

MAKE JUSTICE WORK

Final Report: An economic analysis of alternatives to short term custody

June 2012

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Any enquiries about this report should be directed to enquiries@matrixknowledge.com

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List of abbreviations

BEA	Break-even analysis
CBA	Cost-benefit analysis
CJS	Criminal Justice System
IAC	Intensive Alternatives to Custody
NHS	National Health Service

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1.0 Executive summary

Introduction

The objective of this research was to generate evidence on the economic benefits of providing Intensive Alternatives to Custody (IAC order) as an alternative to short term custodial sentences.

An IAC order is a comprehensive community based intervention which focuses on reducing the risk of reoffending. Typically an IAC order involves a combination of intensive supervision and a variety of requirements such as unpaid work, curfews, mandatory hours of structured activity per week, and enrolment in accredited programmes. The nature of the IAC order varies, however, between recipients and models of delivery.

Practitioners of IAC orders maintain a high level of confidence in the programmes they are running and believe they make a measurable impact on reoffending. However, to date no evaluation has been done on the effect of IAC orders on reoffending. In this context, Matrix Evidence was commissioned by Make Justice Work to estimate the economic benefits of providing an IAC order in two pilot sites – Manchester and Bradford – in comparison to providing short term custodial sentences. The report then attempted to take these findings and consider what economic benefits could be generated if the IAC order were rolled out nationally. Specifically the economic benefits are estimated in terms of cost savings due to both reduced intervention costs and reduced reoffending.

Key findings

- The IAC costs less than short term custodial sentences. The average direct cost of a short term custodial sentence per person per annum is £13,900. In comparison, the average direct cost per person per annum in the IAC was £3,514 in Manchester.
- Practitioners believe reoffending can be greatly reduced due to an IAC order.
- Providing IAC orders for all eligible young adult offenders instead of a custodial sentence would save £500 million over the next 5 years
- These total savings are broken down as follows: £177 million in reduced intervention costs, £69 million in reduced costs to the criminal justice system of dealing with crimes, £29 million in reduced costs to the NHS of dealing with crimes, and £225 million in reduced costs to the victims of crimes.

Key assumptions

- In the absence of IAC specific data, interventions similar to IAC orders were used to measure the impact on reoffending.
- The 2011 Ministry of Justice (MoJ) Compendium on reoffending statistics estimates that community orders could reduce reoffending by 13% compared with short custodial sentences. Due to the more intensive support provided by IAC orders compared to general community orders it is possible that IAC orders have a greater impact on

reoffending. For the purpose of this analysis, a 13% change in reoffending was used to estimate the cost savings.

Results

Intervention costs

An IAC order costs less than short term custodial sentences. On average those eligible for an IAC order are likely to spend nearly four months in a short term custodial sentence which costs £13,900 per person per annum compared with £4,000 to £7,000 for a 12-month IAC order, depending on the services received (MoJ (2011) Research Summary 3/11: Evaluation of the Intensive Alternatives to Custody Pilots).

The direct cost of the IAC order in Manchester – an intervention for young adult offenders – was on average £3,500 per person per annum.

The above costs of an IAC order only include the direct costs of the interventions. This explains why they are lower than the MoJ estimates and why they vary so much. For example, the costs of the Manchester pilot include the cost of case worker mentoring, helping offenders find jobs, and educational interventions delivered by the IAC team, but do not include the costs of other services to which the IAC team may refer offenders, such as referrals to external education and employment training programmes. In comparison, individuals serving short term custodial sentences are not typically provided with these services upon release.

Impact on reoffending

The evidence suggests that community orders are more effective in reducing reoffending in comparison to short term custodial sentences (MoJ (2011) *Compendium of reoffending statistics and analysis*). Due to the intensive nature of an IAC order, an IAC order is likely to be more effective in reducing reoffending than a short custodial sentence. However, further research is required before the relative effect on reoffending of the IAC order can be stated with certainty.

An estimate of the impact on reoffending was available for only one of the pilot sites studied in this report. The reoffending data collected in Manchester suggest that 21% of young adult offenders reoffend during the IAC order.

The site does not collect data on reoffending after the IAC order. This is due to the fact that, thus far, IAC programmes have not been required or funded to collect reoffending data after the IAC order is completed. Currently, the IAC programme in Manchester is attempting to measure the likelihood of reoffending post an IAC order. However, due to the duration of an IAC order and follow-up time required to measure reoffending, this data will not be available until September 2012 at the earliest.

By definition there are no comparable data on reoffending during short term custodial sentences (e.g. the number of adjudications an offender may receive). However, MoJ estimates that 45% of young adult offenders reoffend in the year after a short term custodial sentence.

In order to get an estimate of reoffending post-IAC order that was more comparable to the data on reoffending post short custodial sentences a number of alternative data sources were considered. The most robust data available were those from the effect of suspended sentence orders provided by the MoJ 2011 *Compendium of reoffending statistics and analysis*.

Suspended sentence orders were chosen as they reflect offenders within the community on requirements who could have been given custodial sentences. That is, the nature of the offenders on suspended sentence orders reflects those who are eligible for an IAC order. This suggested that an IAC order, in comparison to short custodial sentences, could reduce reoffending in young adult offenders by at least 13% in the year after the end of the sentence.

Economic benefits

Large economic benefits could be produced by using an IAC order for young adult offenders in place of short term custodial sentences. Not only do the IAC orders cost less, but the likely reduction in offending will also save costs.

The exact economic benefit will depend on how many offenders currently receiving short term custodial sentences will be eligible for an IAC order.

If we assume that 45%¹ of young adult offenders receiving short term custodial sentences could be eligible for an IAC order, it is estimated that:

- Providing IAC orders for all eligible young adult offenders instead of a custodial sentence would save £500 million over the next 5 years;
- Of the total savings £177 million comprise reduced intervention costs, £69 million in reduced costs to the criminal justice system of dealing with crimes, £29 million of reduced costs to the NHS of dealing with crimes, and £225 million of reduced costs to the victims of crimes²

The total cost savings represent economic costs – estimates of the resource use and utility loss avoided as a result of an IAC order. These cost savings are, however, different from realised cost savings in the form of cash available to reinvest. For example, avoiding an arrest and saving a few hours of a police officer's time does not mean that the cost of this time is available to reinvest.

The police officer is still paid the same salary, and will use the saved time to undertake other activities.

IAC orders are estimated to save £46 million of realisable costs. The realisable savings comprise a £10 million reduction in CJS costs, a £6m reduction in NHS costs, and a £30 million reduction in victim costs.

Payment by results

The research also has some important implications for the implementation of payment by results in criminal justice. The Manchester and Bradford pilots should be commended for collecting evidence on the reoffending of those receiving the IAC order. However, it was not possible to estimate the impact of an IAC order on reoffending using these data. These data were only collected during the sentence, while data on the impact of reoffending following the alternative sentence – short custodial sentences – is collected one and two years after the end of the sentence. It is recommended that investment be made in additional sources to collect data on offenders once they leave the IAC order. These data are important if a robust estimate of impact is to be obtained, as will likely be required to implement payment by results³.

¹GMPT project documentation

²Cost associated with victims of crimes refers to resources associated with defensive expenditure, insurance administration, the value of property stolen/damaged/destroyed, and the value of physical and psychological pain and suffering.

³Due to this increasing need, the Manchester pilot is pushing an initiative to measure reoffending post an IAC order using individualised MoJ PNC data.

2.0 Introduction

On any one day, there are approximately 8,000 offenders currently serving short term custodial sentences in the UK (MoJ, 2010). Short term custodial sentences are defined as a sentence which is less than 12 months. With the number of offenders requiring both short and long term custody sentences growing, prisons across the UK are under pressure for capacity. In addition to capacity issues, providing short term custodial sentences comes at a significant cost. It is estimated that the annual cost of providing short term custodial sentences is nearly £320 million (MoJ, 2010, MoJ, 2011a). Considering capacity issues and the high cost associated with short term custodial sentences, there is an increasing need to find alternatives to short term custody.

There is a growing body of research indicating that Intensive Alternatives to Custody (IAC) orders present a suitable community based alternative to short term custodial sentences. The evidence suggests that IAC orders are both less costly and can reduce reoffending rates in comparison to short term custody sentences (MOJ, 2011). IAC orders target the unique needs of offenders by providing comprehensive support which focuses on reducing the risk of reoffending. For example, IAC orders typically involve a combination of requirements such as: compulsory unpaid work, engagement in specific activities, curfews, electronic monitoring, regular meetings with probation officers, and attendance at accredited programmes to focus on anger management, substance misuse, and mental health problems. IAC orders are individually tailored based on the needs of the offender, but all provide a support structure to offenders that would otherwise be lacking (MOJ, 2011).

However, to date no evaluation has been conducted to estimate the economic benefit of providing IAC orders as an alternative to short term custodial sentences. In this context, Matrix Evidence was commissioned by Make Justice Work to estimate the economic value of providing IAC orders. Specifically, two types of IAC orders were evaluated, each currently being piloted in England

- An intervention for young adult offenders (Manchester and Salford IAC);
- An intervention for women offenders (Bradford).

In addition to these IAC orders, the research also considered the economic value of providing community based interventions which are not as intensive as an IAC order. Specifically, two types of community based interventions were evaluated:

- An intervention for offenders with drug problems (Leicester);
- An intervention for offenders with mental health problems (London).

For the Manchester and Salford IAC programmes a cost-benefit analysis (CBA) was undertaken. A CBA estimates the monetary value of the costs and effects of providing IAC orders as alternatives to short term custodial sentences, where the benefits of the IAC orders are expressed in terms of criminal justice and NHS cost savings, and avoided victim costs due to reduced reoffending.

Due to the lack of reoffending data available at Bradford, Leicester and London a break-even analysis (BEA) was undertaken. BEA analysis estimates the necessary reduction in reoffending required for the benefits of the pilots to be equivalent to the costs.

This report presents the methodology and findings of the CBA and BEA. The report is structured as follows. The next section presents the overall methodology. Section 4 presents the results for the CBA for the IAC orders in Manchester and Salford, Section 5 presents the results for the BEA for the IAC order in Bradford, Section 6 presents the results for the BEA for the other community based interventions in London and Leicester, and the final section discusses the implications of the research.

3.0 Methodological approach

3.1 Overview of the analysis

A cost-benefit analysis (CBA) compares the costs and effects of an intervention, all expressed in monetary terms. A CBA is built upon three elements:

- The **effect** of the intervention, expressed in natural units;
- The **costs** associated with the intervention;
- The **benefits** of the intervention, i.e. the monetary value of the effects generated by the intervention.

Following best practice, decision models were built to compare the costs and benefits of the interventions (Philips et al, 2004). The structure of the decision model used is presented in Appendix 1. The same structure was applied to all four IAC orders.

As a measure of the effect of IAC orders on reoffending is not available for the Bradford, Leicester, and London sites a break-even analysis (BEA) was used to assess each of the three pilots. A BEA calculates the necessary reduction in reoffending required in order for the pilots to pay for themselves. In other words, the BEA identifies the necessary reduction in reoffending required for the benefits of the intervention to equal the costs. Therefore, a BEA is built upon the following two elements:

- The **costs** associated with the intervention;
- The **benefits** of the intervention, i.e. the monetary value of one unit of the effect that is the objective of the intervention.

Throughout the remainder of this report the necessary reduction in reoffending determined by the BEA will be referred to as the break-even point; in other words, the point at which the benefits equal the costs. Additional detail on the way in which the break-even point is calculated can be found in Appendix 1.

3.2 Data collection

Data used to populate the models were collected primarily from two sources:

- Cost estimates were calculated based on financial budgets and interviews with IAC pilot representatives. Additional detail of this work can be found in Section 3.2.1.
- Benefit estimates – the monetary value of avoided offences – were obtained from previous research done by Matrix on lifetime costs of reoffending (Marsh and Fox, 2008). Additional detail of this work can be found in Section 3.2.2 and Appendix 1.

3.2.1 Costs

The purpose of the costing exercise was to estimate the direct cost per offender using each IAC order. In order to derive this estimate a top-down costing approach was used. Top-down costing uses existing financial data to estimate the overall financial cost of delivering the intervention within a defined population and setting, and then divides this by the number of people receiving the intervention within the population and setting to estimate its unit cost.

Top-down costing provides a reasonable estimate of the direct cost of each IAC. However, depending on the model of IAC implemented in the pilot sites, top-down costing may exclude indirect costs associated with the IAC such as services referred to, volunteer time, or overtime by caseworkers.

3.2.2 Effects

The effect of IAC on reoffending was obtained from two sources:

- Pilot sites – each pilot site was asked to provide data on the likelihood that offenders who use their service would reoffend;
- Literature – the data provided by pilot sites were supplemented by the existing literature on the probability that offenders would reoffend post community interventions.

Using the two sources above, the likely reduction in reoffending due to an IAC order was estimated. For the purpose of the model it was assumed that the reduction in reoffending is maintained for 5 years.

3.2.3 Benefits

Estimates of the economic cost of offending were drawn from previous estimates developed by Matrix (Marsh and Fox, 2008). The authors estimate the lifetime cost of reoffending between release from prison to age 50 for offenders sentenced for various offence types. The cost of reoffending is derived from three perspectives: Criminal Justice System (CJS); National Health Service (NHS); and the victim.

Marsh and Fox determine the cost of reoffending for both males and females between the ages of 10 to over 21. The cost of reoffending used for the CBA in Manchester and the BEA in London and Leicester is associated with young male adults between the ages of 18 and 20 – it was assumed this cohort best describes the participants in the IAC order in Manchester. The cost of reoffending used for the BEA in Bradford is associated with young female adults between the ages of 18-20 – as the intervention is only provided for women.

For the CBA the model is used to estimate the cost savings associated with the reduction in likelihood of reoffending from providing offenders with an IAC. In order to do this, it is necessary to assume that the distribution of offenders by cause of sentencing in each IAC followed the national distribution of ex-offenders.

For the BEA the model is used to estimate the value of a one per cent reduction in the likelihood of reoffending. This is then combined with the unit cost of the IAC to estimate the percentage change in the likelihood that an offender reoffends required for the IAC to break even. As with the CBA model, it is assumed that the distribution of offenders by cause of sentences follows the national distribution of ex-offenders, and the necessary change in reoffending is maintained for 5 years.

Table 1 summarises the national distribution of ex-offenders by cause of sentencing. Table 2 summarises the 5 year cost of reoffending post release from a standard prison sentence, and the distribution of the cost of reoffending across the CJS, NHS, and victim costs.

Table 1. National distribution of ex-offenders by offender type (source: Research Development and Statistics Directorate of the National Offender Management Service (RDS NOMS), 2007)

Offender type (sentenced for)	Percentage (%)
Violence against a person	28
Robbery	24
Sexual	4
Burglary	13
Theft and handling	6
Fraud and forgery	1
Motoring	4
Drug	9
Other	11
Total	100

Table 2. Total cost of reoffending post release from standard prison sentence by cause of sentencing (Marsh and Fox, 2008)

Offender type (sentenced for)	Total short term cost of reoffending (F)	Total short term cost of reoffending (M)	Breakdown of cost of reoffending		
	Year 1-5	Year 1-5	CJS	NHS	Victim
Violence against a person	£181,791	£233,972	20%	10%	70%
Robbery	£31,506	£258,878	18%	9%	73%
Sexual	£0	£47,078	28%	6%	66%
Burglary	£129,077	£236,662	24%	8%	67%
Theft and handling	£76,993	£132,374	27%	6%	67%
Fraud and forgery	£68,344	£149,102	23%	9%	67%
Motoring	£81,841	£176,982	25%	9%	67%
Drug	£62,436	£136,386	25%	9%	67%
Other	£104,858	£193,413	23%	9%	67%

3.3 Models and presentation of results

The models were run for different cohorts depending on the pilot being assessed. For instance, the CBA model was run for young male adults between the ages of 18 and 20, while the BEA on the Bradford pilot was run for young female adults.

All monetary figures are in 2010 prices. Where the benefits and costs of the interventions extend over more than one year, in accordance with Green Book¹ guidance, a 3.5 per cent discount rate was applied to calculate the present value of the benefits.

Inevitably, the parameters required to populate the models are subject to uncertainty. The models were put through a series of iterations to examine the effect of variations in key parameters on the results.

¹ http://www.hm-treasury.gov.uk/data_greenbook_index.htm

4.0 Results: IAC order - Manchester and Salford

Key messages

In the UK, the 5 year cost savings generated by using IAC orders for eligible young adult offenders as an alternative to short term custodial sentences would be nearly £500 million.

The 5 year cash realisable savings would be nearly £46 million across the UK.

A 12 month IAC for a young adult offender in Manchester and Salford costs £3,514 per offender. In comparison a short term custodial sentence would cost nearly £13,900 per offender.

It is estimated that IAC orders for young adult offenders can reduce reoffending by nearly 13 per cent in comparison to short term custodial sentences.

These results are based on a population of 3,404 young adult offenders who would be eligible for IAC orders each year across the UK.

Summary of findings

Table 3 summarises the findings from the CBA for an annual cohort of 188 young adult offenders in Manchester and Salford, and 3,404 young adult offenders across the UK. The results present the estimated total cost savings associated with providing IAC orders as an alternative to short term custodial sentences for all eligible offenders over 5 years.

Three different reoffending scenarios were considered. The results for each scenario are presented separately. Each scenario is explained in more detail below. In addition the results are presented from two different perspectives: (i) Manchester and Salford – providing IAC orders for all eligible young adults within Manchester and Salford probation trusts, (ii) UK – providing IAC orders for all eligible young adults across the UK.

It is evident from Table 3 that providing IAC orders as an alternative to short term custodial sentences can generate significant cost savings. Even when analysing the most robust scenario (scenario 3), IAC orders can generate nearly £27 million in cost savings in Manchester, and £500 million in cost savings across the UK. Nearly 45 per cent of the total cost savings are due to a reduction in victim costs.

Table 3. Cost savings associated with providing IAC orders in comparison to short term custodial sentences over 5 years by scenario (£m, 2010 prices)²

Scenario	Parameter	Perspective	
		Manchester	UK
Scenario 1	Cost savings due to:		
	<i>Intervention costs</i>	£9.8	£176.8
	<i>CJS costs</i>	£4.0	£72.0
	<i>NHS costs</i>	£1.7	£30.1
	<i>Victim costs</i>	£13.0	£236.0
	Total cost savings	£28.4	£514.9
	Realisable savings due to:		
	<i>CJS costs</i>	£0.6	£10.3
	<i>NHS costs</i>	£0.3	£6.0
	<i>Victim costs</i>	£1.7	£31.4
	Total realisable cost savings	£2.6	£47.7
Scenario 2	Cost savings due to:		
	<i>Intervention costs</i>	£9.8	£176.8
	<i>CJS costs</i>	£1.3	£22.8
	<i>NHS costs</i>	£0.5	£9.6
	<i>Victim costs</i>	£4.1	£74.9
	Total cost savings	£15.7	£284.1
	Realisable savings due to:		
	<i>CJS costs</i>	£0.2	£3.3
	<i>NHS costs</i>	£0.1	£1.9
	<i>Victim costs</i>	£0.6	£10.0
	Total realisable cost savings	£0.8	£15.2
Scenario 3	Cost savings due to:		
	<i>Intervention costs</i>	£9.8	£176.8
	<i>CJS costs</i>	£3.8	£68.8
	<i>NHS costs</i>	£1.6	£28.8
	<i>Victim costs</i>	£12.5	£225.6
	Total cost savings	£27.6	£499.9
	Realisable savings due to:		
	<i>CJS costs</i>	£0.55	£9.9
	<i>NHS costs</i>	£0.32	£5.8
	<i>Victim costs</i>	£1.66	£30.0
	Total realisable cost savings	£2.52	£45.6

² An explanation of each scenario can be found on pg.19-20

The second largest benefit is due to reduction in intervention costs, which is nearly 35 per cent of the total savings. Cost savings associated with the CJS and NHS account for nearly 14 per cent, and 6 per cent of the total cost savings, respectively.

The total cost savings presented above are economic costs – the value of the resources avoided due to IAC orders. However, not all the total savings can be realised in the form of cash. By providing the Manchester and Salford IAC, nearly 9 per cent of the total cost savings can be realised in the form of cash which is equivalent to nearly £2.5 million in Manchester and Salford, and £45.6 million across the UK. Nearly 66 per cent of the realisable cost savings is due reduction in victim costs. The second largest realisable benefit is due to reduction in CJS costs, which is nearly 22 per cent of the total realisable savings. Realisable cost savings associated with NHS costs account for nearly 13 per cent of that total realisable savings.

Additional detail on how the realisable savings are generated can found in the Appendix 2.

Throughput

- The IAC order in Manchester and Salford helps approximately 188 offenders per year (GMPT Project Documentation). This is equivalent to a total of 940 young adult offenders over a 5 year time period.
- It is estimated that nearly 6,870 young adult offenders are on short term custodial sentences per year (MOJ, 2011a).
- It is assumed 45 per cent of those on short term custodial sentences are eligible for IAC orders (GMPT Project Documentation).
- Applying the percentage of offenders eligible for IAC orders to the total number of young adult offenders on short term custodial sentences per year, the estimated number of offenders across the UK eligible for IAC orders is 3,404 per year. This is equivalent to a total of 17,020 young adult offenders over a 5 year time period.

Costs

- The cost of an IAC order per offender per year in Manchester and Salford is £3,514 (GMPT Project Documentation)
- It is estimated that the average length of a short term custodial sentence for young adult male offenders is 4.17 months (GMPT Project Documentation).
- The annual cost of a custodial sentence which is 12 months is £40,000 (MoJ, 2011b)
- The 12 month cost of a custodial sentence was used to estimate the average cost of a custodial sentence in Manchester and Salford. It is estimated that the average cost of a short term custodial sentence per offender is £13,900.

Effect on reoffending

- Based on termination data provided by Manchester and Salford probation it is estimated the probability that an offender reoffends while on an IAC order is 21.4 per cent (GMPT Project Documentation). However, it should be noted termination data does not capture individuals who reoffend but the court determines their offence not serious enough for

revocation. Therefore, reoffending while on an IAC order could potentially be higher. Manchester and Salford probation does not collect data on the probability of reoffending post completion of an IAC order.

- The probability that a young adult offender reoffends the year after release from a short term custodial sentence is 45 per cent (MoJ 2011a).

These estimates of reoffending on IAC orders and custodial sentences are not directly comparable. Therefore, alternative ways to measure and/or model a more comparable effect size were considered. Each of the alternative approaches considered is explained below. Scenario 3 was considered the most robust, and was thus used to generate the key messages.

Scenario 1

Scenarios one and two extrapolate from the data available in the Manchester and Salford pilot site.

The likelihood of reoffending while on an IAC order was extrapolated to predict the likelihood of reoffending 1 year after the IAC order. The extrapolation involved two adjustments:

- First, based on the experience of how rates of reoffending vary on standard community sentences (Petersilia, J. and Turner, S, 1990); the reoffending rate during the IAC order was used to predict that the reoffending rate over the whole period of the IAC order which is estimated to be 43 percent.
- Second, to estimate the reoffending rate 1 year after the IAC order, it was assumed the reoffending rate changes according to standard age-crime curves (MoJ 2009), predicting a reoffending rate 1 year after the IAC order of 38 per cent.

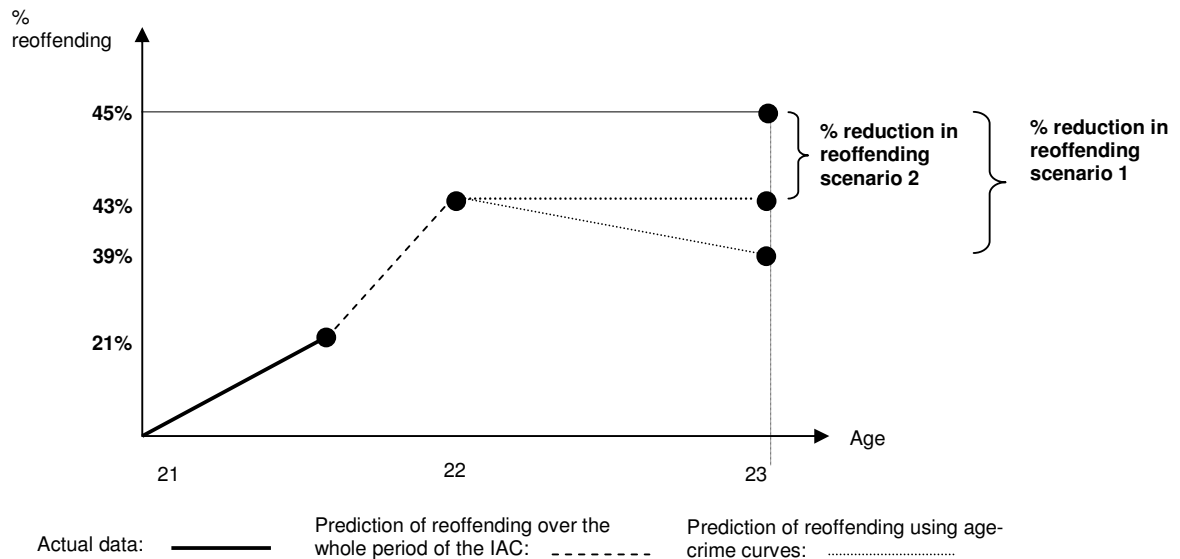
Based on these adjustments, it is estimated an IAC order reduces reoffending by 14 per cent. Figure 1 below provides a graphical description of how the reoffending rate while on an IAC order was used to predict the reoffending 1 year after the IAC order in Scenario 1.

Scenario 2

Similar to Scenario 1, the likelihood of reoffending while on an IAC order was extrapolated to predict the likelihood of reoffending 1 year after the IAC order. However, in Scenario 2 it is assumed that the total reoffending rate whilst on the IAC order which is estimated to be 43 per cent is maintained for one year.

Based on this adjustment, it is estimated an IAC order reduced reoffending by 4 per cent. Figure 1 below provides a graphical description of how the reoffending rate while on an IAC order was used to predict the reoffending 1 year after the IAC order in Scenario 2.

Figure 1. Extrapolating estimates of reoffending during an IAC order



Scenario 3

The previous two scenarios adjusted the offending data available in the Manchester pilot site. There are, however, a number of potential biases associated with any comparison of these estimates with reoffending rates post short custodial sentences:

- The sample of offenders in the Manchester pilot may vary from sample of all the offenders on short term prison sentences.
- The estimates do not formally measure the impact of IAC order, as they estimate reoffending during the IAC order and make assumptions about how these rates vary post the IAC order.

In order to overcome these limitations, Scenario 3 drew on existing effectiveness studies. The data considered was the 2011 MoJ Compendium of reoffending statistics. The MoJ statistics met a high methodological standard and provided match pair analysis to compare offenders receiving custodial sentences against alternatives. The community sentences of most relevance to the evaluation of the IAC order were those on the relative effectiveness of suspended order sentences versus custodial sentences.

Suspended order sentences provide intensive support for offenders. These are typically provided to offenders who are of higher risk than standard community sentences. Given the similarity between this intervention and the IAC order, the relative effect of this intervention compared with short term custodial sentences was used as an estimate of the effect of the IAC order. Based on this data, it is estimated that the reoffending rate one year after the IAC order is 38 per cent³. That is, community supervision reduces reoffending by 13 per cent (MoJ, 2011b).

³The weighted averages of one year reoffending data for individuals aged 18-24 were used. .

Sensitivity analysis

A few parameters used in the model are subject to uncertainty. Therefore, additional analysis was undertaken to observe the sensitivity of the total cost savings to changes in: the cost of the IAC order; the percentage of offenders eligible for the IAC order; the percentage reduction in reoffending due to the IAC order; and length of time in a short term custodial sentence. Table 4 summarises the parameters that were tested along with the ranges used for the sensitivity analysis. Figures 1 to 3 show the impact on the total cost savings.

Table 4. Sensitivity analysis

Parameter	Value in model	Sensitivity analysis range	
		Low	High
Unit cost of IAC order	£3,514	£3,000	£18,000
Percentage eligible for IAC order	45%	10%	60%
Percentage reduction in reoffending	4%-14%	0%	25%
Length of time in short term custodial sentence	4.17 months	1 month	11 months

Figure 2 shows the relationship between the total cost savings across the UK and the unit cost of the IAC order. As stated previously, the unit cost of the IAC order only includes the direct cost of the intervention. As indirect costs are excluded it is likely the cost of an IAC order is underestimated. However, Figure 2 demonstrates that, holding all other parameters constant, the cost savings remain high for a wide range of IAC order costs.

Figure 2. Sensitivity of cost savings to cost of IAC order per person

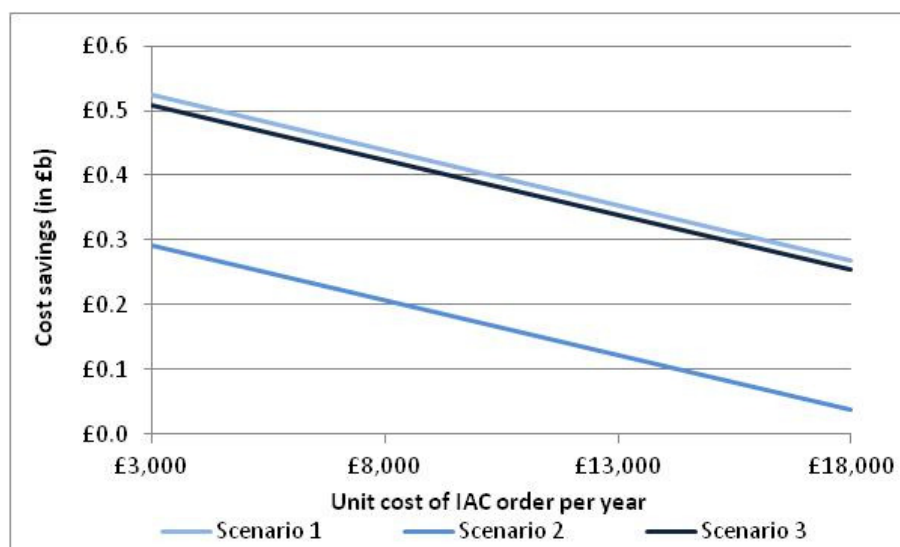


Figure 3 shows the relationship between the total cost savings across the UK and the percentage of young adult offenders who are eligible for the IAC order. It demonstrates that,

holding all other parameters constant, IAC orders for young adult offenders can generate considerable cost savings even if only given to a small percentage of eligible individuals.

Figure 3. Sensitivity of cost savings to percentage of young adult offenders eligible for IAC order

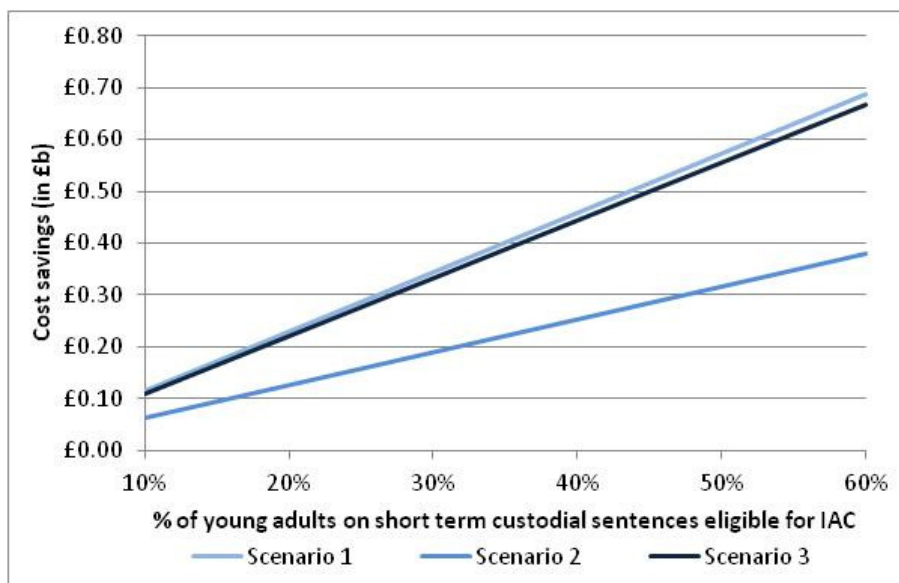


Figure 4 shows the relationship between the total cost savings across the UK and the percentage reduction in reoffending due to an IAC order. It demonstrates that, holding all other parameters constant, even if an IAC order has no effect on reoffending, the orders will generate considerable cost savings as they are a cheaper intervention.

Figure 4. Sensitivity of total cost savings to percentage reduction in reoffending

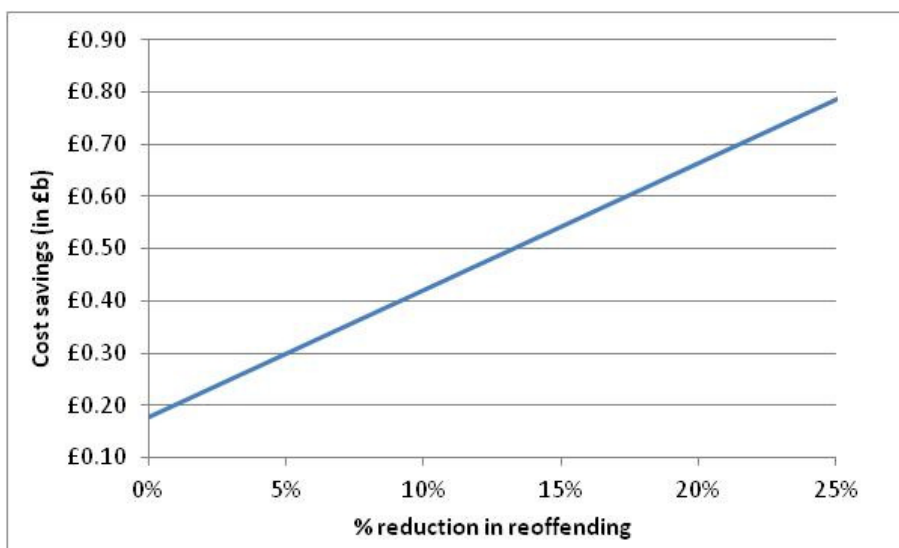
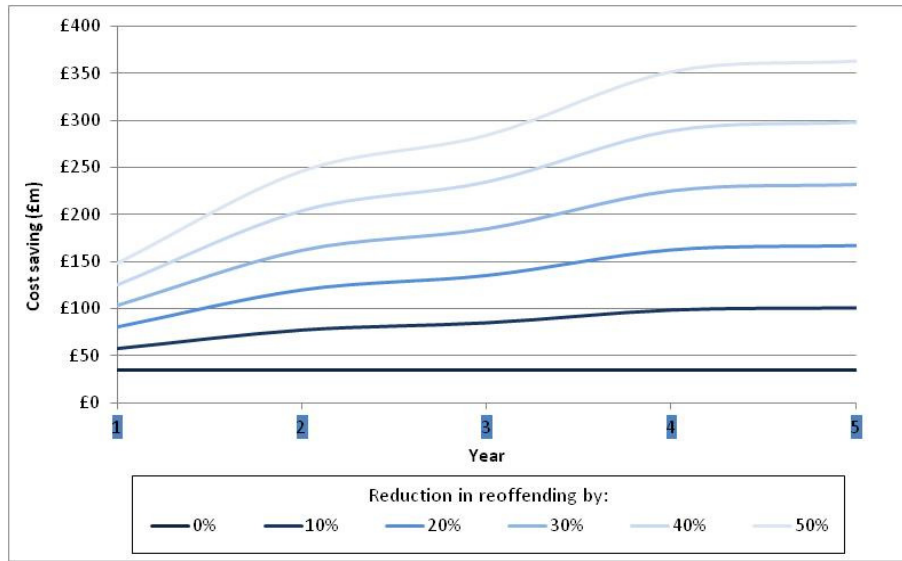


Figure 5 provides an alternative representation of Figure 4. It shows the relationship between the cost savings each year across the UK and the percentage reduction in reoffending due to an IAC order. As in Figure 4, it demonstrates that, holding all other parameters constant, even if an IAC order has no effect on reoffending, the orders will generate considerable cost savings.

Figure 5. Sensitivity of yearly cost savings to percentage reduction in reoffending



Similar to Figure 5, Figure 6 shows the relationship between the realisable cost savings each year across the UK and the percentage reduction in reoffending due to an IAC order. It demonstrates that, holding all other parameters constant, even if an IAC order has a minimal effect on reoffending, the orders will generate considerable realisable cost savings.

Figure 6. Sensitivity of yearly realisable cost savings to percentage reduction in reoffending

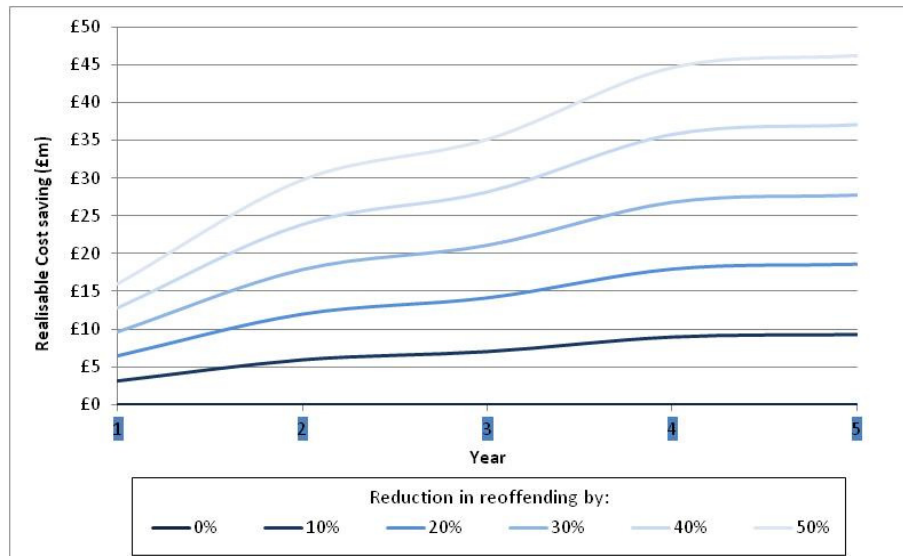
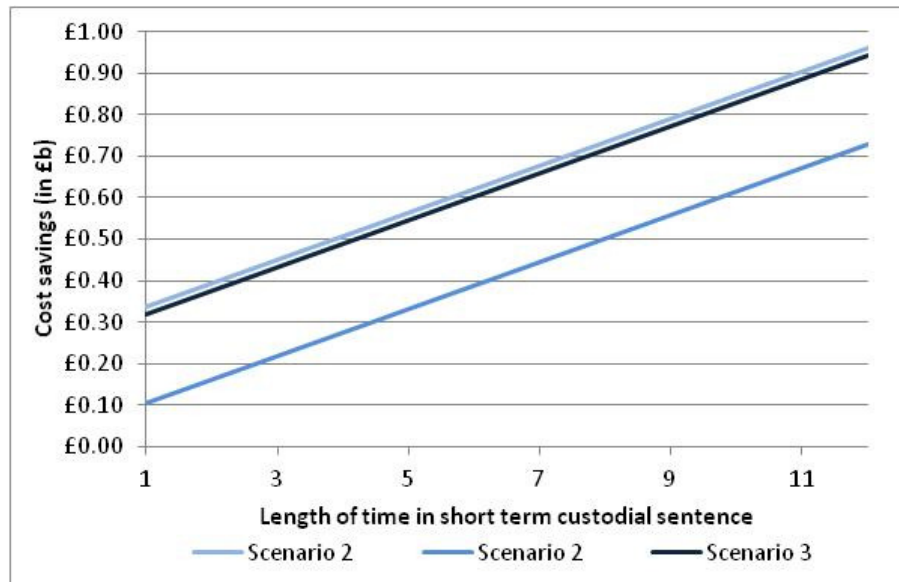


Figure 7 shows the relationship between the total cost savings across the UK and the length of time spent in short term custodial sentences. It demonstrates that, holding all other parameters constant, even if the length of time spent in a short term custodial sentence is as little as 1 month, IAC orders will generate considerable cost savings.

Figure 7. Sensitivity of cost savings to length of time in short term custodial sentences



5.0 Results: IAC order - Bradford

The IAC order in Bradford is targeted at women offenders. Similar to Manchester and Salford, the IAC order in Bradford collects reoffending data for those on the order. However, the data in Bradford suggest that none of the women on the IAC order reoffend during the order. It may well be that this is the case, and reflects the high level of effectiveness of the IAC order. However, this may also be a function of small sample size of offenders used to construct the data (n=24). In order to be cautious, a break-even analysis was conducted for the Bradford pilot.

Table 5 outlines the unit cost of the IAC order, the total number of offenders receiving the IAC order per year, and the break-even points – the change in reoffending required for the interventions to be cost neutral. Two types of break-even point were calculated:

- Break-even point based on cost savings to the CJS, NHS, and victims;
- Break-even point based on cost savings to the CJS. Since the IAC order is a cost borne by the CJS, the break-even point estimates the necessary reduction in reoffending required for the benefits within the CJS to equal the cost of the IAC order. That is, the benefits associated with NHS and victims are excluded.

It is evident from Table 5, that the break-even points associated with the total cost savings and CJS savings are very low. It is possible the break-even points in Bradford are exceptionally low due to the fact that indirect costs are excluded from the analysis. For example, if the Bradford pilot works by referring offenders to relevant services, it is likely that large costs are excluded from the estimates used in the analysis.

How likely is it that the IAC order in Bradford achieves these reductions in reoffending? As explained in the previous section, the estimated reduction in reoffending associated with suspended sentence community orders is 13 per cent in the year after the sentence (MoJ, 2011b). Considering that an IAC order has more requirements and more tailored services than suspended sentence orders, it might be expected that the IAC order would generate the 1% and 2% reduction in reoffending required to break even.

Table 5. Break-even point of the Bradford IAC order pilot – total and CJS savings

IAC order site	Number of offenders per annum	Cost of IAC order per offender per annum	Reduction in reoffending required to break even	
			Total savings	CJS savings
Bradford	24	£1,000	0.9%	2.0%

6.0 Results: other community based interventions (Leicester and London)

The community based interventions in London and Leicester do not collect data on the reoffending of those using their services either during or after the orders are completed. Therefore, a break-even analysis was conducted for both pilots.

Table 6 outlines the unit cost of the interventions, the total number of offenders receiving the intervention per year, and the break-even points – the change in reoffending required for the interventions to be cost neutral. Two types of break-even point were calculated:

- Break-even point based on cost savings to the CJS, NHS, and victims;
- Break-even point based on cost savings to the CJS. Since the IAC order is a cost borne by the CJS, the break-even point estimates the necessary reduction in reoffending required for the benefits within the CJS to equal the cost of the IAC order. That is, the benefits associated with NHS and victims are excluded.

It is evident from Table 6 that the break-even points are very low. It is possible the break-even points in London are exceptionally low in comparison to Leicester due to the fact indirect costs are excluded from the analysis. For example, the London pilot primarily acts as a referral service to mental health specialists. Therefore it is likely that large costs associated with treatment are excluded. In comparison, the Leicester pilot which helps offenders with drug problems is the primary provider of treatment and includes treatment costs within its budget.

How likely is it that the community based interventions in Leicester and London achieve these reductions in reoffending? As explained in the previous section, the estimated reduction in reoffending associated with suspended sentence community orders is 13 per cent in the year after the sentence (MoJ, 2011b)). It might thus be expected that all of the break-even points could be achieved.

Table 6. Break-even point of other community sentences – total and CJS savings

IAC order site	Number of offender per annum	Cost of IAC order per offender per annum	Reduction in reoffending required to break even	
			Total savings	CJS savings
Leicester	466	£3,670	2.3%	10.9%
London	2,695	£275	0.1%	0.6%

7.0 Discussion

Providing IAC orders to young adult offenders as an alternative to short term custodial sentences can generate significant cost savings. Specifically, an IAC order for young adult offenders could generate at least £500 million across the UK over 5 years if provided to all eligible offenders. Of these savings it is estimated that at least £45 million will be realisable – could be available for reinvestment.

There was insufficient data on reoffending rates to conduct a CBA on the other IAC orders and community sentences considered. Instead, a BEA was undertaken. These suggest that it is reasonable to expect the interventions to generate the reduction in reoffending required for them to be cost-neutral.

In interpreting these results it is important to keep in mind the following limitations of the analysis:

- The reoffending data collected by the Manchester and Salford pilot is not directly comparable to the one year reoffending statistics associated with short term custodial sentences provided by the MoJ. Due to the incomparability of reoffending data, a modelling approach was employed to conduct the CBA based on secondary data. However, further research needs to be done to be certain about the one year reoffending rate associated with IAC orders. The economic analysis only considered the direct costs of each pilot. Most interventions refer offenders to other services, which are indirect costs of the intervention. Ignoring the indirect costs of each intervention implies the cost is underestimated. However, the sensitivity analysis indicated that, even when increasing the cost of the IAC order in Manchester and Salford significantly, IAC order continues to generate significant cost savings.
- The cost of a short term custodial sentence is based on the annual cost of custody provided by the MoJ. As this figure only estimates the direct costs of custody it excludes a number of indirect costs. Therefore, it is possible that the cost of a short term custodial sentence could be higher. In this case, it can be expected that the results of the economic analysis are underestimated and IAC orders can generate additional savings.
- The benefits captured in the model are associated with reduced intervention and reoffending costs. However there are numerous other benefits associated with IAC orders such as increased employment, reduced incidence of substance misuse related illness, reduced incidence of mental health illnesses, etc. Limiting the scope of the model to direct intervention reoffending costs implies that the CBA underestimates the total benefit of IAC orders.
- The results of the CBA are based on providing IAC orders for all eligible offenders over a 5 year time horizon. If IAC orders are provided for longer periods of time, the total cost savings would increase.

Even though the above limitations mean that the estimated cost savings are subject to uncertainty, the sensitivity analysis suggested that the conclusion that the IAC orders represent an efficient use of public resources is unlikely to change.

The research also has some important implications for the implementation of payment by results in criminal justice. The Manchester and Salford and Bradford pilots should be commended for collecting evidence on the reoffending of those receiving the IAC order. However, it was not possible to estimate the impact of IAC order on reoffending using these data. The data were only collected during the sentence, while data on the impact of reoffending following short-custodial sentences are collected one and two years after the end of the sentence. It is more difficult and costly to collect data on offenders once they leave the IAC order, but these data are important if a robust estimate of the impact of community sentences is to be obtained, as will likely be required to implement payment by results.

The research also highlights the importance of sample size. The ability to collect robust data is limited by the availability of reasonable sample size. For example, as of December 2011 only 100 young offenders in Manchester and Salford had completed an IAC order for at least one year. These small sample sizes make it difficult to develop a reliable intervention and control group for comparison. In order for accurate estimates of reoffending associated with IAC orders to be collected a larger sample size needs to be developed.

8.0 References

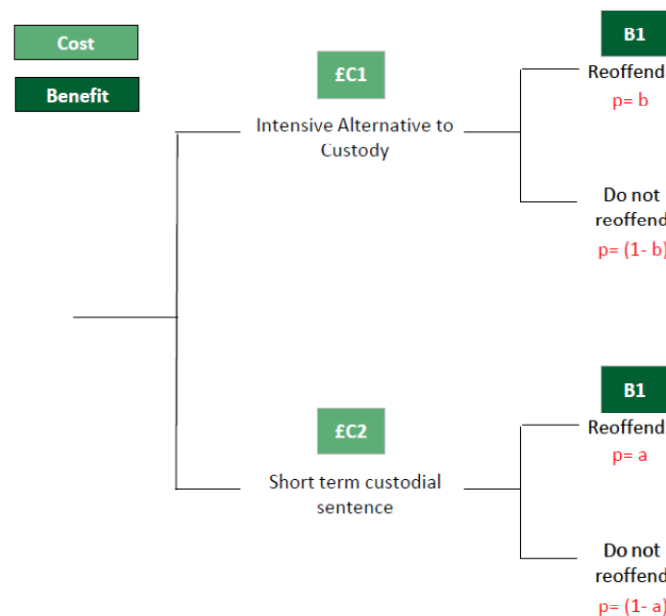
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9.0 Appendix 1: Decision model and data

9.1 Decision model

Figure A1.1 presents a decision model to determine the impact of IAC orders on reoffending in offenders

Figure A1.1: A decision model for the impact of IAC orders on reoffending in comparison to short term custodial sentences



9.2 Break-even analysis

Equation A1.1 presents the formula used to calculate the necessary effect size of the IAC orders in Bradford, Leicester, and London for the intervention to break even. Sections 4 within the report summarize the cost of the intervention and the number of offenders within each pilot. Section 7.3 in the appendix summarizes the cost of reoffending data used to populate the equation.

Equation A1.1. Formula to calculate effect size required for the intervention to break-even.

$$ES = (P_c - P_a) = \frac{\text{cost of intervention}}{\sum \text{cost of reoffending}_{\text{offence type}} \times \text{number of offenders}_{\text{offence type}}}$$

9.3 Cost of reoffending

Figures A1.1 to Figure A1.9 summarise the cost of reoffending per offence by offence type for young male and female adults aged between 18 and 20 (Marsh and Fox, 2008).

Figure A1.1 Cost of reoffending by year and gender - offence type - violence

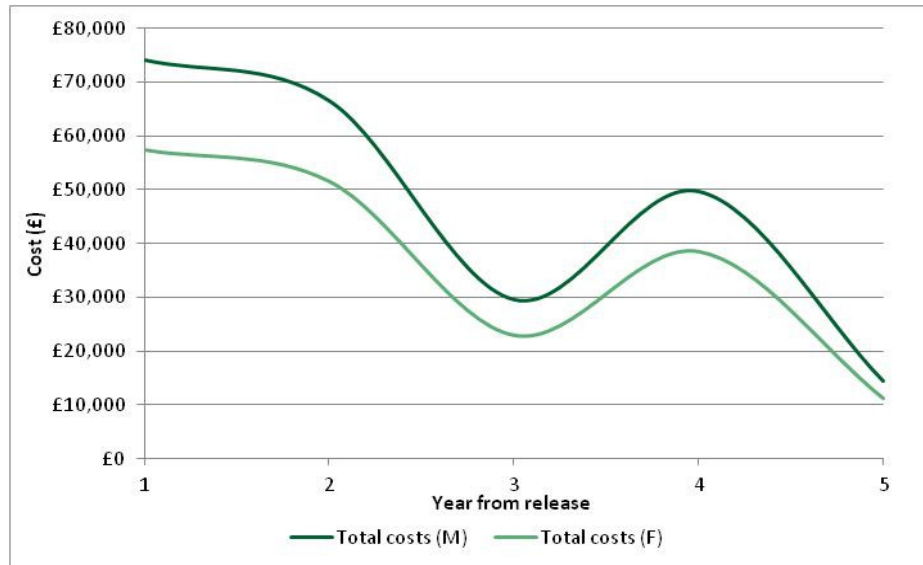


Figure A1.2 Cost of reoffending by year and gender - offence type - robbery

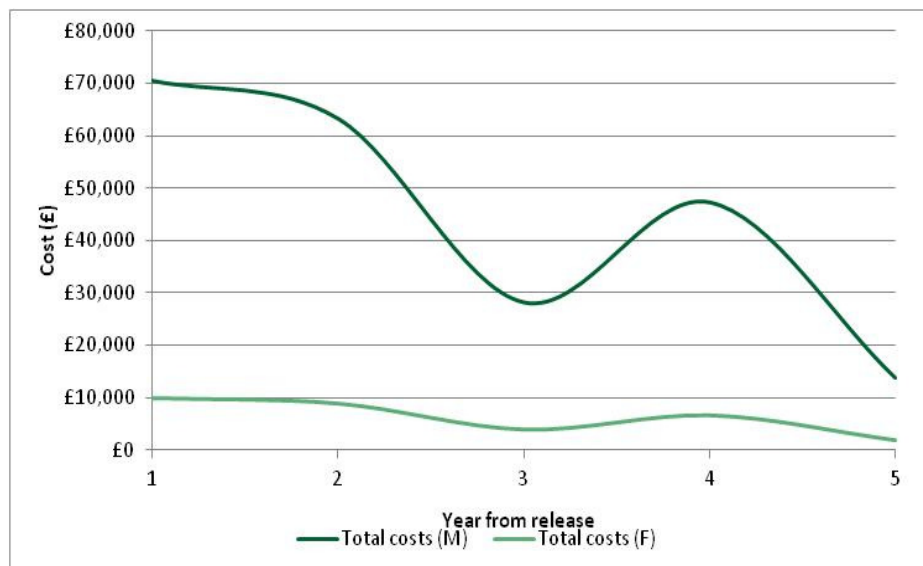


Figure A1.3 Cost of reoffending by year and gender - offence type - sexual offences

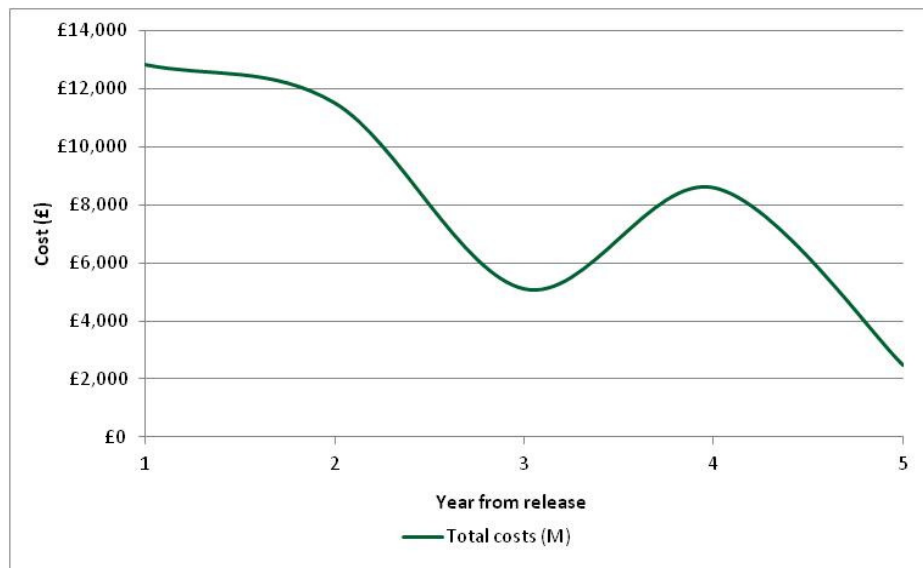


Figure A1.4 Cost of reoffending by year and gender - offence type - burglary

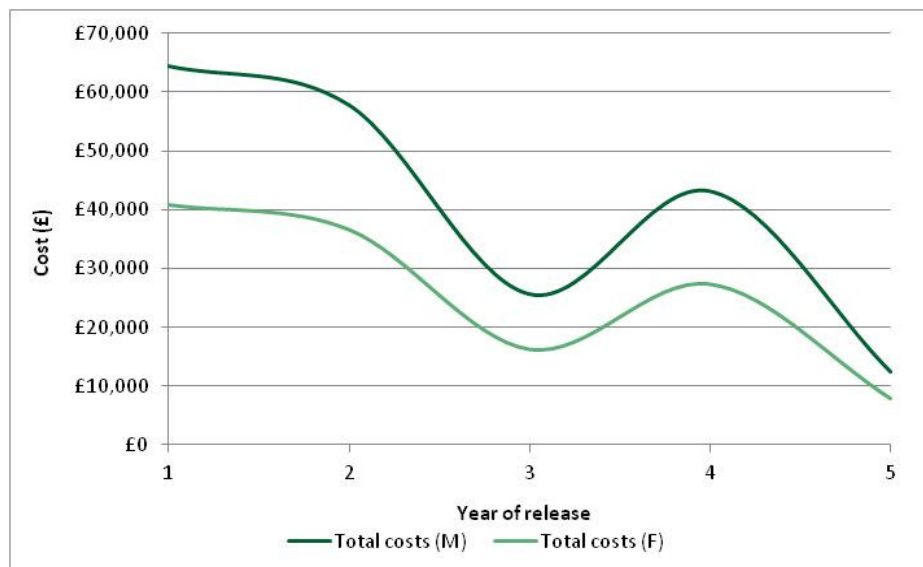


Figure A1.5 Cost of reoffending by year and gender - offence type - theft and handling

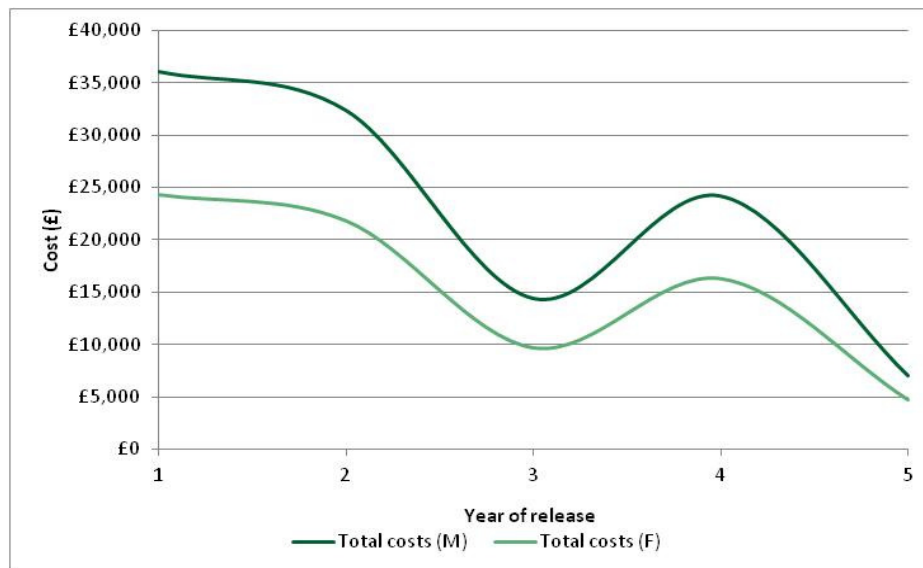


Figure A1.6 Cost of reoffending by year and gender - offence type - fraud and forgery

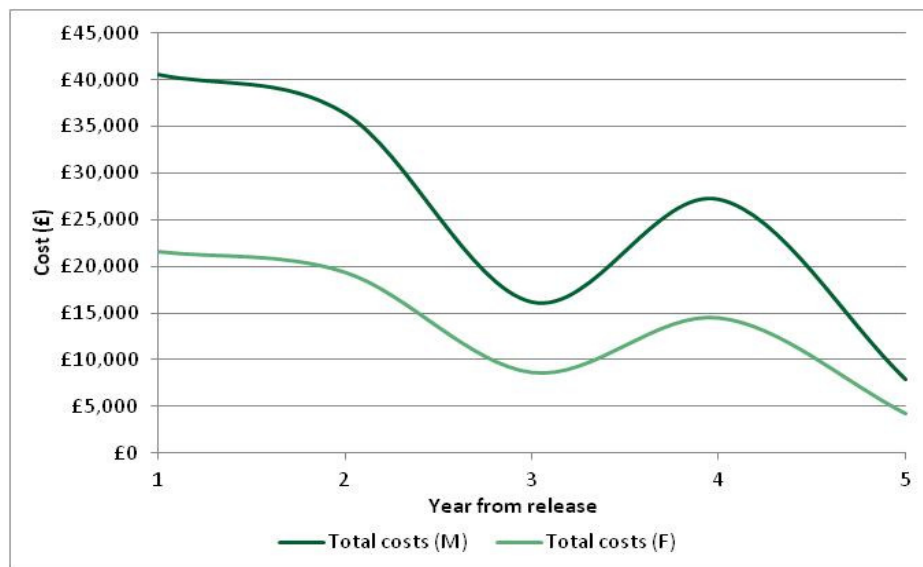


Figure A1.7 Cost of reoffending by year and gender - offence type - motoring

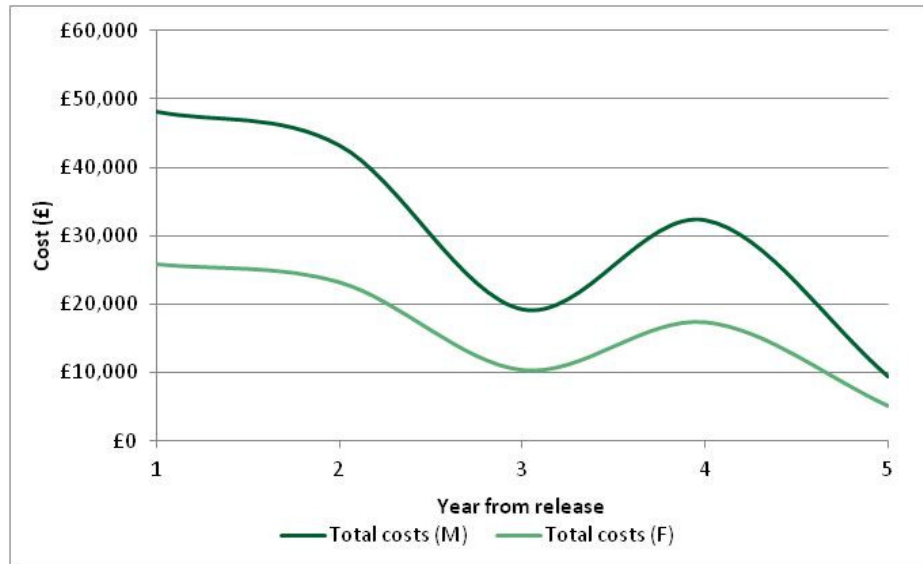


Figure A1.8 Cost of reoffending by year and gender - offence type - drug

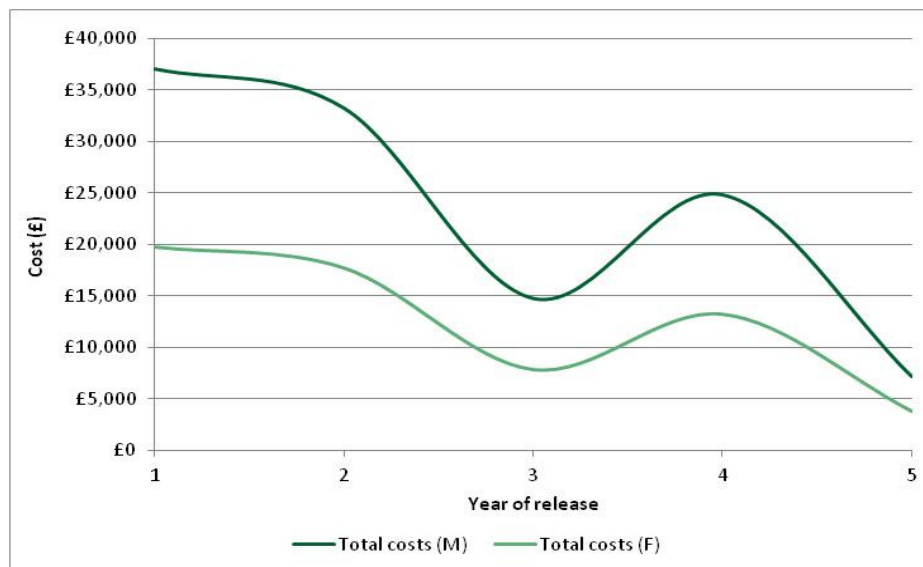
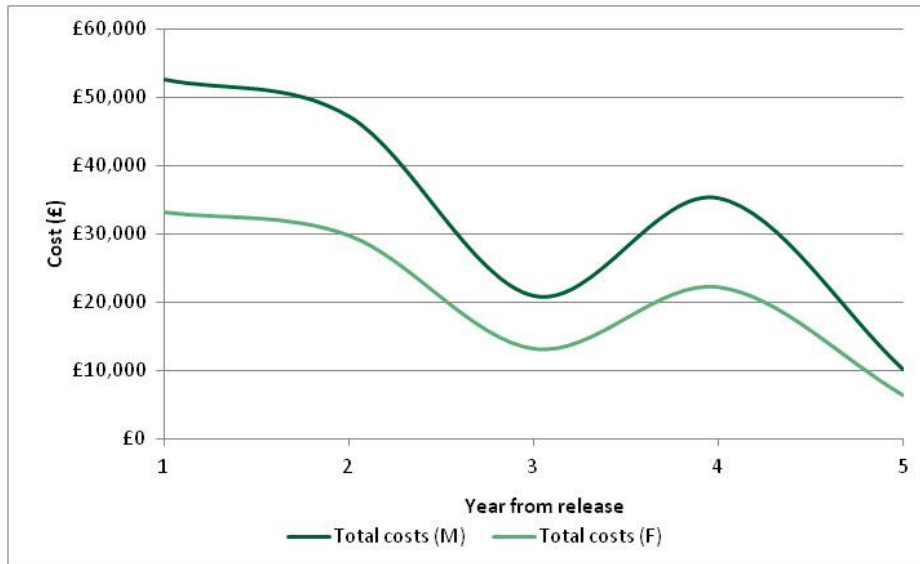


Table A1.9 Cost of reoffending by year and gender – offence type - other



10.0 Appendix 2: realisable savings

Table A2.1 outlines the percentage of total cost savings which are considered to be realisable by offence type.

Table A2.1 Proportion of total savings which are realisable by offence type

Type of offender (sentences for)	Type of cost savings		
	CJS	NHS	Victim costs
Violence against a person	17%	20%	0%
Robbery	19%	20%	4%
Sexual	18%	20%	0%
Burglary	21%	20%	68%
Theft and handling	19%	20%	69%
Fraud and forgery	0%	20%	0%
Motoring	0%	20%	0%
Drug	0%	20%	0%
Other	0%	20%	0%

Make Justice Work

26a Ganton Street, London, W1F 7QZ, UK

email: info@makejusticework.org.uk | tel: +44 (0)20 3538 8365 | www.makejusticework.org.uk

Matrix Evidence

Epworth House, 25 City Road, London, EC1Y 1AA, UK

email: enquiries@matrixknowledge.com | tel: +44 (0)20 7684 5777 | www.matrixknowledge.com