



Ministry  
of Justice

# Justice Data Lab

## Pilot summary

Ministry of Justice Analytical Services

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## Introduction

The Justice Data Lab (JDL) was established in April 2013 and aimed to address the needs of the Voluntary and Community Sector (VCS) primarily, who have struggled to access re-offending data and, in turn, struggled to evaluate the impact of interventions aimed at reducing re-offending rates. The JDL was launched as a pilot for one year, with the aim of providing easier access to aggregate re-offending data for organisations that provide services to offenders. Following this pilot year, a publication was issued detailing the work and improvements<sup>1</sup>. The pilot was extended for a second year and, as of April 2015, the Justice Data Lab is a permanent service offered by the Ministry of Justice.

This document aims to build on the original pilot publications and summarise learning from the full pilot period. The document addresses the following points;

- Key findings through the Justice Data Lab during the pilot – in this section key findings are detailed, as well as reflecting on who has used the service
- Reflections on the JDL processes – this section looks at the improvements brought in during the pilot and consider any future improvements which should be investigated with the potential of bringing into the service going forward
- User Engagement – this section details the activities undertaken to reach JDL users; changes to the service that have either been made or will be made to the service as a result of feedback.
- Next steps for the JDL service – in this section a forward look for the Justice Data Lab is discussed

This document sits alongside the current guidance on the JDL process, and also the published Official Statistics from the service.

**Feedback is welcomed on this report, and the Justice Data Lab service. Please email your feedback to [justice.datalab@justice.gsi.gov.uk](mailto:justice.datalab@justice.gsi.gov.uk).**

### The Justice Data Lab service

The JDL provides organisations with aggregate re-offending data specific to the offenders they have been working with, and that of a matched control group who have very similar characteristics, along with analyses that assess whether any apparent differences in re-offending measures given are statistically significant.

We hope that by providing re-offending information through the JDL, these organisations will be able to reflect on their success, and also understand how they can improve and develop their services – ultimately leading to a reduction in crime in the future.

Initially, the JDL provided a one year proven re-offending rate in line with the national re-offending measure. Feedback from users included the desire to know how often people re-offended and how long until their next re-offence. As standard, the JDL now supplies the following aggregate measures:

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<sup>1</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/289250/justice-data-lab-pilot-year.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289250/justice-data-lab-pilot-year.pdf)

- the one year proven re-offending rate
- the frequency of proven re-offending over the one year period
- the time to the first re-offence within the one year period

Full guidance about how the Justice Data Lab works can be found at the following link: [www.justice.gov.uk/justice-data-lab](http://www.justice.gov.uk/justice-data-lab).

## Overview of pilot years

Between April 2013 and March 2015, the Justice Data Lab produced 124 reports<sup>2</sup> showing the impact of a wide range of different programmes and services offered to offenders. These reports have covered the work of providers from across all sectors and have identified programmes that appear to lead to both reductions and increases in re-offending.

Following the first pilot year, the experience gained in operating the Data Lab and feedback received from users of the service led to a number of improvements. These were built upon during the second half of the pilot, with more developments in the pipeline. Aspects that have already been addressed include:

- Improving the data upload template so that better information can be captured from organisations about their work and how they identify offenders to work with
- Providing further information within the JDL reports on the matching of offenders to MoJ data and reasons why some offenders have to be excluded from the analyses
- Improving the availability of data underpinning the service, for example moving to quarterly updates of the re-offending cohorts and incorporating other administrative datasets to improve our modelling

Forthcoming developments (outlined in more detail in this document) include:

- Providing additional re-offending metrics relating to the severity of re-offence and extending the standard re-offending measure to look over a two year period
- Providing more detail on offenders that are not matched (specifically, where suitable, identify those who have yet to be released from prison)
- Incorporate offender assessment data into analyses for programmes that deal with specific issues, such as alcohol, drugs, accommodation.

A quantitative feedback survey with all users who have been provided with a Data Lab report (as at end March 2015) has been undertaken. The findings are published alongside this report and any key aspects will be incorporated into the Data Lab's work plan. The team will also continue to work closely with the JDL Expert Panel as we seek to implement these and other possible changes.

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<sup>2</sup> With one report published in April 2015.

## Key findings through the Justice Data Lab Pilot

This section details the number of requests for information through the Justice Data Lab, and the key findings of the Justice Data Lab for the pilot period. To view all the published findings from the Justice Data Lab, please follow this link:  
[www.gov.uk/government/collections/justice-data-lab-pilot-statistics](http://www.gov.uk/government/collections/justice-data-lab-pilot-statistics)

### Requests for information

By 31 March 2015, there were 156 requests for re-offending information through the Justice Data Lab. Of these requests;

- 123 reports were completed and published, with another report subsequently published in April 2015.
- 19 requests could not be answered as the minimum criteria for a Data Lab analysis had not been met.
- 2 requests were withdrawn by the submitting organisation

The remaining requests remain(ed) to be processed.

### Key findings

Of the 124 reports completed by 31<sup>st</sup> March 2015, all had the one year proven re-offending rate analysed. However, with the other measures coming into effect during the pilot, 110 reports included the frequency of re-offending measure and 7 included the time to re-offending measure. Taking this into account:

- 28 reports indicated statistically significant reductions in re-offending on the one year proven re-offending rate (23 of which also indicated statistically significant reductions in the frequency of re-offending).
- 89 reports indicated insufficient evidence to draw a conclusion about the effect on the one year proven re-offending rate
- Of these 89, 11 reports detail statistically significant reductions in the frequency of re-offending
- 7 reports indicated a statistically significant increase in re-offending on the one year proven re-offending rate.

The following sections summarises the findings from the pilot. Full details of these results can be found in the document that accompanies this publication. Please note that these analyses only refer to the effectiveness of programmes evaluated through the Justice Data Lab, and so should not be taken as definitive advice on which programmes are likely to reduce re-offending.

Where an inconclusive result has been observed, this does not mean that the programme does not impact on re-offending and may in part, be related to the small number of individuals that the organisation has worked with. In all cases where an inconclusive result has been observed, the organisation has been recommended to submit further years of data when they become available to more precisely identify the impact of the service or programme on re-offending. Also, in the cases where the results are inconclusive, in many cases the organisations still benefitted – either in improving their data collection standards or helping to identify that their programme does not necessarily work in the way that they had intended.

**One year proven re-offending rate**

Figure 1 shows the published findings broken down by main need that the intervention or service was aiming to address when looking at the headline figure of the one year proven re-offending rate.

- Programmes focussed on employment were the largest category analysed through the Data Lab and it also has the largest number of outcomes in each of the three categories. Nearly a quarter (23%) of these analyses showed statistically significant reductions in re-offending.
- Interventions or services aiming to improve education or learning in prison had the highest proportion of statistically significant reductions in re-offending overall, but note this is based on a total of five requests.

Interventions or services aimed at addressing accommodation needs have shown mixed results, which may reflect variations in the severity of the accommodation needs that are being addressed; but also some very different approaches to tackling these needs. Developments in our analyses (explained in more detail further on in this report) on such specific programmes may enhance the outcomes.

**Figure 1: Published findings from the Justice Data Lab during the pilot, broken down by intervention type and whether the service had a statistically significant increase or decrease or an inconclusive result on the one year proven re-offending measure**

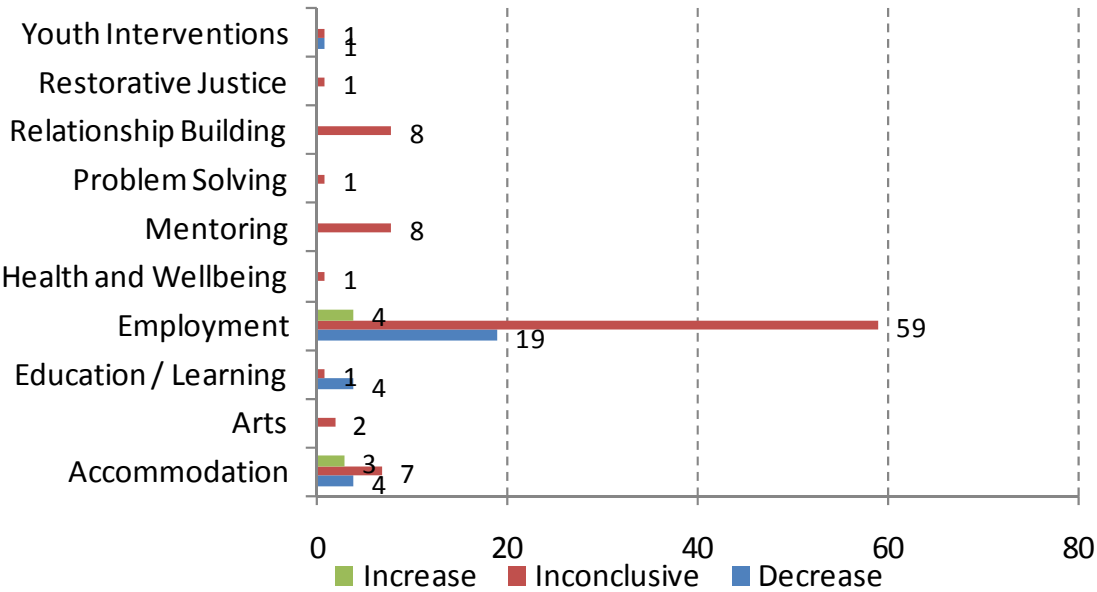


Figure 2 below looks at the published findings from each of the sectors that have requested information, covering the private sector, the public sector, the voluntary and community sector (VCS), and educational institutions. Whilst the JDL was initially set up for the VCS, there were a similar number of requests from the public sector as well as a substantial number from the private sector. The VCS and the public sector had a similar number showing statistically significant reductions in the one year proven re-offending measure.

**Figure 2: Published findings from the Justice Data Lab as at end March 2015, broken down by sector type**

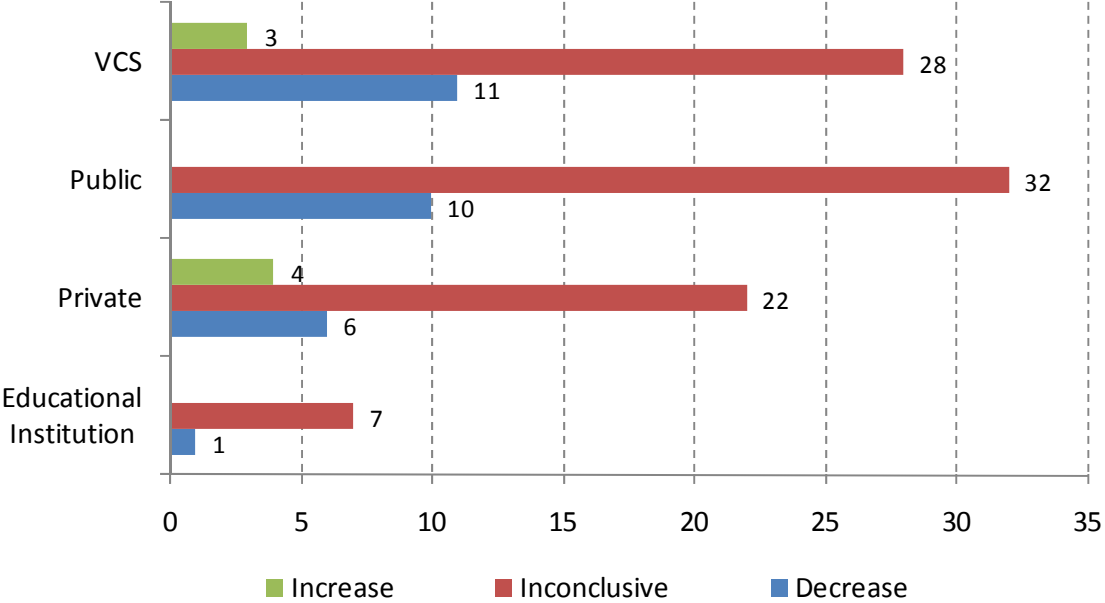
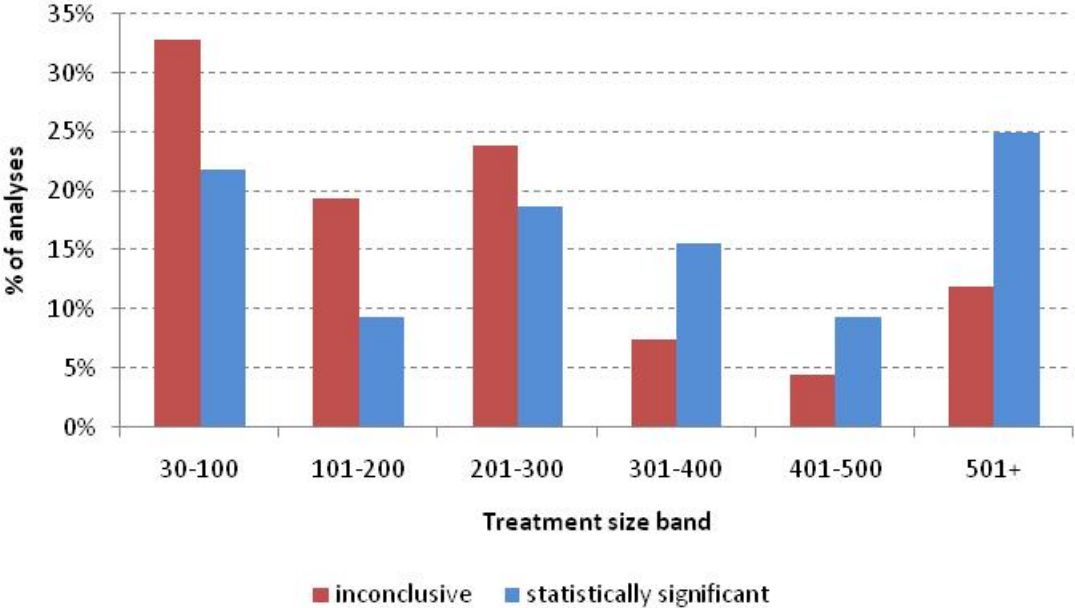


Figure 3 looks at the distributions of both inconclusive and statistically significant results (combining both increases and decreases) for the one year proven re-offending rate measure when accounting for the number of individuals that were matched for analysis purposes.

Of the 32 results that were statistically significant, 25% had a treatment size of more than 500 individuals that were matched for analysis purposes. However, only 12% of the 66 inconclusive results had a treatment size of more than 500 matched individuals. At the opposite end of the scale, nearly a third (32%) of inconclusive results were from treatment sizes between 30-100 individuals compared to 22% of the statistically significant results.



**Figure 3: Distributions of analyses by treatment size band\***



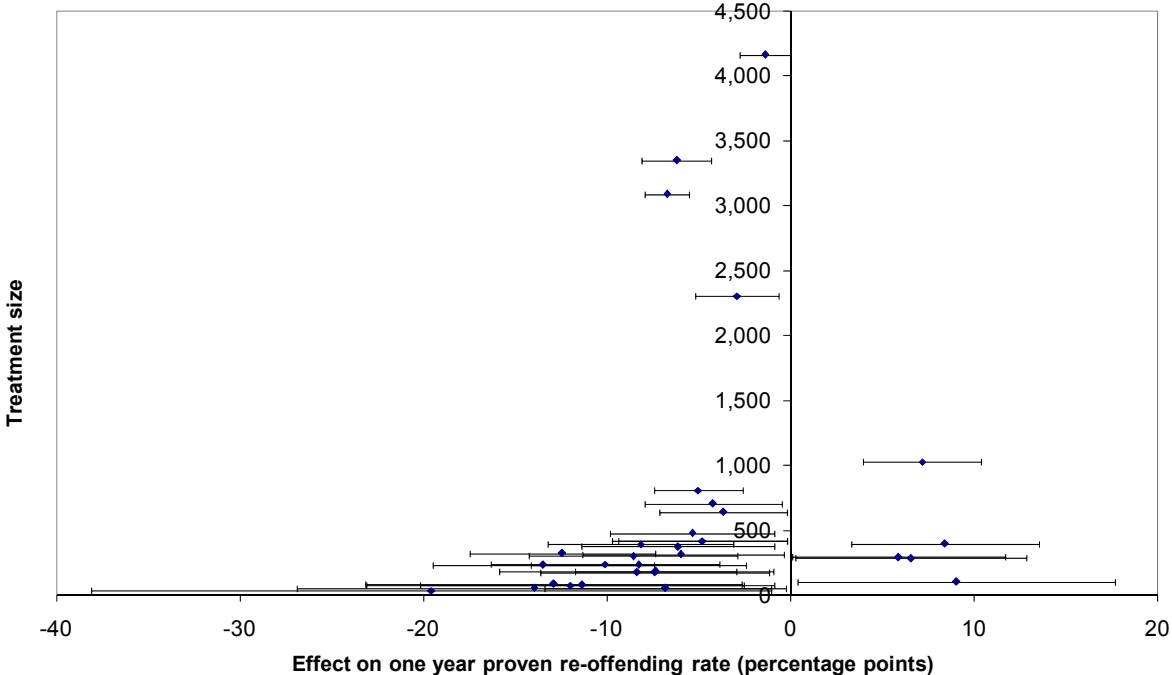
\* These results exclude the NOMS CFO 2011 analyses where a regional control group was used

Figure 4 expands on the effect of treatment size further, looking at the statistically significant results seen up to the end of the pilot period. Each significant request is represented by a diamond and line. The diamonds show the best estimate of the effect size, which is the difference between the one year proven re-offending rate for the final matched treatment and control groups and the size of the final matched treatment group. For example, if the one year proven re-offending rate for 100 offenders participating in an intervention was 30%, compared with 36% for a matched control group, the best estimate of the effect size would be 6 percentage points and the size of the final matched treatment group would be 100.

The lines going through the diamonds represent the confidence intervals around these estimates. As the confidence intervals do not cross 0, this indicates a statistically significant result meaning that we can be confident that there is a real difference in the re-offending rate for the persons who received the intervention. Estimates of impact on the left hand side of the forest plot indicate the treatment group has a lower re-offending rate than the matched control group, whereas estimates on the right hand side of the forest plot indicate the treatment group has a higher re-offending rate than the matched control group.

From this, it is clear that precision of the effect size increases as the treatment size increases (i.e. the confidence interval narrows as you move up the chart). The smallest treatment size for a significant result has been 30, however this also had the largest confidence interval range (+/- 18.5%pts) so difficult to make more specific statements of the impact of such an intervention. Whereas the largest treatment size for a significant result was 4,160 and had one of the smallest confidence interval range (+/- 1.4%pts).

**Figure 4: Effect on the one year proven re-offending rate against treatment size (all statistically significant requests published as at March 2015)**



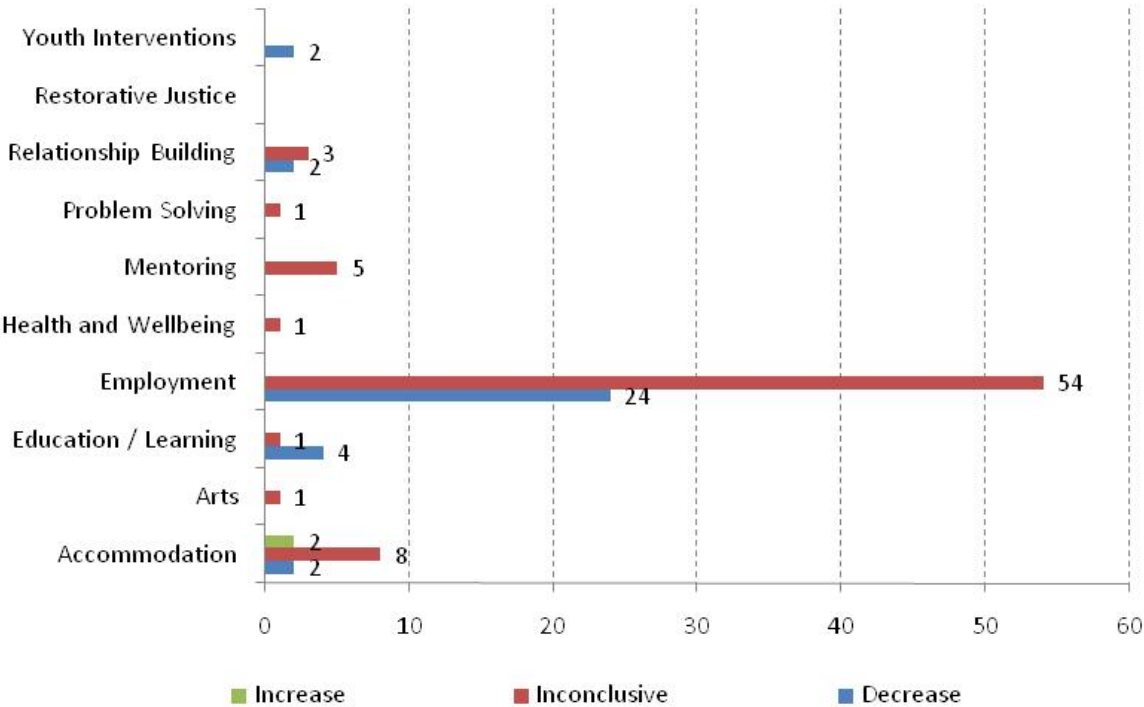
**Frequency of re-offending<sup>3</sup>**

Figure 5 shows the pilot findings broken down by main need that the intervention or service was aiming to address when looking at the frequency of re-offending measure. As with the headline measure, programmes focused on employment were the largest category analysed through the Data Lab. Nearly a third (31%) of these analyses showed statistically significant reductions in the frequency of re-offending. Only two requests overall showed statistically significant increases in the frequency of re-offending.

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<sup>3</sup> The frequency of re-offending measure was developed after the start of the pilot so not all requests have results for this measure.

**Figure 5: Published findings from the Justice Data Lab to date, broken down by intervention type and whether the service had a statistically significant increase or decrease or an inconclusive result on frequency of re-offending measure**



**Time to first re-offence**

This measures the number of days to the first re-offence within the same one year period and was brought into the Data Lab analyses in late 2014. No result for this measure has shown a significant difference from the matched control groups and this measure will be reassessed to make sure it is as useful as possible.

## Reflections on our processes

This section looks at the improvements brought in during the pilot period and others that have been investigated and are due for implementation over the coming months, specifically:

- Improvements to data provision
- Developments to internal analysis methods and data included in analyses
- Incorporation and developments of additional metrics

### Improvements to the Justice Data Lab processes

Key improvements that have brought into the Justice Data Lab processes over the pilot period include:

Improving the Data Upload Template - Developments included working with organisations more closely to understand how an organisation works with an individual and to fully understand the service provided to make sure our analyses are as relevant as possible. Using this information, the Data Upload template has been enhanced with a series of questions around referral routes to make it easier for organisations to provide this information. We understand that for some organisations there will be many referral routes used for their clients – but the clearer an organisation can be, the more confident that the Justice Data Lab will be in its analysis.

Providing greater detail on the selection of individuals for analysis – full details (as far as currently possible) are given routinely on the matching process of the treatment group to our internal administrative datasets. Attrition rates are standard within JDL analyses but the report gives a full explanation on each of the steps where and why individuals drop out of the process.

Account for more localised data when matching the treatment and control groups –The location and reach of the intervention are assessed to see where regional or prison(-type) specific control groups are logical. This can help account for the effect of behaviours that are not observable within the datasets used, and therefore not accounted for within the modelling processes. These are provided with commentary alongside the standard national control groups.

An assessment of the statistical power within each published request – This gives an idea of how large the sample size would need to be for each request in order to get a significant result. It is recommended that organisations submit as many individuals as possible including previous years of information to improve the chance of obtaining a more precise estimate of the impact on re-offending possible. Repeat analyses can also be produced for the same programme if the organisation provides us with information on more individuals who have since completed the programme following the initial request.

Keeping our underlying data up to date – We aim to include the latest re-offending data into JDL analyses a maximum of 2 months after the most recent publication of proven re-offending statistics<sup>4</sup>. The most recent data incorporated into JDL analyses is now up to March 2013 (as at time of publication of this report).

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<sup>4</sup> [www.gov.uk/government/collections/proven-reoffending-statistics](http://www.gov.uk/government/collections/proven-reoffending-statistics)

More recent updates include an addition to the data upload template to make it explicitly clear that, once data has been provided to the Justice Data Lab and analysis has commenced, there is an agreement that the report will be published by the Ministry of Justice.

Information on what sector (accommodation, drugs etc) is targeted by the intervention is now being asked for, as well as information on the needs of individuals within the treatment group provided. This is to enhance the understanding of the criminogenic needs of individuals and help the team understand how to best incorporate Offender Assessment (OASys) data into creating the matched control group. The aim of this is to provide more specific control groups for those interventions with quite specific needs involved. The incorporation of this dataset is a work in progress and, for the immediate future at least, dual runs of matched control groups (with/without OASys data incorporated in the matching) will be taken forward to fully assess the impact.

To help expand the understanding of how the intervention or service may have affected re-offending, several additional measures are being considered that need careful interpretation and understanding:

- Two year proven-reoffending measures (both rate and frequency of re-offending) where there is a suitable number of individuals suitable for such analyses (i.e. there has been sufficient time since their index offence to allow for possible reoffending over two years) – emphasis is on the importance of information provided by the organisation about the intervention, for example, did the organisation keep in contact with participants after intervention had finished as this could be a factor that leads into reduction of re-offending on a two year scale.

If the treatment cohort allows for these two year measures, a new matched control group will be needed to make sure robust comparisons are made.

- Return to custody measures - specifically 'Return to prison for first re-offence' and 'Frequency of re-offences ending in a custodial sentence'. These will exclude anyone who breaches their license conditions and returns to prison as a result.
- Assessing the severity of the first re-offence - these measures look at, for those individuals who have gone on to re-offend, whether the first re-offence is more or less severe (or same) than their index offence. We would also aim to look at the number of first re-offences within the re-offending cohort and assess the number of offences in each tier of severity.

These measures use the same severity categorisation developed by the Ministry of Justice and the Home Office.

For all of these measures, judgement calls will be needed on a case by case basis to assess what measures would be appropriate due to the number of individuals in the final treatment group(s). This also applies as to whether to provide the measures for both regional and national control groups where appropriate.

## User engagement

In this section, we detail the key ways in which we engage with our users. This is important because the Justice Data Lab was established in order to address a need and we need to make sure that our service continues to meet the needs of those and future customers. User engagement is therefore a key theme of our work, which this section details.

### Summary of our user engagement during the pilot

The JDL carries out detailed analysis of interventions or services delivered by a range of providers. The JDL statistics are organisation-specific meaning that direct communication (between the JDL team and data providers) is essential to reflect each service fairly. As such, the team:

- Make sure organisations know what the JDL does, how they can get involved and what they will get back from the team through our website guidance; attending events; and responding to general queries via email and telephone.
- Have built, and will continue to build knowledge of the barriers external organisations face in collecting or submitting data to the JDL through our Expert Panel; feedback survey of users; and taking on board information through direct engagement with providers.
- Have presented the JDL service at a range of events to inform the sector and beyond. We are very grateful to those organisations who have hosted the JDL team at events or alliances. If you feel an upcoming event would be a good portal to expand awareness for the Justice Data Lab then please feel free to approach the team with details.
- Aim to understand the organisation that the team are generating analysis for, and the individuals who received it by getting in touch with the organisation directly and frequently once analysis has started and keeping in touch throughout.
- Want to improve the quality of our work through feedback from those who have used the service –a feedback survey is issued once the Data Lab reports have been provided to the organisation and follow this up once the report has been published. The results of these are regularly reviewed to make sure any lessons learnt can be built upon. We encourage all users to complete this survey or provide feedback directly so the team can continually improve the service.
- We have recently undertaken a more detailed survey with all customers who have had their analyses published during the pilot period. The results of which will be analysed and published in due course.

The JDL monthly publication is the primary outlet for communicating project results publicly, and the team have regular communication with organisations in the four week period leading up to this. Once an analysis is finished, a draft report is sent to the data providers for review and comment, and the JDL team can answer queries about the analysis. The level of communication during this period has varied widely, where some organisations don't indicate any changes to the initial report and others recommend clarifications. This often reflects the detail of information received in the Data Upload Template.

The JDL team continue to learn lessons about how to improve communication with customers so that both sides of the process are fully informed to make sure the analyses are as useful and as meaningful as possible.

Positive feedback has been received on the communication from the JDL team and, where constructive criticism is received, we aim to learn from these points and look for ways to improve the service. Looking forward, we hope that the quality of information provided by organisations, as well as our good working relationships with them, continue to improve through our communications.

### **The role and feedback from the Justice Data Lab Expert Panel**

The organisation New Philanthropy Capital (NPC), and the infrastructure body, Clinks, were instrumental in helping us establish the Justice Data Lab. Regular Expert Panel meetings help to keep key interested parties up to date with developments of the Justice Data Lab as well as discussing key issues and barriers to accessing the service, and how these barriers could be addressed. This Expert Panel meet quarterly and consists of; staff from MoJ; NPC staff, Clinks, VCS organisations, and academia.

The challenge and support from the Expert Panel has been extremely positive, and we are grateful to every member of the group who has given their time freely to this purpose. We feel that the Justice Data Lab has genuinely benefited from this input, and that we have managed to improve our service as a result.

As the Justice Data Lab is the first such service offered by the government, we aim to share knowledge and lessons learnt with other Departments who are considering developing similar services. Working with NPC, we have made links with Departments across the UK as well as sharing our knowledge with the organisation SVA (Social Ventures Australia) to help develop a proposal to put forward to the New South Wales Government.

## Next steps for the Justice Data Lab service

Following the successful two year pilot period, the Justice Data Lab is now a permanent service offered by the Ministry of Justice. The service is free at the point of use, and the same service model will continue to operate, as detailed in the guidance.

Throughout the pilot period, there have been various suggestions on how the Justice Data Lab can be improved and move forward as a service. We will need to make sure that we balance continuing to deliver the Justice Data Lab service alongside bringing in the improvements which are mentioned below. The key improvements that we want to bring in over the next year include:

- To improve communications, so that users of the service know we have responded accurately and professionally to all their queries. This is something that we will continue to improve on.
- Continue to investigate how to provide greater detail on the selection of individuals for analysis in the section “Processing the Data”, giving more details about any individuals who were not included in the analyses due to still being in prison where suitable.
- Dual running suitable analyses with and without offender assessment data to assess the impact of the incorporation of this dataset to our service.
- Review the methodology behind the Justice Data Lab processes, engaging with both academia and government analysts, to make sure it is still fit for purpose and to identify any possible improvements that can be incorporated.
- Review the reports published following a request so that the final report is as useful and user-friendly as possible considering the various developments during the pilot period and beyond.
- Work with the UK Statistics Authority to assess the Justice Data Lab analyses for compliance against the Code of Practice for Official Statistics, with the aim of having the JDL analyses being accredited as ‘National Statistics’. We currently operate to the Code of Practice but this would give official approval that our processes meet the National Statistics standard.



## Contact Points

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General information about the official statistics system of the United Kingdom is available from [www.statistics.gov.uk](http://www.statistics.gov.uk)

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