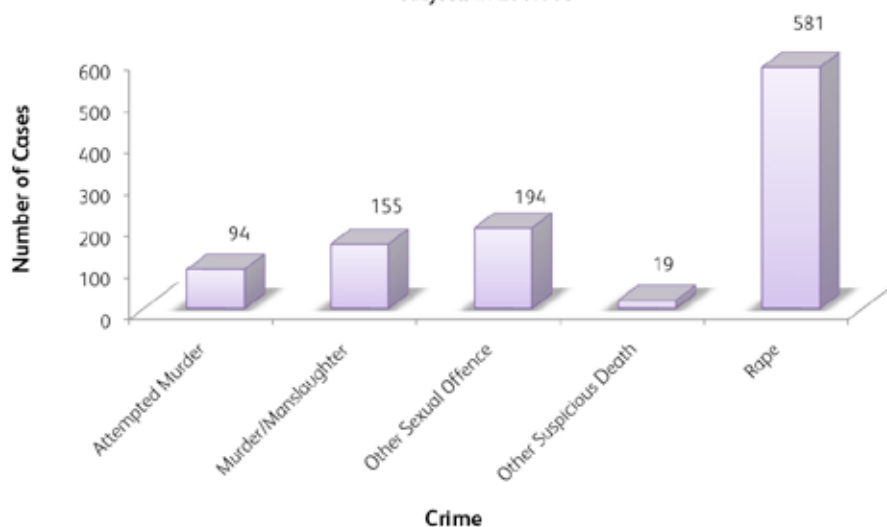


Figure 20. Number of Serious Crime cases which have been linked to one or more subjects in 2007/08



2008/09

Figure 21 shows the number of cases where a crime scene profile has been matched to one or more subject profiles for the main offence types and Figure 22 shows the number of cases where a crime scene profile has been matched to one or more subject profiles for serious offences.

Figure 21. Number of cases which have been linked to one or more subjects in 2008/09

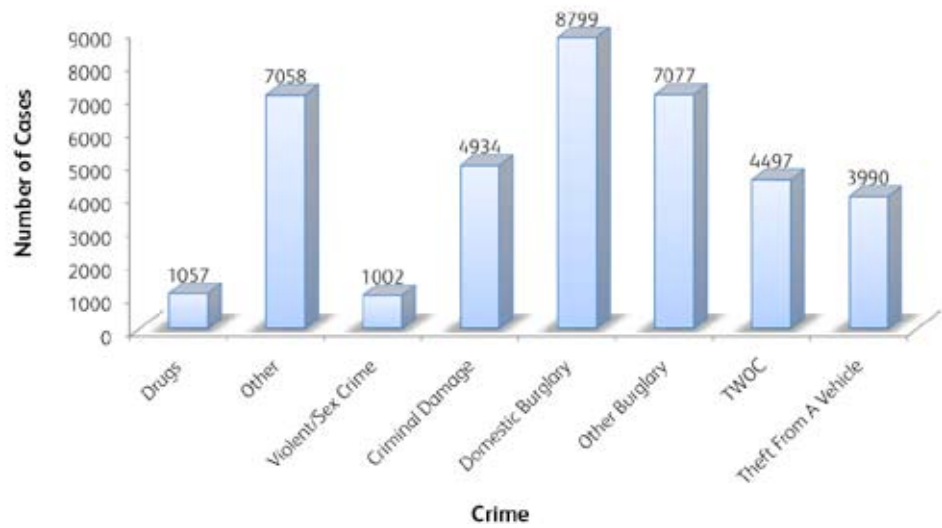
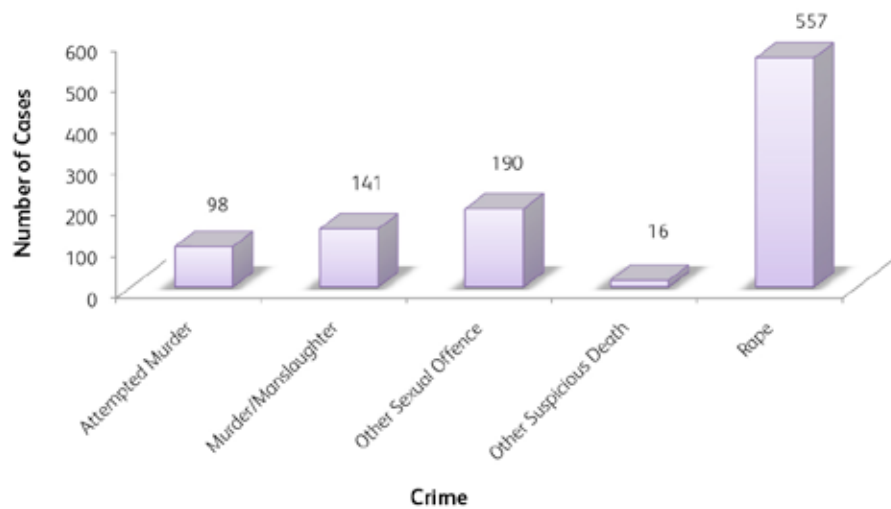


Figure 22. Number of Serious Crime cases which have been linked to one or more subjects in 2008/09



Crime scene to crime scene

Matches between DNA samples retrieved from different crime scenes provide valuable intelligence information on linked offences and thus repeat offenders. Since May 2001, 28,494 crime scenes have been linked to other crime scenes as a result of a new crime scene profile being added to the NDNAD.

In 2007/08, 2,861 new crime scenes were linked to other crime scenes when DNA profiles from the new crime scenes were added to the NDNAD.

In 2008/09, 4,139 new crime scenes were linked to other crime scenes when DNA profiles from the new crime scenes were added to the NDNAD. The large increase in scene to scene matches in 2008/09 is partly due to an IT change, which led to some older samples being identified in a greater number of matches.

By number of linked scenes

Table 1 shows the numbers of match groups linking crime scenes with other crime scenes. This indicates that the crimes were potentially committed by the same offender.

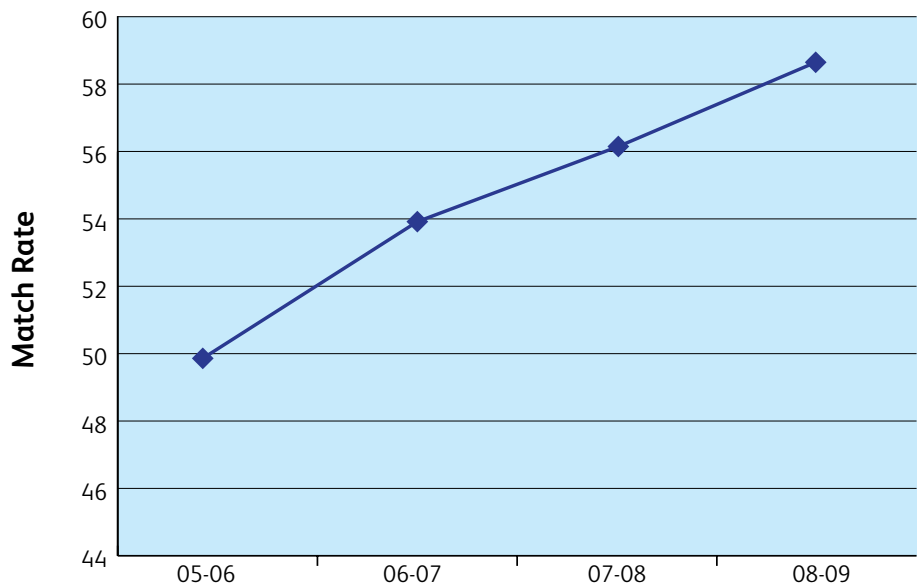
Table 1. Match Groups linking Crime Scenes at 31/03/09

No. of Crime Scene Profiles in the Match Group	No. of Scene to Scene Match Groups
2	8900
3	513
4	124
5	54
6	16
7	15
8	5
9	3
10	10
11	1
12	4
13	1
14	1
16	1
17	2
41	1
42	1
43	1
58	1

Match rates

As the number of DNA profiles on the NDNAD has grown, the number of reported DNA matches reported has also increased. From the date of establishment of the NDNAD in 1995, this has illustrated its value to the police as a source of intelligence information in crime investigation.

Figure 23. Crime Scene to Subject Match



A key objective in recent years has been to ensure that the majority of the active criminal population is represented on the NDNAD, and this has led to a steady increase in the likelihood of a crime scene profile matching to a subject profile already held on the NDNAD upon being loaded. This is referred to as the crime scene to subject match rate.

Matches to crime scenes also occur when, upon being loaded, a subject profile matches to a crime scene profile already held on the NDNAD. This *subject to crime scene* match rate is a much lower figure. As previously explained, this is because the majority of recorded crimes do not have a crime scene (for example, minor assault, drugs offences, theft, fraud etc.) and consequently there is no crime scene examination.

2007/08

The average match rates between crime scene and subject profiles when:

- a crime scene profile was loaded to the NDNAD during 2007/08 was 56.3 %
- a subject profile was loaded to the NDNAD during 2007/08 was 1.5 %

2008/09

The average match rates between crime scene and subject profiles when:

- a crime scene profile was loaded to the NDNAD during 2008/09 was 58.7 %
- a subject profile was loaded to the NDNAD during 2008/09 was 2.3 %

These figures are for all forces.

Summary figures for matches and detections in 2007/08

Table 2 shows the number of *crimes* with a DNA match and the number of *crimes* detected in which a DNA match was available for 2007/08 by crime type. Table 3 shows the corresponding figures for 2008/09.

Table 2. DNA Matches and Detections 2007/08

2007/08	Crimes with a DNA scene-subject match	Detections of crimes in which a DNA match was available
All other recorded crime	3,659	1,407
Criminal Damage	5,432	3,180
Domestic Burglary	8,043	3,443
Drugs Offences	1,000	321
Homicide	363	83
Other Burglary	7,211	3,886
Other Sex Offences	163	64
Other Violent Offences	1,766	849
Rape	540	184
Robbery	1,432	617
Theft from Vehicle	3,544	2,201
Theft of Vehicle	4,223	1,379
Total of 12 crime types	37,376	17,614

NB 'Homicide' includes murder and manslaughter

Source: Police data on forensic activity and related detections

Table 3. DNA Matches and Detections 2007/08

2008/09	Crimes with a DNA scene-subject match	Detections of crimes in which a DNA match was available
All other recorded crime	3,699	1,506
Criminal Damage	5,149	2,886
Domestic Burglary	8,188	3,702
Drugs Offences	1,110	397
Homicide	252	70
Other Burglary	7,110	3,830
Other sex offences	175	106
Other Violent offences	1,819	861
Rape	580	168
Robbery	1,462	603
Theft from vehicle	3,484	2,036
Theft of vehicle	3,699	1,298
Total of 12 crime types	36,727	17,463

NB 'Homicide' includes murder and manslaughter

Source: Police data on forensic activity and related detections

Summary figures for matches and detections 1998-2009

Table 4. DNA Matches and Detections 1998-2009

Year	Crimes with a DNA scene-subject match	Detections of crimes in which a DNA match was available	Additional detections arising from the DNA match*	Total DNA-related detections ('DNA detections' and Additional detections)
1998/99	21,239	6,151	Not available	6,151
1999/00	23,021	8,612	Not available	8,612
2000/01	30,894	14,785	Not available	17,785
2001/02	39,043	15,894	6,509	22,403
2002/03	49,913	21,098	12,717	33,815
2003/04	45,269	20,489	15,899	36,388
2004/05	40,169	19,873	15,732	36,605
2005/06	45,221	20,349	19,960	40,309
2006/07	41,717	19,949	21,199	41,148
2007/08	37,376	17,614	15,420	33,034
2008/09	36,727	17,463	14,452	31,915
Total April 1998 – March 2009	410,589	182,277	121,888	304,165

Source: Police data on forensic activity and related detections

* The figures for 2008/09 for Additional detections are provisional

'Matches' include cases where the individual had an innocent reason for being at the crime scene and cases where it was not possible to take the investigation forward.

A 'DNA detection' means that the crime was cleared up and a DNA match was available.

"Additional detections" occur when, for example, a suspect, on being presented with DNA evidence linking him to one offence, confesses to further offences.

Security and Data Protection

As operators of the NDNAD, the NPIA are responsible for ensuring its security, and in particular the data maintained within it. Data security is a key requirement under the Data Protection Act: the seventh data protection principle states that “*appropriate technical and organisational measures shall be taken against any unauthorised or unlawful processing of personal data and against accidental loss or destruction of, or damage to, personal data*”.

The security arrangements associated with the NDNAD are overseen by the NDNAD Strategy Board, as well as by the Information Commissioner’s Office.

Over the past two years, there has been intense focus on the emphasis on security of citizen data held by the government as a result of a number of high profile data loss incidents. The government’s response to these losses was the Data Handling Review chaired by Robert Hannigan. The Data Handling Review led to a root and branch review of government security policy, culminating in the publication of the Security Policy Framework (SPF), which contains the primary internal protective security policy and guidance on security and risk management for HM Government Departments and associated bodies. The framework supersedes the Manual of Protective Security and it sets out 70 minimum security requirements for security policy that all government departments and agencies (defined as including all bodies directly responsible to them) **must** adhere to.

Implications for the National DNA Database

Many of the minimum standards required by the SPF were already met or exceeded by the security measures in place for the NDNAD. Nevertheless, a comprehensive security review of the way the database is run and the security measures in place at forensic suppliers has been undertaken, resulting in a number of revised working practices and increased security monitoring of activity on the NDNAD. Areas where further improvements could be made have also been identified and have been addressed. This has resulted in:

- clear definition of roles and responsibilities for the senior information risk owner and the information asset owner who has day-to-day responsibility for the security of the NDNAD;
- the production of audit statements on internal controls;

- reinforced staff security awareness training and HR processes to deal with any security incidents;
- a revised incident management scheme, which includes reporting to the Information Commissioner's Office;
- the introduction of an Information Charter at a corporate (NPIA) level;
- additional specific measures to protect personal information;
- stricter controls and measures for the use of removable media;
- security clauses in all contracts with suppliers and contractors; and
- increased audit and management accountability.

Two major projects have also been undertaken. The first project was to withdraw the use of fax machines from the DNA process. All communications between police forces, the NDNAD Delivery Unit and forensic suppliers are now undertaken via government secure email with strict audit and controls in place and overlying encryption where required. This project is now live with all UK police forces and suppliers.

The second project is to bring the NDNAD within the main NPIA datacentre. The NDNAD is currently hosted by the Forensic Science Service who developed it when they were an Executive Agency of the Home Office. The decision has now been taken to move the NDNAD into NPIA facilities where it can benefit from the structured security measures afforded to other critical policing systems. The project is due for completion by the end of 2009.

Security continues to be given the highest priority within the National DNA Database Delivery Unit and by the NPIA senior management who are committed to a process of continuous improvement for the DNA Database and to an ongoing programme of technical and procedural compliance audits to ensure that the high standards which have been set are embedded and being implemented within day operational practices by all operational staff.

Research Requests

Legislation Relating to Research on the NDNAD

The Police and Criminal Evidence Act (PACE) 1984, as amended, requires that DNA samples and profiles derived from them can only be used for the purposes of prevention and detection of crime, the investigation of an offence or the conduct of a prosecution. Since April 2005, by further amendment of PACE through the Serious Organised Crime and Police Act the retained samples and profiles can also be used for the purposes of identifying a deceased person or body part.

The access policy for use of samples taken under PACE and information derived from the samples is that only the uses permitted under the Act will be allowed, subject to any other relevant legal and ethical constraints. Each request for release of samples and/or data is considered on a case by case basis.

Summary and Analysis of Research Requests received up to 31 March 2009

Firstly, it should be noted that research requests are not agreed unless they have clear operational benefit to the police in terms of investigating and solving crime.

Since the development and implementation of the NDNAD in 1995, there have been 46 requests for access to samples or data for research and development purposes. 26 of these requests have been approved, 18 have been rejected and two are currently being considered. Further information on the nature of the requests is provided in Table 5.

Research requests made up to 31 March 2009, have been categorised into five areas and the numbers received, approved and outstanding under each category are listed below in Table 5. The categories presented in this document are broadly similar to those supplied to the Science and Technology Select Committee in 2004/2005 but they have been broken down further to provide more clarity.

Table 5. NDNAD Research Requests

NDNAD Research Requests Received, Approved and Outstanding				
Category	Received	Approved	Rejected	Awaiting Decision
1. Requests for management information to assess and improve effectiveness of the Database.	3	2	1	0
2. External requests e.g. from Universities, European Network of Forensic Science Institutes (ENFSI).	6	1	4	1
3. Police operational request relating to specific investigations (includes familial search requests up to 31 March 2006). Familial searching is now a part of the service provided to the Police Forces by the forensic science suppliers in collaboration with the Custodian.	4	2	2	0
4. R&D requests from the Home Office, forensic science suppliers to develop new services for future use in routine casework.	30	19	10	1
5. Requests for access to data to develop and implement improvements to the Database.	3	2	1	0
Total	46	26	18	2

The process for approval and management of research requests has changed over time to take account of the increasing size and importance of the NDNAD, together with changes to legislation and to the positioning of the NDNAD. Review and analysis of the research requests is, therefore, considered in the context of:

- legislation relating to the NDNAD,
- technological changes in DNA profiling and the NDNAD,
- the need to assess and improve effectiveness of the Database and DNA profiling evidence generally,
- the increased understanding by the forensic science community, the Criminal Justice System and the public of the importance of the NDNAD, and the awareness of the potential use and misuse of genetic materials and databases.

Current Arrangements for Management of Research Requests

Requests for the release of profiles or samples must be approved by the NDNAD Strategy Board. In the first instance requests are made to the Custodian of the NDNAD who provides the Board with details of the request together with the Custodian's observations on the merits of the request for the Board to consider.

In accordance with the requirements of PACE, the Board does not approve any research unless it has clear operational benefit to the police in terms of investigating and solving crime.

Under the present arrangements, each proposal is assessed on its merit by the NDNAD Strategy Board and further independent advice is sought from the Ethics Group.

Research using DNA samples and profiles taken and retained under PACE powers can only be carried out for the purposes permitted under the Act.

PACE does not require the permission of the person from whom the sample was taken for research to be carried out.

Forensic science organisations have been issued with strict guidance relating to the handling of samples and profiles in their possession. This guidance instructs providers that this information cannot be used for any purpose other than for populating the National Database or as a response to any specific and formal request by the police service.

Forensic science organisations store samples on completion of the DNA analysis, and retain a record of the derived profiles for use in the specific case or related investigations.

All material submitted by Police Forces to forensic science organisations that provide DNA profiling services and any data derived from these samples, remain the property of the Police.

If a forensic science organisation wishes to consider making use of the samples or DNA profiles for any other purpose, such as research, they must submit such a proposal to the NDNAD Strategy Board for consideration.

Commercial confidentiality limits what details can be provided about specific research proposals.

Technological Changes and Improvements to DNA Profiling and the NDNAD

Since 1995, the effectiveness of the NDNAD has been continually monitored, reviewed and improved in line with the requirements of the CJS, taking due account of the legal, ethical and data protection issues.

The NDNAD was originally set up using a profiling system called SGM in which six loci (non-coding areas of the DNA) and a gender marker were examined. The average discrimination power of this system (i.e. the probability of a match between full SGM profiles from two unrelated individuals) was about one in 50 million and it was recognised that as the size of the Database increased, there could be adventitious matches between profiles. Adventitious matches occur as a chance match between two DNA profiles but apart from identical siblings, an individual's DNA may be distinguished by further testing of additional DNA loci.

As previously stated, although each person's DNA is unique (apart from identical siblings) DNA profiling does not examine all variations between individuals and is therefore not unique to an individual. It does however examine those areas of the DNA that discriminate widely between individuals and the chance of two unrelated individuals having matching full DNA profiles using the current SGM Plus analysis is less than 1 in a 1,000 million.

A further development that has been used highly successfully in serious cases is familial searching. A familial search is used to identify offenders who do not have a profile on the NDNAD but who may have a close relative who does have a profile on the NDNAD. Familial searching is a restricted service, undertaken on a case-by-case basis and only after authorisation from the ACPO Officer for the police force requesting the service with an endorsement from the Crown Prosecution Service (CPS) solicitor.

Y-STR analysis, which is a technique for looking at variable genetic regions present on the Y-chromosome, has also proved useful in serious cases. As the Y-chromosome is only present in males, this test can be very useful in analysing DNA profile mixtures, especially in sexual assault cases, where the DNA profile of the offender is mixed with components from a female victim and there is more female profile present than male profile within the mixture. For Y-STR work to be undertaken on the retained samples, written authorisation is required from the police force ACPO Officer, the Crown Prosecution Service (CPS) caseworker and the Chair of the NDNAD Strategy Board. It is also often used to eliminate individuals from a police investigation who have been identified through a familial search.

Support to Parliament

As in previous years the majority of questions asked in Parliament about the NDNAD related to the following issues:

- the number of people whose profiles were held on the database, in total and by age, ethnicity and geographical area;
- the number of profiles held relating to people who had not been charged with or convicted of an offence; and
- the number of matches and detections resulting from use of the NDNAD.

Other issues raised were the number of DNA profile search requests received from overseas police authorities; the use of DNA profiles for research purposes; and the cost of operating the NDNAD; and the security of the NDNAD. Full details of the Parliamentary Questions can be found in Hansard, at www.publications.parliament.uk/pa/pahansard.htm

Number of persons on the NDNAD who have been convicted of an offence

One of the questions most frequently asked about the National DNA Database is how many persons held on the NDNAD have been charged with or convicted of an offence. The NDNAD holds key demographic data only and does not hold information on whether those on it have committed any offence. Data on the arrest and conviction histories of persons with a profile on the NDNAD are held on the Police National Computer but is not routinely available. The main function of the PNC is to support operational policing and the investigation of crime; it is not an information database for statistical purposes.

The most recent data available is:-

- on 24 April 2009 there were an estimated 4,587,430 persons on the NDNAD sampled by forces in England and Wales;
- of these, 3,601,245 persons had a current conviction, caution, reprimand or final warning recorded on PNC;
- the remaining 986,185 persons includes people who have been convicted and have had their records deleted from PNC, and those against whom proceedings are still on-going, as well as those who have never been convicted.

Freedom of Information Act Requests

Requests under the Freedom of Information Act, received mainly from the media, cover largely the same issues. These can also be complex and wide ranging, as shown by the following example which asked for:

1. A copy of the process (or processes) that is being followed to remove the DNA profiles and destroy the DNA samples for subjects whose DNA was taken by Scotland forces when legally obliged to. The process I am requesting is to describe the process followed to ensure proper removal and destruction of the 20,000 or so DNA profiles and DNA samples for forces other than England & Wales forces (number of profiles removed as indicated in the table of section 4 or your response reference 43286 to an earlier FOIA request). Which roles in which departments have to perform which actions, how is this verified, how is this communicated, etc.
2. Information describing how profiles removed from the NDNAD are dealt with during back up operations, and in cases of a crash of the database, restore operation of the NDNAD.
3. If a process is being created for the removal of DNA profiles and destruction of DNA samples for subjects whose DNA was taken by England and Wales forces (i.e. describing the actions happening after reaching the 'Yes - Action the removal of PNC, fingerprint and DNA records' box in the MoPI Guidance - Step model - Retention Guidelines), any available documents related to the creation of this process.
4. Numbers of subject and crime scene profiles, for both samples taken by England & Wales forces and for samples taken by other forces, added to the NDNAD per calendar year since 2002.
5. Total numbers of subject and crime scene profiles, for both samples taken by England & Wales forces and for samples taken by other forces, in the NDNAD per calendar year since 2002'.

Financial Overview

The costs relating to the maintenance of the NDNAD from 2002/03 to 2007/08 and the estimated cost for 2008/09 are given in Tables 6 and 7. The costs from 2006/07 are higher than for previous years, because of the complete separation of costs from the FSS, and because the increase in the number of forensic suppliers, requires additional resources for accreditation and continuous monitoring. In addition, the costs for 2008/09 include the costs of transferring the physical operation and maintenance of the NDNAD from the FSS to the NPIA.

It is not possible to break these figures down into capital and running costs.

Table 6. Costs of NDNAD Maintenance 2002/06

	2002/03	2003/04	2004/05	2005/06
NDNAD Services costs (£)	774,304	904,385	1,276,823	1,245,151
Supplier Accreditation costs (£)	320,507	388,047	433,828	459,192
Total (£)	1,094,811	1,292,432	1,710,651	1,704,343

Table 7. Costs of NDNAD Maintenance 2006/09

	2006/07	2007/08	2008/09
NDNAD Service delivery including delivery of IT Development projects (£)	2,041,743	1,600,087	1,818,362
Custodian Accreditation (£)*	527,677	574,817	1,512,138
NDNAD Transition	n/a	n/a	960,000
Total (£)	2,569,420	2,174,904	4,290,500

* Custodian Accreditation costs prior to 2008/09 are the direct programme costs of the Custodian Accreditation programme and do not include the NPIA staff costs for NDNAD management, administration and data quality. These additional costs have however been included in the figures for 2008/09 onwards.

National DNA Database Strategy

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Ian Miller

Information Commissioner's Office

*Since April 2008

Minutes of the Strategy Board can be found at
www.npia.police.uk/en/10133.htm

National DNA Database (NDNAD) Process

This 'Rich Picture' provides an overview of the core process for collecting and processing DNA samples for investigative purposes. England & Wales, plus Northern Ireland forces, collect and process DNA samples under the Police And Criminal Evidence Act (PACE). Forces in Scotland are regulated by the Criminal Procedure (Scotland) Act.

② Scene of Crime

At the crime scene, a Crime Scene Investigator (CSI) identifies and collects evidence including finger prints and DNA.

Items potentially containing DNA are placed into sealed bags and each item is labeled with a common reference number for that case. All bags are then contained in one large sealed container together with an information card, recording relevant details about the scene; and taken back to the police station for processing. These exhibits are then prioritised, according to the likely value of the evidence.

The CSI collates the recovered material, records exhibit details and enters key information into the police systems. The DNA samples are kept at a controlled temperature prior to dispatch to the force's nominated forensic science laboratory.

① Custody Suite

Following arrest for a recordable offence, the detainee will be taken to a force Custody Suite that provides a controlled environment to interview the suspect, establish identity, generate a record on the Police National Computer (PNC) and obtain a DNA sample. Fingerprint checks against the National Fingerprint Database (IDENT1) will assist in the identification of any known aliases. The PNC record includes unique reference numbers for the individual and the arrest, and confirms if a DNA profile is currently held. In parallel, creation of the PNC record also generates a skeleton record on the NDNAD, which includes these unique references. The unique references generated will accompany the sample throughout the remainder of the process.

Pace Kit

If PNC and IDENT1 checks confirm that no DNA sample has previously been provided by the arrestee, then a sample will be taken under the appropriate legislative framework. The DNA sampling kit contains 2 identical swabs and is uniquely identified with a barcoded record card and labels. Following sampling, they are sealed in barcoded tubes, placed in an inner bag with tamper-proof seal, and accompanied by the barcoded DNA record card; then all enclosed in an outer bag.



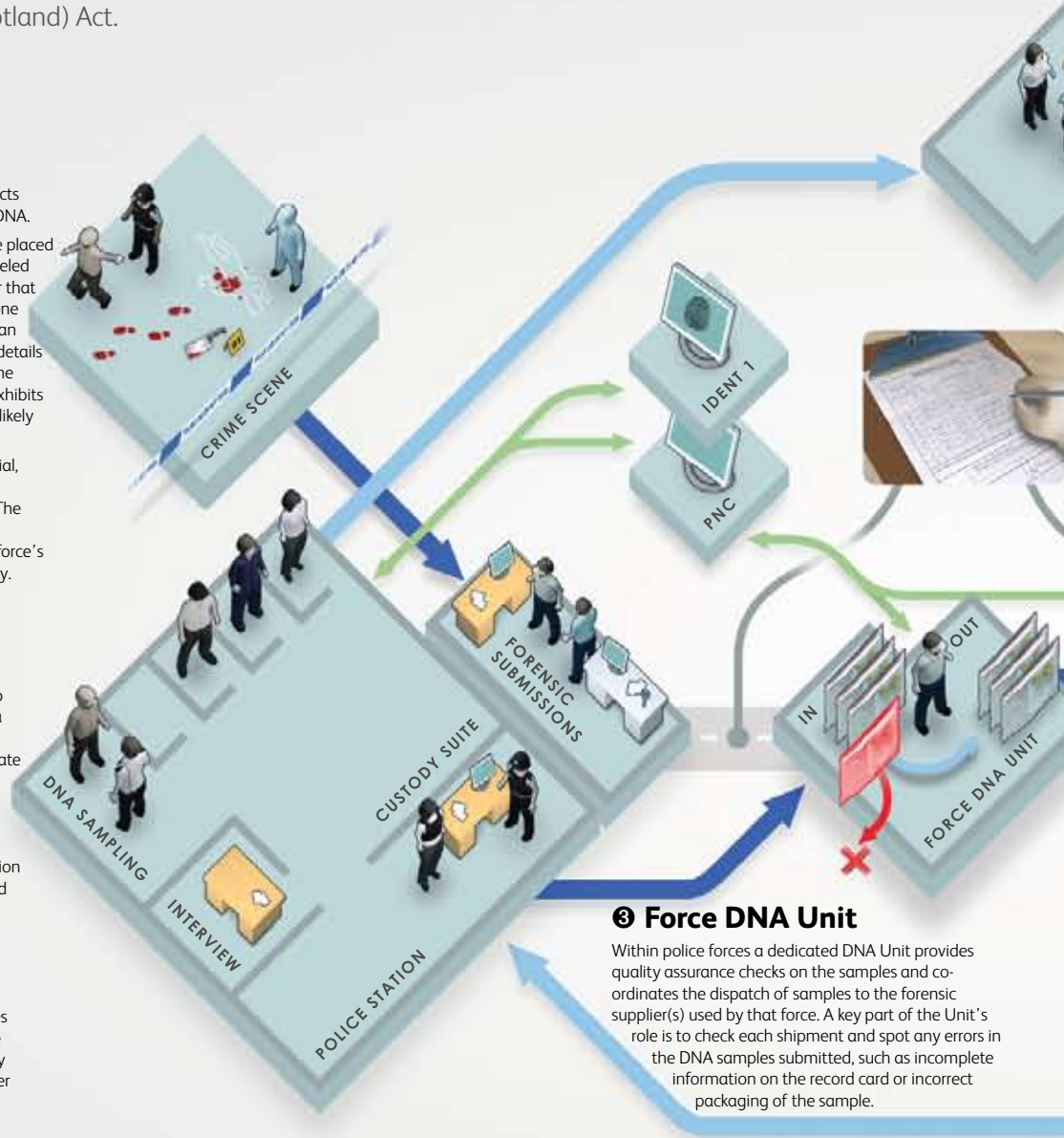
③ Force DNA Unit

Within police forces a dedicated DNA Unit provides quality assurance checks on the samples and co-ordinates the dispatch of samples to the forensic supplier(s) used by that force. A key part of the Unit's role is to check each shipment and spot any errors in the DNA samples submitted, such as incomplete information on the record card or incorrect packaging of the sample.

Match Report

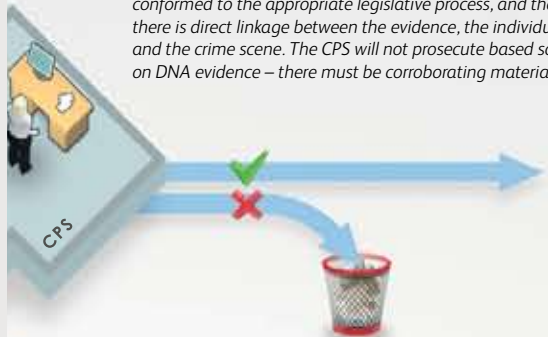
DNA match information is not acted upon in isolation by police. The match report does form the basis of further investigation, and where applicable provides additional supporting evidence in the case submitted to the CPS.

Where a match with an unsolved crime is identified, the original investigating officer is informed that this new information is available.



Crown Prosecution Service (CPS)

The CPS is responsible for ensuring DNA evidence has conformed to the appropriate legislative process, and that there is direct linkage between the evidence, the individual and the crime scene. The CPS will not prosecute based solely on DNA evidence – there must be corroborating material.



Court

DNA evidence plays a powerful role in supporting prosecutions. However, as with all evidential material, the defence are able to challenge its validity and relevance.

Transport

DNA samples are security sealed in a tamper-proof bag, prior to collection by a courier. Every handover of the sealed courier bag is recorded, timed, and signed for auditable continuity of evidence purposes.

4 Forensic Supplier Laboratory

DNA analysis is provided by selected forensic science DNA laboratories which are accredited against quality standards set by the Forensic Science Regulator. Forensic suppliers ensure the full traceability of each sample, from point of delivery, through the testing procedure and forwarding of the DNA profiles electronically to the NDNAD Service Centre, plus subsequent storage of the sample.

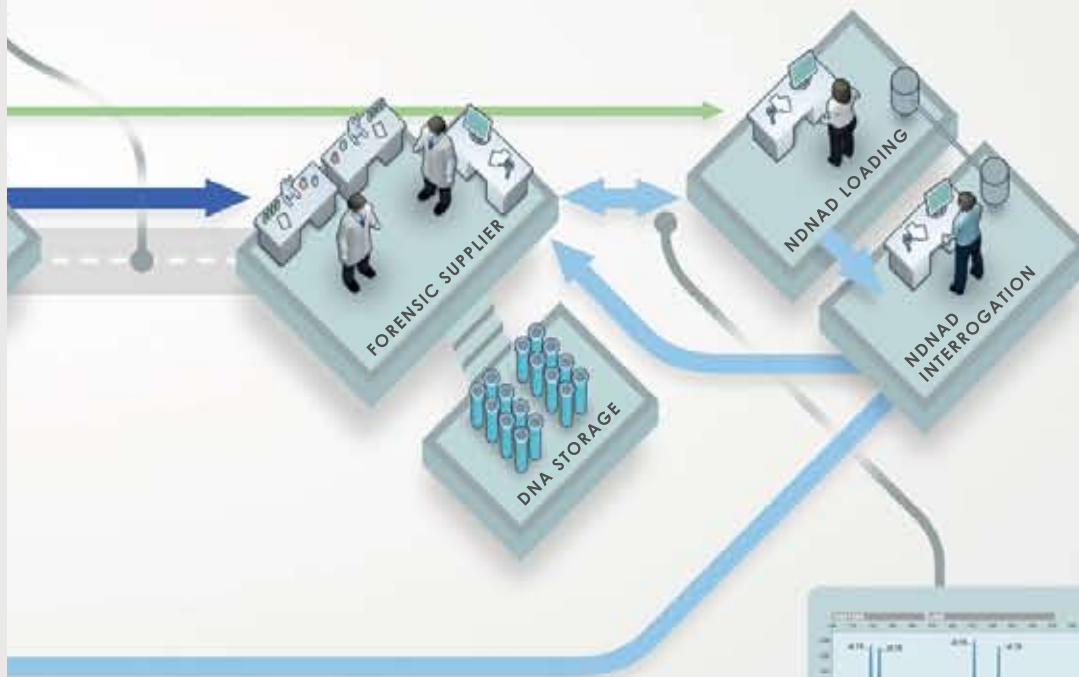
5 NDNAD Service Centre – Loading and Interrogation

Profiles obtained by the forensic laboratories from sample analysis are sent to the NDNAD Service Centre for loading to the Database. An individual's profile will only be loaded if there is consistency of the unique reference numbers that have accompanied the sample with the same numbers within the NDNAD skeleton record (previously generated from the PNC) and the unique reference numbers that have accompanied the sample. In the rare event of a profile failing to load, NDNAD personnel liaise with the relevant police force and forensic supplier laboratory to investigate and resolve the discrepancy.

Following a successful load, the profile is automatically searched against all the pre-existing profiles on the Database.

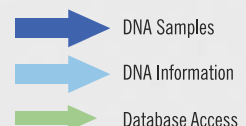
6 NDNAD Service Centre – Match Reporting

Matches between individuals and crime scenes, or crime scenes and crime scenes, generate a report which is securely transmitted to the relevant police force(s).



DNA Profile Transfer

DNA profiles derived from individuals and crime scenes are securely transmitted by the forensic laboratory to the NDNAD custodian. The DNA record contains a numeric string and unique reference number. In the case of England and Wales forces, the profiles derived from individuals contain neither personal nor demographic information.



Glossary

ACPO

The Association of Chief Police Officers, an independent, professionally led strategic body, which in the public interest and in equal and active partnership with Government and the Association of Police Authorities leads and co-ordinates the direction and development of the police service in England, Wales and Northern Ireland.

APA

The Association of Police Authorities, an organisation set up on 1st April 1997 to represent police authorities in England, Wales and Northern Ireland, both on the national stage and locally. It influences policy on policing and supports local police authorities in their important role.

CJS

Criminal Justice System

CPS

The Crown Prosecution Service, the Government Department responsible for prosecuting criminal cases investigated by the police in England and Wales.

Crime scene sample

A DNA sample recovered from the scene of a crime.

Crime scene profile

The DNA profile derived from analysing a crime scene sample.

DNA

Deoxyribonucleic acid, a substance found in most cells of all people, and in the cells of animals, plants, and other organic matter. Variations in the DNA code are responsible for physical differences between individuals including their sex, height and eye colour. Except for identical siblings, each person's DNA is unique.

DNA sample

A physical sample of an individual's DNA.

DNA profile

A numerical representation following analysis of a DNA sample.

NDNAD Ethics Group

An advisory non-Departmental Public Body set up to provide independent advice on ethical issues concerning the NDNAD to Ministers and the NDNAD Strategy Board.

FSS

Forensic Science Service Limited, a Government Owned Company.

Human Genetics Commission

An advisory body set up by the UK Government at the end of 1999 to consider the public interest issues in relation to developments in genetic science.

Match group

A match group consists of two or more profiles that are indistinguishable or compatible, insofar as comparison is possible. A match group may comprise any combination of profiles eg two or more subject profiles, two or more crime scene profiles or a mix of subject and crime scene profiles.

NDNAD

National DNA Database

NPIA

National Policing Improvement Agency

PACE

Police and Criminal Evidence Act 1984

PNC

The Police National Computer, which holds extensive data on arrested individuals, vehicles and property and is accessible from over 120,000 terminals across the country. In particular, it contains details of persons from whom DNA samples have been taken under PACE. A subset of these details is transferred electronically to create a stub record on the NDNAD to which the DNA profile is subsequently attached.

SGM

The Second Generation Multiplex DNA profiling system, introduced in 1995, which allows the simultaneous analysis of six loci and a gender marker to produce a DNA profile with an average match probability of about one in fifty million. SGM was the original DNA system used for the NDNAD.

SGM Plus

The current system of DNA profiling used in the UK, known as SGM Plus¹ examines 10 areas of DNA plus a gender test and produces a numeric DNA 'profile' that can be loaded electronically onto the NDNAD. This contains two numerical representations of the DNA at each area examined, one inherited from the mother and the other from the father. Although each person's DNA is unique (apart from identical siblings) DNA profiling does not examine all variations between individuals and is therefore not unique to an individual. It does, however, examine those areas of the DNA that discriminate widely between individuals and the chance of two unrelated individuals having matching full SGM Plus profiles is less than one in a 1000 million.

Subject sample

A DNA sample taken from a known individual, usually following an arrest.

Subject profile

The DNA profile derived from analysing a subject sample.

1 AmpFLSTR **SGM Plus**®

Notes



