REFORM

Unlocking prison performance

Elizabeth Crowhurst
Eleonora Harwich

April 2016

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Advisory board

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1 Lars Otto and Peter Bogetoft, *Benchmarking: Benchmark and Frontier Analysis Using DEA and SFA*, version 0.26, 2015.

Contents

Executive summary

Increasing productivity remains a key challenge for government. This is particularly true of the public sector where official estimates indicate that productivity has grown by just 0.1 per cent per annum between 1991 and 2013.[2] As the Chancellor has argued, without sustained productivity improvements the United Kingdom will fail to maintain living standards and achieve economic growth in the longer-term.[3]

Current productivity measures, however, are fundamentally flawed.[4] For the most part they remain sector-level analyses focussed on the volume of outputs produced, rather than the quality of the services or their value to citizens. Despite the pressing need to find productivity gains, little is known about how individual public institutions are performing, hindering the ability to learn from best practice and maximise value for money.

This problem is very evident in the prison service. Official estimates use the number of prisoners held as the single output measure, which fails to take into account either the conditions for offenders or the quality of rehabilitative support provided. Government measures of prison performance also fail to take advantage of reoffending data. What matters is not being effectively measured.

Hence, whilst the significant savings delivered over the last Parliament may indicate improved productivity in the prison estate, increases in violence, overcrowding and self-harm show deteriorating outputs – but not ones that current productivity estimates capture.[5] In addition, reoffending rates have barely changed in a decade.[6] These factors have led the Justice Select Committee, amongst others, to question whether a focus on short-term cost-saving measures have, in some prisons, resulted in poorer longer-term performance.[7]

It is therefore clear that a new performance measurement framework is needed: one which captures both how prisons spend their money to provide a safe environment and whether they improve the life-chances of offenders released from their care. Encouragingly, the Government recognises this: in a landmark speech on prison reform the Prime Minister announced the creation of new prison league tables which would balance the need to dip test performance at a given point in time with measuring longer-term outcomes.[8] To date, however, the method and framework for producing these remain unknown.

This paper seeks to fill this gap and lays out a new model for performance measurement. Through ranking a group of comparable prisons against a frontier of best practice *Reform* also aims to identify high – and low – performing prisons and thus the scope for improvement across a number of metrics.

Firstly, the analysis considers prison efficiency by evaluating whether prisons spend wisely, keep prisoners and staff safe and promote rehabilitative activities. Secondly, an evaluation of prison effectiveness looks at how successful prisons are at reducing reoffending and supporting prisoners into education, training, employment and accommodation on release. Taken together these measures allow an assessment of performance in the short and long term, and most importantly help determine whether individual prisons are delivering value for money to taxpayers.

There is, however, a significant need for improved data availability and quality. The success of any performance model hinges on the integrity of the data used and as this

2 Office for National Statistics, *Sources & Methods for Public Service Productivity Estimates: Total Public Services*, 2016.
3 HM Treasury, *Spending Review and Autumn Statement 2015*, 2015.
4 Elizabeth Crowhurst, Amy Finch, and Eleonora Harwich, *Towards a More Productive State* (Reform, 2015).
5 Ministry of Justice, *Safety in Custody Quarterly Update to September 2015*, 2015.
6 Ministry of Justice, *Proven Re-Offending Statistics Quarterly Bulletin April 2013 to March 2014, England and Wales,* 2016.
7 House of Commons Justice Committee, Ninth Report of Session 2014–15, *Prisons: Planning and Policies*, HC 309 (London: The Stationery Office, 2015).
8 David Cameron, 'Prison Reform: Prime Minister's Speech,' Speech, (8 February, 2016).

report argues, current data is both lacking and poor quality. In particular, publically available financial data is woefully inadequate. Whilst some financial data can be obtained on public prisons via a Freedom of Information request, the Ministry of Justice do not even collect this data for private prisons. This limits the ability for contractors to be held to account, but also for lessons to be learnt where private prison places are cheaper. For example, at privately run HMP Oakwood the cost per place is £12,210 per annum compared with an average of £21,382 for Category C prisons.[9]

Within these constraints however, *Reform*'s analysis of 40 Category B and C prisons shows that, across both the four efficiency and two effectiveness indicators, there is significant variation in performance. Closing the gap between the best and worst performing prisons therefore presents considerable opportunity to both realise savings and improve outcomes.

The analysis also shows that the most efficient prisons are not necessarily the most effective, reinforcing the potential need to make trade-offs in the short and longer-term. Few prisons are able to transform good prisoner living conditions or high levels of resettlement provision (for example accredited courses and drug treatment) into improved life chances for offenders on release. Data availability and quality prevents further analysis of this, but the Ministry of Justice should prioritise further examination of those prisons which are able to buck the trend and perform well against both measures.

The forthcoming Prison Reform Bill provides an opportune moment to address these issues and bring greater clarity and transparency to prison performance. This is an essential step for a Justice Secretary committed to reforming the prison estate to deliver better outcomes for prisoners.[10] Greater transparency and a focus on outcomes are also essential for increasing productivity and delivering value for money. This report aims to provide a helpful step towards this goal.

9 Ministry of Justice, *Cost per Place and Cost per Prisoner by Individual Prison Establishment 2014-15 tables*, 2015.
10 Michael Gove, 'The Treasure in the Heart of Man – Making Prisons Work,' Speech, (17 July, 2015).

Summary of recommendations

1. The Ministry of Justice should collect and publish data documenting broken down expenditure patterns for both private and public prisons. This should include, at a minimum, the amount of funds spent on payroll, building maintenance, prisoner training (including education and industries) and drug testing.
2. The Ministry of Justice should where possible increase the diversity of reoffending data publically available (including severity and time to failure at an institutional level) to support the identification of strategies to reduce offending behaviour.
3. The Ministry of Justice should create a baseline of predicted reoffending at a prison level. This will enable a better understanding of performance by taking into account the impact of external factors on outcomes.
4. The Ministry of Justice should introduce a measure of prison performance which better encapsulates prisoner activity. This should include, at a minimum, time spent on education, industry, accredited programmes (taking into account course completion rates) and any hours spent as part of peer mentoring schemes. To ensure governors and prison staff are not incentivised to provide 'activity for activities sake' through tasks which are unlikely to develop skills or promote rehabilitation, a framework should be established which lays out which activities can be included under the new measure.
5. The Ministry of Justice should instruct prisons to collect data on the number of prisoners in denial of their offence. This should be ascertained through a combination of prisoner input and staff assessment – based upon conduct both during the prosecution process (as documented by Her Majesty's Courts and Tribunals Service) and whilst incarcerated.
6. The Ministry of Justice should collect data on the number of visits received by prisoners as a proxy for family ties. Once the digital prisons programme has progressed further, time spent on the phone or video-conferencing family should also be included in this metric.
7. In order to develop a more rounded performance framework the Ministry of Justice should include qualitative evidence of prison performance. To support this independent bodies such as the Her Majesty's Inspectorate of Prisons and Independent Monitoring Boards should also ensure more conformity and detail in their reports. Taken together these measures will enable greater transparency and allow more comparative research to be undertaken to understand of the drivers of prison performance.
8. The Ministry of Justice should set minimum targets for the provision of substance misuse courses (specifically within Category B and C prisons) – a practice which is currently employed for offender behaviour and sexual offender programmes – and hold governors to account for ensuring these targets are met.
9. The Ministry of Justice should work closely with the National Probation Service and Community Rehabilitation Companies to better understand the relationships between employment, education, settled accommodation and reoffending. As part of this process, they should commission a quantitatively robust evaluation in order to establish a clear evidence base for future rehabilitation strategies.
10. The Ministry of Justice should revisit the contracts it holds with providers under the Transforming Rehabilitation programme in order to enable Community Rehabilitation Companies to better tailor their resettlement service in the light of need and effectiveness.

Introduction

> *"Which is the best performing prison in the country? Which is the prison that is achieving the best reoffending results? …. The answer is we don't know. Seriously we have no idea. This just isn't good enough."*[11]
>
> Rt Hon David Cameron MP, February 2016

Improving productivity is a key priority for the Government. In the *Autumn Statement* the Chancellor argued that without sustained productivity improvements the United Kingdom will fail to maintain living standards and achieve economic growth in the longer-term.[12] The Government's 2015 *Productivity Plan* also stated that greater productivity is essential for the wellbeing of citizens and laid out reforms to the tax, education and transport systems, among others, which aim to support higher levels of productivity.[13]

This focus must be extended to public services. The public sector accounts for 20 per cent of GDP, yet only two pages out of 82 were devoted to this topic in the *Productivity Plan.*[14] Official estimates also suggest public sector productivity has risen only 0.1 per cent per year between 1997 and 2013.[15] The prize for identifying mechanisms for improvement in the public sector alone is therefore sizeable.

As *Reform* argued in *Towards a more productive state,* however, the current measurement of public sector productivity is poor.[16] By considering only how public spending is translated into outputs, and not longer-term outcomes, current metrics fail to highlight whether organisations are delivering the services that citizens need. A focus on sectors rather than institutions has also hampered the ability for examples of best practice to be identified.

Nowhere is this better exemplified than within the prison estate. For years the productivity of the prison service has been measured simply by the amount spent and the number of prisoners in the estate. Publically available data also fails to provide even sector level estimates, but instead combines the prison service with the courts, probation and the fire service.[17]

This tells us little about how effectively the public are being protected and prisoners humanely housed. It also fails to capture whether prisons are rehabilitating offenders to desist from committing further crimes. Other mechanisms for performance measurement exist, such as the surveys and inspections carried out by Her Majesty's Inspectorate of Prisons (HMIP) and the annual prison ratings produced by the National Offender Management Service (NOMS) – which are informed by prisons reporting on a number of measures. Even these, however, are failing to measure outcomes at an institutional level.

The Prime Minister has recognised this challenge. In his recent speech he stated a lack of rigorous performance evaluation is hindering further prison reform and limiting transparency.[18] The Justice Secretary, Rt Hon Michael Gove has also told the Justice Select Committee that the Ministry of Justice (MoJ) is failing to use data effectively to shape policy.[19] Without meaningful performance metrics policymakers and practitioners simply cannot begin to grasp what works and, conversely, what is failing within our current penal system.[20] Key to achieving this will be a move away from what can be easily measured to more innovative ways of capturing success and failure. This will inform the Prime Minister's new prison league tables so that prison leaders can be better held to account.

11 David Cameron, 'Prison Reform: Prime Minister's Speech'.
12 HM Treasury, *Spending Review and Autumn Statement 2015*.
13 HM Treasury, *Fixing the Foundations: Creating a More Prosperous Nation*, 2015.
14 Ibid.
15 Office for National Statistics, *Public Service Productivity Estimates,* 2016.
16 Crowhurst, Finch, and Harwich, *Towards a More Productive State*.
17 Office for National Statistics, *Sources & Methods for Public Service Productivity Estimates: Total Public Services*, 2016.
18 David Cameron, 'Prison Reform: Prime Minister's Speech.'
19 Michael Gove, Oral Evidence to the House of Commons Justice Select Committee, 16 March 2016.
20 Chris Fox and Kevin Albertson, 'Payment by Results and Social Impact Bonds in the Criminal Justice Sector: New Challenges for the Concept of Evidence-Based Policy,' *Criminology and Criminal Justice* 11, no. 5 (August 2011).

Encouragingly, the Prime Minister's proposed reforms will mean greater use of outcome data such as reoffending and levels of employment post-release. Reducing reoffending remains a key challenge for the prison service and for government. Current evidence suggests nearly half of all prisoners will reoffend within 12 months of release, rising to 60 per cent for those serving less than a year.[21] This revolving door of crime comes at a significant cost to victims and is estimated to cost the public £13 billion a year.[22] Research has also shown that around three quarters of offenders are jobless on release.[23] The inclusion of outcome measurements is therefore essential.

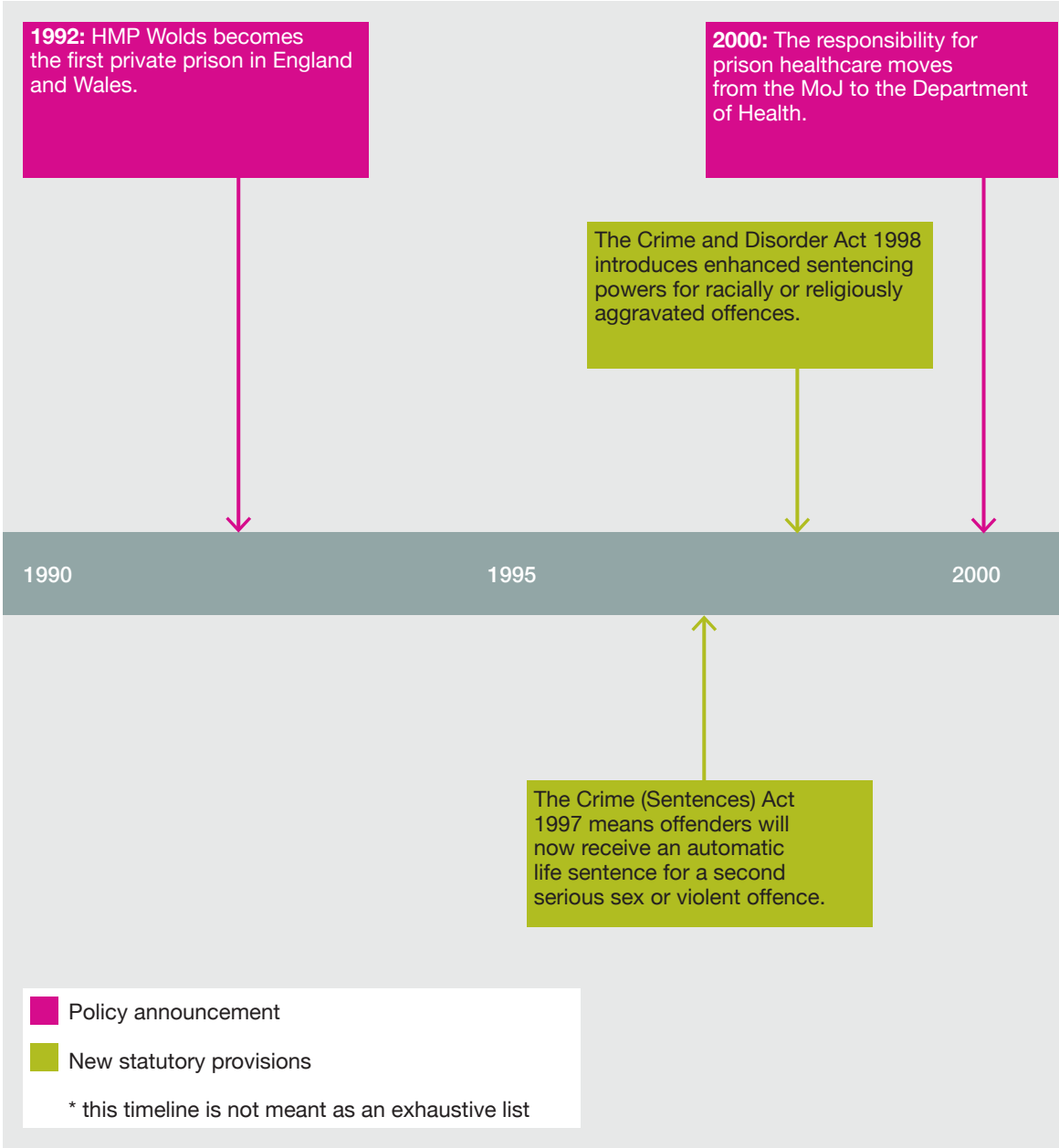
This paper proposes a new model for measuring prison performance – one which is focussed not only on ensuring decent living conditions for inmates, but also assesses the ability of our prisons to improve inmates' life-chances after prison, which is of wider value to society. By ranking prisons based upon a combination of these metrics, policymakers will be better able to assess where value for money is being achieved and subsequently how to spread best practice across the prison estate. The success of such a model is, however, determined by the integrity and quality of the available data, which is a substantial challenge within this area.

21 Ministry of Justice, *Proven Reoffending Statistics: April 2013 to March 2014*, 2016.
22 National Audit Office, *Managing Offenders on Short Custodial Sentences*, 2010.
23 Ministry of Justice, *National Offender Management Service Annual Report 2014/15: Management Information Addendum*, 2015.

1
A review of the estate

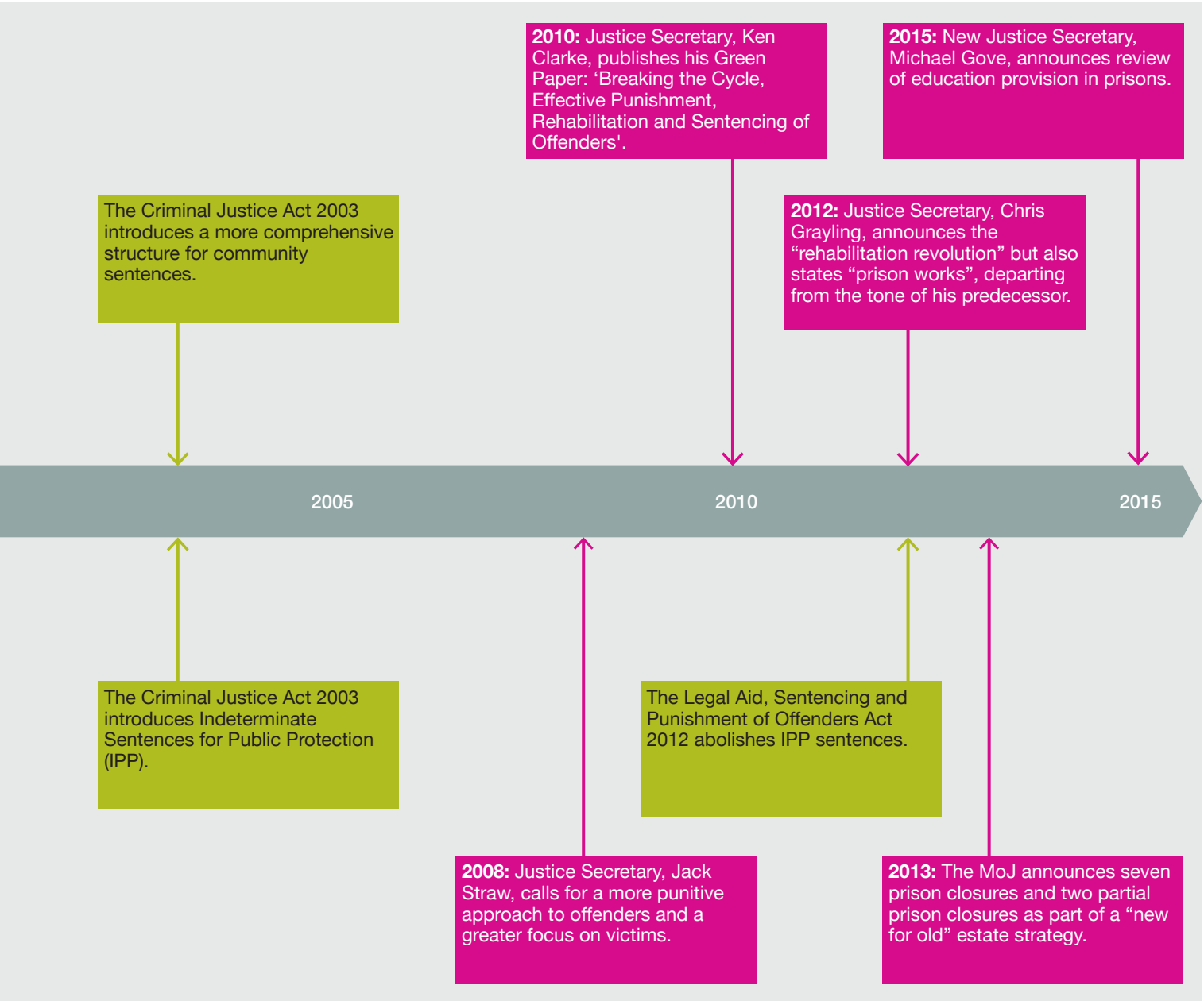
There has been an ongoing debate on whether 'prison works'. For more than three decades political leaders have held contrasting views about whether prison can reduce reoffending or simply makes bad people worse. This shifting political narrative has had significant implications for prison policy, sentencing frameworks and the headline prison population.

Figure 1: Timeline of prison policy affecting headline population, 1990-2015



While there is debate around who should be imprisoned and for how long, deteriorating prison conditions mean the Justice Secretary is faced with the more pressing question of how to make prison work for those already incarcerated. Recent policy developments have been positive. Since taking up post, Gove has launched reviews into prison education and the juvenile estate, both with a view to improving rehabilitation.[24] Estate modernisation has also been prioritised, again with the idea of improving prisoner outcomes.[25]

24 Michael Gove, 'Education in Prison', Press release, (8 September 2015).
25 HM Treasury and Ministry of Justice, 'Prison Building Revolution Announced by Chancellor and Justice Secretary,' 9 November, 2015.



Whilst these initial steps should be welcomed, delivering better outcomes from the prison estate means understanding what works. An essential starting point must, therefore, be a better understanding of prison performance.

1.1 The population

Between 1993 and 2008 the male prison population grew at a rate of around four per cent annually.[26] This increase can, at least in part, be attributed to a rise in the number of

26 Ministry of Justice, *Prison Population Figures: 2014*, 2015.

prisoners recalled to prison whilst out on licence. In 1999-2000 around 1,300 were recalled, in 2007-08 this was more than ten times higher at just over 13,000.[27]

The introduction of legislation which focussed on harsher punishment, including the Crime and Disorder Act 1998 and The Crime (Sentences) Act 1997, also contributed to this rise.[28] In particular, IPP sentences, brought in under the Criminal Justice Act 2003, allowed courts to not only impose a minimum tariff to be served, but also to detain offenders indefinitely until it was possible to prove they posed no risk to the public. Whilst IPP sentences were designed to be reserved for the most serious offenders, they were used much more widely than anticipated by ministers.[29] Human rights concerns combined with the fact that the prison service was ill-equipped to provide the necessary volume of rehabilitation programmes, led to IPP sentences being abolished in 2012.[30] However, those sentenced under the previous regime remain subject to its provisions. As of March 2015 there were still 4,600 prisoners serving IPP sentences – many of whom have served their minimum tariff.[31] While those that remain may do so due to the continuing risk they pose, the absence of sufficient access to rehabilitation courses is a key area for improvement for prisons.

After the steady increase in inmate numbers however, the Coalition years saw a stabilising of the headline prison population. Between 2010 and 2014 the adult male prison population settled at approximately 81,000.[32]

1.1.1 Offence mix

Across this period the offence mix of the sentenced population has also broadly remained stable. Offenders convicted of violence against the person have consistently been the largest cohort, particularly since 2009.[33] The number of sexual offenders, however, increased over the last Parliament – they now account for 16 per cent of sentenced prisoners compared to 13 per cent in 2010.[34]

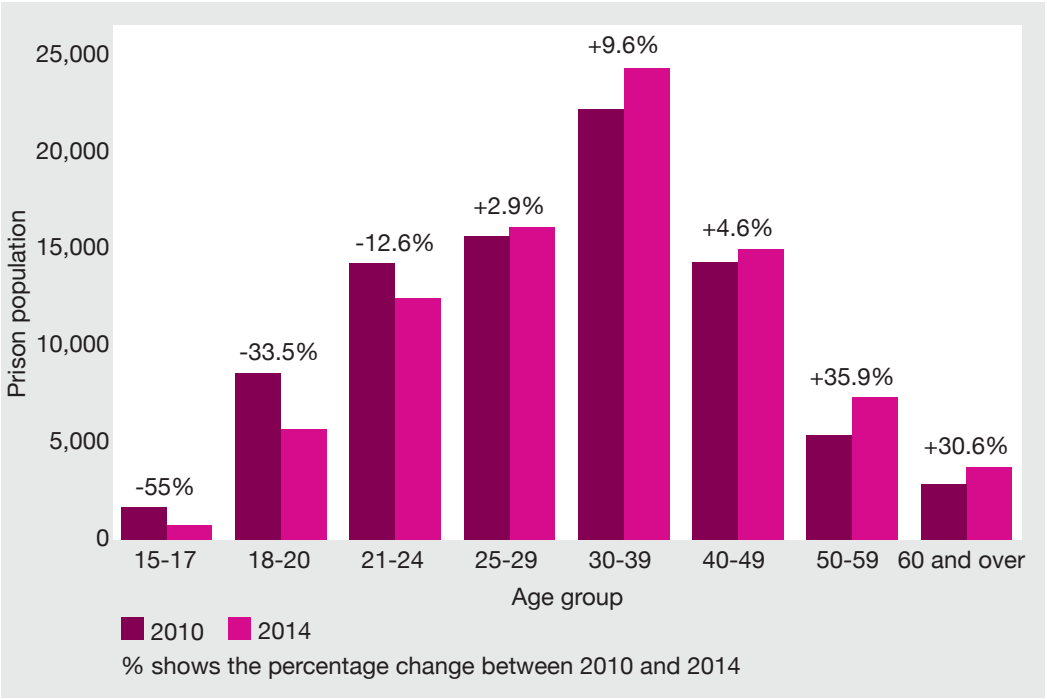
Prolific offenders with more than 15 previous convictions or cautions also continue to dominate the population, accounting for around one third of prisoners.[35] In the year to June 2014, the proportion of first time offenders fell from 13 to 11 per cent, whilst all other categories remained stable.[36]

1.1.2 Demographic change

Despite the headline population stabilising over the last Parliament, the demographics of the prison population are changing. The proportion of prisoners over the age of 50 has increased from less than 10 per cent in 2010 to nearly 13 per cent in 2014.[37] At the same time the percentage of prisoners aged under 25 has decreased from approximately 29 per cent to 22 per cent.[38] The Justice Select Committee expects this trend to accelerate in the longer term – partially due to increasing prosecutions for historical sex offences – although currently the over 50's still only equate to around 11,000 prisoners.[39]

27 Ministry of Justice, *Offender Management Statistics Quarterly: January – March 2013*, 2013.
28 Between 2004 and 2014 the average sentence length for indictable offences rose from 16.1 to 18.3 months. See Ministry of Justice, *Prison Population Figures: 2014*.
29 Ministry of Justice, *IPP Factsheet*, 2011. See also Andrew Selous, 'Prison Sentences', 15 October 2015, Written Answer 12127 for the most recent statistics on those still held under the IPP regime.
30 See James, Well and Lee vs United Kingdom in which the European Court of Human Rights found that IPP sentences contravened the right to liberty due to a lack of resources, meaning prisoners were unable to prove they were risk free and able to be released.
31 Andrew Selous, 'Prison Sentences', 15 October 2015, Written Answer 12127.
32 Over the winter months during this period the adult male population rose to 83,000 falling to around 80,000 during the spring and summer. Ministry of Justice, *Prison Population Figures: 2014*.
33 Ibid.
34 Ibid.
35 Ibid.
36 Ibid.
37 Ibid.
38 Ibid.
39 House of Commons Justice Committee. *Older Prisoners, Fifth Report of Session 2013-14*. HC 89. (London: Stationery Office, 2013).

Figure 2: Demographic change in prisons in England and Wales



Source: Ministry of Justice, *Prison population*, 2014

1.2 Spending

Public expenditure on prisons grew rapidly through the late 1990s and mid-2000s, partly due to increases in the headline population.[40] This trend was reversed in 2010 when a tough financial settlement led to a rapid reduction in costs.[41]

More recently, the 2015 *Spending Review* settlement committed £1.3 billion of capital investment to transform the current prison estate.[42] It also requires the MoJ to save a further £930 million by 2019-2020.[43] The proportion of these cuts that will fall on prisons is not yet known, however, the Government has outlined a minimum target of £80 million of savings per year from prison running costs, out of a total budget of approximately £2 billion.[44]

Over the last Parliament, estate restructuring measures – particularly the closure of old inefficient prisons, combined with financial benchmarking – succeeded in bringing down the unit cost of prisons across England and Wales. The total average annual cost of housing a prisoner was £37,163 in 2010-11 falling to £33,785 by 2013-14, a reduction of 9 per cent.[45] There remains, however, significant variation in spending across the estate. For example, amongst Category C prisons in 2014-15, the highest cost per prison place was HMP Kennet at £73,828 per year compared with HMP Oakwood at only £18,549 – around a quarter of the cost.[46]

40 HM Treasury, *Public Expenditure Statistical Analyses 1999-2000*, 1999; HM Treasury, *Public Expenditure Statistical Analyses 2005*, 2005; HM Treasury, *Public Expenditure Statistical Analyses 2011*, 2011.
41 HM Treasury, *Spending Review 2010*, 2010. The Ministry of Justice faced cuts of 23 per cent in real terms over the period 2010-2015.
42 Ministry of Justice and HM Treasury, *Ministry of Justice's Settlement at the Spending Review 2015*, 2015.
43 Ibid.
44 Ibid. This figure refers to the direct resource expenditure on prisons found in table 1 in Ministry of Justice, *Costs per Place and Cost per Prisoner by Individual Prison Establishment 2014-15 Tables*.
45 Ministry of Justice, *Costs per Place and Cost per Prisoner by Individual Prison Establishment 2011-12*, 2012. ; Ministry of Justice, *Costs per Place and Costs per Prisoner by Individual Prison Establishment 2014-15 Tables.*
46 Ministry of Justice, *Costs per Place and Cost per Prisoner by Individual Prison Establishment 2014-15 Tables*.

1.3 The estate

The prison estate in England and Wales is managed by NOMS, which is an executive agency of the MoJ. There are some 121 establishments. Currently 14 of those are privately run.

The majority of prisons are categorised according to the level of security they provide.[47] Since the late 1960s adult male offenders have been classified as either Category A, B, C or D depending on the perceived likelihood of them attempting to escape and the risk of harm to the public of such an attempt.[48] The least serious offenders, and those reaching the end of longer sentences whose risk-level is deemed to have reduced, are housed in open prisons with higher levels of autonomy and freedom of movement. High-security prisons hold the more serious Category A and Category B prisoners who are serving long sentences. In England and Wales, a long sentence is defined as one for which the threshold for conditional early release is over four years.[49] Throughout the duration of their sentence, offenders can move between categories depending on their perceived security risk to the public and their engagement with prison programmes. Whilst being detained before trial, or immediately following sentencing, the majority of prisoners are sent to local prisons, after which they may be transferred to longer-term accommodation.

1.3.1 'New for old'

The current estate varies widely in age and design. A significant number of prisons were built over a century ago, whilst only a minority were built in the last decade such as HMP Oakwood, which opened in 2013.[50] As a result, a number of prisons have limited space for rehabilitative activities, are difficult to modernise and are costly to run.[51]

Successive governments have attempted to solve this problem. In 2006, the Labour Government announced the creation of the Core Capacity and New Prisons Programmes.[52] Central to these reforms was a commitment to increase the net capacity of the prison estate to 96,000 by 2014, following a period of population influx. While rising prison numbers provided a burning platform, the then Government also saw modernisation of the estate as paramount. The New Prison Programme in particular specifically aimed to replace over five thousand "worn out, inefficient places in the current estate".[53]

Lord Carter's review of prisons also proposed 'Titan' prisons, large institutions able to hold up to 2,500 prisoners.[54] The review argued that increasing capacity in this way would maximise the purposeful activity available to prisoners whilst also allowing a large number of smaller, older and less efficient prisons to be closed. Concerns were expressed, however, that Titan prisons would prove difficult to run and result in less humane regimes.[55] Her Majesty's Chief Inspector of Prisons (HMCIP) at the time also believed that smaller institutions could provide more suitable conditions for rehabilitation.[56] As a result of significant opposition to the MoJ's consultation paper on Titan prisons the plans were abandoned.[57] Subsequent analysis of prison performance has found that newer prisons, regardless of their size, outperformed older institutions.[58]

47 Ministry of Justice, *Categorisation and Recategorisation of Adult Male Prisoners,* 2011.
48 Ibid.
49 Andrew Coyle, *The Management of Prisoners Serving Long Sentences,* (International Centre for Prison Studies, 2001).
50 Prisons that were built over a century ago include HMP Dartmoor, HMP Pentonville and HMP Wandsworth.
51 Lord Carter, *Securing the Future: Proposals for the Efficient and Sustainable Use of Custody in England and Wales*, 2007.
52 Gabrielle Garton Grimwood, *Building Prisons: The Bigger, the Better?* (London: Stationery Office, 2014).
53 Ibid: 17.
54 Lord Carter, *Securing the Future*, 2007.
55 Centre for Social Justice, *Locked Up Potential: A Strategy for Reforming Prisons and Rehabilitating Prisoners*, 2009.
56 HM Inspectorate of Prisons for England and Wales. *HM Chief Inspector of Prisons for England and Wales Annual Report 2008-09,* 2009.
57 Gabrielle Garton Grimwood, *Building Prisons: The Bigger, the Better?.*
58 Kevin Lockyer, *Future Prisons: A Radical Plan to Reform the Prison Estate* (Policy Exchange, 2013).

The Coalition Government also sought to modernise the estate through a programme of restructuring. As with previous reforms, this involved closing older, more expensive prisons and investing in new, cheaper capacity – a strategy of 'new for old'. Since 2010, 14 prisons have been closed and two new prisons have opened. [59] The Government has also signed a contract to build a 2,100 capacity prison in Wrexham – a partial return to Lord Carter's Titan prisons.[60] The National Audit Office (NAO) described the programme as the "most coherent and comprehensive for many years".[61]

In late 2015 Justice Secretary, Rt Hon Michael Gove, pledged to continue this programme, announcing the closure of a further nine old prisons, with five new prisons set to be built before the end of this Parliament. The 'new for old' strategy is therefore forming a key plank of the Conservative Government's prison reform agenda.

1.3.2 An estate in crisis

Despite this programme of modernisation, and the reforms to rehabilitation services, it has consistently been argued that prisons are failing in one of their most basic requirements of delivering a humane environment for offenders. In his final annual report previous HMCIP, Nick Hardwick, found that "outcomes … fell sharply across all areas and, overall, the outcomes we reported on in 2014–15 were the worst for 10 years".[62] Similarly, the Justice Select Committee have argued that aside from HMIP, evidence from the Independent Monitoring Boards (IMBs), MoJ and Prison and Probation Ombudsman (PPO) all "indicate a deterioration in standards of safety and performance across the prison estate".[63]

Violence

Over the last five years there have been worrying increases in assaults and violent incidents, both amongst inmates and against staff. The total number of assaults has risen from 14,508 in 2010, to 18,874 in 2015.[64] Assaults against staff have risen from 2,937 to 4,568 over the same time period.[65] 2015 also saw the largest number of homicides (eight) recorded in a single calendar year.[66]

The number of incidents of self-harm and self-inflicted deaths are also a cause for concern. Whilst the number of self-inflicted deaths remained stable in 2014 and 2015, the longer-term trend shows a steady rise, increasing from 58 in 2010 to 89 in the year ending March 2014 – and in the context of a relatively constant population size.[67]

One contributing factor to the increase in prison violence is the increasing prevalence of new psychoactive substances – dubbed "lethal highs" following a number of inmate deaths resulting from their use.[68] The last two annual reports from the HMIP have also raised concerns about this issue, with their 2014-15 report stating: "[p]risoner violence towards staff and other prisoners had risen, often fuelled by the increased use of new psychoactive substances".[69]

59 HMPs Thameside and Oakwood.
60 Ministry of Justice, 'Modernisation of the Prison Estate', Press Release, (4 September, 2013).
61 National Audit Office, *Managing the Prison Estate*, 2013: 9.
62 HM Inspectorate of Prisons for England and Wales, *HM Chief Inspector of Prisons for England and Wales Annual Report 2014-15*, 2015: 7.
63 House of Commons Justice Committee, *Prisons: Planning and Policies, Ninth Report of Session 2014–15* (House of Commons, 2015): 3.
64 Ministry of Justice, *Safety in Custody Statistics England and Wales Deaths in Prison Custody to September 2015 Assaults and Self-Harm to June 2015*, 2015. These figures include incidents that occurred at Immigration Removal Centres.
65 Ministry of Justice, *Safety in Custody Quarterly Update to September 2015*.
66 Ibid.
67 Ibid.
68 Andrew Selous, 'Safety in Prisons for singles', HC Deb 17 June 2015, c 81WH.
69 HM Inspectorate of Prisons for England and Wales, *HM Chief Inspector of Prisons Annual Report 2014-15,* 2015: 32.

Overcrowding[70]

Despite the headline population stabilising, overcrowding levels have continued to rise. The most recent figures for 2014 show an increase in the number of prisons which were classified as overcrowded – from 77 of 119 prisons in March, to 83 of 117 prisons in December.[71]

In June 2015, the MoJ also admitted that previous statistics going back to 2009 had underestimated actual levels of overcrowding.[72] Inaccurate recording practices meant that in some cases two prisoners being held in a cell designed for one had only been counted as a single instance of overcrowding. Revised figures taking these inaccuracies into account therefore suggest a higher level of overcrowding than previously thought.[73] For example, in 2013-14 the original figures put overcrowding at 22.9 per cent and the number of offenders doubled up in a cell designed for one at 21.9 per cent.[74] Revised data showed this to be in fact 24.1 and 24.5 per cent respectively.[75]

1.4 Cost vs quality: assessing performance in the long term

With budgets falling over the last Parliament the prison service has seen an increasing pressure to cut costs – and quickly. The above information shows that as a result, there has been a growing tension between short-term efficiency and longer-term effectiveness.

The Justice Select Committee has argued that it is "improbable that there is no link between estate reconfiguration, benchmarking, and changes in operational policy… and the shift in safety across the prison estate".[76] In particular, it suggests that reductions in staffing numbers, due both to spending cuts and increased staff vacancies, have resulted in a more restrictive regime in a number of institutions, undermining relationships between prisoners and staff.[77] A previous analysis of short-sentenced prisoners also argued that overcrowding can lead to reduced provision of activity for prisoners which can be harmful in the long term.[78]

In addition, the NAO have expressed concerns that the Coalition's estate strategy led to a number of high performing prisons being closed. Despite being projected to save £211 million between 2010 and 2015 just under half of the prisons closed, or identified for closure, were considered high-performing – scoring 13 or more out of a possible 16 – in their most recent inspections.[79] While, as argued in this paper, current mechanisms for measuring success fall short, particularly by not evaluating outcomes, it is still concerning that overall prison performance was not considered as part of the decision-making process. High-performing prisons that are expensive to run are not necessarily desirable, but, using some measure of prison performance is vital to ensure taxpayers' money is spent to the best effect both in the short and long term.

1.4.1 Improving rehabilitation

Aside from maintaining service levels, value for money is most importantly about delivering the best possible outcome for the lowest possible price. A crucial, and significant part of this is assessing a prison's ability to reform the prisoners it houses. Over the last decade, however, the prison estate has made little headway in decreasing the number of individuals who go on to commit further offences once released from prison.

70 There are two key definitions when considering whether a prison is overcrowded: (i) Certified Normal Accommodation (CNA) also known as uncrowded capacity, is the Prison Service's own measure of accommodation. CNA represents the good, decent standard of accommodation that the Service aspires to provide all prisoners. (ii) Operational capacity is the total number of prisoners that an establishment can hold without serious risk to good order, security and the proper running of the planned regime. Ministry of Justice, 'Certified Prisoner Accommodation,' 2012.
71 House of Commons Justice Committee, *Prisons: Planning and Policies, Ninth Report of Session 2014-15*, 2015.
72 Andrew Selous, *Written Statement HCWS29*, 11 June 2015.
73 Ibid.
74 Ibid.
75 Ibid.
76 House of Commons Justice Committee, *Prisons: Planning and Policies, Ninth Report of Session 2014-15*, 2015: 4-5.
77 Ibid.
78 National Audit Office, *Managing Offenders on Short Custodial Sentences*, 2010.
79 A total of 8 out of 18 prisons achieved these scores. National Audit Office, *Managing the Prison Estate*.

The latest available data from the financial year 2013-14 records the adult reoffending rate for those sentenced to custody at 46 per cent.[80] Such high levels come at a significant cost to both offenders and society. At a national level the NAO have estimated that "reoffending by all recent ex-prisoners costs the economy between £9.5 billion and £13 billion per year".[81] While these estimates are taken from the year 2008-09 the fact that the reoffending rate has remained almost constant over the last decade means these cost are unlikely to have fallen – and if anything would have increased in line with inflation.

The most worrying offender category remains those serving sentences of less than 12 months. Since 2002, the reoffending rate for this cohort has consistently been much higher than that of those serving longer sentences. Despite nearly a 2 per cent reduction in the year to 2013, their reoffending rate was 58 per cent, compared to 34 per cent for those serving more than 12 months.[82] From 2013, the Coalition Government's Transforming Rehabilitation (TR) programme extended resettlement support and supervision to prisoners serving sentences of less than 12 months. It remains too early to assess the impact of this change.[83]

80 Ministry of Justice, *Proven Reoffending Statistics: April 2013 to March 2014*.
81 National Audit Office, *Managing Offenders on Short Custodial Sentences*: 4.
82 Ministry of Justice, *Transforming Rehabilitation: A Strategy for Reform*, 2013.
83 Ibid.

2
Measuring performance in prisons

The deterioration in safety across the estate, combined with a continuing failure to reform offenders highlights the importance of balancing short-term financial gains with longer-term objectives.

Critical to achieving a better understanding of prison performance is ensuring evaluations consider outcomes and not simply the volume of prisoners housed or the quality of the prison environment. This chapter will outline the importance of an outcomes-focussed approach and consider a number of measurement challenges within the justice setting. It will also lay out current mechanisms for understanding prison performance, before proposing a new model which aims to ensure value for money is maintained in the short, medium and longer term.

2.1 Why outcomes count

As the Prime Minister has recently argued, demonstrating the value of our public services requires us to measure what really counts – in this case whether our prisons are equipping offenders with the skills they need to reintegrate into society and desist from crime.[84] This alone makes it an essential part of *Reform's* model for measuring prison performance. However, there are also wider societal benefits from tackling reoffending.

Firstly, the prison population is disproportionately disadvantaged when compared to the general population. In a survey of 1500 offenders, 24 per cent had been in care during childhood and 29 per cent had experienced abuse.[85] This compares with 2 and 4 per cent, respectively, in the general population.[86] Multiple studies, including the 2009 Bradley Review, also suggest significant numbers within the prison population suffer with one or more recognised mental illness.[87] Preventing further incarceration therefore helps to improve the wellbeing of the least fortunate.

Studies also show that victims, just like offenders, are predominantly found in disadvantaged communities.[88] The Office for National Statistics (ONS) has found victimisation to be consistently associated with lower levels of personal wellbeing meaning reducing reoffending has benefits beyond the prisoner population.[89]

Increasing the proportion of prisoners that are living in settled accommodation and are in education or employment after release is important not just for prisoners' wellbeing but for the long-term sustainability of government finances. These post-release outcomes help to create better skilled, more employable citizens, which – in the right economic environment – might lead to reduced reliance on the welfare state and thus more sustainable public spending. In short, an outcomes-focussed prison system which also ensures prisons are spending wisely, benefits prisoners, victims and wider society.

2.1.1 Isolating the prison effect

Disentangling the impact of external factors to isolate the so-called 'prison effect' on outcomes, such as reoffending and employment upon release, is complex. The prison estate forms only part of a complicated web of government agencies. It is challenging, for example, to separate out the role of the Prison Service from probation or Integrated Offender Management (IOM) teams, which are also charged with reducing offending. The relationship between the prison and probation services is particularly pertinent in light of

84 David Cameron, 'Prison Reform: Prime Minister's Speech.'
85 Kathryn Hopkins, 'Wave 1 of Surveying Prisoner Crime Reduction (SPCR), a Longitudinal Cohort Study of Prisoners Conducted from 2005 to 2010 in England and Wales,' (Ministry of Justice, 2013).
86 Ibid.
87 Lord Bradley, *The Bradley Report* (Department of Health, 2009).
88 Those living in the 20 per cent most deprived areas are more likely to be victims of crime. Office for National Statistics, *Crime Statistics, Focus on Public Perceptions of Crime and the Police, and the Personal Well-Being of Victims, 2013 to 2014,* 2015.
89 Ibid.

the TR programme.[90] This saw the creation of 'through the gate' services which aimed to join-up the support received by offenders under new Community Rehabilitation Companies (CRCs).[91]

In addition, offenders, particularly those serving sentences over 12 months, are likely to have been housed in more than one establishment. It can therefore be difficult to understand whether improvements or declines in prisoner outcomes can be attributed to the prison from which they were released or whether the other establishments in which they were housed had the most impact on their propensity to reoffend.

Work by the Home Office went some way in attempting to isolate the impact of a particular prison by comparing the seven-year reconviction rate of prisoners who attended HMP Grendon with a control group (who met the same selection criteria, and had similar risk levels) who were sent to an alternative establishment.[92] By attempting to emulate the design of a randomised control trial the researchers were able to control for the inherent characteristics of prisoners – which was particularly important at HMP Grendon where a large number of prisoners suffered from personality disorders and were therefore considered high-risk.[93] The results suggest that time at HMP Grendon was strongly related to lower reoffending rates, compared to time at a different prison.[94] For prisoners spending more than 18 months at the establishment this impact was more pronounced. It is of course important to note that HMP Grendon is a specialist prison run as a therapeutic community and therefore it is perhaps expected that outcomes would be different from non-specialist prisons. The study is also based on data over two decades old. In recent times few studies have been able to address these issues.

Similar to other public services, background characteristics also have a large impact on the chances of an individual reoffending. Evidence suggests that a prisoner's gender, age and offending history have a much greater effect on an individual's propensity to reoffend than criminal justice interventions such as vocational training.[95] For example, results from the Surveying Prisoner Crime Reduction (SPCR) longitudinal study show that criminal history has the strongest association with further offending – independent of other factors including crime type, employment status prior to prison and substance misuse.[96]

While data on age and offence history may be available at a national or regional level, no information (aside from gender due to prison categorisation) is made publically available at a prison or prisoner level. Some of this data is held on the Police National Computer (PNC) and can be utilised for assessing risk under integrated offender management schemes. For the vast majority of researchers, however, an inability to access this resource provides an insurmountable barrier to controlling for these prisoner characteristics – thus making it difficult to 'isolate the prison effect' from a purely quantitative perspective.[97]

2.1.2 Exploring variation

Whether or not prisons have a comparatively low impact on reoffending rates – relative to these other factors – an offender's prison experience remains an important part of the rehabilitation puzzle. Statistics on international performance shows wide variations in

90 Measuring performance using an Administration of Justice approach, which takes into account these inter-relationships would be one way to acknowledge this overlap. See Office for National Statistics, *Public Service Productivity, Measuring the Output of the Probation Service*, 2010.
91 While this may be an important challenge for researchers and policymakers moving forwards, the data used in this paper is taken from the financial year 2012-13 and therefore will not be affected by the changes introduced by Transforming Rehabilitation.
92 Ricky Taylor, *Seven-Year Reconviction Study of HMP Grendon Therapeutic Community* (Home Office, 2000).
93 Ibid.
94 Ibid.
95 Ian Brunton-Smith and Kathryn Hopkins, *The Factors Associated with Proven Re-Offending Following Release from Prison: Findings from Waves 1 to 3 of Surveying Prisoner Crime Reduction*, (Ministry of Justice, 2013).
96 Ibid. International evidence also supports this claim. Work by the State of Colorado found that the characteristics of prisoners, such as age had a significant effect on recidivism rates. For example, offenders under 20 had a reoffending rate of 53 per cent compared to 41 per cent for the 50-59 category, see Ryan King and Brian Elderbroom, *Improving Recidivism as a Performance Measure* (Justice Policy Center, 2014).
97 For some academic access to a sample of PNC data may be possible. All data in these instances would be anonymised.

reoffending – from over 70 per cent in the United States to 20 per cent in Norway.[98] Cultural or demographic differences, or variation in how criminal activity is measured may contribute to these variations, however, such a large gap suggests that how a prison estate functions might have an impact on rehabilitation.[99] The Nordics, for example, are renowned for their commitment to reforming offenders.[100] Simply accepting individuals as being at 'high risk' of reoffending due to inherent characteristics may also lead to prison 'warehousing' – where little attempt is made to encourage rehabilitation and resettlement.

In addition, support and rehabilitation services received by offenders in the prison that releases them can still have a significant impact on post-release outcomes. It is the 'final prison' which is responsible for liaising with probation services and the third sector to ensure support continues 'through the gate' into the community. It is also where release on temporary licence (ROTL) is most used. ROTL is a pivotal part of preparing offenders for reintegrating into society.[101] Evidence shows that almost a quarter of reoffending, within the current one-year follow-up conducted by the Government, occurs within the first two months.[102] The role of the final prison to help facilitate and support a smooth transition back into the community should therefore not be underestimated.

2.2 Current methods

The Government has a number of mechanisms for measuring prison performance – the most widely cited being the independent inspection reports produced by HMIP and the Prison Rating System (PRS) introduced by NOMS. These assessments serve to try and prevent human rights breaches but also attempt to identify areas for improvement within individual institutions and across the estate. By highlighting to government those prisons which are failing to meet minimum standards more can be done to prevent further deteriorations in conditions. Alongside inspection results HMIP also publish thematic reports which address issues such as mental health that are of concern across the estate. Figure 3 outlines the current, most commonly used, performance frameworks and highlights the strengths and weaknesses of these different approaches.

98 Christina Sterbenz, 'Why Norway's Prison System Is so Successful, *Business Insider*, 11 December 2014.
99 The NAO has highlighted the issue of international comparisons of justice systems. See National Audit Office, *NAO Briefing: Comparing International Criminal Justice Systems*, 2012.
100 See for example Thomas Ugelvik and Jane Dullum, *Penal Exceptionalism? Nordic Prison Policy and Practice* (Oxon: Routledge, 2012).
101 Prison Reform Trust, *Inside Out: The Role of the Voluntary and Private Sector in Providing Opportunities for Rehabilitation for People on Temporary Release*, 2016.
102 Ministry of Justice, *Proven Reoffending Statistics: April 2013 to March 2014*.

Figure 3: Current performance measurement techniques

Assessment model	Measurement	Advantages	Disadvantages
Her Majesty's Inspectorate of Prisons The Healthy Prison Test	Prisons are inspected at least once every five years. On average inspections occur every three years. Prisons will also be inspected more frequently if they are considered to be performing badly based upon other measures such as the Prison Rating System outlined below.[103] Reports include a mixture of prisoner surveys and observation by inspectors. Inspections are carried out against published inspection criteria known as 'expectations' which are based upon international human rights standards. The inspections focus on prisoners' experience of the establishment's regime and training opportunities. The test involves a consideration of four metrics – safety, respect, purposeful activity and resettlement.	It captures aspects of performance not inherent in data. It includes an evaluation of prisoner and staff experiences. The Inspectorate takes a mixed methods approach and uses quantitative data to corroborate the validity of their qualitative assessments. Establishments are required to produce action plans following inspection, the implementation of which is evaluated at the next visit to ensure improvements are being made. Inspectors communicate continuously with prison managers throughout their visit and ensure that on their departure the findings are well understood by staff.[104]	The qualitative part of the ratings relies heavily on inspectors making value judgments when interpreting the inspection framework and results of the survey. The infrequency of inspections means it is not possible to create annual or bi-annual ranking tables. While this is not the goal of the inspection system the infrequency of inspections makes comparisons difficult. It does not take into account prison outcomes such as proven reoffending rates and employment upon release.
National Offender Management Service Prison Rating System	The most recent key performance indicator (KPI) framework – the Prison Rating System (PRS) considers performance under four domains: public protection, reducing reoffending, decency and resource management, and operational effectiveness. The four domains are partially informed by the evaluations from HMIP and the Measuring the Quality of Prison Life (MQPL) survey outlined below.	It uses comparator groups to enable prisons to be benchmarked against similar organisations which has helped deliver significant savings.[105] It takes into account education or training, employment and settled accommodation rates on release.	The reducing reoffending metric is based on the provision of purposeful activities and accredited offender behaviour courses rather than proven reoffending rates. While drawing on data from HMIP and the MQPL could be positive. The different time frames used in the varying models mean this may however result in not comparing like with like.

103 HM Inspectorate of Prisons for England and Wales, *Inspection Framework*, 2016.
104 Ibid.
105 National Offender Management Service, *NOMS Business Plan 2014 to 2015*, 2015.

Assessment model	Measurement	Advantages	Disadvantages
National Offender Management Service Measuring the Quality of Prisoner Life Survey	Survey of prisoners consisting of 128 questions which try to assess the moral climate of a prison through uncovering the personal experiences of prisoners. At each adult establishment prisoners are invited to participate until about 120 of them have agreed. The questions are categorised into respect, trust, humanity, the quality of staff-prisoner relationships and a sense of decency. Conducted in adult prisons once every two years.	The survey data can drill down into the mechanisms which are driving good performance. For example, what types of regimes increase distress amongst prisoners and how do these practices impact on incidents of self-harm and suicide.	The infrequency of the data collected makes it hard to compare a large number of prisons fairly as many will have been assessed at very different times and be subject to different government policies.[106] To date, the survey fails to take into account prisoner outcomes such as proven reoffending rates and employment on release. However, subsequent versions will integrate these measures. Evidence suggests the survey is the most 'invisible' of the performance measures and either unknown or misunderstood by prison managers. The complexity of the survey also makes it difficult for staff to interpret and apply.[107]
Office for National Statistics The Productivity of the Prison Service	Annual estimates of the productivity of the prison service at a UK level. Productivity is estimated by comparing the total amount of output produced with the total amount of inputs used. Inputs are calculated as the volume of total expenditure, and output is calculated as the total prison population.	It provides a headline trend which enables comparisons over time and with other areas of government spending.	It is a simplistic measurement with a single input and a single output. There is no quality adjustment on the output measures meaning that these figures say little about the quality of prison regimes across the estate. It fails to take into account prison outcomes such as proven reoffending and employment on release. Prison service data is combined with estimates from probation, the fire service and the courts restricting analysis even at an estate level.

Across the above current methods there is also an underlying issue of data integrity. If one is to have confidence in new models or measures, the quality of the data being used must be improved. This will be explored in the next chapter.

2.2.1 Outcome or output?

While it is encouraging that many of the measures highlighted above focus on activities that promote prisoner resettlement, reducing reoffending is considered only by measuring outputs – most commonly the completion of treatment or offender behaviour courses – not outcomes. Understanding whether prisoners are offered resettlement opportunities and are engaged in industry and training is valuable, but cannot begin to tell us whether programmes within an individual prison are actually successful at improving the life-chances of prisoners on release. Completion numbers alone also fail to provide insight as to which programmes, or mix of programmes, addresses criminal behaviour within specific offender populations.

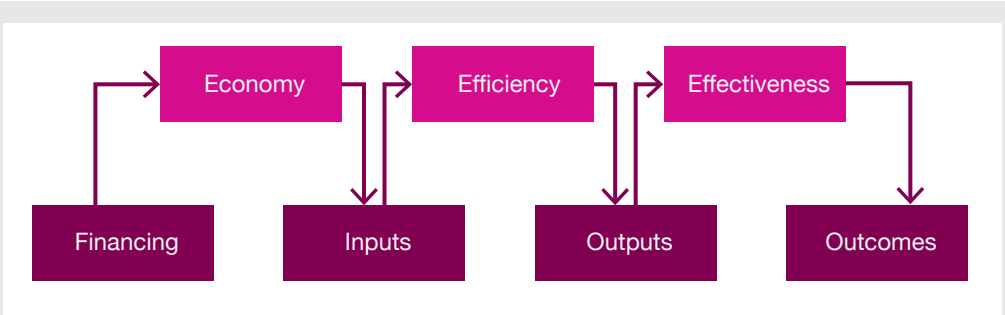
106 Only 2 prisons were covered in 2010 and 32 in 2011.
107 Yvonne Jewkes, Ben Crewe, and Jamie Bennett, *Handbook on Prisons* (Oxon: Routledge, 2016).

Even models that take into account other outcome measures (such as accommodation and employment rates after release) use proxies, such as drug treatment completions and reductions in risk based on the OASys risk assessment, to calculate the reduction in reoffending.[108] As discussed at the beginning of this chapter, by taking into account longer-term outcomes policymakers are better able to assess and improve value for money. A new model for measuring success in prisons which addresses these issues is therefore needed.

2.3 The way forward

Reform's paper *Towards a more productive state* argued that a value for money framework (see Figure 4) can enable policymakers to consider performance at every stage of the production chain – rather than its constituent parts in isolation.[109] Applied to the penal setting this model enables an assessment of how successful individual prisons are at buying the goods and services they need and how these are then converted into improving the life chances of prisoners.[110]

Figure 4: The National Audit Office's value for money framework



Source: National Audit Office, 'Assessing Value for Money'

Metric	Description
Economy:	How cheaply prisons purchase goods and services, such as equipment, and the workforce.
Efficiency:	How well management and operational decisions within prisons transform resources into the outputs produced. For example, how funds are deployed to provide a safe and decent prison regime that supports the resettlement of offenders.
Effectiveness:	The extent to which individual and social outcomes, such as reduced reoffending, have been achieved by the outputs. There are multiple outcomes that prisons seek to address such as public protection and rehabilitation. These may themselves produce unintended or negative outcomes. For example, a focus on improving public protection may lead to higher use of imprisonment or longer sentence lengths. All of these consequences should be accounted for in an effectiveness measure.

108 Ministry of Justice, *Prison Rating System 2013/14*, 2014.
109 Crowhurst, Finch, and Harwich, *Towards a More Productive State*.
110 National Audit Office, 'Assessing Value for Money,' Webpage, (23 February 2016).

Currently, aside from cost per place, no additional information on prison spend is publically available. Information received under Freedom of Information requests (FoIs) submitted for this report provide some data for analysis but the high number of missing values prevents the use of this information to evaluate prison spending patterns.[111] As a result of poor quality financial data for prisons in England and Wales, a full evaluation of prison economy is, therefore, not possible.

Nevertheless, by breaking down the production function into efficiency and effectiveness, this paper will still identify whether prisons are able to perform consistently well or whether excelling on one indicator can be at the detriment of another. It will also allow us to identify best practice in each of these areas of production.

The success of any framework, however, is dependent upon the variables selected and the measurement technique used. The next chapter will layout the *Reform* model.

111 Freedom of Information Disclosure, Ministry of Justice, 2 September 2015, 99996/15.

3
A new model for success

Within a value for money framework different techniques can be used for evaluating performance.[112] The selection of an appropriate technique will depend on the availability and reliability of the data, the size of the sample and, most importantly, on the objective of the analysis.

3.1 Measuring best practice

This paper makes use of Data Envelopment Analysis (DEA) due to its ability to identify high-performing prisons, benchmark others prisons against these and provide practical steps for improvement within a sample. It also allows for the creation of ranks.

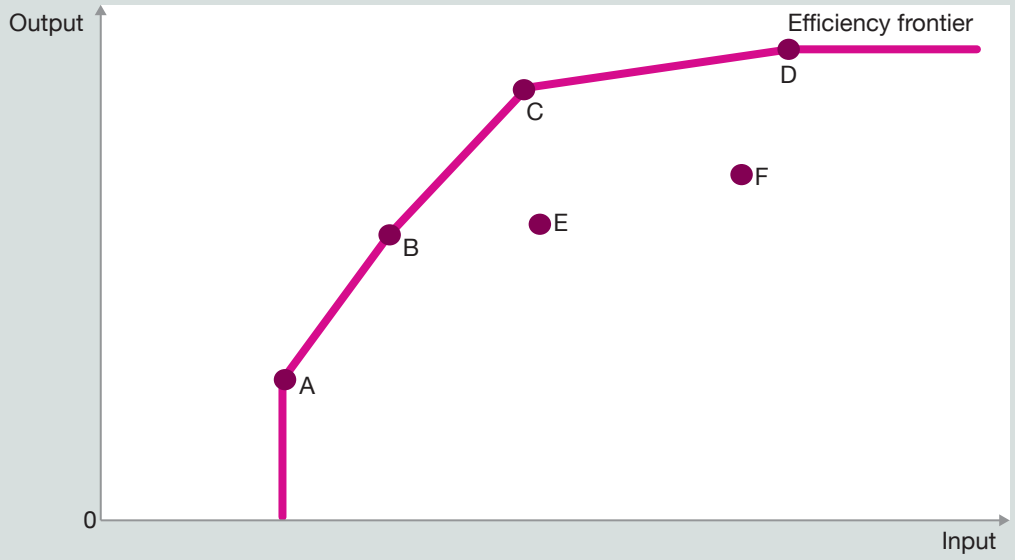
More specifically, this paper follows a similar methodology to the one laid out in Rogge et al., which uses DEA to estimate a directional distance function (see the technical appendix for further explanation).[113]

Data envelopment analysis

Summary of technique

DEA is a mathematical technique for performance evaluation.[114] It converts inputs, such as cost per place, and outputs, like offender behaviour course completions, of the most efficient prisons into a 'best practice' frontier.[115] This frontier is constructed by joining together the "combination of outputs that a fully efficient organisation could deliver given a set of inputs".[116] All other prisons are then compared to those on the frontier.[117]

Figure 5: Data envelopment analysis



In Figure 5, prisons on the frontier (points A, B, C, D) are deemed to be a 100 per cent efficient. The distance of the rest of the prisons (points E and F) from the frontier reflects their level of inefficiency and thereby their potential for improvement. For example, prisons E and F could have a higher cost per place (input) than A, B, C or D and have a higher number of assaults amongst inmates (output) than the prisons on the frontier, which would explain their relative inefficiency.

112 See 'Chapter 3: Evaluating Public Institutions', in Crowhurst, Finch, and Harwich, *Towards a More Productive State*.
113 Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons', *European Journal of Operational Research* 241, no. 1 (February 2015).
114 Wade Cook, Kaoru Tone, and Joe Zhu, 'Data Envelopment Analysis: Prior to Choosing a Model', *Omega* 44, no. 1 (April 2014).
115 Ibid. Also known as the 'outer envelope' or efficiency frontier.
116 Helen Simpson, *Productivity in Public Services* (The Centre for Market and Public Organisation, 2006).
117 Cook, Tone, and Zhu, 'Data Envelopment Analysis: Prior to Choosing a Model'.

Assumptions	
DEA assumes that: > Organisations evolve in relatively homogenous environments. > Organisations use relatively similar inputs to produce their outputs. > The selected inputs 'produce' the selected outputs.	
Advantages	**Disadvantages**
> It attributes an efficiency score to each prison under scrutiny, which allows for the creation of a ranking system. > It provides each prison, not on the frontier, in a given sample, with practical ways of improving its efficiency score.[118] For example, previous research using DEA showed that in order for HMP Onley to have been considered fully efficient, it should have reduced its direct resource expenditure by 12 per cent, its number of serious assaults by 46 per cent, its number of Prison Service Orders investigations by 72 per cent and should have increased the number of hours of purposeful activity for its prisoners by 22 per cent.[119] > It can accommodate multiple inputs and outputs, including negative outputs such as violent incidents and substance misuse which are essential components of a good prison performance measure. > It produces meaningful results using small samples which is important given the number of prisons in England and Wales.[120] > It makes no assumption about the exact relationship between the inputs and outputs.[121] > There is no need for inputs and outputs to be weighted in terms of their importance, however, this can be done if the analysis requires.	> Efficiency scores only provide information about the relative performance of prisons within a given sample. They do not tell us how much more efficient prisons could be in a wider context.[122] > No additional steps for improvement are given for the prisons which are found on the frontier. > Findings are not applicable to a wider group of prisons. > The assumption of a homogenous environment may not hold true within the prison estate. For example, prison location impacts upon the ability to attract and retain prison staff[123] and the quality and quantity of employment opportunities for prisoners on release.[124] > Prisons have no control over their 'stock' of prisoners who may be hugely different in terms of offending history and socio-economic background. This means that one prison might be deemed less efficient than another simply because of these external factors. Policymakers should therefore think carefully about which prisons they decide to compare. These characteristics are also hard to control for due to data availability as highlighted in Section 3.1.1. > DEA cannot be used to explore the drivers of efficiency i.e. why one prison is helping more prisoners to complete offender behaviour courses than another.

3.2 Selecting meaningful metrics

As a starting point for establishing a model for performance evaluation, it is essential to understand the goals of the institutions or system being scrutinised.[125] The Prison

118 Ronald Nyhan, 'Benchmarking Tools: An Application to Juvenile Justice Facility Performance,' *The Prison Journal*, 82, no. 4 (December, 2002).
119 All percentages have been rounded to the nearest percentage point. The list provided is not exhaustive and the data provided is based on the financial year 2009/10. Maximilian Hall et al., 'The Economic Efficiency of Rehabilitative Management in Young Offender Institutions in England and Wales,' *Socio-Economic Planning Sciences* 47, no. 1 (March 2013).
120 Rajiv Banker, Vandana Gadh, and Wilpen Gorr, 'A Monte Carlo Comparison of Two Production Frontier Estimation Methods: Corrected Ordinary Least Squares and Data Envelopment Analysis,' *European Journal of Operational Research* 67, no. 3 (June, 1993).
121 By this the authors mean the algebraic relationship between inputs and outputs, otherwise known as the functional form of the production function.
122 By this the authors mean the efficiency frontier created by data envelopment analysis does not inform us on an ideal or absolute level of efficiency. Instead, it provides information on relative efficiency.
123 House of Commons Justice Committee, *Prisons: Planning and Policies, Ninth Report of Session 2014-15*, 2015.
124 Ama Dixon and Lorraine Casey, *Vocational Training and Employability Skills in Prisons and Young Offenders Institutions* (National Institute of Adult Continuing Education, 2013).
125 Martha R. Burt, *Measuring Prison Results: Ways to Monitor and Evaluate Corrections Performance* (Washington, D.C: U.S. Department of Justice, National Institute of Justice, 1981).

Service's mission statement records this as:

> *"Her Majesty's Prison Service serves the public by keeping in custody those committed by the courts. Our duty is to look after them with humanity and help them lead law-abiding and useful lives in custody and after release."*[126]

At a basic level, prisons have three main aims: protecting the public, holding prisoners in a safe environment, and promoting rehabilitation. NOMS also emphasises the importance of good staff working conditions.[127]

The complexity and overlapping nature of these objectives means it is challenging to build a model which encapsulates them all. As a result, prison performance models are wide ranging and have focussed on specific aspects of the regime rather than the full prison experience. Often these have been those that are easy to quantify and measure, rather than the metrics which may provide the most value to policymakers.[128]

For example, American criminologist Charles Logan developed a quality of confinement index, focussed on public protection and the humane housing of prisoners.[129] The quality of confinement index has been widely cited and applied to a range of prisons from female private institutions to large male public jails.[130] However, while this may go some way to holding prisons to account for protecting the public and ensuring inmate safety, it fails to measure efforts to reform offenders.

Some models have attempted to assess prisons against all of their stated objectives – including resettlement and reducing reoffending on release – such as Burt and Rogge et al.[131] Burt's model, developed in the 1980s in the US, focussed on laying out the key parts of prison life that performance metrics should cover and more importantly how best to collate the necessary data to evaluate these in a practical setting. By contrast, Rogge et al. applied their framework to a number of local and Category B and C prisons in England and Wales based on data from 2009/10.[132] These models are closest to the one used in this report (see section 3.4.1).

Burt[133]	**Rogge et al**[134]
> Measures of security: escape rate, escape seriousness. > Measures of living and safety conditions: victimisation, overcrowding, sanitation. > Measures of inmate health: physical and mental health as well as intermediate products of programmes and services including basic skill improvement and vocational training completion. > Measures of post-release success: employment and recidivism.	> Employment and accommodation: number of discharges, number employed on release, number in settled accommodation on release. > Capacity utilisation: average prison population, average number of prisoners not in overcrowded cells. > Quality of life in prison: net resource expenditure, average prison population, serious assault number, total hours of purposeful activity per week.[135] > Reoffending and rehabilitation of prisoners: number of discharged offenders with a sentence of less than 12 months who do not reoffend.

126 HM Prison Service, 'About Her Majesty's Prison Service,' *Webpage*, 2012.
127 Ibid.
128 Alison Liebling, *Prisons and Their Moral Performance: A Study of Values, Quality, and Prison Life* (Oxford: Oxford University Press, 2005).
129 Oliver Hart, Andrei Shleifer, and Robert Vishny, 'The Proper Scope of Government: Theory and an Application to Prisons,' Working Paper (National Bureau of Economic Research, September 1996). See also Sharon Dolovich, 'State Punishment and Private Prisons,' *Duke Law Journal* 55, no. 3 (December 2005).
130 Ibid.
131 Burt, *Measuring Prison Results: Ways to Monitor and Evaluate Corrections Performance*; Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons'.
132 Ibid.
133 Burt, *Measuring Prison Results: Ways to Monitor and Evaluate Corrections Performance.*
134 Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons'.
135 This metric is not available for prisons post-2012.

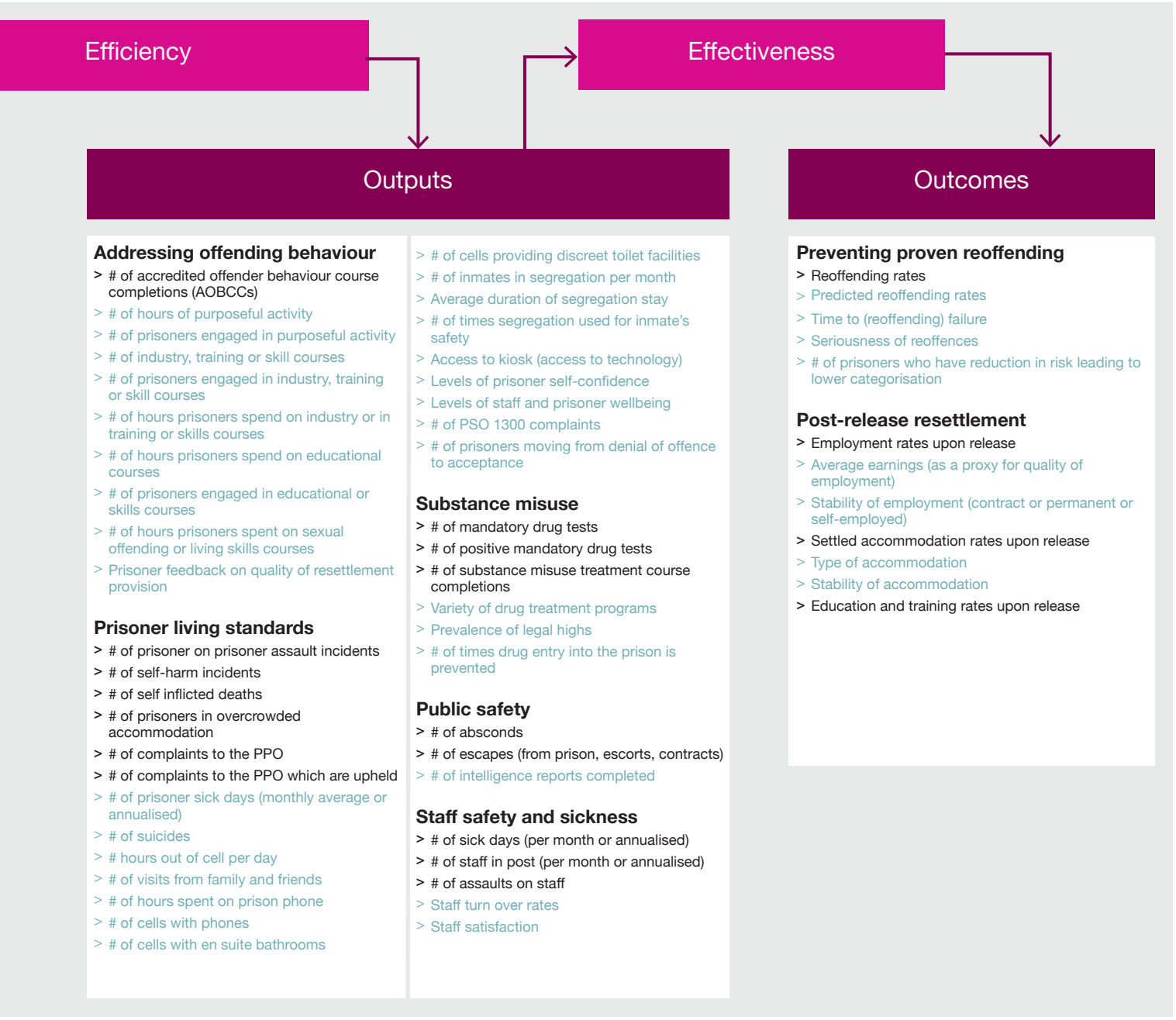
3.3 Model constraints

One of the major challenges in evaluating the performance of prisons is the availability and quality of data. As a result, there remains a large discrepancy between what would ideally be included in *Reform's* prison performance model and the variables that are actually measured, collected and disseminated by government. Figure 6 below lays out all of the metrics that would ideally be included.[136]

An ideal model of prison performance would also, as discussed above, control for a number of additional external factors which may affect the quality of outputs and outcomes. These would include, in addition to prisoner characteristics, prison age, size, location, average distance from prisoners' homes and the local labour and housing market conditions. Sadly, at present, these cannot be included.

Figure 6: *Reform*'s ideal value for money framework

136 This is not an exhaustive list. The authors acknowledge that other metrics could be included.


Efficiency
Effectiveness
Outputs
Outcomes
Addressing offending behaviour
> # of accredited offender behaviour course completions (AOBCCs)
> # of hours of purposeful activity
> # of prisoners engaged in purposeful activity
> # of industry, training or skill courses
> # of prisoners engaged in industry, training or skill courses
> # of hours prisoners spend on industry or in training or skills courses
> # of hours prisoners spend on educational courses
> # of prisoners engaged in educational or skills courses
> # of hours prisoners spent on sexual offending or living skills courses
> Prisoner feedback on quality of resettlement provision
Prisoner living standards
> # of prisoner on prisoner assault incidents
> # of self-harm incidents
> # of self inflicted deaths
> # of prisoners in overcrowded accommodation
> # of complaints to the PPO
> # of complaints to the PPO which are upheld
> # of prisoner sick days (monthly average or annualised)
> # of suicides
> # hours out of cell per day
> # of visits from family and friends
> # of hours spent on prison phone
> # of cells with phones
> # of cells with en suite bathrooms
> # of cells providing discreet toilet facilities
> # of inmates in segregation per month
> Average duration of segregation stay
> # of times segregation used for inmate's safety
> Access to kiosk (access to technology)
> Levels of prisoner self-confidence
> Levels of staff and prisoner wellbeing
> # of PSO 1300 complaints
> # of prisoners moving from denial of offence to acceptance
Substance misuse
> # of mandatory drug tests
> # of positive mandatory drug tests
> # of substance misuse treatment course completions
> Variety of drug treatment programs
> Prevalence of legal highs
> # of times drug entry into the prison is prevented
Public safety
> # of absconds
> # of escapes (from prison, escorts, contracts)
> # of intelligence reports completed
Staff safety and sickness
> # of sick days (per month or annualised)
> # of staff in post (per month or annualised)
> # of assaults on staff
> Staff turn over rates
> Staff satisfaction
Preventing proven reoffending
> Reoffending rates
> Predicted reoffending rates
> Time to (reoffending) failure
> Seriousness of reoffences
> # of prisoners who have reduction in risk leading to lower categorisation
Post-release resettlement
> Employment rates upon release
> Average earnings (as a proxy for quality of employment)
> Stability of employment (contract or permanent or self-employed)
> Settled accommodation rates upon release
> Type of accommodation
> Stability of accommodation
> Education and training rates upon release

3.3.1 Data availability

Research for this paper has indicated that several performance variables in *Reform's* ideal model correspond to information that prisons already collect, but that government does not exploit by collating the information centrally. This data collection failure reduces transparency. The MoJ has recently committed to making more data publically available, but exactly what information this will contain is as yet unknown.[137]

FoIs submitted for this report also suggest that, aside from costs per place or per prisoner in 2012-13 and 2013-14, no additional financial data was held or collected by the MoJ for privately run prisons.[138] Responses stated that "NOMS… is not required to collate or analyse costs specifically for private (contracted) prisons. The information you have requested is the responsibility of individual companies that manage private (contracted) prisons so there is no need for MoJ to hold such data."[139]

This raises questions around the Ministry's ability to assess the spending behaviour of its contractors. It also prevents the MoJ from understanding performance differences between public and private institutions. Recent data suggests some private prisons such as HMP Oakwood are delivering prison places at much lower costs than their public counterparts.[140] The MoJ may therefore be missing an opportunity to understand what is driving savings within individual institutions in order to apply the lessons more widely.

The NAO has also previously criticised this arrangement with private contractors.[141] The Ministry has since agreed to increase their level of oversight. All new contracts will need to have an open-book clause written into them and past contracts will be renegotiated to include this.[142] If the MoJ is now collecting this data however, they are still failing to publish it. This once again restricts transparency.

Recommendation 1

The Ministry of Justice should collect and publish data documenting broken down expenditure patterns for both private and public prisons. This should include, at a minimum, the amount of funds spent on payroll, building maintenance, prisoner training (including education and industries) and drug testing.

3.3.2 Data quality

Even where data is available the consistency, transparency and quality of it are key issues for evaluating prison performance. Firstly, there is the potential for inconsistency due to a lack of adherence to standardised reporting templates and procedures. Within the broken down expenditure data, received as a result of an FoI request with a six-month delay, there is a high number of missing values across different expenditure categories. For example, a number of public prisons would appear to have no maintenance cost (expressed in terms of cost per prisoner) for the year 2012-2013. This seems highly unlikely and calls into question the compliance with standardised reporting practices.

Secondly, there is the potential risk of wrongful reporting at an individual prison level. Under the PRS, prisons are now rated on data integrity – for example, the accurate recording of data on central systems. However, in discussions for this report, governors and prison researchers have both commented that in some prisons data is not checked by management or consistently recorded and therefore may not always be reliable. For example, in cases of violence between prisoners, there may be variation as to when this is

137 Ministry of Justice, *Single Departmental Plan: 2015 to 2020*, 2016.
138 Freedom of Information Disclosure, Ministry of Justice, 2 September 2015, 99996/15.
139 Ibid.
140 Ministry of Justice, *Costs per Place and Costs per Prisoner by Individual Prison Establishment 2013-14*, 2014.
141 National Audit Office, *Transforming Contract Management*, 2014.
142 The NAO define open-book as "the right for the contracting authority to receive data from the supplier showing a breakdown of costs in greater detail than in the invoice. For example, this could include unit costs, supplier profit, or details of cost absorption by suppliers." National Audit Office, *Open-Book Accounting and Supply-Chain Assurance*, 2015; National Audit Office, *Transforming Contract Management*.

documented as an assault or not. In some instances, this, or issues collating the data, has led to the under or over-estimation of figures. Data provided on request by the MoJ regarding the number of prisoners requiring hospitalisation in private prisons following use of force showed 108 incidents in 2014.[143] This was later revised to just 14 – an overestimation of 671 per cent.[144] In 2013, initial figures released for this same measure were also much higher than the actual figures. The overcrowding data, which required revision as highlighted in Chapter 1, is a further example of issues with data quality.

Thirdly, the Data Protection Act forces data-rounding policies.[145] Within prison workforce data, any value below five is suppressed and all other figures are rounded to the nearest ten. Consequently, in middle management where numbers are low, all prisons have a value of ten even though there may be significant variation. An analysis of the impact of different types of specialist support staff and management structures on prison performance is therefore not possible.

Reoffending data poses further challenges. Not only is it widely accepted that official rates underestimate incidences of crime, several studies have also suggested that the MoJ's current definitions of reoffenders and reoffences are too restrictive.[146] For example, reoffending data does not take into account severity and/or timing of criminal activity.[147] Lower levels of severity in reoffending behaviour could reasonably be regarded as a partial success for the prison system. An offender that had previously been convicted of a violent crime committing shop lifting on release may be seen as a partial success, as might a delayed return to prison for a prolific offender who has cycled in and out of the criminal justice system over a period of years. Neither of these examples would be captured by current performance measures. Encouragingly, more recent statistical releases from the MoJ have included a measure of time to failure – i.e. how long following release offences occur – for the whole of the prison estate.[148] Providing this type of insight at prison level should be the next step taken by the Government.

In addition, the current 12-month follow-up period used by the MoJ for measuring reoffending creates a partial picture – lifetime reoffending models suggest a significant amount of crime is committed after this period.[149] There is clearly a trade-off between making the follow-up periods too long, so that data on reoffending can be made publically available for use, and not sufficiently long enough to capture all further offending. Internationally follow-up times vary between six months and five years.[150] There is perhaps scope for the MoJ to find an appropriate middle ground.[151]

The MoJ has tried to address these problems. In 2013 it launched the Justice Data Lab to give organisations working with reoffenders better access to reoffending data.[152] The lab allows organisations to receive data, including the aggregate rate of reoffending for the cohort they are working with, as well as equivalent figures for statistically-matched control groups.[153] Following the pilot, 83 per cent of organisations that used the service reported it to be useful, and it became permanent in 2015. It has since developed beyond a binary reoffending measure to include frequency and time to reoffence metrics, and the most recent reports are beginning to measure severity of offence.[154]

143 Andrew Selous, 'Letter to Andy Slaughter MP,' 23 March, 2015.
144 Andrew Selous, 'Letter to Sarah Champion MP,' 26 March, 2015.
145 In order to protect privacy, it must not be possible to deduce the identity of specific individuals from the data released alone or in conjunction with other publically available data.
146 Sarah Armstrong and Fergus McNeil, *Reducing Reoffending: Review of Selected Countries* (The Scottish Centre for Crime & Justice Research, 2012).
147 Ibid.
148 Ministry of Justice, *Proven Reoffending Statistics: April 2013 to March 2014*.
149 Kevin Marsh and Chris Fox, 'The Benefit and Cost of Prison in the UK. The Results of a Model of Lifetime Re-Offending,' *Journal of Experimental Criminology* 4, no. 4 (December 2008).
150 Seena Fazel and Achim Wolf, 'A Systematic Review of Criminal Recidivism Rates Worldwide: Current Difficulties and Recommendations for Best Practice,' *PLoS ONE* 10, no. 6 (June 2015).
151 Publishing interim reoffending data may also be one way of maintaining a data flow.
152 Ministry of Justice, *Justice Data Lab: The Pilot Year*, 2014.
153 Ministry of Justice, 'Justice Data Lab', Webpage, 2015.
154 Ministry of Justice, *Justice Data Lab Re-Offending Analysis: Phoenix Futures – Therapeutic Communities Programme*, 2016.

While the Justice Data Lab represents an advance towards better data collection, it does have some shortcomings. Firstly, it is restricted to service providers working with offenders and thus is based only on how an intervention worked with one very specific cohort. This means that organisations cannot understand how effective their interventions would be with other groups – i.e. whether the success or failure would be replicated more extensively. It is also not widely used: as of January 2016, analyses had only been undertaken by 32 organisations, many of which used particularly small samples. In addition, it cannot be used to isolate the prison effect since it does not provide information at a prison or prisoner level.

The Justice Data Lab and the Prime Minister's recent commitment to include proven reoffending data within the new prison performance measures are welcome developments. However, having a more developed understanding of reoffending patterns, particularly at a prison level, could better enable policy officials, as well as the academic community, to evaluate the relative ability of prison regimes to reduce reoffending.

Recommendation 2

The Ministry of Justice should increase the diversity of reoffending data publically available at a prison level (including severity and time to failure) to support the identification of strategies to reduce offending behaviour.

In previous probation statistics, relating to the now redundant probation trusts, proven reoffending rates were compared to a baseline of predicted levels of reoffending.[155] This was calculated using a logistic regression model which takes into account age, gender, criminal career, offence type and locality. Creating a baseline allows a much greater understanding of the effect of criminal justice interventions on reoffending. The MoJ's consultation on reoffending statistics following the implementation of TR also suggests comparing proven reoffending with the Offender Group Reconviction Scale – another mechanism for predicting the risk of a particular cohort.[156] Unfortunately, no such analysis is currently undertaken for evaluating prison performance.[157]

Recommendation 3

The Ministry of Justice should create a baseline of predicted reoffending at a prison level. This will enable a better understanding of performance by taking into account the impact of external factors on outcomes.

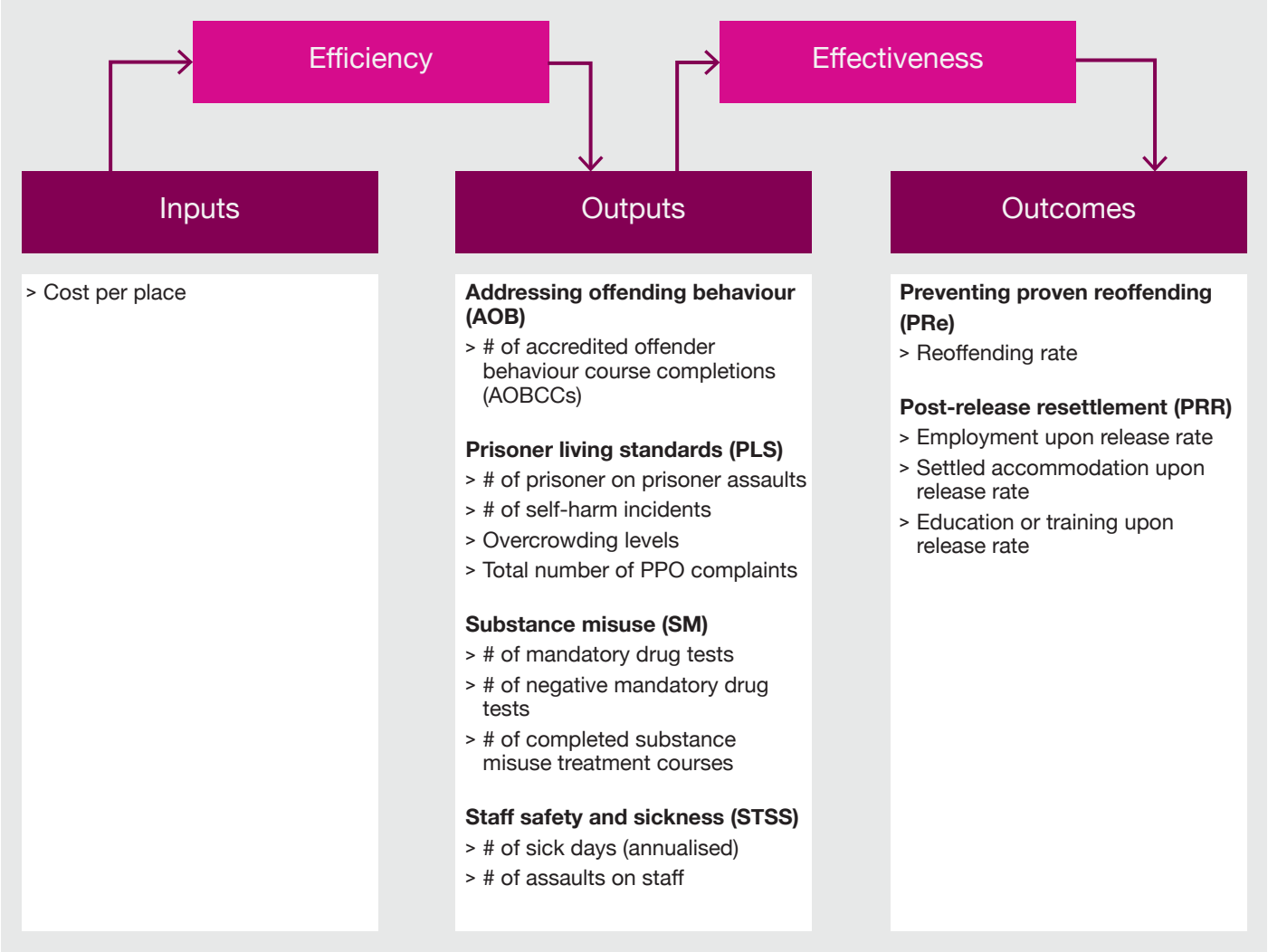
In the context of these constraints the below section lays out the model actually used by *Reform* and lists the variables that will underpin the analysis undertaken by this report.

3.3.3 The *Reform* model

Institutional objectives and literature on prison performance provided a basis for selecting key variables to include in the model. In addition, unstructured interviews were used to provide further insight, including with the NAO, HMIP and other industry experts and practitioners including prison governors. The model presented in Figure 7 draws on these different sources to provide the most comprehensive approach possible within the current data constraints outlined above.

155 Ministry of Justice, *Local Adult Reoffending 1 April 2012 – 31 March 2013 England and Wales: Ministry of Justice Statistics Bulletin*, 2013.
156 Ministry of Justice, *Consultation on Changes to Reoffending Statistics Following the Introduction of the Rehabilitation Programme*, 2015.
157 In his recent speech on prison reform, the Prime Minister mentioned the idea of comparing reoffending rates with a predicted baseline. Any plans to implement these changes have, however, not yet been laid out. See David Cameron, 'Prison Reform: Prime Minister's Speech'.

Figure 7: *Reform*'s prison performance model



To assess the robustness and underlying logic of the above model, a principal component analysis (PCA) was conducted. The results of which have verified our selections and the groupings of the variables. See the technical appendix for further details about the PCA.

3.3.4 Data triangulation

One way to mitigate the impact of data availability and quality issues on the robustness of policy research is to 'triangulate' the results with other information sources. In the context of prisons, the existence of agencies such as HMIP and the IMBs can act as potential tools for checking the validity of government data. Prisoner responses to the HMIP and the MQPL surveys, as well as details within complaints made to the PPO, can also add qualitative information about prisoner and staff relationships and the quality of rehabilitative interventions. This report adopts a mixed-methods approach, which takes into account these additional sources, to test the validity of the prison rankings. This also enables an exploration of the potential drivers of efficiency and effectiveness.

4
Prison rankings

The evaluation of prison performance presented in the following sections rates the efficiency and effectiveness of 40 Category B and C prisons in the 2012-13 financial year using the model laid out in Chapter 3.

By doing this, the results will highlight and distinguish between those prisons that deliver safe custodial services at a low cost (i.e. relative efficiency – the subject of section 4.1) and those that also drive improved outcomes for prisoners after release (i.e. relative effectiveness – the subject of 4.2). The links between prison efficiency and effectiveness will then be assessed. This will enable *Reform* to identify possible mechanisms for improving value for money across the prison estate.

In order to benchmark prisons, it is vital to compare like with like. To increase similarity, male adult Category B and C prisons have been selected. While these prisons still house a diverse population, offenders within this cohort are the most directly comparable. This cohort has the additional advantage of having a strong focus on the resettlement and training of offenders which made them desirable for an outcomes-focussed analysis. The paper also makes use of the comparator groups developed by NOMS to further maximise comparability.[158]

The model presented will not attempt to establish causal links or add to the literature on the determinants of reoffending. Instead, it will highlight examples of prisons achieving high-levels of efficiency and effectiveness. Owing to data availability issues, further evidence is needed to explain the variations in performance. For policymakers, it is essential therefore to conduct further work to understand why some prisons outperform others.

It is important to note that the MoJ and NOMS set a number of national standards and strategies aimed at maintaining the quality of the prison environment and supporting the reduction of reoffending. These include the publication of Prison Service Orders and Prison Service Instruments which lay out minimum standards of accommodation. Where possible, the following sections highlight prisons where these strategies are proving effective.

4.1 Efficiency

This section explores prison efficiency based on cost per place and the following four efficiency indicators:

- addressing offending behaviour (AOB);
- prisoner living standards (PLS);
- substance misuse (SM); and
- staff safety and sickness (STSS).[159]

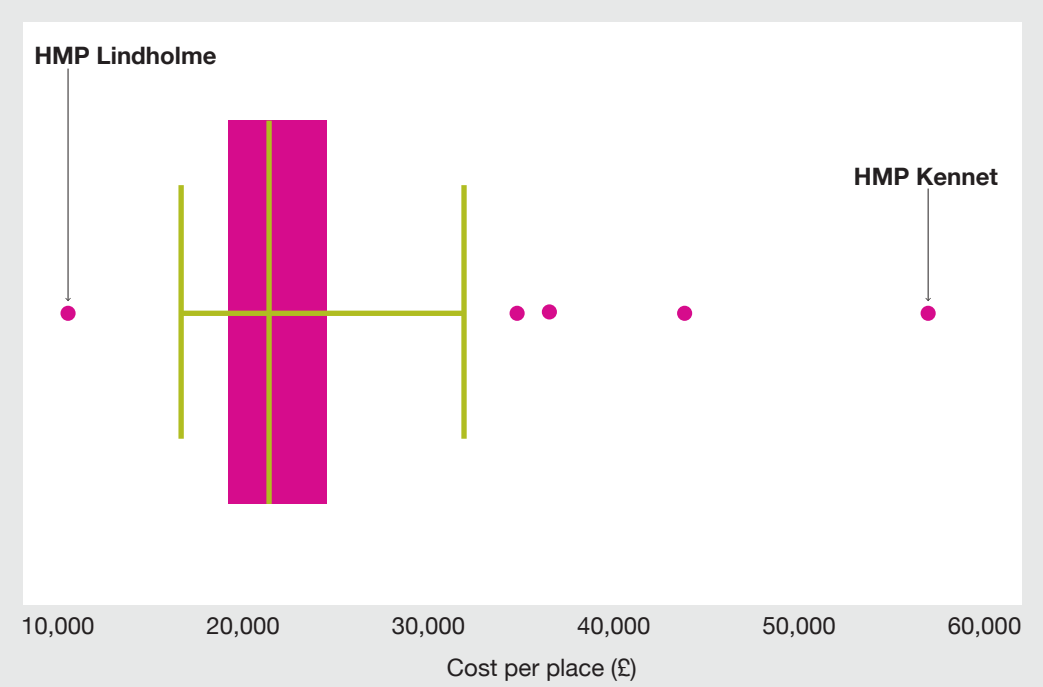
Each indicator focuses on a different aspect of the prison estate. It is hoped that by doing so this analysis will evaluate prison efficiency in as holistic a way as possible.

4.1.1 Exploring variation in costs per prison place

All four efficiency indicators use prison cost per place as a common input. As shown by Figure 8, the amount spent on each prison place ranges from £56,730 for HMP Kennet to £10,919 for HMP Lindholme.[160] Moreover, 30 per cent of prisons in our sample spend more than the mean of £23,709. On average, these more expensive prisons spend about £7,934 extra per place – this is the standard deviation. At first glance this analysis suggests there is scope for savings.

158 Freedom of Information Disclosure, Ministry of Justice, June 2014, 91109.
159 For the purpose of this analysis direct cost per place is used rather than overall resource expenditure.
160 Ministry of Justice, *Costs per Place and Costs per Prisoner by Individual Prison Establishment 2012-13*, 2013.

Figure 8: Variation in cost per prison place



Source: Ministry of Justice, *Costs per Place and Costs per Prisoner 2012-13*, 2013.

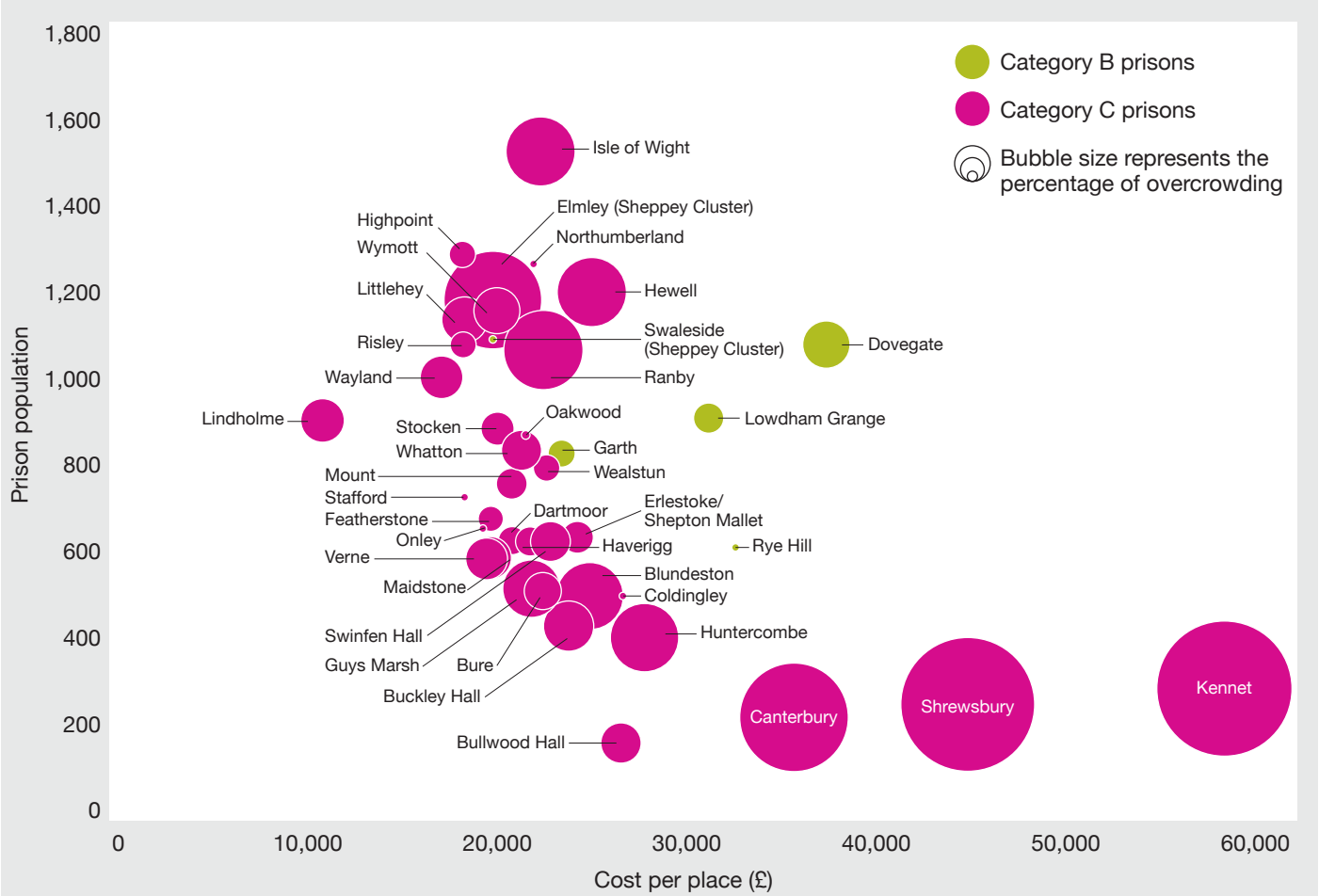
In contrast to the assumption that large prisons use economies of scale to reduce costs, there is no clear relationship between prison size and cost per place within the sample (see Figure 9). Some larger prisons are indeed cheaper than their smaller counterparts, but this pattern is not universal. For example, HMP Hewell, which houses 1,191 prisoners, costs around £25,000 per prison place. The cost per place at HMP The Verne, housing only 590 offenders, is lower at around £19,254.[161]

Additional costs are also not explained by prison category. While it is reasonable to expect the required higher security levels in Category B prisons to translate into higher costs, of the five most expensive prisons in the sample, three are Category C and two are Category B.

As has been argued throughout this paper, ensuring that prisons deliver value for money does not simply mean reducing costs. To explore this idea, Figure 9 also takes into account one of the selected output metrics – levels of overcrowding. The variation in levels of crowding is represented by the size of the data points. As a result, a different picture emerges. Big prisons such as HMP Elmley, which are also relatively cheap, suffer from very high levels of overcrowding. Smaller prisons such as HMPs Whatton or The Mount are delivering low levels of overcrowding at similar costs to the bigger prisons. This underlines the importance of taking outputs into account when measuring performance.

161 Ibid.

Figure 9: Relationship between cost per place, prison population and overcrowding



Note: Coldingley, Northumberland, Oakwood, Onley, Rye Hill, Stafford, Swaleside are not overcrowded in order for them to appear on the graph their percentage of overcrowding was artificially inflated to 0.3%.

4.1.2 Addressing offending behaviour (AOB)

One way to measure a prison's attempts to rehabilitate its inmates is through the provision of programmes designed to address the behaviour patterns that cause offending. To assess this the first efficiency indicator measures how prisons convert funds into:

- accredited offender behaviour course completions (AOBCCs).[162]

This measure attempts to control for prison size by considering the relationship between the number of starts and completions.[163] By doing so this measure better captures the quality of provision rather than the volume. In addition, it also should be acknowledged that the raw number of starts may be outside of a prisons control due to the allocation of resources from central government.

For a more detailed explanation of the equation used, please refer to the technical appendix.

162 The accredited offender behaviour couse completion variable is based on *Reform* calculations. See the technical appendix for further information.
163 Both of these are correlated with prison population size. For population size and AOBCS ρ=0.5923**; for population size and AOBCCs ρ=0.6116**, (**) denotes statistical significance with a 95 per cent confidence interval (p<0.05).

Accredited programmes

Accredited programmes involve a series of activities designed to help offenders reduce their risk of reoffending. In order to achieve accredited status, programmes are required to demonstrate there is an evidence base that their intervention works to reduce reoffending. Programme types include cognitive behavioural therapy (CBT), anger management, domestic violence and sexual offender treatment.

All prisoners are entitled to apply for offender behaviour courses, however, many are oversubscribed meaning there can be significant waiting times. Places are awarded based upon a suitability assessment which takes into account offender risk, need, motivation and how responsive the offender is perceived to be to interventions. For violence programmes, time left to serve plays a significant role on determining which offenders are awarded a place.[164]

Due to a lack of data this indicator of efficiency does not include other forms of prisoner activity, such as vocational and academic education programmes. The number of hours of purposeful activity per prisoner was discontinued as a performance indicator for prisons at the end of 2011-12.[165] As this data was not being gathered on a day-to-day basis by prison management it was felt that using the information could only be achieved at a disproportionate cost to the MoJ.[166] The MoJ has recently suggested, in their *Single Departmental Plan*, that it will re-introduce metrics which measure purposeful activity including the number of hours prisoners spend outside of cells.[167] More recent statistical releases have also included the number of hours worked in industry – measured against a target rate.[168] Under this analysis, however, which is reliant upon the most current proven reoffending data (which relates to prisoners incarcerated in 2012-13) – measuring the number of AOBCCs remains the only available metric for understanding prisoner activity levels.

Recommendation 4

The Ministry of Justice should introduce a measure of prison performance that better encapsulates prisoner activity. This should include, at a minimum, time spent on education, industry, accredited programmes (taking into account course completion rates) and any hours spent as part of peer-mentoring schemes. To ensure governors and prison staff are not incentivised to provide 'activity for activities sake' through tasks which are unlikely to develop skills or promote rehabilitation, a framework should be established which lays out which activities can be included under the new measure.

Figure 10 ranks prisons by their efficiency on this measure. Prisons with an assigned score of zero (highlighted in blue) are deemed to be 100 per cent efficient compared to other prisons in the sample. The higher the efficiency score, the higher the level of inefficiency and the greater the room for improvement. For example, a prison with a score over 0.5 has much more scope for improving efficiency than a prison scoring 0.1. Scores are defined on a scale from 0 to infinity. On the AOB indicator 10 prisons are deemed efficient.

164 Freedom of Information Disclosure, Ministry of Justice, August 2015, 84355.
165 Andrew Selous, 'Prisons: Employment,' 4 December 2014, Written Answer 217213.
166 Ibid.
167 Ministry of Justice, *Single Departmental Plan: 2015 to 2020,* 2016.
168 Ministry of Justice, *Prison Rating System 2014-15*, 2016.

Figure 10: AOB efficiency scores

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Bullwood Hall	1	0.0000	Swinfen Hall	21	0.1792
Canterbury	1	0.0000	Verne	22	0.1829
Erlestoke/Shepton Mallet	1	0.0000	Maidstone	23	0.1849
Haverigg	1	0.0000	Featherstone	24	0.2072
Huntercombe	1	0.0000	Onley	25	0.2361
Isle of Wight	1	0.0000	Northumberland	26	0.2559
Kennet	1	0.0000	Wealstun	27	0.2643
Lindholme	1	0.0000	Bure	28	0.2646
Risley	1	0.0000	Mount	29	0.2669
Shrewsbury	1	0.0000	Buckley Hall	30	0.2686
Littlehey	11	0.0207	Guys Marsh	31	0.2689
Whatton	12	0.0482	Ranby	32	0.2763
Swaleside (Sheppey Cluster)	13	0.0562	Hewell	33	0.2808
Stocken	14	0.1204	Dartmoor	34	0.2822
Wayland	15	0.1330	Oakwood	35	0.2990
Highpoint	16	0.1408	Garth	36	0.3387
Wymott	17	0.1420	Rye Hill	37	0.3604
Coldingley	18	0.1631	Blundeston	38	0.4090
Stafford	19	0.1706	Lowdham Grange	39	0.4649
Elmley (Sheppey Cluster)	20	0.1761	Dovegate	40	0.6381

Prisons may find themselves on the frontier for different reasons. For example, HMP Lindholme has a particularly low cost per place, £10,919, and has produced 48 AOBCCs (which represents just 5 per cent of its total population), whereas HMP Isle of Wight is more expensive but had a total of 325 AOBCCs (which represents 21 per cent of its total population) across the same period. HMP Whatton, close to the frontier, had a similarly impressive number with 267 AOBCCs (32 per cent of the total population) that financial year.[169]

As highlighted in Chapter 3, additional qualitative information can help explain the drivers of greater efficiency. For example, HMP Kennet's reception criteria (which lays out the type of offenders an establishment will and will not house e.g. those serving life sentences or sex offenders) states that offenders must be able to show evidence of a positive attitude towards resettlement.[170] Similarly, HMP Whatton insists that prisoners accept

169 In the case of HMP Whatton the high number of course completions may be due to its role as a sex offender prison. Interviews conducted as part of the research for this paper suggest the sex offenders may be more compliant programme completers. They also attract more central funding than other offender types.
170 Ministry of Justice, 'Kennet Prison Information,' (2014).

responsibility for their offences and have a commitment to rehabilitation.[171] It is feasible that this helps prisoners to stick with the courses, contributing to increased programme completion – and, in this case, the prison's proximity to the efficiency frontier.

Information on whether prisoners acknowledge guilt for their offence and are committed to being rehabilitated is not routinely collected by prisons. While individual officers may have an appreciation of this for offenders they work closely with, a more formalised process documenting which offenders are in denial may enable prison management to strategically identify which individuals need support to take responsibility for their actions. This is a key starting point to enable their rehabilitation.[172]

Recommendation 5

The Ministry of Justice should instruct prisons to collect data on the number of prisoners in denial of their offence. This should be ascertained through a combination of prisoner input and staff assessment – based upon conduct both during the prosecution process (as documented by Her Majesty's Courts and Tribunals Service) and whilst incarcerated.

Wider literature on accredited offender behaviour programmes suggests that tutor delivery rates and tutor performance are also key determinants of the number of course drop-outs – and therefore low numbers of course completions. An analysis of 5,255 offenders serving prison sentences in England and Wales found those prison sites which were ranked highly by the Joint Accreditation Panel – who ensure course standards – also had low drop-out rates.[173] "[H]igher drop-out rates were associated with sites where tutors were delivering fewer courses per year."[174] This suggests that tutors who deliver programmes frequently are better equipped to ensure quality courses and higher numbers of completions. To maximise completion rates, the MoJ should look to ensure less experienced tutors are supported in their roles.

Moving towards efficiency

A key advantage of DEA is that it can be used to provide tangible steps for performance improvement – also known as progression paths, which are reported as required percentage changes in input and output.[175]

Figure 11 below documents the steps prisons need to follow in order to become fully efficient with respect to the AOB indicator.

171 The aforementioned reconviction study at HMP Grendon also makes reference to the requirement that inmates are motivated to change in order to be placed at the prison.
172 Tony Ward, 'Good Lives and the Rehabilitation of Offenders: Promises and Problems,' *Aggression and Violent Behaviour* 7, no. 5 (October 2002).
173 Linda Blud et al, 'Accreditation of Offending Behaviour Programmes in HM Prison Service: 'What Works' in Practice,' *Legal and Criminological Psychology* 8, no. 1 (February 2003).
174 Ibid: 77.
175 More specifically this is an advantage of Directional Distance Function. See the technical appendix for further information.

Figure 11: AOB progression paths

Prison name	Reduction in cost (%)	Increase in course completions (%)	Prison name	Reduction in cost (%)	Increase in course completions (%)
Bullwood Hall	0	0	Swinfen Hall	19	9
Canterbury	0	0	Verne	23	16
Erlestoke/Shepton Mallet	0	0	Maidstone	23	20
Haverigg	0	0	Featherstone	25	41
Huntercombe	0	0	Onley	29	32
Isle of Wight	0	0	Northumberland	28	23
Kennet	0	0	Wealstun	28	34
Lindholme	0	0	Bure	28	24
Risley	0	0	Mount	31	51
Shrewsbury	0	0	Buckley Hall	27	28
Littlehey	3	1	Guys Marsh	30	23
Whatton	5	2	Ranby	30	22
Swaleside (Sheppey Cluster)	7	3	Hewell	27	54
Stocken	14	7	Dartmoor	33	42
Wayland	19	14	Oakwood	33	47
Highpoint	19	12	Garth	35	37
Wymott	17	9	Rye Hill	27	40
Coldingley	15	117	Blundeston	40	44
Stafford	22	17	Lowdham Grange	36	39
Elmley (Sheppey Cluster)	21	13	Dovegate	41	41

The percentage changes presented in Figure 11 above can be translated into tangible figures. For example, HMP Littlehey found very close to the frontier would need to reduce its cost per place by £492 and deliver an additional two courses to be as efficient as HMP Huntercombe or any other prison on the frontier. HMP Swinfen Hall ranked in the middle of the performance tables would be required to cut £4,427 from its cost per place and produce 19 additional course completions. The results also show that 18 of the prisons under consideration need to increase their AOBCCs by over 20 per cent to be efficient. This suggests that substantial improvements can be made on this particular indicator. Figures documenting the progression paths for the other three efficiency indicators can be found in the technical appendix (Figure 27 to 32).

4.1.3 Prisoner living standards (PLS)

While it is difficult to fully capture prisoner living standards without the use of survey data, this indicator will consider the relationship between prison cost per place and:

- incidents of violence and self-harm amongst inmates;
- prisoner complaints; and
- prisoners in overcrowded accommodation.

Similar to the previous indicator, the measure takes into account prison size, on this occasion by using the total number of prisoners housed. For a more detailed explanation of the equation used, please refer to the technical appendix.

Overcrowding and complaints

A prisoner is deemed as living in overcrowded accommodation when the number of occupants in their cell exceeds the limit set by NOMS. This limit varies by prison but includes the number of prisoners held two to a single cell, three prisoners in a cell designed for one or two, and any prisoners overcrowded in larger cells.[176]

Prisoner complaints are defined here as the number of complaints received by the PPO. These occur when an internal process within the prison has not reached a satisfactory outcome. Complaints cannot relate to conviction or sentence.[177]

It is important to note that overcrowding in and of itself may not be problematic. The question is whether there is a gap between the operational capacity of the prison and the amount of regime activity available. A focus on crowded cells may obscure the fact that it is possible for cells to be crowded, and still maintain a good regime with sufficient capacity to support prisoner wellbeing. Crowding may, however, be indicative of a prison having insufficient or limited resources to meet the rehabilitative needs of the population it houses. Former HMCIP Nick Hardwick has also argued that evidence from across the estate suggests overcrowding has resulted in lower levels of prison safety.[178] It is therefore an important metric to include.

In addition to the metrics listed above self-inflicted deaths within a prison should be taken into account. Self-inflicted deaths represent a significant failure on the part of the state to safely house those in its care. To reflect this, where a death in custody occurs an investigation is automatically launched by the PPO to understand whether the death could have been prevented.[179]

Due to modelling constraints and the low occurrence of self-inflicted deaths within the time period under consideration it was not possible to include this indicator within the DEA. The occurrence of self-inflicted deaths is nevertheless an important consideration within *Reform*'s framework. To acknowledge this, as Figure 12 notes, seven prisons were manually relegated to the bottom ranks (including three that were relegated from the frontier signified by an asterisk) due to reporting one or more self-inflicted deaths.

On the PLS measure, as Figure 12 shows,16 prisons are deemed technically efficient.

176 Ministry of Justice, *National Offender Management Service Annual Report 2014/15: Management Information Addendum*, 2015.
177 Prisons and Probation Ombudsman, 'How to Submit a Complaint,' (2016).
178 HM Inspectorate of Prisons for England and Wales, *HM Chief Inspector of Prisons for England and Wales Annual Report 2014-15*.
179 Prisons and Probation Ombudsman, 'Fatal Incidents Reports,'(2016).

Figure 12: PLS efficiency scores

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Bullwood Hall	1	0.0000	Featherstone	21	0.0300
Bure	1	0.0000	Shrewsbury	22	0.0372
Coldingley	1	0.0000	Wealstun	23	0.0439
Dartmoor	1	0.0000	Buckley Hall	24	0.0462
Haverigg	1	0.0000	Garth	25	0.0479
Highpoint	1	0.0000	Guys Marsh	26	0.0507
Kennet	1	0.0000	Mount	27	0.0568
Lindholme	1	0.0000	Wayland	28	0.0588
Maidstone	1	0.0000	Swinfen Hall	29	0.0628
Oakwood	1	0.0000	Lowdham Grange	30	0.0655
Onley	1	0.0000	Stocken	21	0.1070
Rye Hill	1	0.0000	Huntercombe	32	0.1140
Stafford	1	0.0000	Ranby	33	0.1778
Verne	1	0.0000	Dovegate	39	1 self-inflicted death
Whatton	1	0.0000	Northumberland*	39	1 self-inflicted death
Wymott	1	0.0000	Risley*	39	1 self-inflicted death
Canterbury	17	0.0006	Swaleside (Sheppey Cluster)*	39	1 self-inflicted death
Blundeston	18	0.0222	Isle of Wight	39	1 self-inflicted death
Littlehey	19	0.0227	Hewell	39	1 self-inflicted death
Erlestoke/Shepton Mallet	20	0.0297	Elmley (Sheppey Cluster)	40	3 self-inflicted deaths

Qualitative evidence for this metric highlights peer support and mentoring as an important mechanism for improving prisoner wellbeing and reducing disorder. In a recent thematic report on this topic, HMIP argues that peer support can improve life for both those giving support, through gained skills and confidence, and those receiving it.[180] These types of schemes can also help reduce expenditure as offenders can provide some services prisons would otherwise be required to pay for.

Wider literature also suggests that family ties and the perceived fairness of the regime are central to prisoner living standards. Research has demonstrated that maintaining family ties has a substantial positive impact, not only in terms of outcomes such as reducing reoffending, but within prisons.[181] For instance, it has positive implications for prisoners' mental health and can reduce stress.[182]

180 HM Inspectorate of Prisons, *Life in Prison: Peer Support*, 2016.
181 Martin Manby, Leanne Monchuk and Kathryn Sharratt, 'The Importance of Maintaining Family Ties during Imprisonment – Perspectives of Those Involved in HMP New Hall's Family Support Project,' *Prison Service Journal*, no. 209 (September 2013).
182 Creasie Finney Hairston, 'Family Ties During Imprisonment: Important to Whom and For What?' *The Journal of Sociology & Social Welfare* 18, no.1 (March 2015).

How decisions are taken and the quality of behaviour of those in power also has a significant impact.[183] One way to increase communication between offenders and staff has been the introduction of Prison Councils. These enable a democratically elected group of prisoners to have regular meetings with senior members of prison management, and to raise questions or issues from the wings. User Voice, a charity which runs prison councils, argues that providing a platform for collaboration between service users and providers promotes 'active citizenship'.[184] A study of User Voice also found that prisoners were mostly concerned with "basic issues which when addressed increased their level of wellbeing by alleviating frustrations and uncertainty".[185]

While independent research is valuable, an empirical understanding of how prisons are performing on these types of metrics is essential for assessing prison efficiency. Gathering data on family ties could also be used when evaluating outcomes as research shows that prisoners who are visited by a relative are 39 per cent less likely to reoffend within a year of release than those who receive no visits.[186]

Recommendation 6

The Ministry of Justice should collect data on the number of visits received by prisoners as a proxy for family ties. Once the digital prisons programme has progressed further, time spent on the phone or video-conferencing family should also be included in this metric.

4.1.4 Substance misuse (SM)

Evidence has found that 29 per cent of prisoners admit to having a drug problem on arrival to prison and a further six per cent go on to develop an addiction whilst inside.[187] In reality these figures are likely to be much higher.[188] Identifying and treating offenders using drugs within a prison is therefore a key objective for prison staff.

This efficiency indicator considers how funds are used to:

- understand the prevalence of substance misuse in prisons by carrying out mandatory drug tests and the number that return a negative result.
- support those suffering with addiction through the provision of treatment courses and the number of these that are successfully completed.

For a more detailed explanation of the equation used, please refer to the technical appendix.

183 Liebling, *Prisons and Their Moral Performance: A Study of Values, Quality, and Prison Life*.
184 User Voice, 'Our Services,' (2016).
185 Bethany Schmidt, 'User Voice and the Prison Council Model: A Summary of Key Findings from an Ethnographic Exploration of Participatory Governance in Three English Prisons,' *Prison Service Journal*, no. 209 (September 2013).
186 Adrian Fradd et al., *Improving Prisoners' Family Ties: Piloting a Shared Measurement Approach* (New Philanthropy Capital, 2011).
187 HM Inspectorate of Prisons for England and Wales, *HM Chief Inspector of Prisons for England and Wales Annual Report 2011-12*, 2012.
188 The Centre for Social Justice, *Drugs in Prison*, 2015.

Substance misuse and treatment

Whilst it is accepted that a large proportion of drug use will go undetected, the prevalence of substance misuse in a prison is measured by the random mandatory drug testing programme. Under this scheme prisons must test a random sample of 5 or 10 per cent of prisoners each month, depending on prison capacity.[189]

Substance misuse courses are also forms of accredited programmes and, must therefore have evidence to support their positive effect on prisoner outcomes. A number of the courses include cognitive skills therapy to help offenders develop coping methods to deal with their addictions.[190]

Current available metrics for substance misuse do not capture the prevalence of new psychoactive substances. As highlighted in Chapter 1, evidence suggests that drug use is changing across the estate and that the prevalence of legal highs may be associated with a fall in illegal substance misuse, implying that Mandatory Drug Test (MDT) numbers are a significant underestimation.[191] Until the use of these substances can be quantified an assessment based upon MDTs remains the sole metric available.

The prevalence of traditional drugs does also remain a significant concern. The Centre for Social Justice highlight that the number of needles seized in prisons tripled over the decade running up to 2013.[192] Data also shows 4,274 drug finds in the financial year 2012-13, rising to 4,479 in 2013-14.[193] Reducing 'traditional' drug use within the prison environment should therefore remain a priority.

Figure 13 shows that 18 prisons are deemed technically efficient on the SM indicator.

Figure 13: SM efficiency scores

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Bullwood Hall	1	0.0000	Canterbury	21	0.0019
Coldingley	1	0.0000	Bure	22	0.0049
Dartmoor	1	0.0000	Swinfen Hall	23	0.0054
Elmley (Sheppey Cluster)	1	0.0000	Risley	24	0.0070
Guys Marsh	1	0.0000	Buckley Hall	25	0.0115
Hewell	1	0.0000	Blundeston	26	0.0170
Isle of Wight	1	0.0000	Shrewsbury	27	0.0189
Kennet	1	0.0000	Wymott	28	0.0289
Lindholme	1	0.0000	Huntercombe	29	0.0351
Littlehey	1	0.0000	Featherstone	30	0.0438
Maidstone	1	0.0000	Garth	31	0.0489
Onley	1	0.0000	Rye Hill	32	0.0532
Ranby	1	0.0000	Mount	33	0.0586

189 Ministry of Justice, *National Offender Management Service Annual Report 2014/15: Management Information Addendum,* 2015.
190 Ministry of Justice, 'Offender Behaviour Programmes (OBPs),' 2014.
191 HM Inspectorate of Prisons, *Changing Patterns of Substance Misuse in Adult Prisons and Service Responses*, 2015.
192 Centre for Social Justice, *Drugs in Prison*.
193 Ministry of Justice, *Drugs Found by Establishment and Drug Type 2010/11-2013/14*, 2015.

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Stafford	1	0.0000	Erlestoke/Shepton Mallet	34	0.0620
Stocken	1	0.0000	Oakwood	35	0.0800
Verne	1	0.0000	Dovegate	36	0.0950
Wayland	1	0.0000	Haverigg	37	0.0995
Whatton	1	0.0000	Wealstun	38	0.1028
Highpoint	19	0.0004	Lowdham Grange	39	0.1033
Swaleside (Sheppey Cluster)	20	0.0013	Northumberland	40	0.1742

There are a number of potential drivers of efficiency among these high-performing prisons. In 2012, for example, HMP Highpoint, close to the frontier, began working with the Rehabilitation for Addicted Prisoners Trust (RAPt) who provide substance support services.[194] RAPt had proven experience in other establishments including at HMPs Elmley and Wayland – both deemed efficient.[195]

At HMP Dartmoor, another high scorer, HMIP highlights a number of successful strategies for reducing alcohol and drug misuse: "Prisoners could access a family worker, peer mentors, self-management and recovery training (SMART) and Alcoholic Anonymous groups".[196] However, at Dartmoor the IMB also point to the prevalence of spice as a concern – highlighting again the need to use metrics which cover new psychoactive substances.[197]

Lessons can be learnt from difficulties at the poorly rated prisons. The IMB at HMP Oakwood suggest that a higher volume of drugs at the prison can be attributed to the prison's design with a single fence, close to a road allowing drugs (and mobile phones) to be thrown over with ease.[198] Single fences are standard practice for Category C prisons, due to the lower security levels, however this suggests this policy may need to be revised or alternative tactics employed to prevent large volumes of drugs entering prisons.

Of course, using evidence in this way has limitations. Differences in the information, and level of detail, provided by HMIP and IMB means it is not consistently possible to understand whether similar tactics may be employed across mid or low-ranking prisons. The available information does, however, suggest these strategies may help increase prison efficiency.

Recommendation 7

In order to develop a more rounded performance framework the Ministry of Justice should include qualitative evidence of prison performance. To support this independent bodies such as Her Majesty's Inspectorate of Prisons and Independent Monitoring Boards should also ensure more conformity and detail in their reports. Taken together these measures will enable greater transparency and allow more comparative research to be undertaken to understand the drivers of prison performance.

In light of the above evidence, it is also worrying that across the sample under consideration 16 establishments had not registered a single substance misuse programme completion within that year.

194 It is important to note that drug treatment services are commissioned by the Department of Health rather than the Ministry of Justice.
195 Independent Monitoring Board, *HMP/YOI Elmley Annual Report 2013*.
196 HM Inspectorate of Prisons, *Report on an unannounced inspection of HMP Dartmoor*, 2013: 28.
197 Ibid.
198 Independent Monitoring Board, *HMP Oakwood Annual Report*, 2013.

Recommendation 8

The Ministry of Justice should set minimum targets for the provision of substance misuse courses (specifically within Category B and C prisons) – a practice which is currently employed for offender behaviour and sexual offender programmes – and hold governors to account for ensuring these targets are met.

4.1.5 Staff safety and sickness (STSS)

Reform's final efficiency indicator considers the ability of prisons to use funds to provide positive working conditions for staff based on:

- the number of recorded violent incidents against staff; and
- the annualised number of staff sick days.

For a more detailed explanation of the equation used, please refer to the technical appendix.

In the year under consideration (financial year 2012-13), an average of 77 per cent of prison spending (based on cost per place) went on staffing costs across the sample.[199]

Previous work by the NAO further highlights the importance of addressing staff stress and sickness levels. They argue that if the wide variations in average sickness rates across establishments were addressed, the Prison Service could save the equivalent of £9.6 million in staff costs each year.[200] Within the sample the average absence rate is 9.7 sick days per year per member of staff and ranged from 6.3 at HMP Huntercombe to 16.5 sick days at HMP Bullwood Hall. The UK average, for those over 16 and in employment, sits at 4.5 days per year per worker.[201] There is, therefore, clear scope for improvement.

Staff-prisoner relationships are central to prison life.[202] Offenders' experiences of prison officers are essential for maintaining order and minimising the use of force.[203] Sixteen prisons are deemed technically efficient on the STSS indicator.

Figure 14: STSS efficiency scores

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Buckley Hall	1	0.0000	Canterbury	21	0.0064
Bullwood Hall	1	0.0000	Erlestoke/Shepton Mallet	22	0.0066
Bure	1	0.0000	Dartmoor	23	0.0105
Dovegate	1	0.0000	Featherstone	24	0.0112
Huntercombe	1	0.0000	Isle of Wight	25	0.0136
Kennet	1	0.0000	Blundeston	26	0.0144
Lindholme	1	0.0000	Guys Marsh	27	0.0146
Lowdham Grange	1	0.0000	Ranby	28	0.0155

199 This only takes in to account publically run prisons as the information for privately run ones is missing. Freedom of Information Disclosure, Ministry of Justice, 2 September 2015, 99996/15.
200 National Audit Office, *The Management of Sickness Absence in the Prison Service*, 2004.
201 Office for National Statistics, *Sickness Absence in the Labour Market, 2014*, 2014.
202 For a detailed exploration of the work of prison officers see Alison Liebling, David Price, and Guy Shefer, *The Prison Officer* (Oxon: Routledge, 2010).
203 National Audit Office, *The Management of Sickness Absence in the Prison Service*.

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Maidstone	1	0.0000	Haverigg	29	0.0158
Mount	1	0.0000	Highpoint	30	0.0173
Oakwood	1	0.0000	Swinfen Hall	31	0.0185
Onley	1	0.0000	Risley	32	0.0190
Rye Hill	1	0.0000	Wealstun	33	0.0196
Shrewsbury	1	0.0000	Littlehey	34	0.0222
Verne	1	0.0000	Wymott	35	0.0234
Wayland	1	0.0000	Swaleside (Sheppey Cluster)	36	0.0312
Stafford	17	0.0032	Hewell	37	0.0313
Whatton	18	0.0034	Garth	38	0.0367
Stocken	19	0.0060	Elmley (Sheppey Cluster)	39	0.0434
Coldingley	20	0.0062	Northumberland	40	0.0480

Understanding the levers by which prisons can improve on this indicator is more complex than with the three previous efficiency indicators. This is due to the fact that the measure of annualised staff sickness days does not discriminate between days off for sickness or days off due to experiencing violence from inmates. This means the percentage changes required according to the progression paths should not be taken at face value. They may, of course, still be an indicator of potential issues within that prison, but to determine this would require further investigation. An analysis of the sample shows that there is a moderate, yet statistically significant, relationship between the number of violent incidents and staff absenteeism.[204]

Work by Holmes and MacInnes also suggests that a lack of appropriate training can reduce prison officers' confidence, contributing to higher levels of work-related stress – and thus higher absenteeism. Poor management practices, combined with a lack of support, are also considered drivers of stress.[205] French suggests that prison staff experience lower levels of wellbeing, over and above other public-sector occupations, due to the fact that a high degree of stigma is attached to admitting feeling stressed. His research, based upon staff surveys and interviews, suggests that "stress is a dirty word" and that staff are unable to seek support due to fear of this being used against them when it comes to opportunities such as promotion.[206] Kinman et al. support this view and suggest that one reason why support is underused and ineffective is that it is often not viewed as confidential.[207]

This demonstrates the value of taking a mixed methods approach to performance measurement. Anonymised or independent survey data or interviews with staff would be one way to explore elevated levels of absence. Understanding the drivers of staff absenteeism must be a key concern for governors and prison management.

204 $\rho = 0.4326^{**}$, (**) denotes statistical significance with a 95 per cent confidence interval ($p<0.05$)
205 Susan Holmes and Douglas MacInnes, 'Contributors to Stress among Prison Service Staff,' *The British Journal of Forensic Practice* 5, no. 2 (2003).
206 Steve French, *Fair and Sustainable? The Implications of Work Intensification for the Wellbeing and Effectiveness of PGA Members*, (Keele University 2015): 31.
207 Gail Kinman, Andrew Clements, and Jacqui Hart, *POA Members: Work-Related Stress Survey* (University of Bedfordshire, 2014).

4.1.6 Mapping overall efficiency

Whilst using multiple metrics allows a more granular understanding of prison performance, it is useful to see whether prisons score similarly well, in terms of their relative performance, across all four efficiency indicators. For example, do prisons that score highly on addressing offending behaviour also rank well for prisoner living conditions?

In order to estimate the relationships between the indicators the four efficiency scores have been correlated to produce a measure of association. The results show that prisons that do well on the accredited programme indicator (AOB) are also likely to perform well in terms of prisoner living standards (PLS) and substance misuse (SM). Despite these results being statistically significant, however, the correlations are weak – as documented by Figure 15.

Figure 15: Correlations between efficiency indicators

	AOB	PLS	SM	STSS
AOB	1			
PLS	0.3892**	1		
SM	0.3890**	0.1133	1	
STSS	0.0220	-0.0005	0.2053	1

** denotes statistical significance with 95 per cent confidence interval (p<0.05)

AOB: Addressing offender behaviour

PLS: Prisoner living standards

SM: Substance misuse

STSS: Staff safety and sickness

To explore this further Figure 16 documents all of the efficiency ranks achieved by the prisons in the sample. The results have been converted into a heat map based upon the rank score across the four efficiency indicators. The darker the cell the higher the prisons have ranked for that indicator.

Figure 16: Efficiency heat map

Prison name	**AOB:** Addressing offender behaviour	**PLS:** Prisoner living standards	**SM:** Substance misuse	**STSS:** Staff safety and sickness
Blundeston	38	18	26	26
Buckley Hall	30	24	25	1
Bullwood Hall	1	1	1	1
Bure	28	1	22	1
Canterbury	1	17	21	21
Coldingley	18	1	1	20
Dartmoor	34	1	1	23
Dovegate	40	39	36	1
Elmley (Sheppey Cluster)	20	40	1	39
Erlestoke/Shepton Mallet	1	20	34	22
Featherstone	24	21	30	24

Prison name	**AOB:** Addressing offender behaviour	**PLS:** Prisoner living standards	**SM:** Substance misuse	**STSS:** Staff safety and sickness
Garth	36	25	31	38
Guys Marsh	31	26	1	27
Haverigg	1	1	37	29
Hewell	33	39	1	37
Highpoint	16	1	19	30
Huntercombe	1	32	29	1
Isle of Wight	1	39	1	25
Kennet	1	1	1	1
Lindholme	1	1	1	1
Littlehey	11	19	1	34
Lowdham Grange	39	30	39	1
Maidstone	23	1	1	1
Mount	29	27	33	1
Northumberland	26	39	40	40
Oakwood	35	1	35	1
Onley	25	1	1	1
Ranby	32	33	1	28
Risley	1	39	24	32
Rye Hill	37	1	32	1
Shrewsbury	1	22	27	1
Stafford	19	1	1	17
Stocken	14	21	1	19
Swaleside (Sheppey Cluster)	13	39	20	36
Swinfen Hall	21	29	23	31
Verne	22	1	1	1
Wayland	15	28	1	1
Wealstun	27	23	38	33
Whatton	12	1	1	18
Wymott	17	1	28	35

The fact that these associations exist, and that some prisons achieve very high, and others very low, levels of efficiency across three out of four of the indicators, suggests that prisons are able to have some influence over their performance. For the MoJ, this suggests that a more detailed examination of those prisons ranking particularly highly, or poorly, could be extremely valuable. By identifying potential strategies for improving one area of prison management it can expect to make wider gains across additional indicators of prison efficiency.

4.1.7 Comparing apples with apples

To ensure the above rankings are not significantly affected by additional factors such as the size of the prison (based on the number of prisoners housed) the below analysis groups prisons with those that are most similar.

The comparator groups developed by NOMS enables this analysis. These are formulated using variables including prison function, average population, budget, average prisoner age, and proportion of prisoners in each sentence length band. Comparator groups are dynamic, meaning they are different for each prison and individual institutions may appear multiple times.

Figure 17 below shows HMP Lindholme's performance compared to its nearest comparators. The prison was selected based on its position on the frontier for all four efficiency indicators. There is a significant amount of variation across the scores achieved by each prison in this comparator group. This suggests that its performance cannot be explained by prison and offender characteristics alone.

Figure 17: HMP Lindholme dynamic comparator group

Prison name	AOB	PLS	SM	STSS
Lindholme	1	1	1	1
Highpoint	16	1	19	30
Onley	25	1	1	1
Ranby	32	33	1	28
Risley	1	39	24	32
Stocken	14	21	1	19
Wayland	15	28	1	1
Wealstun	27	23	38	33

Similarly, the ranks achieved by HMP Northumberland, which scored poorly across all four indicators, cannot be explained by these inherent factors (see Figure 18). Indeed, one of its comparators is HMP Lindholme, which achieved technical efficiency on every measure even with similar types of prisoner. There is, therefore, scope for improvement at this institution.

Figure 18: HMP Northumberland dynamic comparator group

Prison name	AOB	PLS	SM	STSS
Northumberland	26	39	40	40
Highpoint	16	1	19	30
Lindholme	1	1	1	1
Ranby	32	33	1	28
Risley	1	39	24	32
Wayland	15	28	1	1
Wymott	17	1	28	35

Combining the *Reform* value for money model and method with these types of statistical groupings, helps affirm the validity of the ranks by excluding the possibility that scores are the result of non-institutional factors. It may also help identify high performing prisons which could be deemed over-achievers based upon the inherent characteristics of their prisons (i.e. age) and prisoners (i.e. criminal history) – such as HMP Lindholme.

Understanding prison performance based solely on these efficiency indicators only gives a partial picture. As argued throughout this paper attempting to assess outcomes is essential. The next chapter therefore considers the effectiveness of prisons.

4.2 Effectiveness

This section is concerned with the ability of prisons to deliver positive outcomes for prisoners – and therefore wider society – after their release. These two effectiveness indicators are based on the following outcomes:

- preventing proven reoffending (PRe); and
- post-release resettlement (PRR):
  - the number of ex-prisoners in employment on release;
  - the number of ex-prisoners in education or training on release; and
  - the number of ex-prisoners in settled accommodation on release.[208]

For a more detailed explanation of the equations used, please refer to the technical appendix.

The analysis uses reoffending rates of offenders serving sentences of 12 months or more. This was due to a lack of data within category B and C prisons serving shorter sentences.

208 These two indicators have been assessed separately as the number of offenders in a cohort is different to the number of offenders discharged. They are also measured at different points in time – the PRR variables on release and the PRe measures anytime up until 12 months after leaving prison.

Reoffending includes any proven offence committed by an ex-offender in a 12-month follow-up period that leads to a court conviction, caution, reprimand or warning (an additional 6 months is allowed after this for it to be proven in court).

For the purpose of this report:

Rehabilitation is defined as the process by which an offender is reformed so that upon release he or she does not go on to commit further offences.

Employment on release includes full-time employed or self-employed (30 hours plus), part-time or temporary work.

Education or training on release includes full or part-time education or training (apprenticeships and further education).

Settled accommodation on release includes living in the family home, living as an owner or occupier, tenant with a secure tenancy, in a caravan or a boat, with a friend on a permanent basis or in supported housing.

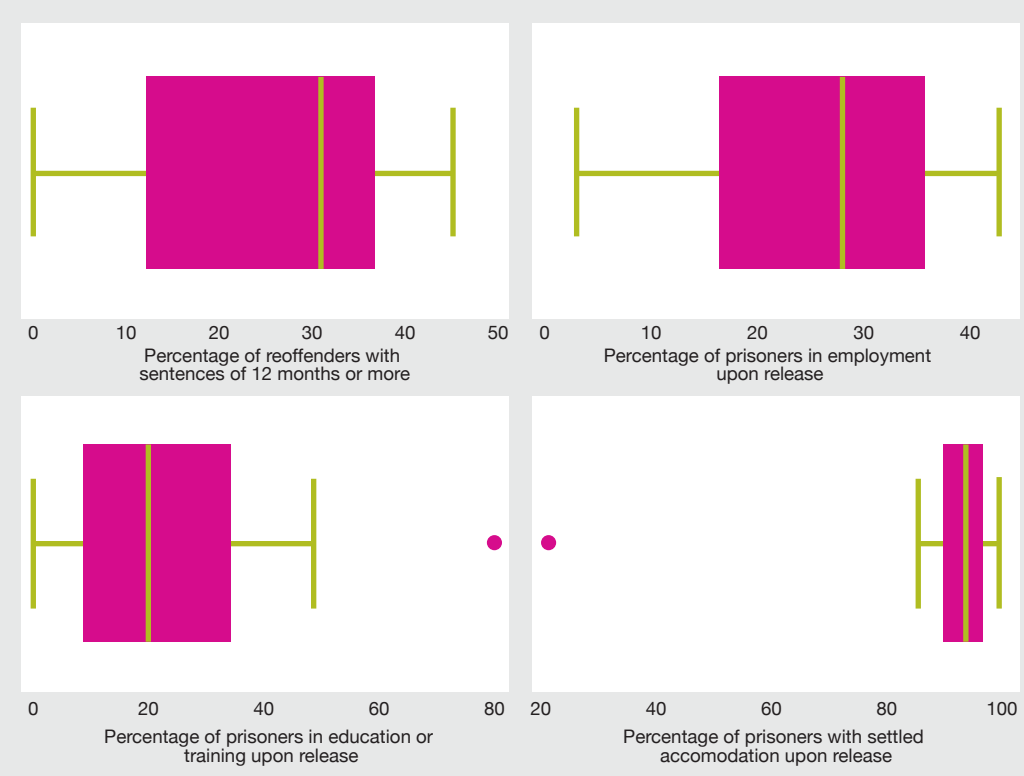
For the purpose of this report:

Resettlement is defined as the process by which an offender is equipped with the necessary skills and support to secure employment, education or training and settled accommodation upon release.

4.2.1 Effectiveness ranks

Much like the variation in prison spending highlighted earlier in this chapter, there are significant differences between the outcomes achieved by prisons in the sample under consideration, as Figure 19 below documents.

Figure 19: Variation in prison outcomes



Source: National Offender Management Service, *Management Information Addendum*, 2012-2013.

In particular, there is little variation, in this sample, on the provision of settled accommodation. In addition, the median is extremely high and sits at 94 per cent.[209] This indicates that prisons do well at ensuring prisoners have settled accommodation upon release.

For many of the prisons the HMIP and IMB highlight the good work of the third sector in this area – which provides links to support in the community to ensure prisoners do not leave with nowhere to go. Given that measures of settled accommodation only cover housing status on discharge, it cannot be determined whether this represents a short-term solution in the form of a hostel or other temporary accommodation, or a more sustainable, long-term housing solution. There is also no external validation of this data, which is based on prisoners telling staff their accommodation status on release. It is possible, and perhaps likely, that Figure 19 represents a significant overestimation of accommodation levels and most importantly the quality of accommodation for offenders on release.

By contrast, employment rates were significantly more variable. Three prisons within the sample achieved employment for fewer than 10 per cent of the offenders under their supervision (HMPs Canterbury, Bure and Whatton) while HMPs Dartmoor, Elmley, Isle of Wight, Ranby and Rye Hill achieved rates of around 40 per cent.

It is important to note that variations in cohorts within prisons may have an impact on employment. For example, HMPs Bure and Whatton held high levels of sex offenders which may have made finding employment particularly tough. However, even when removing these potential outliers a further eight prisons failed to achieve a post-release employment rate of 20 per cent showing room for improvement.

For education and training upon release the range is also large. The lowest percentage sits at 0.2 per cent and the highest at 80 per cent. This suggests that there is significant scope for some prisons to improve most of their post-release outcomes. Reducing the distance between the worst and best performing prisons again presents a clear opportunity for driving value for money.

4.2.2 Preventing proven reoffending (PRe)

The PRe rank is based on data from the financial year 2013-14. As proven reoffending is calculated on a 12-month follow-up period, this data covers the recidivism rates of offenders incarcerated during financial year 2012-13, the year under consideration in this paper (see Figure 26 in the technical appendix). Figure 19, shows a wide variation between prisons in terms of reoffending. Just four prisons are deemed efficient on the PRe indicator. This will be explored in more detail below.

Figure 20: PRe effectiveness scores

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Bullwood Hall	1	0.0000	Erlestoke/Shepton Mallet	21	0.1423
Highpoint	1	0.0000	Stafford	22	0.1696
Huntercombe	1	0.0000	Swinfen Hall	23	0.1837
Shrewsbury	1	0.0000	Ranby	24	0.1983
Canterbury	5	0.0029	Dartmoor	25	0.1995

209 This is with the exception of one outlier prison, HMP Canterbury which had a settled accommodation on release rate of around 20 per cent. This is most likely explained by the fact that HMP Canterbury was a specialist foreign national prison and therefore a number of those released would have been deported.

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Kennet	6	0.0039	Coldingley	26	0.2052
Verne	7	0.0170	Mount	27	0.2479
Isle of Wight	8	0.0189	Onley	28	0.2490
Maidstone	9	0.0205	Dovegate	29	0.2626
Oakwood	10	0.0352	Haverigg	30	0.2720
Risley	11	0.0473	Buckley Hall	31	0.2770
Whatton	12	0.0478	Stocken	32	0.2820
Swaleside (Sheppey Cluster)	13	0.0483	Hewell	33	0.2856
Garth	14	0.0524	Guys Marsh	34	0.2968
Rye Hill	15	0.0536	Featherstone	35	0.3001
Bure	16	0.0672	Lindholme	36	0.3443
Northumberland	17	0.0705	Elmley (Sheppey Cluster)	37	0.3476
Littlehey	18	0.0747	Wealstun	38	0.3567
Lowdham Grange	19	0.0822	Blundeston	39	0.3775
Wymott	20	0.1325	Wayland	40	0.4218

4.2.3 Post-release resettlement (PRR)

The PRR indicator uses data for the three outcome variables in 2012-13 (employment, education or training and settled accommodation upon release) as these are measured at point of release. They do not include any information about sustained levels of employment or accommodation. This might explain why more prisons are deemed to be efficient on the PRR than on the PRe – 17 prisons are found on the frontier for this indicator.

Figure 21: PRR effectiveness scores

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Bure	1	0.0000	Mount	21	0.0069
Elmley (Sheppey Cluster)	1	0.0000	Kennet	22	0.0080
Featherstone	1	0.0000	Haverigg	23	0.0105
Garth	1	0.0000	Whatton	24	0.0145
Hewell	1	0.0000	Guys Marsh	25	0.0150
Highpoint	1	0.0000	Buckley Hall	26	0.0230
Huntercombe	1	0.0000	Verne	27	0.0282

Prison name	Rank	Efficiency score	Prison name	Rank	Efficiency score
Isle of Wight	1	0.0000	Wealstun	28	0.0285
Littlehey	1	0.0000	Blundeston	29	0.0348
Lowdham Grange	1	0.0000	Erlestoke/Shepton Mallet	30	0.0353
Maidstone	1	0.0000	Shrewsbury	31	0.0392
Onley	1	0.0000	Coldingley	32	0.0510
Ranby	1	0.0000	Dartmoor	33	0.0577
Rye Hill	1	0.0000	Stafford	34	0.0596
Swinfen Hall	1	0.0000	Stocken	35	0.0604
Wayland	1	0.0000	Oakwood	36	0.0826
Wymott	1	0.0000	Dovegate	37	0.1143
Swaleside (Sheppey Cluster)	18	0.0040	Risley	38	0.1632
Bullwood Hall	19	0.0048	Canterbury[210]	39	0.1646
Lindholme	20	0.0059	Northumberland	40	0.2070

4.2.4 Protective factors

At a prisoner level, work, education and settled accommodation have often been viewed as protective factors which can reduce the risk of individuals going on to commit further crimes.

For example, work by the MoJ showed a 9.4 percentage point reduction, for those who had served less than 12 months, and 5.6 percentage point reduction, for those who had served over 12 months, in reoffending rates, for those entering employment – as compared with a control group.[211] Additional evidence also shows that the 'quality' of post-release employment has a greater impact on levels of recidivism than employment in it and of itself.[212] This, once again, highlights the need for more meaningful and detailed data when evaluating outcomes.

In addition, the SCPR showed that having of a safe place to stay reduced an individual's propensity to reoffend from 66 per cent to 51 per cent.[213] Stable accommodation has also been shown to reduce reoffending by over 20 per cent.[214] Within the sample under review in this paper, settled accommodation and reoffending have a moderately strong association.[215]

Academic literature, however, has argued that "the evidence base is less than clear about the role of stable accommodation in reducing risk of recidivism".[216] This can be attributed to

210 As HMP Canterbury held foreign national prisoners it would have deported a significant proportion of the offenders it housed on release. As a result, it would find it more difficult to score highly on the PRR metric than other prisons.
211 Ministry of Justice, *Analysis of the Impact of Employment on Re-Offending Following Release from Custody, Using Propensity Score Matching*, 2013. The study did not take into account those who were self-employed or below the lowest tax threshold. These individuals may have formed part of the control group.
212 Christopher Uggen, 'Ex-Offenders and the Conformist Alternative: A Job Quality Model of Work and Crime,' *Social Problems* 46, no. 1 (February 1999).
213 Brunton-Smith and Hopkins, *The Factors Associated with Proven Re-Offending Following Release from Prison: Findings from Waves 1 to 3 of Surveying Prisoner Crime Reduction*.
214 Ministry of Justice, *Transforming Rehabilitation: a summary of the evidence on reducing reoffending*, 2013.
215 The correlation coefficient is of: $\rho = 0.6633^{**}$, (**) denotes statistical significance with a 95 per cent confidence interval ($p<0.05$).
216 Chris O'Leary, 'The Role of Stable Accommodation in Reducing Recidivism: What Does the Evidence Tell Us?' *Safer Communities* 12, no. 1 (2002): 5.

two failings in previous evaluations. First, some studies fail to single out accommodation as the intervention which is affecting the outcomes. Second, few studies use control groups.[217] Most of the research therefore suggests a correlation between stable accommodation and recidivism but does not identify a causal link.[218] In addition, according to a recent government review, there is insufficient evidence to determine the impact on reoffending of programmes to find accommodation for offenders.[219] The most robust evaluation undertaken in the UK, found that a major offender resettlement programme in London made little difference to recidivism rates.[220]

Weaknesses in the evaluation techniques used do not prove that no link exists and ensuring that offenders are accessing stable housing and sustainable employment should nevertheless be a priority for the MoJ. Caution should be taken however, when applying these findings to *Reform*'s analysis. The available evidence focusses on outcomes for individual prisoners, meaning it is not therefore possible to draw conclusions at an aggregate prison level.

To establish a more robust evidence-base, better measurement mechanisms must be in place. This will also help ensure prisons, and the relevant authorities working with offenders after release, are held to account for the wellbeing of prisoners leaving their care.

Follow-up surveys with offenders may be expensive and unlikely to provide sufficient or accurate information. The National Probation Service and recently created CRCs however, have a wealth of information about offenders after release.

Recommendation 9

The Ministry of Justice should work closely with the National Probation Service and Community Rehabilitation Companies to better understand the relationships between employment, education, settled accommodation and reoffending. As part of this process, they should commission a statistically robust evaluation in order to establish a clear evidence base for future rehabilitation strategies.

In addition, CRCs have a duty to provide accommodation and employment services as part of the prison resettlement provision, irrespective of need – for example, if a prisoner returns home to live with their spouse – or evidence of its effectiveness.[221] In some cases, requiring staff to provide guidance and support on accommodation can represent a waste of resources.

Recommendation 10

The Ministry of Justice should revisit the contracts it holds with providers under the Transforming Rehabilitation programme in order to enable Community Rehabilitation Companies to better tailor their resettlement services in the light of need and effectiveness.

4.2.5 Comparing pears with pears

As highlighted earlier in this report, comparator groups can be used to test the validity of the efficiency and effectiveness rankings. This is particularly necessary, and helpful, when considering effectiveness as prisoner characteristics can have a large impact on post-release outcomes. These form a key part of the metrics used by NOMS when creating the dynamic comparator groups.

217 Ibid.
218 Ibid.
219 Ministry of Justice, *Transforming Rehabilitation: A Strategy for Reform*, 2013.
220 Criminal Justice Partnership, *An Evaluation of the Diamond Initiative: Year Two Findings*, 2011.
221 See schedule 1 and schedule 7 of Ministry of Justice, 'Community Rehabilitation Company Contracts,' 2014.

Figure 22 shows the comparator group of prisons for HMP Highpoint, which like HMP Lindholme in the previous section was selected due to being one of the three highest scoring prisons for both effectiveness indicators. Again *Reform*'s analysis suggests that performance cannot be explained by the inherent characteristics of prisoners. It is also interesting that HMP Lindholme, which is placed on the frontier for all four efficiency indicators, scores poorly on the two effectiveness indicators. This suggests that high levels of efficiency cannot guarantee effectiveness.

Figure 22: HMP Highpoint dynamic comparator group

Prison name	Rank	PRe	Rank	PRR
Highpoint	1	0.000	1	0.000
Lindholme	36	0.344	20	0.006
Northumberland	17	0.070	40	0.207
Onley	28	0.249	1	0.000
Ranby	24	0.198	1	0.000
Risley	11	0.047	38	0.163
Stocken	32	0.282	34	0.060
Wayland	40	0.422	1	0.000

It is also possible to use the progression paths produced to help struggling prisons reach the standards of their best performing peers. For example, as Figure 23 shows HMP Wayland ranked at 40 and would need to ensure 84 less prisoners reoffended upon release, whereas HMP Northumberland (ranked 17) would need only 14 less. To reach the best practice frontier on the PRR indicators, HMP Northumberland would also need to increase the number in settled accommodation by 103, the number in employment by 32 and the number in education or training by 23.

Figure 23: HMP Highpoint dynamic comparator group progression paths

Prison name	Rank	Increase non-reoffenders (%)	Number in of offenders in cohort	Number of offenders not reoffending to increase
Lindholme	36	19.77	565	68
Northumberland	17	2.84	782	14
Onley	28	24.61	303	49
Ranby	24	10.51	565	39
Risley	11	2.29	573	9
Stocken	32	22.68	387	56
Wayland	40	24.64	580	84

This shows quite clearly the scope for improvement amongst even statistically similar prisons, and the benefits of DEA.

4.3 Linking the chain

This section examines the relationship between prison efficiency and effectiveness, to understand whether greater efficiency will also make prisons more effective at reaching desirable social outcomes.

4.3.1 Better courses, better outcomes?

The section first considers the relationship between the AOB efficiency indicator and reoffending, both with respect to the raw number of reoffenders and the PRe score. This will establish whether the prisons that maximise AOBCCs are effective at reducing reoffending.[222] The second examines the relationship between a prison's AOB rank and the other three outcome measures.

Findings are broadly consistent with the existing literature on offender behaviour courses – namely, the reason programmes achieve accreditation is their ability to have a positive impact on reoffending. For example, the Home Office found that the reoffending rates for those completing the Enhanced Thinking Skills programme were eight percentage points lower than predicted (results are based upon the two-year reconviction rates of over 20,000 offenders who had attended this programme).[223] For some types of offender this difference was significantly higher: 17 percentage points for violent offenders and 13 percentage points for sexual offenders.[224] A meta-analysis of recent literature also suggests that courses utilising CBT have consistently been found to reduce the likelihood of further offending.[225]

Within the sample a statistically significant relationship is found between those who do well under the AOB and PRe metrics.[226]

This relationship is based on completion of the courses, and there is evidence to suggest that a metric based on course take-up alone would not produce the same results. Work by McMurran and Theodosi, considering 16 studies of interventions using CBT, suggests that non-completion is associated with elevated levels of reoffending – higher than both those who completed the courses and those that never started them.[227] While they find this effect is more pronounced amongst those being supervised in the community, failure to complete an accredited programme may make prisoners more likely to reoffend.[228] This research and the results in this paper may be the reflection of an element of self-selection on this indicator. Individuals that are less likely to complete courses may already be more predisposed to committing further offences, and vice versa – the direction of causality is unclear.

There is also evidence to suggest that accredited programmes contribute to higher levels of employment. Analysis undertaken as part of the SPCR study found that prisoners who had completed accredited programmes had an employment rate of 37 per cent compared to 29 per cent who had not.[229] Of the 2,171 prisoners surveyed, more than a quarter had taken part in some form of accredited programme.[230] These 630 prisoners were compared with the rest of the sample that had not undertaken an accredited programme.

222 Measured by the number of reoffenders with sentences of 12 months or more.
223 Rosie Travers, Ruth Mann and Clive Hollin. *Who Benefits from Cognitive Skills Training?* (National Offender Management Service, 2015).
224 Ibid.
225 Nana A. Landenberger and Mark W. Lipsey, 'The Positive Effects of Cognitive–behavioral Programs for Offenders: A Meta-Analysis of Factors Associated with Effective Treatment,' *Journal of Experimental Criminology* 1, no. 4 (December, 2005).
226 $\rho = 0.3251^{**}$ See Table 15, (**) denotes statistical significance with a 95 per cent confidence interval ($p<0.05$).
227 Mary McMurran and Eleni Theodosi, 'Is Treatment Non-Completion Associated with Increased Reconviction over No Treatment?' *Psychology, Crime & Law* 13, no. 4 (July 2007).
228 Ibid.
229 Brunton-Smith and Hopkins, *The Factors Associated with Proven Re-Offending Following Release from Prison: Findings from Waves 1 to 3 of Surveying Prisoner Crime Reduction*.
230 The sample was formed of prisoners serving sentences of between 18 months and four years so this proportion may be higher than within the average prison population.

Despite the evidence, no statistically significant relationship was found between AOBCCs and employment within the sample.[231]

4.3.2 Better conditions, reduced reoffending?

In the 1970s and 80s political rhetoric supported the view that harsher sentencing and strict prison conditions were more likely to act as a deterrent for offenders – thereby producing lower reoffending rates. More recently, however, there is emerging international evidence that the contrary is true. A study on the effect of prison conditions on recidivism in the United States suggest that harsher conditions can actually increase reoffending on release.[232] While this analysis uses increased security levels as a proxy for harsher conditions and is based on a small sample (just under 1,000), it raises questions about the assumption that harsh conditions improve prisoner outcomes.[233]

A larger European study with a dataset of 25,000 former inmates finds similar results.[234] The authors conclude that "estimates suggest that harsh prison conditions increase post-release criminal activity".[235] Based on this evidence, it should be expected that those prisons scoring badly on prisoner living standards also rank poorly under the PRe indicator.

This analysis supports this view. In particular, an increase in violent incidents amongst inmates is moderately associated with higher reoffending rates – and this association is statistically significant.[236] It is not possible to conclude from this if it is the violent incidents themselves driving higher levels of reoffending. It may of course be the case that other underlying issues across the estate such as drug abuse, lack of access to anger management courses or frustration with internal grievance procedures are causing the violent incidents. Exploring the causes of violence as well as identifying violence reduction strategies should both be key priorities for prison governors and the MoJ.

4.3.3 Addiction and post-release outcomes

Research suggests that reducing substance misuse has a positive impact on prisoner outcomes – particularly by reducing further criminal activity. Work by the Home Office found a five percentage point reduction in a one-year reoffending rate for those who had completed accredited substance misuse course.[237] Independent academic research also supports this. Needham et al consider 564 offenders with alcohol-related problems thought to be linked to offending. Using a control group, they find offenders not exposed to an alcohol treatment programme (utilising elements of CBT) to be twice as likely to reoffend.[238]

The intensity of the substance misuse intervention affects the likelihood of reoffending. RAPt found that those that had completed their drug treatment programme were less likely than a second group exposed to a different (less intensive) programme to reoffend within the 12 months following release.[239] Thirty one per cent of RAPt completers were reconvicted compared to 49 per cent of comparison completers.[240] Similar to the literature discussed in 4.3.1, non-completion of substance misuse courses is also associated with elevated levels of reoffending – those who did not complete the course had a reoffending rate of 48 per cent.[241]

231 $\rho = 0.2141$ not statistically significant both at a 95 and 90 per cent confidence interval (i.e. $p<0.05$ and $p<0.10$)
232 Keith Chen and Jesse Shapiro, *Does Prison Harden Inmates? A Discontinuity-Based Approach* (Yale School of Management and University of Chicago, 2004).
233 Ibid.
234 Francesco Drago, Roberto Galbiati, and Pietro Vertova, 'Prison Conditions and Recidivism,' *American Law and Economics Review* 17, no. 2 (February 2011): 103.
235 Ibid: 1.
236 $\rho = 0.4089$**, (**) denotes statistical significance with a 95 per cent confidence interval ($p<0.05$).
237 Brunton-Smith and Hopkins, *The Factors Associated with Proven Re-Offending Following Release from Prison: Findings from Waves 1 to 3 of Surveying Prisoner Crime Reduction*.
238 Marie Needham et al, 'Association Between Three Different Cognitive Behavioral Alcohol Treatment Programs and Recidivism Rates Among Male Offenders: Findings from the United Kingdom,' *Alcoholism: Clinical and Experimental Research* 39, no. 6 (June, 2015).
239 Albert Kopak et al., 'Effectiveness of the Rehabilitation for Addicted Prisoners Trust (RAPt) Programme,' *Journal of Substance Use* 20, no. 4 (July 2015).
240 Ibid.
241 Ibid.

International evidence also found "frequent drug users 53% more likely to be re-arrested than non-drug abusers".[242] Reducing the volume of drugs in prison and rehabilitating those who enter as addicts has an important part to play in aiding the resettlement process.

Reform's analysis finds that there are statistically significant relationships between several of the variables used to create the SM indicator and those used in the effectiveness indicators. Firstly, higher levels of positive drug tests are moderately associated with higher reoffending rates.[243] For each additional positive drug test there is an equal increase in the number of reoffenders.[244] This clearly supports the evidence detailed above. Secondly, completions of drug treatment courses are positively associated with employment and settled accommodation upon release.[245] No relationship is found between drug treatment completions and lower reoffending rates.

4.3.4 Happy staff, better outcomes?

While the impact of staff-prisoner relationships on an offender's prison experience have previously been considered by academics, little work has evaluated the relationship between staff working conditions on outcomes for prisoners after their release.

This analysis finds positive relationships between the number of assaults on staff, staff sickness and the number of inmates who reoffend.[246]

4.3.5 From efficiency to effectiveness

Reform's analysis shows no distinct pattern across the value for money chain. Greater efficiency does not automatically imply greater effectiveness. However, it is possible that prisons which rank highly on efficiency are cutting costs to the detriment of longer term objectives. This requires further exploration by policymakers.

There are however positive, and statistically significant, relationships between:

- the AOB and PRe indicators;
- the PLS and PRe indicators; and
- the SM and PRR indicators.

Figure 24: Correlations between efficiency and effectiveness indicators

	AOB	PLS	SM	STSS	PRe	PPR
AOB	1					
PLS	0.3892**	1				
SM	0.3890**	0.1133	1			
STSS	0.022	-0.0005	0.2053	1		
PRe	0.3251**	0.3023*	0.0293	0.0979	1	
PPR	0.0546	-0.0658	0.3819**	0.1587	-0.143	1

**denotes statistical significance with a 95 per cent confidence interval (p<0.05); * denotes statistical significance with a 90 per cent confidence intervals (p<0.10).

242 Ojmarrh Mitchell, David Wilson, and Doris MacKenzie, 'Does Incarceration-Based Drug Treatment Reduce Recidivism? A Meta-Analytic Synthesis of the Research,' *Journal of Experimental Criminology* 3, no. 4 (December 2007): 8.
243 ρ = 0.5048**, (**) denotes statistical significance with a 95 per cent confidence interval (p<0.05).
244 This was calculated using Ordinary Least Square regression with robust standard errors.
245 Correlation coefficient for: (i) substance misuse course completions and employment upon release ρ = 0.4638**, (**) denotes statistical significance with a 95 per cent confidence interval (p<0.05); (ii) substance misuse course completions and settled accommodation upon release ρ= 0.4473**, (**) denotes statistical significance with a 95 per cent confidence interval (p<0.05).
246 Correlation coefficient for: (i) sick days and reoffending ρ = 0.4220**; (ii) assaults on staff and reoffending ρ = 0.4584**, (**) denotes statistical significance with a 95 per cent confidence interval (p<0.05).

It should be noted that while some of these correlations are significant they are not strong. This does however suggest that prisons who do well in terms of AOB and PLS scores will have lower numbers of reoffenders.[247] In other words, prisons that are able to minimise complaints, violence and overcrowding and ensure offenders complete behaviour courses will potentially see lower rates of reoffending. Reducing substance misuse may also help offenders secure work, education or accommodation upon release. In these areas, therefore, governors can both make efficiency gains and positively impact long-term effectiveness. These must be key areas of focus for the MoJ.

Figure 25: Efficiency and effectiveness heat map

Prison name	**AOB:** Addressing offender behaviour	**PLS:** Prisoner living standards	**SM:** Substance misuse	**STSS:** Staff safety and sickness	**PRe:** Proven reoffending	**PRR:** Post-release resettlement
Blundeston	38	18	26	26	39	29
Buckley Hall	30	24	25	1	31	26
Bullwood Hall	1	1	1	1	1	19
Bure	28	1	22	1	16	1
Canterbury	1	17	21	21	5	39
Coldingley	18	1	1	20	26	32
Dartmoor	34	1	1	23	25	33
Dovegate	40	39	36	1	29	37
Elmley (Sheppey Cluster)	20	40	1	39	37	1
Erlestoke/ Shepton Mallet	1	20	34	22	21	30
Featherstone	24	21	30	24	35	1
Garth	36	25	31	38	14	1
Guys Marsh	31	26	1	27	34	25
Haverigg	1	1	37	29	30	23
Hewell	33	39	1	37	33	1
Highpoint	16	1	19	30	1	1
Huntercombe	1	32	29	1	1	1
Isle of Wight	1	39	1	25	8	1
Kennet	1	1	1	1	6	22
Lindholme	1	1	1	1	36	20
Littlehey	11	19	1	34	18	1
Lowdham Grange	39	30	39	1	19	1

247 A lower efficiency score means greater efficiency. The positive correlation shows that if AOB scores are lower reoffending will be lower.

Prison name	**AOB:** Addressing offender behaviour	**PLS:** Prisoner living standards	**SM:** Substance misuse	**STSS:** Staff safety and sickness	**PRe:** Proven reoffending	**PRR:** Post-release resettlement
Maidstone	23	1	1	1	9	1
Mount	29	27	33	1	27	21
Northumberland	26	39	40	40	17	40
Oakwood	35	1	35	1	10	36
Onley	25	1	1	1	28	1
Ranby	32	33	1	28	24	1
Risley	1	39	24	32	11	38
Rye Hill	37	1	32	1	15	1
Shrewsbury	1	22	27	1	1	31
Stafford	19	1	1	17	22	34
Stocken	14	21	1	19	32	35
Swaleside (Sheppey Cluster)	13	39	20	36	13	18
Swinfen Hall	21	29	23	31	23	1
Verne	22	1	1	1	7	27
Wayland	15	28	1	1	40	1
Wealstun	27	23	38	33	38	28
Whatton	12	1	1	18	12	24
Wymott	17	1	28	35	20	1

The heat map above takes the ranks achieved by prisons across *Reform*'s value for money chain and highlights that some prisons such as HMP Whatton rank fairly highly across all six scores. This suggests there is room for all prisons to improve their performance. Identifying how prisons who are able to achieve these consistently high levels must be a key focus for the MoJ. As this paper has argued only by balancing efficiency with improving long-term outcomes can prisons promote sustainable public spending.

Conclusion

It is clear that current mechanisms for evaluating success in prisons fall short. From measurements of prison productivity, which fail to take outcomes into account, to the metrics used by NOMS, which exclude the impact on prisoners after release. These indicators are unable to ensure value for money is being achieved. By ignoring outcomes, it is not possible to systematically highlight examples of best practice and as a result better identify strategies for reform.

In this context, the Prime Minister's commitment to better performance management – centred around the outcomes of rehabilitation and resettlement – should be welcomed. However, key to achieving this aim has to be the collection of better, more diverse data. By selecting more meaningful metrics, and ensuring data is consistently collected and publically available, Government can both drive performance improvements and increase transparency. Better performance indicators will also prison leaders and policymakers are held to account.

While many of these challenges remain, this paper has laid out a new framework for understanding value for money in prisons – one which allows for a consideration of both short-term efficiency and long-term effectiveness. It has also highlighted some key areas where data is lacking. Were more data to be made publically available, a more detailed analysis would be possible. Addressing these gaps, combined with an outcome-focussed approach, would be valuable steps towards better performance measurement.

Through applying the *Reform* model to a sample of 40 prisons the analysis has also highlighted the significant variations in performance across the estate. While data availability and quality issues prevent a full understanding of the drivers of these differences, it is clear that there is scope for improvement. Closing the gap between the best and worst performing prisons could both realise savings and improve outcomes for prisoners.

Technical appendix

The sample

Male adult Category B and C prisons were selected for this analysis due to their focus on the resettlement and training of offenders. While these prisons house diverse prisoner populations, they were the most directly comparable.

Exclusions

The female and juvenile estates were excluded on the basis that these two groups have considerably different support needs from the adult male population.

Women are less likely than men to reoffend, and so a comparison between male, and female prison estates would have been misleading. The latest reoffending data (2013-14) shows the reoffending rate of adult males at 26 per cent as compared to 19 per cent for adult females. A similar problem arises with juveniles, although in this case their rate of reoffending is higher than the adult male population at 38 per cent.[248]

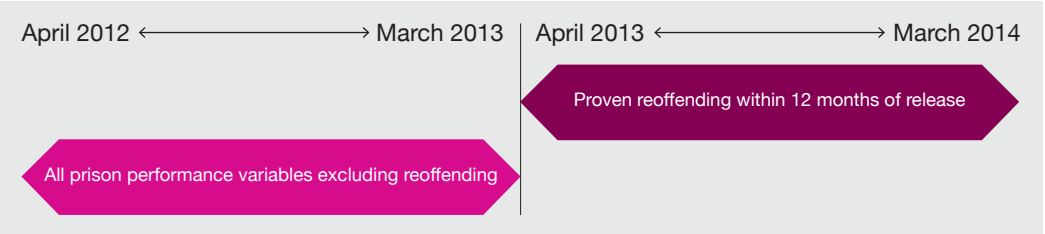
Local prisons have been the subject of much scrutiny in recent HMIP reports.[249] These were eliminated however on the basis that the diverse population and high turnover of prisoners would make it difficult to attribute longer term outcomes to their performance. Local prisons have also already been the subject of one of the most comprehensive studies carried out in this area.[250] Semi-open and open prisons, which allow prisoners out on temporary release to complete activities, or those prisons in the dispersal estate where inmates spend higher numbers of hours in their cells. In these institutions prisons have less ability to influence resettlement and reoffending outcomes for prisoners and were therefore deemed inappropriate to include.

As a result of these exclusions, and missing data, a total of 40 prisons were included in this sample.

Variable description

Figure 26 shows the time periods to which the data used in *Reform's* model corresponds. As this illustrates, all performance data was taken from the financial year 2012-13. Reoffending data from the year 2013-14 was then selected in order to capture, to a certain extent, the behaviour of prisoners who were housed in prisons in the year 2012-13.

Figure 26: Timeline of variables



The publically available statistics on safety in custody are presented in a calendar year format. Freedom of Information requests were submitted to obtain this data for the financial year 2012-13. This ensured that the data used to measure efficiency and effectiveness was compatible.

248 Ministry of Justice, *Proven Reoffending Statistics: April 2013 to March 2014*.
249 HM Inspectorate of Prisons for England and Wales, *HM Chief Inspector of Prisons for England and Wales Annual Report 2014-15*.
250 Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons'.

Below a list of the variables used is presented and explanations provided. The following descriptions are based upon the explanatory notes produced by the MoJ.

Name	Description	Source
Efficiency – input variables		
Baseline certified normal accommodation (CNA)	The total of all available accommodation in an establishment including for example cells, segregation units and healthcare rooms. This measure does not take into account cells which may currently be damaged and not available for use. It is sometimes referred to as the crowded capacity of a prison.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'T3_Costs by Establishment' in Ministry of Justice, Costs per place and costs per prisoner by individual prison, 2013
Direct resource expenditure	The total net expenditure recorded by an individual prison in a financial year.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'T3_Costs by Establishment' in Ministry of Justice, Costs per place and costs per prisoner by individual prison, 2013
Direct cost per place	The direct resource expenditure divided by the baseline certified normal accommodation.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'T3_Costs by Establishment' in Ministry of Justice, Costs per place and costs per prisoner by individual prison, 2013
Accredited offender behaviour course starts (AOBCSs)	This variable is based on *Reform* calculations. It corresponds to the sum of programme starts in four programme categories – general offending, domestic violence, violence, sex offending. The number of programme starts was taken from the accredited programmes dataset rather than the Mi-addendum following advice from the the Performance Analysis Group at NOMS.	Accessed: https://www.gov.uk/government/statistics/accredited-programmes-annual-bulletin-201213 'Accredited Programmes', in Accredited Programmes Annual Bulletin 2012/13
Substance misuse programme starts (SMPSs)	This variable is based on *Reform* calculations. It corresponds to the sum of all accredited programmes starts which fall under the substance misuse programme category. The number of programme starts was taken from the accredited programmes dataset rather than the Mi-addendum following advice from the Performance Analysis Group at NOMS.	Accessed: https://www.gov.uk/government/statistics/accredited-programmes-annual-bulletin-201213 `Accredited Programmes', in Accredited Programmes Annual Bulletin 2012/13
Number of mandatory drugs tests (MDT)	The total number of mandatory drugs tests carried out within a prison in a financial year. All prisoners, including those on remand, are eligible to be randomly selected.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Staff in post monthly average	The average number of staff in post at the end of a calendar month.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013

Name	Description	Source
Efficiency – output variables		
Accredited offender behaviour course completions (AOBCCs)	This variable is based on *Reform* calculations. The number of accredited offender behaviour courses (as defined in AOBCS) which are completed within a financial year by a given establishment. The number of programme completions was taken from the accredited programmes dataset rather than the Mi-addendum following advice from the Performance Analysis Group at NOMS.	Accessed: https://www.gov.uk/government/statistics/accredited-programmes-annual-bulletin-201213 'Accredited Programmes', in Accredited Programmes Annual Bulletin 2012/13
Number of prisoners	The prison population, as documented by the Mi Addendum, is calculated by averaging the 12-month-end population figures.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Total number of prisoners not in overcrowded cells	This variable is based on *Reform* calculations. It was calculated by subtracting the total number of prisoners held in overcrowded cells from the total number of prisoners in a prison. Total number of prisoners held in overcrowded cells: number of prisoners held in a cell where the number of occupants exceeds the baseline certified normal accommodation of the cell. For example, where a cell designed for one holds two. Similar to the average population, annual figures are created by averaging the 12 month-end figures. As previously noted the total baseline certified accommodation varies by prisons and is set by NOMS.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Total number of PPO complaints	The total number of complaints received by the PPO. This includes all complaints whether or not they are upheld. It does not, however, capture the total number of all complaints submitted by prisoners, simply those which are submitted to the ombudsman when all internal complaints processes have failed.	Accessed: http://www.ppo.gov.uk/document/annual-reports/ 'Prisons complaints completed from 1 April 2012 to 31 March 2013' in Prisons And Probation Ombudsman for England and Wales, Annual Report 2012/13, 2013
Assaults on prisoners	This variable is based on *Reform* calculations. Assaults cover a wide range of violent incidents including fights between prisoners. The number of assaults which specifically involve prisoners is not separated from the total number of assaults across the estate. This variable was calculated by subtracting the number of incidents involving staff (see below) from the total number of assaults.	Accessed: https://www.gov.uk/government/statistics/safety-in-custody-statistics 'Table 3.14: Assault incidents (including fights) by establishment, England and Wales' and 'Table 3.15: Assaults on staff by establishment, England and Wales' in Ministry of Justice and National Offender Management Service, Assaults in prison custody 2004-2012. This dataset is presented in calendar year. For the purposes of this paper an FOI request was submitted in order to get the data in financial year format.[251]
Assaults on staff	The total number of violent incidents involving staff.	Accessed: https://www.gov.uk/government/statistics/safety-in-custody-statistics 'Table 3.15: Assaults on staff by establishment, England and Wales' in Ministry of Justice and National Offender Management Service, Assaults in prison custody 2004-2012. This dataset is presented in calendar year. For the purposes of this paper an FOI request was submitted in order to get the data in financial year format.[252]

251 Freedom of Information Disclosure, Ministry of Justice, 12 November 2015, 101453.
252 Ibid.

Name	Description	Source
Substance misuse programme completions (SMPCs)	The number of substance misuse programme completions (as defined in SMPS) which are completed within a financial year by a given establishment. The number of programme completions was taken from the accredited programmes dataset rather than the Mi-addendum following advice from the Performance Analysis Group at NOMS.	Accessed: https://www.gov.uk/government/statistics/accredited-programmes-annual-bulletin-201213 'Accredited Programmes', in Accredited Programmes Annual Bulletin 2012/13
Number of negative MDTs	This variable is based on *Reform* calculations which take the total number of MDTs minus the number of times a test produced a positive result.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Number of working days per member of staff as a proxy for staff sickness	This variable is based on *Reform* calculations. The method used assumes that prison staff work five days per week and take 28 days of annual leave. This is the statutory minimum holiday days (20) plus the normal number of bank holidays. In practice this meant the variable was calculated using the following formula ((5 x 52 - 28) x total number of staff – number of staff annualised sick days) / number of staff.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Self-harm	This includes any incident where a prisoner can be said to have deliberately harmed themselves regardless of the injury sustained.	Accessed: https://www.gov.uk/government/statistics/safety-in-custody-statistics 'Table 2.13: Self-harm incidents by establishment and calendar year, England and Wales, 2004 to 2012' in Ministry of Justice and National Offender Management Service, Self-harm in prison custody 2004-2012. This dataset is presented in calendar year. For the purposes of this paper an FOI request was submitted in order to get the data in financial year format.[253]
Self-inflicted deaths	This variable is wider than suicides and includes instances where a person has accidentally taken their own life. Where a prison has recorded a self-inflicted death in the financial year 2012-13 it has been automatically relegated within the rankings. This is because a death in custody represents a fundamental failure on the part of the State to safely house those in its care.	Accessed: https://www.gov.uk/government/statistics/safety-in-custody-statistics Table '1.16 Self-inflicted by prison' of Ministry of Justice and National Offender Management Service, Deaths in prison custody 1978-2012. This dataset is presented in calendar year. For the purposes of this paper an FOI request was submitted in order to get the data in financial year format.[254]
Effectiveness – input variables		
Number of releases	The total number of prisoners released in a financial year.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Number of offenders in cohort	The number of prisoners released from custody who have been matched with records on the Police National Computer – thus allowing for the measurement of further offences. This number may be lower than the total number of releases due to not being able to match all of the records. Offenders may also appear multiple times but will only be counted once.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013

253 Freedom of Information Disclosure, Ministry of Justice, 12 November 2015, 101453.
254 Ibid.

Name	Description	Source
Effectiveness – output variables		
Number of offenders who do not reoffend	This variable is based on *Reform* calculations. It takes the total number of offenders in cohort minus the number who reoffended within the MoJ's current 12-month follow-up period. As per the Ministry's guidance this would also include offences that were prosecuted within an additional six-month period – a total follow-up period of 18 months. It should be noted that the analysis within this paper considers the reoffending rates of only prisoners who have served sentences of 12 months or more.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Number of prisoners in settled accommodation upon release	The total number of offenders who, on release from custody, report accessing settled accommodation.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Number of prisoners in employment upon release	The total number of offenders who, on release from custody, report that they will be entering employment. This includes full, temporary or part-time work or self-employment.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013
Number of prisoners in education or training upon release	The total number of offenders who, on release from custody, report entering education or training. This includes full or part-time education as well as vocational training such as apprenticeships.	Accessed: https://www.gov.uk/government/statistics/prison-and-probation-trusts-performance-statistics-201213 Table 3 'Prison' of National Offender Management Service, MI Addendum – dataset, 2013

Directional distance functions

Following the methodology set out in Rogge et al., this paper uses data envelopment analysis (DEA), allowing for variable returns to scale, in order to estimate six directional distance functions (DDFs).[255]

What are directional distance functions?

Both DEA and DDF are based on a distance function approach to efficiency measurement. In other words, both these techniques use a mathematical function which measures the distance of an input or output from the production frontier:

$\overrightarrow{DDF_k} = (x_k, y_k; d_x d_y)$, where x_k is an input, y_k an output and $d = d_x, d_y$ the directional vector.

Generally, DEA models are based on what is known as Shepard's distance function. DDF models use a 'more general version' of this.[256] For more details on theory and application of directional distance functions see Färe and Grosskopf or Färe et al.[257]

DDFs allow the simultaneous exploration of the required changes in the specified inputs and outputs to maximise the efficiency of inefficient organisations. On the contrary, DEA does not allow for this as it is imperative to specify the input[258] or output[259] orientation of the distance function towards the frontier.

Despite this flexibility in terms of input-output orientation, DDFs do impose a direction in which input and outputs are supposed to be respectively projected towards the frontier. A direction vector, $d = d_x, d_y$, is assigned to each input or output. It serves as a way of

255 Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons'.
256 Ibid.
257 Rolf Färe, Shawna Grosskopf, and Dimitri Margaritis, 'Efficiency and Productivity: Malmquist and More,' in *The Measurement of Productive Efficiency and Productivity Growth*, ed. Harold Fried, C. A. Knox Lovell, and Shelton Schmidt (Oxford: Oxford University Press, 2008); Rolf Färe and Shawna Grosskopf, 'Theory and Application of Directional Distance Functions,' *Journal of Productivity Analysis* 13, no. 2 (March 2000).
258 The input orientation: maximum possible reduction in inputs given a set of produced outputs.
259 The output orientation: maximum possible increase in all outputs given the current level of input.

specifying the way that efficiency should be evaluated.[260] There is no consensus over which type of direction vector should be applied and there are several potential options.

Direction vectors can be specific to each input and output used in an equation. This means that for a given equation with multiple inputs and outputs, the way that these are projected can be specifically tailored for each input and output. For example, equation 6 (see table below), which has a single input and three outputs, has a direction vector, $d = (0, \bar{y}_{f,1}, \bar{y}_{f,2}, \bar{y}_{f,3})$, that will project these inputs and outputs into four distinct paths. This allows for the creation of tailored progression paths for each prison that is not deemed efficient.

In addition, just like with DEA, there is no consensus on how to deal with undesirable outputs, but several solutions.[261]

How DDFs were used

This paper uses a combination of two techniques to deal with negative outputs. When possible, negative outputs were transformed into positives ones. For example, instead of using the number of prisoners in overcrowded cells, the variable was transformed into a positive and became the number of prisoners not in overcrowded cells (see the following section for the equation specification). A similar process was used for other variables such as: total number of negative mandatory drugs tests (instead of number of positive drug tests), number of days worked per member of staff (instead of number of sick days per member of staff) and number of offenders with sentences of 12 months or more who do not reoffend (instead of number of offenders who do reoffend).

The negative outputs variables which could not be transformed into positives were included as inputs in the coding of the equations. This method is also chosen by Rogge et al.[262]

This paper applies the same direction vector specification as the one followed by Rogge et al.[263] In other words, the direction vectors used project the mean of input and output variables, $d = (-\bar{x}_{\alpha,i}, \bar{y}_{\alpha,i})$, specified in each of the six *Reform* indicators, onto the efficiency frontier.

See equations (2.5) – (2.6) in Rogge et al. for the constrained maximisation equation of DEA.[264]

How to interpret the results

DDFs produce efficiency scores for each observation (i.e. prisons) ranging from 0 to infinity. A DDF evaluated at 0 means that the prison is considered to be fully efficient within a given sample.

DDFs also produce tailored progression paths which reflect what inefficient prisons should do in order to be considered efficient. These are expressed in terms of percentage changes in the inputs and outputs being estimated, $\overrightarrow{DDF_k}(.)d_x/x_k$ for inputs and $\overrightarrow{DDF_k}(.)d_y/y_k$ for outputs.

260 Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons'.
261 Lawrence Seiford and Joe Zhu, 'Modeling Undesirable Factors in Efficiency Evaluation,' *European Journal of Operational Research* 142, no. 1 (October 2002); W. Liu et al., 'DEA Models with Undesirable Inputs and Outputs,' Annals of Operations Research 173, no. 1 (July 2009).
262 Nicky Rogge et al., 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons'.
263 Ibid.
264 Ibid.

Equation specification

All the DEA estimation of the DDFs used in this paper have been written in R and are available upon request.

Efficiency DDFs

1. Addressing offending behaviour (AOB)

$x_{a,1}$ = Cost per place (direct resource expenditure)

$x_{a,2}$ = Number of accredited offender behaviour course starts (AOBCSs)

$y_{a,1}$ = Number of accredited offender behaviour course completion (AOBCCs)

Direction vector: $d = (-\bar{x}_{a,1}, 0, \bar{y}_{a,1})$

2. Prisoner living standards (PLS)

$x_{b,1}$ = Cost per place (direct resource expenditure)

$x_{b,2}$ = Number of prisoners

$y_{b,1}$ = Total number of Prison and Probation Ombudsman (PPO) complaints

$y_{b,2}$ = Total number of assaults on prisoners

$y_{b,3}$ = Total number of self-harm incidents

$y_{b,4}$ = Number of prisoners not in overcrowded cells

Direction vector: $d = (-\bar{x}_{b,1}, 0, -\bar{y}_{b,1}, -\bar{y}_{b,2}, -\bar{y}_{b,3,} \bar{y}_{b,4})$

3. Substance misuse (SM)

$x_{c,1}$ = Cost per place (direct resource expenditure)

$x_{c,2}$ = Number of substance misuse programme starts (SMPSs)

$x_{c,3}$ = Number of mandatory drugs tests (MDTs)

$y_{c,1}$ = Total number of negative mandatory drugs tests

$y_{c,2}$ = Number of substance misuse programme completions (SMPCs)

Direction vector: $= (-\bar{x}_{c,1}, 0,0, \bar{y}_{c,1}, \bar{y}_{c,2})$

4. Staff sickness and safety (STSS)

$x_{d,1}$ = Cost per place (direct resource expenditure)

$x_{d,2}$ = Number of staff

$y_{d,1}$ = Number of days worked per member of staff

$y_{d,2}$ = Number of assaults on staff

Direction vector: $d = (-\bar{x}_{d,1}, 0, \bar{y}_{d,1}, -\bar{y}_{d,2})$

Effectiveness DDFs

5. Preventing proven reoffending (PRe)

$x_{e,1}$ = Number of offenders in cohort with sentences of 12 months or more

$y_{e,1}$ = Number of offenders with sentences of 12 months or more who do not reoffend

Direction vector: $d = (0, \bar{y}_{e,1})$

6. Post-release resettlement (PRR)

$x_{f,1}$ = Number of offenders released

$y_{f,1}$ = Number of offenders in employment upon release

$y_{f,2}$ = Number of offenders in settled accommodation upon release

$y_{f,3}$ = Number of offenders in education or training on release

Direction vector: $d = (0, \bar{y}_{f,1}, \bar{y}_{f,2}, \bar{y}_{f,3})$

Where, $x_{\alpha,i}$ denotes indicator α's i^{th} input and $y_{\alpha,i}$ denotes indicator α's i^{th} output.

$d = (-\bar{x}_{\alpha,i}, \bar{y}_{\alpha,i})$ was the direction vector respectively applied to all inputs and outputs except for non-discretionary variables to which a weight of 0 was applied.

The following variables were treated as non-discretionary:

Non-discretionary inputs: $x_{a,2}$, $x_{b,2}$, $x_{c,2}$, $x_{c,3}$, $x_{d,2}$, $x_{e,1}$ and $x_{f,1}$,

Principal component analysis and the modelling of the prison production function

In order to test the robustness of the model and choice of inputs and outputs, five different principal component analyses (PCA) were performed.[265] Studies have shown that this method improves the robustness of directional distance models.[266] The first PCA was performed an all variables described above. It highlighted variables that could reasonably be excluded from the composition of the efficiency and effectiveness indicators.

The second and third PCAs were performed respectively on all the input and output variables to distinguish the natural groupings within the data and confirm the robustness of the chosen variable groupings. The results of the PCA on all input variables supported the distinction made between the efficiency and effectiveness inputs. The results corresponding to the PCA on all output variables produced slightly different groupings from the ones the authors decided to model. These slight differences were not sufficient to call into question the authors' modelling decisions.

The fourth and fifth PCAs were performed respectively using the input and output variables chosen for the efficiency and effectiveness indicators. This was done in order to check the robustness of the modelling of the efficiency and effectiveness indicators. The component grouping for the efficiency PCA suggested the existence of four components. This supports the choice of building four efficiency indicators.

A couple of variables were grouped differently in the fourth PCA to the chosen input and output groupings. However, these minor differences were not sufficient to call the modelling into question. Similar results were produced by the PCA on the effectiveness input and output variables. The PCAs supported the choice of having two indicators, and only minor variations were made to the choice of variable grouping as a result.[267]

In addition, varimax rotations of the PCA components were operated to increase the efficiency of the analysis of variance.

Additional tables

Below the progression paths are presented for all six metrics. These include the percentage change required as well as the real-terms increase or decrease needed to reach the efficiency frontier.

265 All outputs from the PCAs are available upon request from the authors.
266 Nicole Adler and Ekaterina Yazhemsky, 'Improving Discrimination in Data Envelopment Analysis: PCA–DEA or Variable Reduction,' *European Journal of Operational Research* 202, no. 1 (April 2010).
267 All outputs from the PCAs are available upon request from the authors.

Figure 27: AOB progression paths

Prison name	Reduction cost (%)	Reduction cost real terms (£)	Increase course completions (%)	Increase course completions real terms
Blundeston	40	9696.15	44	44.01
Buckley Hall	27	6367.95	28	28.91
Bullwood Hall	0	0.00	0	0.00
Bure	28	6273.47	24	28.48
Canterbury	0	0.00	0	0.00
Coldingley	15	3866.50	117	17.55
Dartmoor	33	6690.97	42	30.37
Dovegate	41	15128.19	41	68.67
Elmley (Sheppey Cluster)	21	4174.10	13	18.95
Erlestoke/Shepton Mallet	0	0.00	0	0.00
Featherstone	25	4911.70	41	22.30
Garth	35	8030.74	37	36.45
Guys Marsh	30	6376.15	23	28.94
Haverigg	0	0.00	0	0.00
Hewell	27	6656.46	54	30.22
Highpoint	19	3338.50	12	15.15
Huntercombe	0	0.00	0	0.00
Isle of Wight	0	0.00	0	0.00
Kennet	0	0.00	0	0.00
Lindholme	0	0.00	0	0.00
Littlehey	3	491.75	1	2.23
Lowdham Grange	36	11022.31	39	50.03
Maidstone	23	4384.04	20	19.90
Mount	31	6327.34	51	28.72
Northumberland	28	6067.40	23	27.54
Oakwood	33	7089.98	47	32.18
Onley	29	5598.27	32	25.41
Ranby	30	6549.81	22	29.73
Risley	0	0.00	0	0.00
Rye Hill	27	8544.10	40	38.79
Shrewsbury	0	0.00	0	0.00
Stafford	22	4043.95	17	18.36
Stocken	14	2853.58	7	12.95
Swaleside (Sheppey Cluster)	7	1331.53	3	6.04
Swinfen Hall	19	4247.97	9	19.28
Verne	23	4337.01	16	19.69
Wayland	19	3152.82	14	14.31
Wealstun	28	6266.02	34	28.44
Whatton	5	1141.73	2	5.18
Wymott	17	3367.09	9	15.28

Figure 28: SM progression paths

Prison name	Reduction cost (%)	Reduction cost real terms (£)	Increase substance misuse course completions (%)	Increase substance misuse course completions real terms	Increase negative tests (%)	Increase negative tests real terms
Blundeston	2	403.93	Inf*	0.00	3	7.89
Buckley Hall	1	271.47	1	0.28	2	5.30
Bullwood Hall	0	0.00	0	0.00	0	0.00
Bure	1	117.00	Inf*	0.00	1	2.29
Canterbury	0	44.88	Inf*	0.00	0	0.88
Coldingley	0	0.00	0	0.00	0	0.00
Dartmoor	0	0.00	0	0.00	0	0.00
Dovegate	6	2252.51	Inf*	0.00	8	44.00
Elmley (Sheppey Cluster)	0	0.00	0	0.00	0	0.00
Erlestoke/Shepton Mallet	6	1470.47	2	1.51	6	28.72
Featherstone	5	1038.94	7	1.07	5	20.29
Garth	5	1160.55	7	1.20	5	22.67
Guys Marsh	0	0.00	0	0.00	0	0.00
Haverigg	11	2359.44	13	2.43	14	46.09
Hewell	0	0.00	0	0.00	0	0.00
Highpoint	0	9.91	0	0.01	0	0.19
Huntercombe	3	831.55	Inf*	0.00	3	16.24
Isle of Wight	0	0.00	0	0.00	0	0.00
Kennet	0	0.00	0	0.00	0	0.00
Lindholme	0	0.00	0	0.00	0	0.00
Littlehey	0	0.00	0	0.00	0	0.00
Lowdham Grange	8	2448.38	Inf*	0.00	10	47.83
Maidstone	0	0.00	0	0.00	0	0.00
Mount	7	1389.35	2	1.43	7	27.14
Northumberland	19	4130.79	47	4.26	13	80.69
Oakwood	9	1896.81	39	1.95	9	37.05
Onley	0	0.00	0	0.00	0	0.00
Ranby	0	0.00	0	0.00	0	0.00
Risley	1	165.99	Inf*	0.00	0	3.24
Rye Hill	4	1261.07	Inf*	0.00	7	24.63
Shrewsbury	1	448.81	Inf*	0.00	3	8.77
Stafford	0	0.00	0	0.00	0	0.00
Stocken	0	0.00	0	0.00	0	0.00
Swaleside (Sheppey Cluster)	0	29.70	0	0.03	0	0.58
Swinfen Hall	1	128.14	Inf*	0.00	1	2.50
Verne	0	0.00	0	0.00	0	0.00
Wayland	0	0.00	0	0.00	0	0.00
Wealstun	11	2438.32	25	2.51	11	47.63
Whatton	0	0.00	0	0.00	0	0.00

Prison name	Reduction cost (%)	Reduction cost real terms (£)	Increase substance misuse course completions (%)	Increase substance misuse course completions real terms	Increase negative tests (%)	Increase negative tests real terms
Wymott	3	685.01	2	0.71	2	13.38

* Inf signifies no record of substance misuse course completion in 2012/13. This made the calculation of a progression path impossible as it would have meant dividing 0. A possible alternative would have been to replace all 0s with 1s, in order for the calculation to work, however, the authors took the decision not to add an additional layer of error into the data.

Figure 29: STSS progression paths

Prison name	Reduce costs (%)	Reduce costs real terms (£)	Increase working days (%)	Increase working days real terms	Reduce staff assaults (%)	Reduce staff assaults real terms
Blundeston	1	340.63	1	2.86	10	0.20
Buckley Hall	0	0.00	0	0.00	0	0.00
Bullwood Hall	0	0.00	0	0.00	0	0.00
Bure	0	0.00	0	0.00	0	0.00
Canterbury	0	152.46	1	1.28	2	0.09
Coldingley	1	147.58	1	1.24	2	0.09
Dartmoor	1	248.25	1	2.08	1	0.15
Dovegate	0	0.00	0	0.00	0	0.00
Elmley (Sheppey Cluster)	5	1028.08	4	8.63	3	0.60
Erlestoke/Shepton Mallet	1	155.87	1	1.31	3	0.09
Featherstone	1	264.95	1	2.23	1	0.16
Garth	4	869.71	3	7.30	6	0.51
Guys Marsh	2	347.12	1	2.92	2	0.20
Haverigg	2	373.56	1	3.14	4	0.22
Hewell	3	743.24	3	6.24	2	0.44
Highpoint	2	410.75	2	3.45	1	0.24
Huntercombe	0	0.00	0	0.00	0	0.00
Isle of Wight	1	322.53	1	2.71	1	0.19
Kennet	0	0.00	0	0.00	0	0.00
Lindholme	0	0.00	0	0.00	0	0.00
Littlehey	3	527.06	2	4.43	1	0.31
Lowdham Grange	0	0.00	0	0.00	0	0.00
Maidstone	0	0.00	0	0.00	0	0.00
Mount	0	0.00	0	0.00	0	0.00
Northumberland	5	1138.02	4	9.56	3	0.67
Oakwood	0	0.00	0	0.00	0	0.00
Onley	0	0.00	0	0.00	0	0.00
Ranby	2	367.42	1	3.09	1	0.22
Risley	2	449.85	2	3.78	2	0.26
Rye Hill	0	0.00	0	0.00	0	0.00
Shrewsbury	0	0.00	0	0.00	0	0.00
Stafford	0	75.65	0	0.64	0	0.04
Stocken	1	143.21	1	1.20	1	0.08

Prison name	Reduce costs (%)	Reduce costs real terms (£)	Increase working days (%)	Increase working days real terms	Reduce staff assaults (%)	Reduce staff assaults real terms
Swaleside (Sheppey Cluster)	4	739.84	3	6.21	4	0.43
Swinfen Hall	2	438.64	2	3.68	1	0.26
Verne	0	0.00	0	0.00	0	0.00
Wayland	0	0.00	0	0.00	0	0.00
Wealstun	2	464.00	2	3.90	2	0.27
Whatton	0	80.96	0	0.68	1	0.05
Wymott	3	554.34	2	4.66	4	0.32

Figure 30: PLS progression paths

Prison name	Reduction cost (%)	Reduction cost real terms (£)	Reduction PPO complaints (%)	Reduction PPO complaints real terms	Reduction self harm (%)	Reduction self harm real terms	Reduction assaults (%)	Reduction assaults real terms	Increase prisoners not overcrowded (%)
Blundeston	2	525.66	4	0.47	21	2.69	6	1.43	4
Buckley Hall	5	1095.40	8	0.97	23	5.62	11	2.99	8
Bullwood Hall	0	0.00	0	0.00	0	0.00	0	0.00	0
Bure	0	0.00	0	0.00	0	0.00	0	0.00	0
Canterbury	0	14.36	0	0.01	0	0.07	0	0.04	0
Coldingley	0	0.00	0	0.00	0	0.00	0	0.00	0
Dartmoor	0	0.00	0	0.00	0	0.00	0	0.00	0
Dovegate	12	4498.82	13	3.98	5	23.06	13	12.26	14
Elmley (Sheppey Cluster)	7	1417.23	11	1.25	14	7.27	4	3.86	7
Erlestoke/Shepton Mallet	3	704.05	2	0.62	5	3.61	8	1.92	3
Featherstone	4	712.14	4	0.63	5	3.65	2	1.94	3
Garth	5	1136.42	2	1.01	4	5.83	5	3.10	4
Guys Marsh	6	1201.86	12	1.06	9	6.16	7	3.28	8
Haverigg	0	0.00	0	0.00	0	0.00	0	0.00	0
Hewell	6	1576.09	17	1.39	4	8.08	2	4.30	5
Highpoint	0	0.00	0	0.00	0	0.00	0	0.00	0
Huntercombe	10	2701.87	12	2.39	31	13.85	28	7.36	25
Isle of Wight	6	1381.57	2	1.22	3	7.08	4	3.77	3
Kennet	0	0.00	0	0.00	0	0.00	0	0.00	0
Lindholme	0	0.00	0	0.00	0	0.00	0	0.00	0
Littlehey	3	537.56	3	0.48	1	2.76	1	1.47	2
Lowdham Grange	5	1552.33	3	1.37	3	7.96	4	4.23	5
Maidstone	0	0.00	0	0.00	0	0.00	0	0.00	0
Mount	7	1347.30	5	1.19	10	6.91	8	3.67	5
Northumberland	0	0.00	0	0.00	0	0.00	0	0.00	0
Oakwood	0	0.00	0	0.00	0	0.00	0	0.00	0
Onley	0	0.00	0	0.00	0	0.00	0	0.00	0
Ranby	19	4214.75	12	3.73	37	21.61	12	11.49	17

Prison name	Reduction cost (%)	Reduction cost real terms (£)	Reduction PPO complaints (%)	Reduction PPO complaints real terms	Reduction self harm (%)	Reduction self harm real terms	Reduction assaults (%)	Reduction assaults real terms	Increase prisoners not overcrowded (%)
Risley	0	0.00	0	0.00	0	0.00	0	0.00	0
Rye Hill	0	0.00	0	0.00	0	0.00	0	0.00	0
Shrewsbury	2	882.65	26	0.78	9	4.53	13	2.41	218
Stafford	0	0.00	0	0.00	0	0.00	0	0.00	0
Stocken	13	2537.65	10	2.25	10	13.01	12	6.92	9
Swaleside (Sheppey Cluster)	0	0.00	0	0.00	0	0.00	0	0.00	0
Swinfen Hall	7	1488.61	22	1.32	1	7.63	2	4.06	7
Verne	0	0.00	0	0.00	0	0.00	0	0.00	0
Wayland	8	1393.69	4	1.23	10	7.15	4	3.80	4
Wealstun	5	1039.77	7	0.92	7	5.33	5	2.83	4
Whatton	0	0.00	0	0.00	0	0.00	0	0.00	0
Wymott	0	0.00	0	0.00	0	0.00	0	0.00	0

Figure 31: PRe progression paths

Prison name	Increase of non-reoffenders (%)	Increase of non-reoffenders real terms
Blundeston	78	75
Buckley Hall	38	55
Bullwood Hall	0	0
Bure	13	13
Canterbury	2	1
Coldingley	41	41
Dartmoor	16	40
Dovegate	71	52
Elmley (Sheppey Cluster)	26	69
Erlestoke/Shepton Mallet	30	28
Featherstone	29	60
Garth	39	10
Guys Marsh	32	59
Haverigg	20	54
Hewell	17	57
Highpoint	0	0
Huntercombe	0	0
Isle of Wight	19	4
Kennet	0	1
Lindholme	20	68
Littlehey	4	15
Lowdham Grange	68	16
Maidstone	2	4
Mount	40	49
Northumberland	3	14

Prison name	Increase of non-reoffenders (%)	Increase of non-reoffenders real terms
Oakwood	1	7
Onley	25	49
Ranby	11	39
Risley	2	9
Rye Hill	63	11
Shrewsbury	0	0
Stafford	11	34
Stocken	23	56
Swaleside (Sheppey Cluster)	48	10
Swinfen Hall	32	36
Verne	5	3
Wayland	25	84
Wealstun	24	71
Whatton	7	9
Wymott	8	26

Figure 32: PRR progression paths

Prison name	Increase settled accommodation (%)	Increase settled accommodation real terms	Increase employment (%)	Increase employment real terms	Increase education or training (%)	Increase education or training real terms
Blundeston	4	17.23	3	5.36	2	3.87
Buckley Hall	4	11.39	4	3.54	4	2.56
Bullwood Hall	2	2.39	2	0.74	1	0.54
Bure	0	0.00	0	0.00	0	0.00
Canterbury	371	81.64	846	25.37	1832	18.32
Coldingley	12	25.28	13	7.86	14	5.67
Dartmoor	5	28.62	4	8.89	9	6.42
Dovegate	5	56.69	9	17.62	15	12.72
Elmley (Sheppey Cluster)	0	0.00	0	0.00	0	0.00
Erlestoke/Shepton Mallet	9	17.49	6	5.44	9	3.92
Featherstone	0	0.00	0	0.00	0	0.00
Garth	0	0.00	0	0.00	0	0.00
Guys Marsh	2	7.45	1	2.32	167	1.67
Haverigg	1	5.21	1	1.62	2	1.17
Hewell	0	0.00	0	0.00	0	0.00
Highpoint	0	0.00	0	0.00	0	0.00
Huntercombe	0	0.00	0	0.00	0	0.00
Isle of Wight	0	0.00	0	0.00	0	0.00
Kennet	2	3.95	1	1.23	6	0.89
Lindholme	0	2.92	0	0.91	1	0.65
Littlehey	0	0.00	0	0.00	0	0.00
Lowdham Grange	0	0.00	0	0.00	0	0.00

Prison name	Increase settled accommodation (%)	Increase settled accommodation real terms	Increase employment (%)	Increase employment real terms	Increase education or training (%)	Increase education or training real terms
Maidstone	0	0.00	0	0.00	0	0.00
Mount	2	3.43	1	1.06	1	0.77
Northumberland	12	102.67	20	31.91	8	23.04
Oakwood	12	40.98	21	12.74	13	9.20
Onley	0	0.00	0	0.00	0	0.00
Ranby	0	0.00	0	0.00	0	0.00
Risley	11	80.94	11	25.15	30	18.16
Rye Hill	0	0.00	0	0.00	0	0.00
Shrewsbury	10	19.43	17	6.04	16	4.36
Stafford	5	29.56	4	9.19	7	6.63
Stocken	4	29.98	4	9.32	6	6.73
Swaleside (Sheppey Cluster)	3	2.00	6	0.62	22	0.45
Swinfen Hall	0	0.00	0	0.00	0	0.00
Verne	15	14.00	26	4.35	157	3.14
Wayland	0	0.00	0	0.00	0	0.00
Wealstun	2	14.12	2	4.39	1	3.17
Whatton	3	7.21	11	2.24	13	1.62
Wymott	0	0.00	0	0.00	0	0.00

Bibliography

Adler, Nicole, and Ekaterina Yazhemsky. 'Improving Discrimination in Data Envelopment Analysis: PCA–DEA or Variable Reduction.' *European Journal of Operational Research* 202, no. 1 (April 2010).

Armstrong, Sarah, and McNeill, Fergus. *Reducing Reoffending: Review of Selected Countries*. The Scottish Centre for Crime & Justice Research, 2012.

Banker, Rajiv, Vandana Gadh, and Wilpen Gorr. 'A Monte Carlo Comparison of Two Production Frontier Estimation Methods: Corrected Ordinary Least Squares and Data Envelopment Analysis.' *European Journal of Operational Research* 67, no. 3 (June 1993).

Bradley, Lord Keith. *The Bradley Review, 2009*.

Brunton-Smith, Ian, and Kathryn Hopkins. *The Factors Associated with Proven Re-Offending Following Release from Prison: Findings from Waves 1 to 3 of Surveying Prisoner Crime Reduction*. Ministry of Justice, 2013.

Burt, Martha. *Measuring Prison Results : Ways to Monitor and Evaluate Corrections Performance*. Washington, D.C: U.S. Dept. of Justice, National Institute of Justice, 1981.

Cameron, David. 'Prison Reform: Prime Minister's Speech.' Speech, 8 February, 2016.

Carter, Lord Patrick. *Securing the Future: Proposals for the Efficient and Sustainable Use of Custody in England and Wales*. Ministry of Justice, 2007.

Centre for Social Justice. *Locked Up Potential: A Strategy for Reforming Prisons and Rehabilitating Prisoners*. Centre for Social Justice, 2009.

———. *Drugs in Prison,* 2015.

Chen, Keith, and Jesse Shapiro. *Does Prison Harden Inmates? A Discontinuity-Based Approach*. Yale School of Management and University of Chicago, 2004.

Cook, Wade, Kaoru Tone, and Joe Zhu. 'Data Envelopment Analysis: Prior to Choosing a Model.' *Omega* 44 (April 2014).

Creasie Finney Hairston. 'Family Ties During Imprisonment: Important to Whom and for What?' *The Journal of Sociology & Social Welfare* 18, no. 1. (March 2015).

Criminal Justice Partnership. *An Evaluation of the Diamond Initiative: Year Two Findings*. Metropolitan Police, 2011.

Crowhurst, Elizabeth, Amy Finch, and Eleonora Harwich. *Towards a More Productive State*. Reform, 2015.

Dixon, Ama, and Lorraine Casey. *Vocational Training and Employability Skills in Prisons and Young Offenders Institutions*. National Institute of Adult Continuing Education, 2013.

Dolovich, Sharon. 'State Punishment and Private Prisons.' *Duke Law Journal* 55, no. 3 (December 2005).

Drago, Francesco, Roberto Galbiati, and Pietro Vertova. 'Prison Conditions and Recidivism.' *American Law and Economics Review* 17, no. 2 (February 2011).

Färe, Rolf, and Shawna Grosskopf. 'Theory and Application of Directional Distance Functions.' *Journal of Productivity Analysis* 13, no. 2 (March 2000).

Färe, Rolf, Shawna Grosskopf, and Dimitri Margaritis. 'Efficiency and Productivity: Malmquist and More.' In *The Measurement of Productive Efficiency and Productivity Growth*, edited by Harold Fried, C. A. Knox Lovell, and Shelton Schmidt. Oxford: Oxford University Press, 2008.

Fazel, Seena, and Achim Wolf. 'A Systematic Review of Criminal Recidivism Rates Worldwide: Current Difficulties and Recommendations for Best Practice.' *PLoS ONE* 10, no. 6 (June 2015).

Fox, Chris and Kevin Albertson. 'Payment by Results and Social Impact Bonds in the Criminal Justice Sector: New Challenges for the Concept of Evidence-Based Policy?' *Criminology and Criminal Justice* 11, no. 5 (August 2011).

Fradd, Adrian, Esther Paterson, Lucy de Las Casas, and Lucy Heady. *Improving Prisoners' Family Ties: Piloting a Shared Measurement Approach*. New Philanthropy Capital, 2011.

French, Steve. *Fair and Sustainable? The Implications of Work Intensification for the Wellbeing and Effectiveness of PGA Members*, Keele University, 2015.

Grimwood, Gabrielle Garton. *Building Prisons: The Bigger, the Better?* London: Stationery Office, 2014.

Gove, Michael. 'The Treasure in the Heart of Man – Making Prisons Work.' Speech, 17 July, 2015.

———. 'Education in Prison.' 8 September, 2015.

Hall, Maximilian, Wenbin Liu, Richard Simper, and Zhongbao Zhou. 'The Economic Efficiency of Rehabilitative Management in Young Offender Institutions in England and Wales.' *Socio-Economic Planning Sciences* 47, no. 1 (March 2013).

Hart, Oliver, Andrei Shleifer, and Robert Vishny. 'The Proper Scope of Government: Theory and an Application to Prisons.' Working Paper. National Bureau of Economic Research, September 1996.

HM Inspectorate of Prisons for England and Wales. *HM Chief Inspector of Prisons for England and Wales Annual Report 2008 -09*, 2009.

-- -- --. *HM Chief Inspector of Prisons for England and Wales Annual Report 2011-12,* 2012.

-- -- --. *HM Chief Inspector of Prisons for England and Wales Annual Report 2014-15,* 2015.

-- -- --. *Changing Patterns of Substance Misuse in Adult Prisons and Service Responses, 2015.*

-- -- --. *Inspection Framework*, 2016.

-- -- --. *Life in Prison: Peer Support,* 2016.

HM Prison Service. 'About Her Majesty's Prison Service.' *Webpage*, 2012.

HM Treasury. *Public Expenditure Statistical Analyses 1999-2000,* 2000.

———. *Public Expenditure Statistical Analyses 2005*, 2005.

———. *Spending Review 201*0, 2010.

———. *Public Expenditure Statistical Analyses 2011*, 2011.

———. *Fixing the Foundations: Creating a More Prosperous Nation*, 2015.

———. *Spending Review and Autumn Statement 2015*, 2015.

Holmes, Susan and Douglas MacInnes. 'Contributors to Stress among Prison Service Staff.' *The British Journal of Forensic Practice* 5, no. 2 (2003).

Hopkins, Kathryn. *Wave 1 of Surveying Prisoner Crime Reduction (SPCR), a Longitudinal Cohort Study of Prisoners Conducted from 2005 to 2010 in England and Wales*. Ministry of Justice, 2013.

House of Commons Justice Committee, *Prisons: Planning and Policies*, *Ninth Report of Session 2014–15.* HC 309. London: The Stationery Office, 2015.

———. *Older Prisoners, Fifth Report of Session 2013-14.* HC 89. London: Stationery Office, 2013.

Independent Monitoring Board. *HMP Oakwood Annual Report*, 2013.

———. *HMP/YOI Elmley Annual Report 2013*, 2014.

Jewkes, Yvonne, Ben Crewe, and Jamie Bennett. *Handbook on Prisons*. Oxon: Routledge, 2016.

Kinman, Gail, Andrew Clements, and Jacqui Hart. *POA Members: Work-Related Stress Survey*. University of Bedfordshire, 2014.

Kopak, Albert, Lucy Dean, Steven Proctor, Lauren Miller, and Norman Hoffmann. 'Effectiveness of the Rehabilitation for Addicted Prisoners Trust (RAPt) Programme.' *Journal of Substance Use* 20, no. 4 (July 2015).

Landenberger, Nana, and Mark Lipsey. 'The Positive Effects of Cognitive–behavioral Programs for Offenders: A Meta-Analysis of Factors Associated with Effective Treatment.' *Journal of Experimental Criminology* 1, no. 4 (December 2005).

Liebling, Alison. *Prisons and Their Moral Performance: A Study of Values, Quality, and Prison Life*. Oxford: Oxford University Press, 2005.

Liebling, Alison, David Price, and Guy Shefer. *The Prison Officer*. Oxon: Routledge, 2010.

Linda Blud, Rosie Travers, Francis Nugent and David Thornton. 'Accreditation of Offending Behaviour Programmes in HM Prison Service: 'What Works' in Practice.' *Legal and Criminological Psychology* 8, no. 1 (February 2003).

Lockyer, Kevin. *Future Prisons: A Radical Plan to Reform the Prison Estate*. Policy Exchange, 2013.

Manby, Martin, Leanne Monchuk, and Kathryn Sharratt. 'The Importance of Maintaining Family Ties during Imprisonment – Perspectives of Those Involved in HMP New Hall's Family Support Project.' *Prison Service Journal*, no. 209 (September 2013).

Marsh, Kevin, and Chris Fox. 'The Benefit and Cost of Prison in the UK. The Results of a Model of Lifetime Re-Offending.' *Journal of Experimental Criminology* 4, no. 4 (December 2008).

McMurran, Mary and Eleni Theodosi. 'Is Treatment Non-Completion Associated with Increased Reconviction over No Treatment?' *Psychology, Crime & Law* 13, no. 4 (July 2007).

Ministry of Justice. *IPP Factsheet*, 2011.

———. 'Modernisation of the Prison Estate,' September 4, 2013.

———. *Analysis of the Impact of Employment on Re-Offending Following Release from Custody, Using Propensity Score Matching*, 2013.

———. *Local Adult Reoffending 1 April 2012 – 31 March 2013 England and Wales: Ministry of Justice Statistics Bulletin*, 2013.

———. *Transforming Rehabilitation: A Strategy for Reform,* 2013.

———. *Offender Management Statistics Quarterly – January – March 2013*, 2013.

———. *Costs per Place and Costs per Prisoner National Offender Management Service Annual Report and Accounts 2013-14, Management Information Addendum*, 2014.

———. *Justice Data Lab: The Pilot Year*, 2014.

———. 'Kennet Prison Information.' Webpage, 2014.

———. *Prison Rating System 2013/14 Specification*, 2014.

———. *Consultation on Changes to Reoffending Statistics Following the Introduction of the Rehabilitation Programme*, 2015.

———. *Costs per Place and Cost per Prisoner by Individual Prison Establishment 2014-15 Tables*, 2015.

———. *National Offender Management Service Annual Report 2014/15: Management Information Addendum*, 2015.

———. *Prison Population Figures: 2014*, 2015.

———. *Safety in Custody Quarterly Update to September 2015*, 2015.

———. 'Prison Building Revolution Announced by Chancellor and Justice Secretary,' Press Release, 9 November, 2015.

———. *Drugs Found by Establishment and Drug Type 2010/11-2013/14*, 2015.

———. *Justice Data Lab Re-Offending Analysis: Phoenix Futures – Therapeutic Communities Programme*, 2016.

———. 'Justice Data Lab,' Webpage, 2016.

———. 'Offender Behaviour Programmes' February 23, 2016.

———. *Prison Rating System 2014-15*, 2016.

———. *Proven Reoffending Statistics: April 2013 to March 2014*, 2016.

———. *Proven Re-Offending Statistics Quarterly Bulletin April 2013 to March 2014, England and Wales*, 2016.

———. *Single Departmental Plan: 2015 to 2020*, 2016.

Ministry of Justice, and HM Treasury. *Ministry of Justice's Settlement at the Spending Review 2015*, 2015.

Mitchell, Ojmarrh, David Wilson, and Doris MacKenzie. 'Does Incarceration-Based Drug Treatment Reduce Recidivism? A Meta-Analytic Synthesis of the Research.' *Journal of Experimental Criminology* 3, no. 4 (December 2007).

National Audit Office. *The Management of Sickness Absence in the Prison Service*, 2004.

———. *Managing Offenders on Short Custodial Sentences*, 2010.

———. *NAO Briefing: Comparing International Criminal Justice Systems*, 2012.

———. *Managing the Prison Estate*, 2013.

———. *Transforming Contract Management*, 2014.

———. *Open-Book Accounting and Supply-Chain Assurance*, 2015.

———. 'Assessing Value for Money,' Webpage, 2015.

National Offender Management Service. *NOMS Business Plan 2014 to 2015*, 2015.

Needham, Marie, Michaela Gummerum, Rebecca Mandeville-Norden, Janine Rakestrow-Dickens, Avril Mewse, Andrew Barnes and Yaniv Hanoch. `Association Between Three Different Cognitive Behavioral Alcohol Treatment Programs and Recidivism Rates Among Male Offenders: Findings from the United Kingdom.' *Alcoholism: Clinical and Experimental Research* 39, no. 6 (June 2015).

Nyhan, Ronald. 'Benchmarking Tools: An Application to Juvenile Justice Facility Performance.' *The Prison Journal* 82, no. 4 (December 2002).

Office for National Statistics. *Sickness Absence in the Labour Market, 2014*, 2014.

———. *Crime Statistics, Focus on Public Perceptions of Crime and the Police, and the Personal Well-Being of Victims, 2013 to 2014,* 2015.

———. *Public Service Productivity Estimates*, 2016.

———. *Sources & Methods for Public Service Productivity Estimates: Total Public Services*, 2016.

O'Leary, Chris. 'The Role of Stable Accommodation in Reducing Recidivism: What Does the Evidence Tell Us?' *Safer Communities* 12, no. 1 (2002).

Otto, Lars, and Peter Bogetoft. *Benchmarking: Benchmark and Frontier Analysis Using DEA and SFA* (version 0.26), 2015.

Prison Reform Trust. *Inside Out: The Role of the Voluntary and Private Sector in Providing Opportunities for Rehabilitation for People on Temporary Release*, 2016.

Prisons & Probation Ombudsman. 'How to Submit a Complaint,' 2016.

Rogge, Nicky, Richard Simper, Marijn Verschelde, and Maximilian Hall. 'An Analysis of Managerialism and Performance in English and Welsh Male Prisons.' *European Journal of Operational Research* 241, no. 1 (February 2015).

Schmidt, Bethany. 'User Voice and the Prison Council Model: A Summary of Key Findings from an Ethnographic Exploration of Participatory Governance in Three English Prisons.' *Prison Service Journal*, no. 209 (September 2013).

Seiford, Lawrence and Joe Zhu. 'Modelling Undesirable Factors in Efficiency Evaluation.' *European Journal of Operational Research* 142, no. 1 (October 2002).

Selous, Andrew. 'Prisons: Employment,' Written Question 217213, 4 December 2014.

———. 'Letter to Andy Slaughter MP,' 23 March, 2015.

———. 'Letter to Sarah Champion MP,' 26 March, 2015.

———. 'Safety in Prisons,' HC Deb 17, 17 June 2015, c 81WH.

———. 'NOMS Accounts,' Explanatory Note. Written Statement, 2015.

Sterbenz, Christina. 'Why Norway's Prison System Is So Successful.' *Business Insider*, 11 December, 2014.

Simpson, Helen. *Productivity in Public Services*. The Centre for Market and Public Organisation, 2006.

Taylor, Ricky. *Seven-Year Reconviction Study of HMP Grendon Therapeutic Community*. Home Office, 2000.

Travers, Rosie, Ruth Mann and Clive Hollin. *Who Benefits from Cognitive Skills Training?* 2015.

Ugelvik, Thomas and Jane Dullum. *Penal Exceptionalism? Nordic Prison Policy and Practice*. Routledge, 2012.

Uggen, Christopher. 'Ex-Offenders and the Conformist Alternative: A Job Quality Model of Work and Crime.' *Social Problems* 46, no. 1 (February 1999).

User Voice. 'Our Services,' February 29, 2016.

Ward, Tony. 'Good Lives and the Rehabilitation of Offenders: Promises and Problems.' *Aggression and Violent Behaviour* 7, no. 5 (October 2002).

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