



Opening access to administrative data for evaluating public services: The case of the Justice Data Lab

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Abstract

As more government administrative data sets are opened for non administrative purposes, there is a need to find ways for voluntary and community organisations and private enterprises to access these resources for evaluation. The Justice Data Lab set up by the Ministry of Justice in England presents an innovative case of how such data can be linked to the data held by organisations delivering public services. By setting up a unit in a secure setting with evaluation and statistical expertise, a large number of providers of programmes to reduce reoffending are able to obtain evidence on how the impact of their interventions differs from that of a matched comparison group. This paper explores the development of the Justice Data Lab, the methodological challenges and the initial experience of those using it. It draws out implications for future development of Data Labs and other forms of encouraging access to administrative data for evaluations.

Key words: Evaluation, administrative data, public services, crime, offending, voluntary sector

1. Introduction

At a time where there is greater attention to the use of administrative data sources held by the public sector, there are emerging opportunities to use this for evaluation. This paper explores the origin, operation and challenges facing the Justice Data Lab (JDL), a project that has provided 117 (as of 11th September 2014) analyses to charities, social enterprises, public sector and private sector bodies with data on the aggregate reoffending rates of the beneficiaries of their programmes related to criminal justice. The Ministry of Justice (MoJ) in England established the JDL as an internal unit that provides impact information for organisations that work with offenders. The service provides measures of re-offending for a cohort of individuals provided by external organisations working in criminal justice, alongside re-offending measures for a comparison group of offenders with very similar characteristics selected through propensity score matching. Finally, the re-offending measures are compared to understand from a statistical perspective whether a genuine change in behaviour has happened.

The JDL is therefore an important innovation in evaluation practice, and an example of linking data held by smaller providers of public services with Government held data. While there have been previous examples of using administrative data for evaluations (Roos et al, 1979; Riippa et al, 2014; Saunders and Heflinger, 2004), this is the first attempt to provide such an evaluation space at scale and to encourage access to data for smaller organisations. Much attention has been given to the development and analysis of administrative data, although there remain particular challenges of using such sources for the evaluation of specific interventions.

This paper explores how the JDL unit was established, how it has been used by organisations, and the methodological and organisational challenges. It draws on a range of published project documents, interviews with 8 users of the service, 5 non users, 4 key informants involved in the design and use of the JDL, a feedback survey of users and group discussions at three meetings of users, non-users and those providing data. The paper is not an evaluation

of the JDL but rather explores how it has been set up and the challenges it is currently addressing. This case study in evaluation practice links policy analysis, criminology and evaluation theory to innovations in the use of administrative data. The approach also shows how such evaluation opportunities need to cross the boundaries between professional evaluation, policy makers, public sector statistical services and academia. The conclusions identify the generalizable elements and the implications for further developments in this field.

The paper reflects on how this case study is negotiating four sets of challenges: conceptual challenges related to the use of reoffending as an indicator of rehabilitating offenders; methodological challenges related to sample sizes, and carrying out a statistical analysis where there may not be a standard service delivery model or selection process; organisational challenges related to the motivations of public service delivery organisations to conduct evaluations; and finally policy challenges related to the motivation of those government departments holding data to share more widely. The paper concludes by drawing implications for the future use of administrative data and the approaches that can be used to provide this data in a safe and affordable manner. The case of the Justice Data Lab therefore has wider lessons for the development of affordable quasi-experimental evaluations on a range of important social areas—education, crime, health, substance misuse. Such a development would have significant implications for non profit organisations, social enterprises and private businesses delivering public services.

2. Context

The development of the JDL has to be seen in the context of public service delivery by a diversity of providers (Dunleavy and Hood, 1994). As part of the development of quasi-markets, there are a range of private, non profit and social enterprise models of support provision related to reducing reoffending, complementing the public sector provision. These forms of publicly funded but voluntary and community or private owned provision are increasing as part of a government agenda to have diversity of providers and increased competition in service delivery. In the criminal justice area, the Transforming Rehabilitation programme of the Ministry of Justice (MoJ) has the aim of “opening up the market to a diverse range of new rehabilitation providers to get the best out of the public, voluntary and private sectors” (MoJ, 2014b). These different types of provider have a growing appetite for evidence of their outcomes (NPC, 2012; Arvidson and Lyon, 2013) that complements a national policy emphasis on measuring the outcomes of public services (Cabinet Office 2012). At the same time there is a similar shift in philanthropic foundations and individuals wanting to measure the impact arising from their resources (Vliet et al, 2013). However, while organisations may want to increase their evaluations, many in the UK report that they lack specialist evaluation knowledge and capabilities (NPC, 2012). A similar issue is raised internationally (Cousins et al, 2014).

The second contextual factor shaping the JDL is the development of the administrative data agenda and the growing interest in ‘Big Data’ by the public sector (ADRN, 2012; Eversley and Mayhew, 2011). Policy makers have increasingly been convinced that the re-use of administrative data is a low cost and— because of improved analytical tools— robust way to inform wider practice and policy development. The UK government set out its intention to provide more open data and increased transparency of public service delivery (Cabinet Office, 2012), supported by the Government Statistical Service Data Strategy (GSS, 2013) resulting in the release of large amounts of data for free where there are no privacy or confidentiality

issues. However, some data is too sensitive for such release and there have been innovations in allowing use in policy of such sensitive data without compromising privacy. There has been a growing use of administrative data in many countries to understand changing populations, policies and businesses. There is also increasing interest for policy evaluation, particularly where there is a need for more robust counterfactuals and comparison groups (Morris and Herrmann, 2013).

Voluntary and community organisations around the world have been slower in the use of these new innovations in data analytics and supply of data, due to a number of factors including the lack of access to administrative data which is safeguarded by Government (De Souza and Smith, 2014). However, the provision of access to data faces a number of challenges, most notably allowing access in a secure way that ensures genuine anonymisation and reduces the risk of any data disclosure (Information Commissioner's Office, 2012). Access also has to be combined with the expert statistical skills needed to analyse the data.

3. Establishing and operating the Justice Data lab

The MoJ has a clear mandate to reduce re-offending, alongside a plethora of voluntary and community organisations who also work to rehabilitate offenders and address some of the social and life disadvantages that they face. The one year proven re-offending rate¹ for adult offenders released from custody during October 2011 to September 2012 was 42.5%, the equivalent figure for offenders starting a court order was 33.6% (MoJ, 2014c). There is rich administrative data held by the MoJ: this records individuals' interactions with the Criminal Justice System including re-offending.

The Justice Data Lab arose from the demands of voluntary and community organisations for support to help them measure their impact, and to ensure that their rehabilitation efforts were working – or identify where they needed to be improved. There are particular difficulties with making re-offending data available widely – information about a person, their criminal history and re-offending behaviour is classified as sensitive personal data by the Information Commissioner. In practice, this means that additional safeguards around the data must be in place to protect it, and that a series of measures must be considered, including ensuring sharing the information is legal and proportionate, when making this data available to third parties.

Previously, organisations were attempting to collect re-offending data from sources such as local and national police and probation sources. However, such reoffending data was of varied quality being piecemeal and difficult to compare across collections. Also, it was an expensive way to collect data, with further risks arising regarding confidentiality and privacy. The lack of access to high quality information was limiting these organisations' ability to learn and develop services and it was also limiting their ability to demonstrate their impact to funders and public sector commissioners of services (MoJ, 2014a).

¹ The **one year proven re-offending rate** is defined as the proportion of offenders in a cohort who commit an offence in a one year follow-up period, which was proven through receipt of a court conviction, caution, reprimand or warning during the one year follow-up period, or in a further six month waiting period. The one year follow up begins when offenders leave custody or start a court sentence. The frequency of re-offending is a count of the number of re-offences which occur in the same period.

Providing access to MoJ administrative data was deemed a sensible avenue to explore. In 2011, in response to research on how voluntary and community organisations struggle to evaluate their effectiveness in reduce reoffending, NPC (a think tank supporting organisations to measure their impact) advocated for a service like the JDL, and the MoJ received ministerial approval to embark on a feasibility study. In 2012, the MoJ carried out engagement with a range of potential data users to understand how this sensitive data could be shared in a way which ensured its protection, but also maximised its potential. This successful engagement lead to the start of a pilot project in 2013 and an extension of this into 2015. The JDL has been able to provide organisations with reoffending data and has been free to use since being established.

How does the Justice Data Lab work?

Participating organisations supply the JDL with details of the offenders they have worked with and information about the services they have provided. The JDL team matches these individuals to the re-offending datasets held within the MoJ and uses statistical modelling techniques to generate a matched comparison group of offenders with very similar characteristics; including demographic, criminal history and employment and benefit history.

As standard, the JDL supplies aggregate one-year proven re-offending rate and frequency of re-offending for that group, and the matched comparison group. The measures for both groups are compared using statistical testing to assess the impact of the organisation’s work on reducing re-offending.

The results are then returned to the organisation, before being published on the gov.uk website as Official Statistics, alongside a summary of the findings to date, to promote transparency and ensure that findings produced through this service can be used by others. In these reports, the findings are explained along with limitations of the analysis. A cautious approach is taken regarding the statistical significance within each report, stating what can and cannot be concluded from the results.²

The Justice Data Lab, is an example of a “Data Lab” that operates as a tabulation unit, building on a high quality data set and a considerable investment into automating the evaluation effort, making it into a statistical compilation process. The JDL therefore provides a service to organisations who would not have the skills or resources to collect outcome data – and in this case those organisations who do not have funds to pay for expensive research. As for all organisations who want to look at their impact or outcome data, they must have a degree of competence in data collection and the use of data. Locating the Data Lab within the statistics profession puts structure to manage risks around using sensitive personal data – and ensures that it is free from interference from Ministers, as the Government Statistical Service is an independent body within Government. This Data Lab is therefore different from other similar initiatives across Government that aim to allow access for approved researchers (academics) to administrative data in a securer setting.³

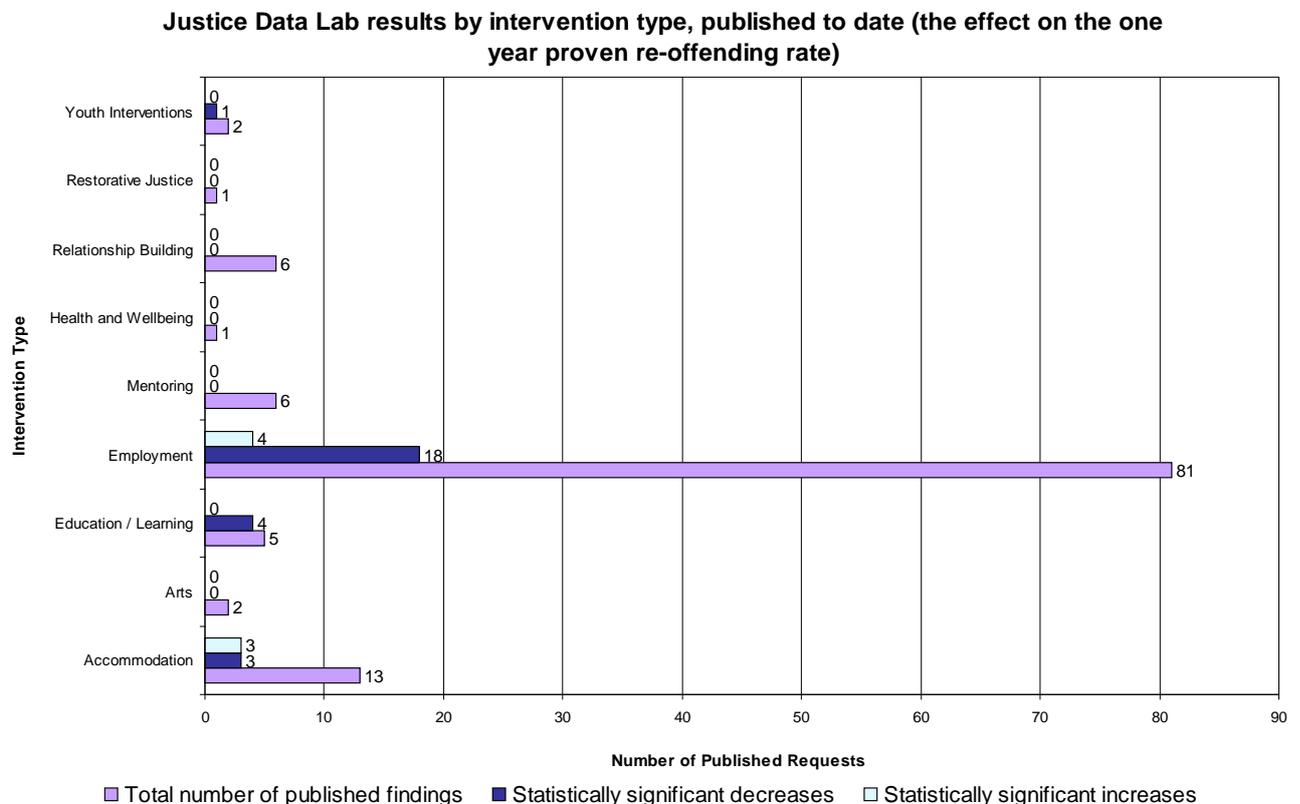
² All results to date can be found at the following link: <https://www.gov.uk/government/collections/justice-data-lab-pilot-statistics>. Full guidance about how the Justice Data Lab works can be found at the following link: www.justice.gov.uk/justice-data-lab

³ In the UK, the Administrative Data Research Centre and network, is a complementary programme to service analysis undertaken by academic evaluators, routinely using complex datasets and the researchers are familiar with statistical techniques to analyse these data. The ADRC will therefore provide the analyst with a relatively permissive setting for analysis.

What has the Justice Data Lab told us so far?

In its first year of operation the JDL published 59 reports of the effectiveness of programmes with offenders. The latest findings, published 11th September 2014 increases this to 117 analyses. The spread of different intervention types and the number of statistically significant increases or decreases is shown in figure 1 below for the latest findings

Figure 1 : Published findings from the Justice Data Lab according to interventions and statistical significance.



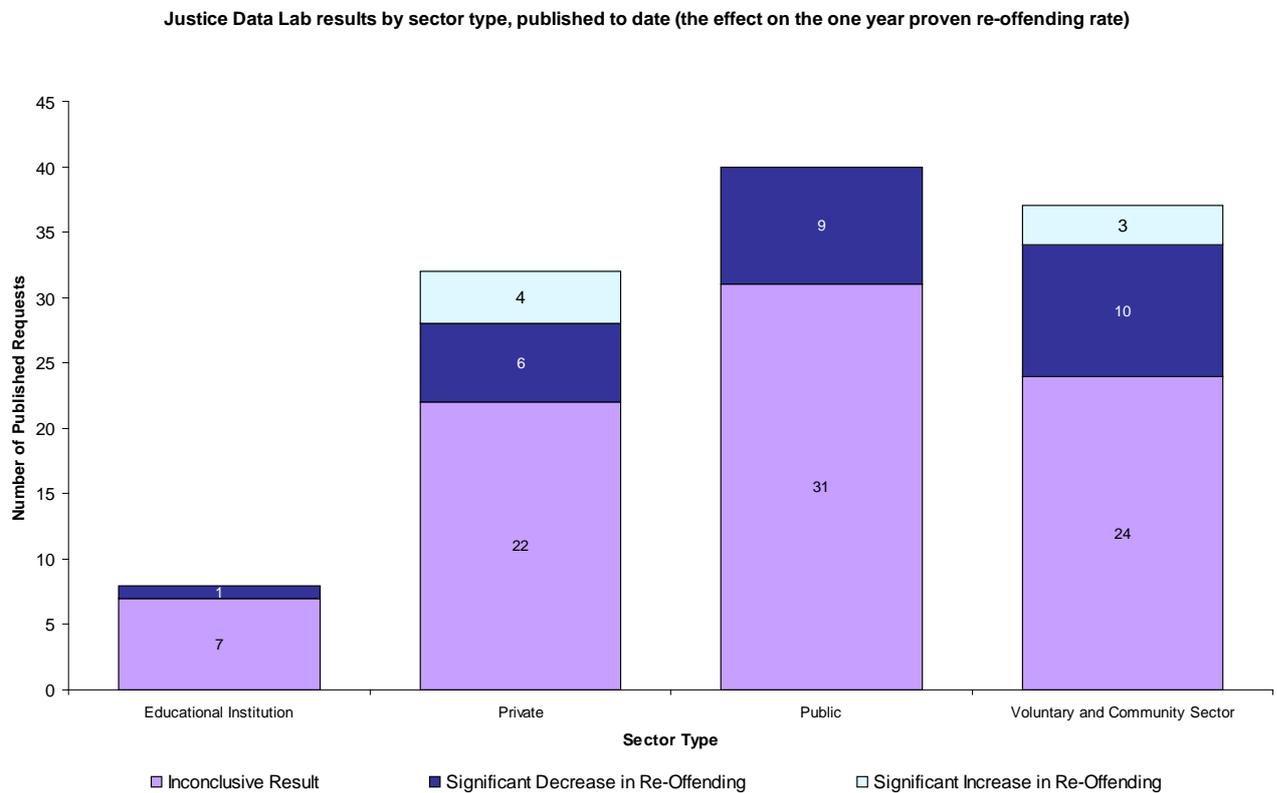
Source: MoJ data on the 117 organisations receiving reports by September 2014

Figure 1 above reflects the findings for those organisations who have sought to establish their effectiveness through the Justice Data Lab only, 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 (MoJ, 2014a).

Figure 2 below looks at the published findings from each of the sectors that have requested information, including the private sector, the public sector, the civil society/voluntary and community sector, and educational institutions. While the JDL was designed to support the Voluntary and Community Sector, the largest number of published findings pertains to interventions or services carried out through the public sector. The Voluntary and Community Sector demonstrate the highest number of statistically significant reductions, in the one year proven re-offending measure as well as three cases of increased reoffending. The private sector demonstrates a number of

increases in re-offending; however it may be worth reflecting that these increases in re-offending reflect programmes to increase employment of the hardest to help offenders, where the organisations will have been encouraged to find new ways of delivering services.

Figure 2: Types of organisations using the JDL, published September 2014



Source: MoJ data on the 117 organisations receiving reports by September 2014

4. Tackling methodological challenges

As an innovative development in evaluation and the use of administrative data, the JDL has had to overcome a range of methodological challenges, many of which are found in other quasi-experimental designs for evaluations. The approach taken has been shaped by the nature of the subject matter, the existing data set being used, the data held by organisations providing services to offenders and finally the legal context in the UK that shapes data sharing and use. Three key challenges are noted: the key indicators used in the reports (the dependent variables), the comparison group and related independent variables, and challenges with sample sizes and confidence limits.

A fundamental challenge has been the availability of variables for analysis – which must be derived from administrative data. There has therefore been a focus on the one year proven re-offending measure. This reflects the limitations of administrative data and the difficulties in having robust consensus and underlying information on drivers of changes in behaviour. Key informants commenting on the methodology have emphasised the difference between reoffending from reconviction, and the need for additional and complementary evaluations to go beyond the data being provided to also assess the impact of any interventions on the behaviour change of individuals who had previously been convicted (McNeil et al, 2012). Many organisations working within the criminal justice system do not see reducing

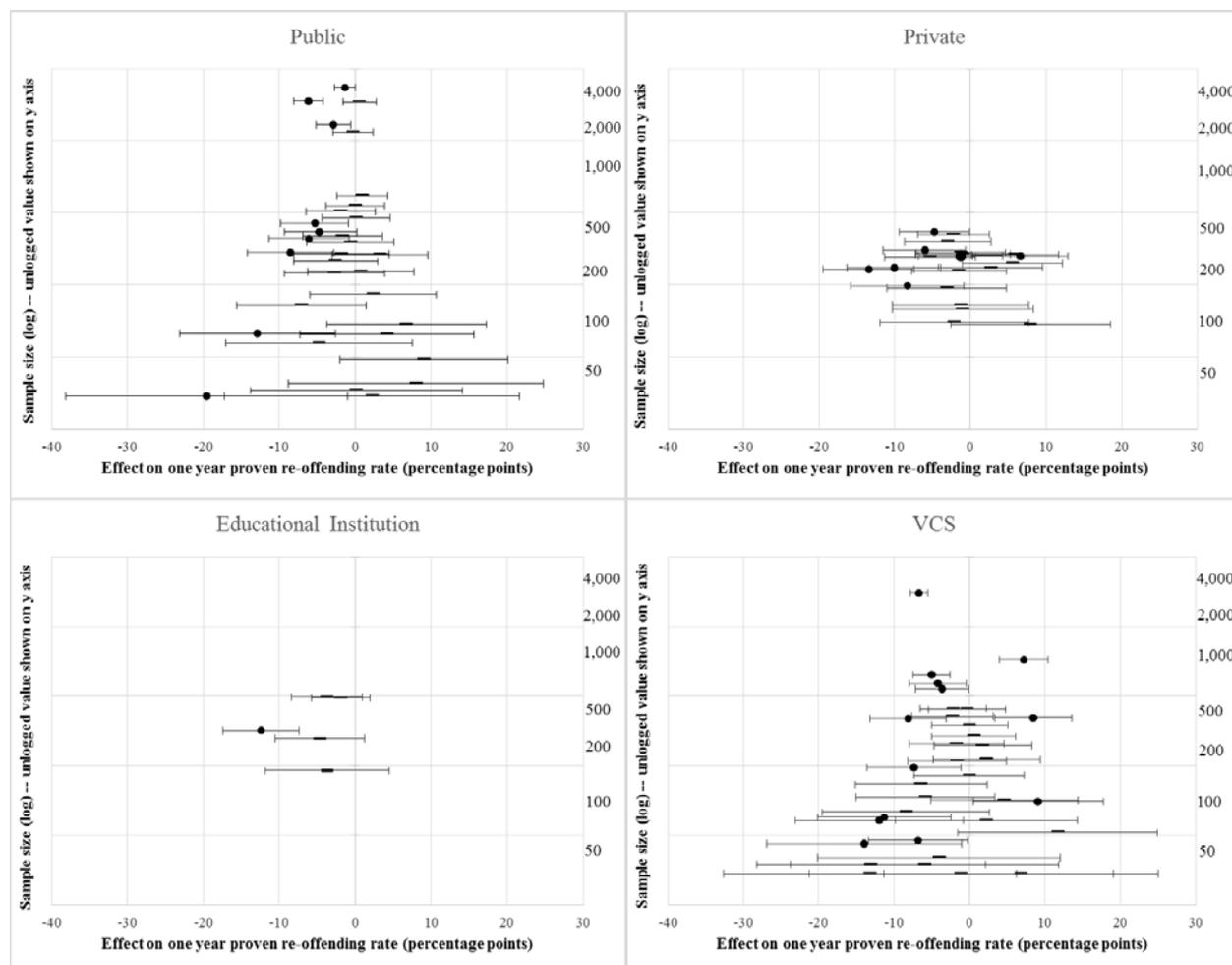
reoffending as their only or primary objective, but rather focus on the desistance from crime as part of a personal journey. Relapses can and are expected to happen and so there is a need to examine progress against frequency of reoffending and severity of the offence. The chief executive of a charity supporting prisoners called for more exploration of “more detailed aspects of the pattern of reoffending, such as the volume of pre- to post-programme offending, the severity of re-offences, penalties for re-offences and differences in volume of reoffending between different sub-cohorts. We believe that it is important to analyse these outcomes in detail to thoroughly evaluate the impact of an intervention”. The JDL is now working with users following feedback such as that above to extend the range of outcome indicators available. This will allow further conclusions to be drawn on how any intervention or service has affected re-offending.

The second set of methodological challenges relate to the matching process and use of Propensity Score Matching (PSM). The use of PSM requires a strict set of assumptions to be made, without which the modelling will not hold – however, as with all evaluation designs of this kind, this approach has the risk of unobserved ‘independent’ variables having an influence on parts of the comparison group. For example, drug problems, mental health conditions, quality of housing and home-life, and employment opportunities are known to influence re-offending but there is little robust administrative data which truly reflects each individuals’ circumstances. However, the very large comparison groups available through the JDL allows assumptions to be made relating to reducing this potential bias. The development of the JDL has involved developing a deeper understanding of how PSM can be applied for different sentence and intervention types. The Justice Data Lab team quality assure every report, and also routinely undertake sensitivity analyses to demonstrate that different parameters or use of variables do not impact on the results.

JDL documentation therefore clearly sets out where it cannot provide evaluative results because the statistical matching approach is unlikely to be appropriate. This includes people who are part of gangs, or have committed terrorist offences; offenders aged 14 or under; interventions targeting vulnerable young people/adults e.g. mental health or learning difficulties or substance misusers; and people who have committed sexual or domestic violence offences. This can exclude many criminal justice interventions which are targeting vulnerable people and substance misusers. These exclusions are made because administrative data available are not likely to cover the characteristics of these individuals appropriately..

The third challenge relates to sample sizes and confidence limits of the analysis. Evidence of outcomes is highly dependent on sample sizes, with larger samples allowing more precise estimates of the impact of interventions on reoffending. For a large proportion of requests with smaller sample sizes there have been inconclusive results. Generally, the larger the cohort, the more confident the analysis can be that it is representative of offenders generally, or those with the specific characteristics the organisation is seeking to address. Generally, the customers of the Justice Data Lab are smaller organisations that will not aim to work with large numbers of individuals over any given period of time. This means that from the outset, it will be difficult for an organisation to identify that they have lead to genuine changes in re-offending behaviour – regardless of what quantitative technique was used. For some organisations that have not collected the personal identifiers of their users, collecting this data at a later date from prisons and referral agencies has been a particular challenge. Despite this, the JDL has identified 25 programmes which have a significant decrease in reoffending and 7 with a significant increase. The figure below shows the relationship of the size of the matched treatment group and range (confidence interval) presented around the change in reoffending.

Figure 3. Sample size and confidence intervals



Source: MoJ data on the 117 organisations receiving reports by September 2014

5. Response of organisations and the use of the Justice Data Lab

The use of the JDL to publish 117 analyses, demonstrates that there is a demand for the service with initial feedback from users finding that the information on reoffending rates is useful for demonstrating impact of services both internally and externally (MoJ, 2014a). Despite the service being scoped and developed with the voluntary and community sector, it is interesting to note that as of September 2014, only 37 of the 117 findings published were for that sector, with much interest from parts of the public sector and other private sector providers who also wanted to show their impact. Future evaluations by Middlesex University and Belmana Consulting will be examining the actual impact on the performance of users of the JDL, but there is evidence that it is influencing the evaluation culture in those using it, particularly smaller voluntary and community organisations, many of whom are new entrants to evaluation.

Users of the JDL interviewed, reported that they now have a better understanding of statistics related to impact and evaluation following the explanations given in the results published by the JDL. There is also evidence of organisations using the JDL to complement other forms of evaluations⁴. However, there is a perceived risk that the use of such a service may lead to an over emphasis on one type of (quantitative) evidence. One organisation using the service referred to the JDL as supporting a “mixed economy of data with some soft and some hard... with the marketization of services there is greater demand to quantify outcomes and there is a more valuing of hard at the expense of soft” (CEO of charity supporting men in prison).

Policy makers interviewed expect that the JDL will have an impact on policy making and providing evidence of what works, but with the significant changes which are taking place in offender rehabilitation policy, it will be difficult to understand what role the Justice Data Lab has really had. The results, along with other evaluations, are already contributing to a growing evidence of “what works”. The JDL has paid particular attention to ensuring the results published are interpreted correctly. This is in response to concerns from some organisations that the data on reoffending from this source will be used without considering the other forms of evaluations, and without a clear understanding of how to interpret the results. The CEO of a voluntary and community organisation was concerned about how those reading the reports may be drawing conclusions without understanding the limitations of the data and without reference to other evaluation evidence. For the users of the JDL, there are particular challenges about how they report the large proportion of insignificant results without damaging their reputation.

The JDL therefore explicitly state that reports should not be compared against each other. This point was reiterated by users of the JDL, one of whom was concerned that the advice on interpreting results was not being followed and warned of the “danger of league tabling and comparing to others on a measure you might not have been set up to cover”. Interviews with non users identified the risk of having a negative or insignificant published result as a major barrier to using the JDL. There is a concern that the methodological limitations may provide results that could lead to a loss of future funding. This was considered a particular problem in light of the major policy reforms and reorganisation of service delivery in the English criminal justice system.

Users of the JDL have been particularly keen to overcome the challenges of accessing sensitive personal data on individuals. The JDL provide a legal gateway to access this data in safe and secure system. This would not be possible without having a specific data lab residing behind the firewall of the government department. There have also been concerns concerning the issue of confidentiality and data protection. While some providers of services are capturing consent during interventions, there is concern from some organisations that requesting consent on an entry form may have led to a decrease in participants(although it has been hard to identify if other changes in their intervention may also have affected participation). Gaining consent retrospectively is also very difficult. The MoJ was considered to have an interpretation which allowed organisations to share data for this specific purpose, that is less restrictive than other government departments regarding consent issues, drawing on the Offender Management Act and the Data Protection Act that enables data sharing between providers, where there is a lawful and proportionate reason to share data for a particular purpose. The Privacy Impact Assessment produced by the MoJ sets out the legislation which enables the sharing of data where consent has not been collected, and makes assurances that the purpose of the JDL is ‘likely’ to satisfy conditions for data sharing, however the onus is on charities “as Data

⁴ See <http://www.safeground.org.uk/wp-content/uploads/2014/08/ICPR-Family-Man-Evaluation-Final.pdf>

Controllers, to satisfy themselves that the sharing of the data with the MoJ complies with their legal obligations” (MoJ 2013: 9). The report further states that “Organisations should obtain their own legal advice about these issues if it is considered necessary” (MoJ 2013: 9). Organisations have reported that this guidance is too vague, requiring them to seek further legal clarification of their position to enable data sharing, which has led to them delaying their application.

6. Discussion

Within the context of England and Wales, the Justice Data Lab has been an effective way of helping smaller organisations access administrative data and evidence of the outcomes from their work with offenders. It has been able to develop because of a combination of political will and ambition of the Statistics Unit in the MoJ to be transparent and work with its customers. After only 15 months of operation, the Justice Data Lab was awarded the Royal Statistical Society Award for Excellence in Official Statistics. The Royal Statistical Society judging panel commented that the award was being given “For the use of statistical techniques to assess success (or failure) in a critical area, and for the exceptionally close way MoJ statisticians have worked with their users, mainly non-statisticians, to provide the most useful possible service, and for the way feedback was both encouraged and acted upon”.

For organisations, there is clearly demand for the service along with some degree of caution and hesitancy among some. It is of interest that a programme developed for voluntary and community organisations is actually being used by a large number of private and public sector bodies too. For all these organisations, the JDL is free at the point of use, and therefore provides a low cost source of evidence to complement other sources. This presents savings to organisations who might otherwise be contracting out this work to other evaluators. The cost per report for the MoJ is estimated to be a fraction of the costs of other surveys or independent data collection. Value for money in service delivery is also expected to be shown in the future as organisations adjust their services on the back of learning derived from the analysis conducted by JDL.

The service provides high quality data on reoffending rates, but organisations are sensitive to the limitations of the results. There are methodological challenges, and care needed in the interpretation of the results. Both the MoJ and the organisations using the service are making efforts to educate people on the use of the results and ensuring there is no risk of a backlash against evaluations more generally. The requirement from the JDL that results have to be put in the public domain encourages a culture of transparency and impact which has not to date been present. The competitive environment within which they are operating presents a particular challenge as negative evidence (or insignificant results) could result in the loss of contracts from the public sector and the loss of other funding. While there are elements of risk in being transparent, organisations using the service appear to be keen to demonstrate their good practice. They are also looking at ways of improving the quality of the samples provided, and ensuring that those requesting data are not supplying selective samples likely to offer more positive results. The organisations providing the service are also working with the MoJ to support the development of a greater range of indicators that can demonstrate desistence and changes in behaviour.

The experience of the JDL is now being shared widely across government with feasibility studies being conducted related to employment and health data. This is a significant investment for Government, who must put resources into ensuring this personal data can be successfully developed into safe products which can be shared securely and robustly. There

are significant opportunities for Government departments to work together, developing a common strategy. In future, this could also include sharing administrative data to improve the underlying information about individuals, and the potential to include a full range of outcome measures. At the moment, this type of service from Government is in its infancy; however the JDL has shown that this approach is possible and that through projects like this, there can be a significant contribution to the evidence base and opportunities to further develop services for evaluation.

7. Conclusion

This paper has explored the use of the Justice Data Lab. It is an innovative approach that allows access to sensitive personal data for evaluation purposes in ways that has not been attempted before. The volume of output from such a small service has been impressive over its short operation; demonstrating that Government Departments can be well placed to contribute to the evidence base, and show real engagement with users. As a pilot project, the JDL has wider implications for policy making and the provision of data on the outcomes of public service interventions. The Data Lab model offers the opportunity to find new ways of providing information for evaluations in a range of different services. As lessons are identified, new datasets developed and methodologies adapted, there are likely to be further Data Labs emerging and further innovations in design. There has been a growing interest from other government departments in the UK, demonstrating the important role that the JDL is playing in showing how there can be wider use of administrative data to help organisations and also help the public sector.

The JDL has to be seen in its wider context of both a 'Big Data' agenda and the growing interest in evaluation. As more opportunities for data analysis become available, there is a need for innovative platforms and a cadre of data curators and analysts (DeSouza and Smith, 2014). The JDL does offer the opportunity for relatively inexpensive quasi-experimental designs and there is potential for it to be used for random control trials in the future. There is also a growing opportunity for more linking of administrative data sets, although there is a need for greater political will and also the development of safe ways of ensuring anonymity and confidentiality.

This paper presents findings from the initial pilot phases of the JDL and further research is needed to assess the longer term contributions and impacts. The future impact of the JDL itself will need to consider how organisations use the results to complement other evaluations and improve their services. At its most extreme, we may be able to see the legacy of the Justice Data Lab through scaling up of services shown to be effective as well as changing those services shown to be less effective. Secondly the impact will be seen from changes to the decision making of policy makers, both at a local level as commissioners of services decide which providers to contract with through better provision of evidence, and secondly at a national level when evidence of different types of intervention becomes available.

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