Ministry of Justice
Candidate Pack

Analytical Services Directorate, 2018

Protecting and advancing the principles of justice

Foreword: Osama Rahman – Director of Analytical Services, MoJ

The Ministry of Justice is one of the key government departments, and our work has a big impact on people's lives.

The department works on how best to balance punishment and rehabilitation of those convicted of criminal offences to reduce future offending rates, supporting victims and witnesses at a difficult time and ensuring access to justice for those who need to use the justice system for a variety of needs.

Analysis is at the heart of what the MoJ does. Most analysts work in multidisciplinary teams and get to use varied and often innovative analytical techniques such as econometric modelling, forecasting, propensity score matching, or cutting edge data science and data visualisation techniques.

Analytical Services are extremely highly regarded both within and outside the department and we have won several cross-government awards.

The Ministry of Justice delivers important services for every one of us

The Ministry of Justice (MoJ) is one of the largest government departments, employing around 76,000 people, with a departmental expenditure limit of approximately £6.5 billion. Each year millions of people use our services across the UK - including courts, tribunals and prisons in England and Wales.

The justice system is an important public service and our work spans criminal, civil and family justice, democracy and rights.

We are all likely to come into contact with the justice system at some point in our lives, either because we have been a witness to or victim of a crime, to protect and enforce our rights, or to settle disputes.

The MoJ is currently undergoing an exciting challenge: transforming itself to be a system that delivers meaningful reform for offenders, delivers justice swiftly and accurately, and utilises data and insight to operate more efficiently and effectively than has ever been possible.

We have a shared vision for delivering justice

Upholding the rule of law and the independence of the judiciary

Standing up for victims

Protecting the vulnerable

Providing open and accessible justice

Protecting the public and keeping our communities safe

Reforming offenders

Our vision is to deliver a world-class justice system that works for everyone in our society

The Department offers exciting work opportunities and excellent benefits

- **Analysis is at the centre of the Department's decision making** – with a Secretary of State keen for all decisions to be evidence driven, your analysis will be key in influencing decisions.

- **Flexible working arrangements** – including compressed hours, job shares, flexi-time and working from home or 'commuter hubs' outside of London.

- **Regular job rotations to broaden experience** – there are regular optional rotations for analysts of all levels to expand experience and opportunities, within the main Department as well as its agencies and other arms length bodies.

- **See the frontline and what your work is influencing** – regular opportunities to visit prisons and courts to better understand the areas your analysis is affecting.

- **Exciting new areas of work** – with the continuing development of data science capability there will be many new areas of analysis to explore and develop.

- **Civil Service Pension Schemes, childcare vouchers, cycle to work scheme, season ticket loans, and many other benefits.**

Why choose the Ministry of Justice?

We asked some people who work here…

There is a **wide variety of roles** – you can work as part of a central statistics unit with options to work in other areas of Analytical services, and some roles are embedded in policy

Inclusive culture with regular **social** and **networking** activities

There is a wide variety of **interesting topic areas** which have access to **large amounts of data**

Access to a **variety of software and tools** – a lot of roles offer the opportunity to learn and build on existing SAS, R and SQL skills

There is the opportunity to take part in managed moves, where it is possible to **gain experience** on the same level across different roles, which helps **broaden knowledge and skills**

Analytical Services are at the heart of all areas of work in the Department

- Analysts support all areas of the Department, including policy-making, strategy and operations. There is a huge appetite within the Ministry for more and better analysis, which is driving us to recruit.

- The Analytical Services Directorate (ASD) comprises over 200 analysts including social researchers, operational researchers, economists, data scientists and statisticians, working in highly multidisciplinary teams.

- We are looking for analysts who are able to work flexibly and take personal responsibility for the work they lead on. The work will be challenging and offers a wide range of opportunities to develop your skills and careers and make a difference.

- Analysts within ASD work flexibly across a variety of tasks in different subject areas across the range of Ministry's interests. This enables ASD to respond to the wide range of analytical needs across MoJ, and provides a greater range of career development opportunities.

The following slides tell you a bit more about some of the teams in ASD…

Analytical Units Within MoJ

ASD is structured into six units, each headed by a Deputy Director.

Each unit has a mixture of all the main analytical professions.

Director of Analytical Services

Alex Wilks	Steve Ellerd-Elliott	Tristan Slinger	Sophie Ingram and Louise Skelton	Mike Marriott	Jonny Hughes
Access to Justice Analytical Services (AJAS)	**Justice Statistics Analytical Services (JSAS)**	**Finance and Strategy Analytical Services (FSAS)**	**Criminal Justice Analytical Services (CJAS)**	**Data Science and HR Analytical Services (DASHRAS)**	**Prison and Probation Analytical Services (PPAS)**

Analytical Services Directorate (ASD) – Units

Access to Justice Analytical Services (AJAS)

- AJAS provides analytical support covering Access to Justice policy areas (civil, administrative and family justice, legal services and Legal Aid), court reform and judicial policy.

Justice Statistics Analytical Services (JSAS)

- JSAS provides high quality data and statistics covering the whole of the justice system to promote understanding and trust and to inform decisions and support the development of clear evidence-based policy.

Finance and Strategy Analytical Services (FSAS)

- FSAS provides analytical support and advice on financial planning, commercial and contract management and transformation of the prison estate. It also provides forecasts and analysis of demand across the criminal justice system and forecasts of MoJ income (including fees and fines).

Criminal Justice Analytical Services (CJAS)

- CJAS provides a range of analytical support and advice on sentencing and electronic monitoring, criminal justice reform, youth justice and adult offenders. It also provides an analytical interface with Her Majesty's Prison and Probation Service (HMPPS), the Youth Justice Board (YJB) and the Sentencing Council.

Data Science and HR Analytical Services (DASHRAS)

- DASHRAS provides analytical support and advice to MoJ's corporate centre through dedicated support on HR. It also includes the Data Science Hub, a new data science team providing data visualisation, advanced analytics and data engineering in projects across the department.

Prison and Probation Analytical Services (PPAS)

- PPAS provides data assurance and governance and analysis to support the commissioning, delivery and scrutiny of operational services delivered or managed under contract by HM Prison and Probation Services (HMPPS). PPAS also have responsibility for research on operational delivery of prison and probation services.

Our award winner Justice Data Lab uses cutting edge statistical methods to evaluate the impact of rehabilitation programmes on reoffending

Why a Justice Data Lab?

Almost **half** of adults released from prison and a **third** of those starting a court order reoffend within 12 months.

The cost to the taxpayer of reoffending was estimated by the NAO to be **£9.5 - £13 billion per year** in 2007-08.

Organisations are working with offenders in an attempt to reduce reoffending… **HOWEVER**

We need the Justice Data Lab so that:

1. Organisations understand the impact of their interventions.
2. MoJ understands 'what works' to reduce reoffending.

What do we do?

- Customers provide the Justice Data Lab team with information on offenders they have worked with.
- We find their criminal records on the Police National Computer (PNC).
- We match them to similar offenders on the PNC who did not take part in the intervention to create a 'control group'.
- We calculate the reoffending rate for those who were on the programme, and those in the control group…

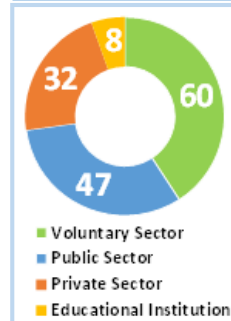…is there a statistically significant difference?

✅ There is evidence that the programme may reduce the number of reoffenders in a 12 month period.

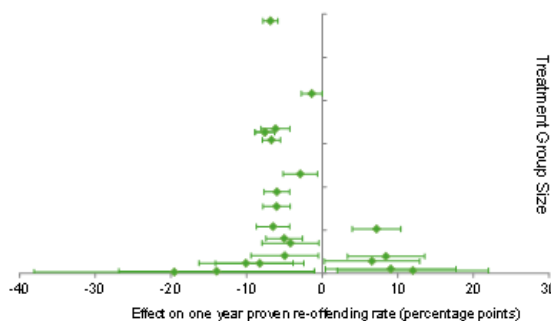❌ There is not sufficient evidence that the programme reduces the number of reoffenders in a 12 month period.

The Justice Data Lab have completed analyses for a variety of organisations:

- Voluntary Sector — 60
- Public Sector — 47
- Private Sector — 32
- Educational Institutions — 8

(up to April 17)

Example: The Prisoner's Education Trust provides grants to offenders in prisons throughout England, for distance learning courses or to purchase materials for arts and hobbies. The JDL analysed the impact of their services.

Result: The analysis provides evidence that, for every 100 participants, the service may decrease the number of proven re-offenders during a one-year period by between 6 and 8 people (see below).

One-year proven re-offending rate after participation in Prisoners Education Trust

- At least one proven re-offence committed in a one-year period
- No proven re-offences committed in a one-year period

Confidence interval: ±1 people

Participants analysed (5,846) — 18.0 people

Control group (336,681) — 25.0 people

Confidence interval: ±0.1 people

Number of proven re-offenders per 100 people

Previous Results

The JDL have completed 160 analyses. 50 of these have shown a statistically significant impact of the intervention on reoffending, of which 42 showed a **reduction** in the 1-year reoffending rate. A selection of these results are shown below:

Impact of interventions on the reoffending rate

Treatment Group Size

Effect on one year proven re-offending rate (percentage points)

What next…?

Short-term

Join up data across Government to understand the impact of intervention programmes on employment and higher education outcomes for offenders.

Long-term

Build a model that predicts the most effective intervention for offenders, to optimise reductions in reoffending and improvements to future prospects for offenders.

https://www.gov.uk/government/news/justice-data-lab-scoops-two-awards-for-services-to-voluntary-sector

Data Science Hub (DaSH)

Using data science to revolutionise analytics in MoJ
Our mission is to educate, inspire and empower MoJ staff to apply data science to realise the potential of our data; accelerating progress towards a data and evidence driven MoJ.

Our projects cover:

Business Analytics (Interactive Data Visualisation)
Developing visualisation tools to allow Ministers, Officials and citizens to explore, interrogate and derive insight from our statistics and performance management information.
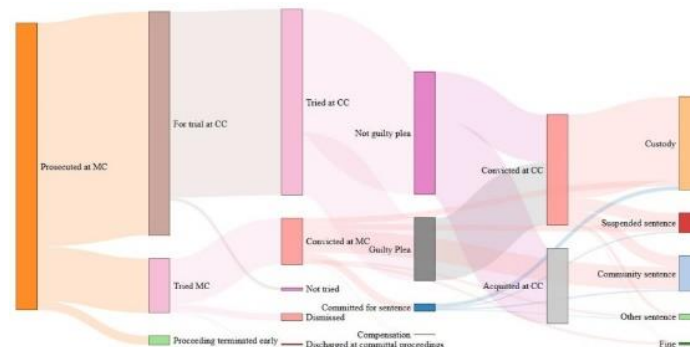
Advanced Analytics
Bringing the most powerful and current analytical techniques to bear on our data and evidence to drive new, actionable insights for organisational challenges right across the business. Techniques we employ include machine learning (both supervised and unsupervised), web scraping, text mining, natural language processing, robotics and fuzzy data matching, using a wide variety of open source software such as R, Python and D3.

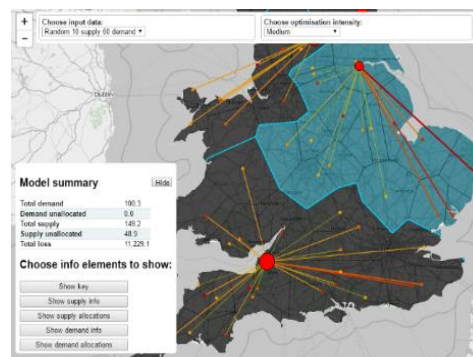### Data engineering and Analytical Tools
Delivering the high quality tools and data we need to solve MoJ business problems, through building the infrastructure and improving our internal data and linking in new data sets across government and beyond.

CJS Sankey:
An interactive diagram to visualise flows through the CJS based on crime statistics.
https://moj-analytical-services.github.io/criminal_justice_statistics_sankey/

Location Optimisation:
This tool enables us to understand the implications of different estate options on average travel time, and understand the balance of supply and demand for facilities. It has been used for both Resettlement Prisons and the Youth Justice estate.
https://robinl.github.io/discrete_facility_optimisation/web/

Case Study: SEO Senior Social Researcher

'I'm currently a Senior Social Researcher in Youth Justice Analysis which sits in CJAS. I lead on 'what works' to prevent 10-17 year olds offending/re-offending, and I work closely with my youth justice policy colleagues. My work is varied and quite reactive as it's a fast-paced and high-profile area.

Before this post, I worked at DfE as a Senior Policy Advisor in children and family social work reform, but I actually started my career in the MoJ in AJAS working as a Social Researcher in family justice research and analysis.

I came back to the MoJ due to its supportive environment, the amount of training opportunities available, and the interesting nature of the work.

What I love most about the MoJ is our focus on transparent justice, and accessible research. It's great to see what I work on out in the public domain and see the impact it has on vulnerable citizens.

Case Study: HEO Operational Research Analyst

'I am currently an Operational Research Analyst in Civil and Family Income Analysis, which is part of FSAS. I am responsible for forecasting and analysis of caseload in the family courts. I am also involved in forecasting income from court fees across civil and family courts and tribunals. This work underpins the department's operational and financial planning.

Alongside regular forecasting, I have also worked on a number of other projects. For example, I am currently working on updating estimates of the cost of cases across civil and family courts and tribunals, which will be used to support fee policy development.

While at the Ministry of Justice, I have really enjoyed working on interesting subject areas, and seeing the impact of my work across the department and beyond. I have also had many development opportunities, both through training and the variety of work I have done.'

Case Study: EO Statistical Officer (StO)

'I am a statistician working within the Civil and Administrative Justice Statistics team in Justice Statistics Analytical Services. I lead on Mortgage and Landlord possession statistics and work on wider Civil Statistics as well as supporting the quarterly Tribunals and Gender Recognition Certificate publication.

This role has helped me to develop my dissemination and presentation skills, work with wider teams in MoJ, and have my work feed into other departments across government. I have built up my knowledge and skills with various software, and been encouraged to undertake training, and developed my knowledge of statistical methods like seasonal adjustment.

Currently, I'm working on producing a visualisation tool to be published alongside the Mortgage and Landlord Statistics, allowing users greater flexibility to get at the data they need. This has involved learning to use Tableau – an interactive data visualisation tool – to display the data both graphically and geographically through dynamic maps. This has been a rewarding exercise, and I have enjoyed working to provide tools for a range of data users from the general public to policy colleagues.'

Take a look at some of the other statistical releases produced by analysts at the MoJ