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The effectiveness of different community order requirements for offenders who received an OASys assessment

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National Institute of Economic and Social Research

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The author

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This report explores the impact of different types of community order requirements on re-offending behaviour over a two-year period. The analysis is therefore designed to expand the evidence base on the impact of community sentences on re-offending and to examine the effectiveness of individual requirements, and combinations of requirements, at reducing re-offending.

Approach

It was necessary to base the analysis on offenders who received a community order in 2008 to observe re-offending outcomes over a two-year period. There are some differences between the regime which existed in 2008 and that which is currently in place. However, the nature of these changes is unlikely to affect the broad conclusions which can be drawn from the analysis.

Propensity score matching was used to estimate the impact of the different combinations of community order requirements on the re-offending rate and the number of re-offences committed over a two-year period following the start of the order. This technique involves comparing outcomes for offenders who were assigned to a particular type of requirement (the treatment group) to outcomes for a group of offenders who were similar in their propensity to re-offend and to receive a given package of requirements (the matched comparison group). If, after the matching, the two groups differed in the likelihood that they were placed under a particular type of requirement, or in the probability that they re-offended, the analysis would be unlikely to provide a robust estimate of the impact of a given package of requirements. The analysis focused on the impact of the most prevalent combinations of requirements, as there was a greater chance of being able to produce conclusive estimates of the effectiveness of more common packages.

The detailed information needed to identify a well-matched comparison group was only collected for the subset of offenders who were assessed using the electronic Offender Assessment System (OASys). The analysis suggested that this subsample of offenders were more likely to be supervised than the wider population of offenders who received a community order. They were also more likely to be placed on an accredited programme or to receive drug rehabilitation. Offenders who had less complex needs were less likely to appear in the sample of offenders on which the analysis is based, so the impact estimates may only

be representative of the impact of particular requirement types on offenders who were harder to help.

Requirement types

Offenders receiving a community order can be placed under one or more of 12 possible requirements. More than three-quarters of the offenders (77.3%) considered in the analysis began a supervision requirement, whilst around two-fifths (41.9%) took part in unpaid work. More than one-quarter of offenders (27.6%) participated in a programme requirement, with one-in-eight offenders (12.2%) starting drug rehabilitation. The least common requirements were prohibited activities, residency requirements, mental health treatment, exclusion and the requirement to visit an attendance centre.

The analysis grouped the requirements into five main categories, as follows:

- punitive – curfews and unpaid work;
- supervision;
- programme;
- activity;
- substance misuse – drug rehabilitation and alcohol treatment.

The numbers of offenders who were placed under other types of requirements were considered insufficient to make further analysis viable. Also, it was not possible to produce a robust analysis of the impact of substance misuse requirements within the timeframe for the analysis and so the analysis focuses on the first four categories of requirement listed above.

Results and implications

The main findings of the analysis in relation to each of the four main requirement types considered were as follows:

Punitive requirements

- Adding a punitive requirement (unpaid work or a curfew) to a supervision requirement:
  - Had no impact on the likelihood that the offender re-offended, but reduced the number of re-offences committed within the first year of the community order by 8.1 per cent.

  - This effect was sustained over time, so that the number of offences committed over the two years following the start of the order was reduced by 7.5 per cent.
  - It appeared that this effect was largely driven by the impact of curfew requirements, rather than unpaid work.
- Adding a punitive requirement to a supervision requirement plus a programme requirement:
  - Showed some signs of reducing the number of re-offences committed in the two years following the start of the order, but only at a level which fell slightly outside conventionally-accepted levels of statistical significance.
- The findings suggest that punitive requirements can reduce the frequency of re-offending but have no impact on the re-offending rate.
- Also, the strength and size of the effect depends on the combination of other requirements with which punitive requirements are used.

Supervision requirement

- Adding a supervision requirement to a punitive requirement:
  - Reduced the rate of re-offending one year after the start of the community order by 11.5 per cent, and the number of re-offences committed over this period by 12.7 per cent.
  - Reduced the rate of re-offending in the two years after the start of the community order by 6.8 per cent, and the number of re-offences committed over this period by 8.7 per cent.
- The analysis suggests that where the option of giving an offender a standalone punitive requirement is being considered, adding a supervision requirement to this may reduce re-offending, at least for the two-year period over which outcomes were considered.

Programme requirements

- When a programme requirement was added to a supervision requirement plus a punitive requirement:
  - Over the first year following the start of the community order, the re-offending rate fell by 9.0 per cent, and the number of re-offences committed fell by 14.1 per cent.

- Over the second year following the start of the community order the re-offending rate fell by 7.1 per cent, and the number of re-offences committed fell by 14.9 per cent.

- This shows that programme requirements can have a positive effect in reducing re-offending behaviour when they are combined with punitive elements.

Activity requirements

- Adding an activity requirement to a supervision requirement, or to a supervision requirement plus a punitive requirement, had no impact on the re-offending rate or the number of re-offences committed in the two years over which outcomes were measured.

In conclusion, for the combinations of requirements that it was possible to consider in this report, there was evidence that increasing the punitive element of community orders would not have a detrimental effect on the re-offending rate. Furthermore, in some combinations it may reduce the number of re-offences committed by those subject to a community order. However, it is important to ensure that punitive requirements are used in combination with other requirements which can be used to enhance their effectiveness, such as supervision and programme requirements.

The impact estimates were likely to be representative of the average impact of each package of requirements on offenders for whom OASys data was available, as it was possible to find well-matched comparators for the vast majority of offenders given a particular package of requirements. Also, impact estimates produced using different techniques of identifying the best matches for each treated offender were very similar, which increases confidence in the robustness of the results.

Whilst suspended sentence orders make use of the same 12 requirements, it is possible that the same combinations of requirements have a different impact on re-offending behaviour when they are used as part of a suspended sentence order. Therefore, the impact estimates presented in this report cannot be used to infer the likely impact of requirements made under suspended sentence orders.

Extensions

There are a number of extensions to the analysis presented in this report which may enhance the evidence base on the relative effectiveness of different requirement types. These are as follows:

- Further research is needed to identify a well-matched comparison group for offenders who are given a substance misuse requirement in order to produce credible estimates of the impact of this particular type of requirement.
- Assessing the impact of requirements on a wider range of outcome measures may give a more detailed and nuanced understanding of the effectiveness of particular requirement types e.g. whether activity requirements affect outcomes not considered in this report.
- Repeating the analysis to look at the impact of requirements on re-offending rates over a longer time-period would make it possible to assess the impact of requirements after participation in the community order had ceased.
- A cost-benefit analysis could provide information on the likely net impact to the exchequer or society of increasing the use of particular requirement types. However, it may be difficult to attach a value to some of the possible impacts of increasing the punitive element to requirements, such as the value that the public attach to the punishment of offenders.

1. Introduction

1.1 Policy background

In March 2012 the Government began a consultation on the reform of community sentences, with the aim of increasing the effectiveness of community orders (Ministry of Justice, 2012a). Previous research has demonstrated that re-offending rates are lower for offenders who receive a community order compared to those who receive a short prison sentence (Ministry of Justice, 2011a). However, community orders currently have a 'menu' of 12 possible requirements and the relative effectiveness of each of these, in terms of reducing re-offending, is unknown. The requirements are as follows:

- alcohol treatment;
- drug rehabilitation;
- programme, i.e. participating in a programme designed to reduce re-offending, such as anger management or substance relapse prevention;
- activity, e.g. attending basic skills training;
- attendance centre, i.e. the requirement to attend and participate in activities during leisure time;
- exclusion e.g. from a particular street or shop;
- prohibited activity, i.e. forbidding activities which are likely to result in a further offence, or to cause nuisance;
- supervision, i.e. meetings with a probation officer to seek to address the causes of the offending behaviour;
- curfew, i.e. electronic monitoring;
- mental health treatment;
- residence, i.e. the requirement to reside in a location approved by the probation officer;
- unpaid work (Ministry of Justice, 2010: 101).

The consultation document proposed that, in future, all community orders should include a punitive element. This could be either a community order requirement, such as unpaid work, a curfew, exclusion or a prohibited activity; or it could be a fine. This proposal addresses the concern that too many community orders fail to include a clear punitive element alongside other requirements aimed at rehabilitation and reparation, and so they do not effectively signal that wrongdoing will not be tolerated. The intention behind the proposals is both to punish the offender and increase the effectiveness of other requirements by enforcing

patterns of behaviour thought likely to reduce re-offending. For example, placing an offender under a curfew may reduce re-offending and improve the likelihood that they attend drug treatment, as well as providing a punishment for the crime committed. However, whilst it is proposed that community orders will routinely include a punitive element, exceptions will be permitted in cases where imposing a punitive element would be unjust, given the circumstances of the particular case.

The following section explains how this report seeks to provide evidence on the relative effectiveness of different types of requirement, or combinations of requirements, which can be used to inform the evidence base on community sentences.

1.2 The evaluation

The main objective of this research is to estimate the relative effectiveness of different types of community order requirement in reducing re-offending rates and the frequency of re-offending. The focus of interest is how increasing the use of punitive requirements by adding them to alternative packages, or replacing non-punitive with punitive requirements, is likely to change the probability of an offender re-offending. However, it is important to note that the likely impact on re-offending behaviour is not the only consideration in making sentencing decisions. Even if including a punitive element in community orders had no impact on re-offending, it may still have a deterrent effect on other potential offenders, provide reparation for the offence committed, or punish the offender. Therefore, this analysis only considers the impact of requirements on a limited range of the possible outcomes which might be valued by the public.

To identify the causal impact of any intervention it is necessary to estimate what outcomes would have been if it had not been made. In the current study, this involves estimating likely re-offending behaviour for offenders who were subject to a particular requirement, known as **the treatment group**, if they had not been placed under this requirement. This estimate of the re-offending rate is then compared to the actual rate of re-offending to provide an estimate of the impact of the requirement on the likelihood of re-offending. The estimate of what outcomes would have been for the treatment group if they had not been treated with a particular requirement type is known as **the counterfactual**.

In this evaluation, the counterfactual is estimated by considering outcomes for a comparison group of offenders who received a different combination of requirements, using **propensity score matching**. This involves matching individuals in the treatment group, i.e. subject to a particular requirement, to a **comparison group** who were placed under different

requirements, but who could be expected to have a similar likelihood of re-offending if they had been given the same package of requirements. To derive the propensity score needed to identify offenders in the comparison group who were similar to those in the treatment group, it is necessary to observe all important factors which determine both the likelihood of the offender being placed under a requirement and the probability of them re-offending. This involves matching offenders on the propensity to be placed under a particular requirement, given their characteristics, rather than matching them on every individual characteristic. If important characteristics which determine the likelihood of the offender receiving a requirement and of re-offending are omitted when estimating the propensity score, the model will not produce an accurate estimate of the impact of the requirement.

It is important to note that the same 12 requirements are used for suspended sentence orders. However, the analysis presented in this report is concerned solely with the effectiveness of requirements made as part of a community order. This is partly because community orders are the focus of the Government consultation and partly because of the possibility that the same combinations of requirements have a different impact on re-offending behaviour when they are used as part of a suspended sentence order. As a result, the findings presented in this report cannot be assumed to apply to all requirements of a given type – they are only representative of the impact of requirements made as part of a community order.

1.3 Report outline

Chapter 2 describes the datasets used in the analysis and the implications of basing the analysis on these sources. It also discusses the data items used to measure outcomes and to ensure that the impact estimates produced are robust. Chapter 3 explains the methods of analysis and discusses the likely reliability of the results, whilst Chapter 4 reports the estimated impact of adding each of the main requirement types to an existing package of requirements. Chapter 5 assesses the sensitivity of the results to the choice of matching variables and the prospects for extending the analysis to the wider population of offenders who received a community order. The report concludes with a summary of the key findings and suggestions for further work. The data appendices provide technical information on the analysis.

2. Data

2.1 Introduction

The variables used in the analysis fall into three categories:

- the outcome measures (used to judge the impact of the different requirement types);
- those which identify the treatment received, i.e. the type of requirement;
- those thought to determine the likelihood of re-offending and the requirements placed on the offender, i.e. the matching variables.

The first two outcomes considered in the report are the re-offending rate[1] one and two years after the probation start date for the offence which resulted in the community sentence, henceforward known as **the reference date**. The re-offending rate captures whether the offender committed any further offences within either a one- or two-year period of the reference date. The analysis also explored whether the number of re-offences[2] committed within a one- or two-year period of the reference date was affected by the use of particular requirements. This made it possible to assess whether requirements had an impact on the frequency of re-offending, even if the likelihood of committing at least one re-offence was unchanged. The analysis focused on offenders who were given a community order in 2008 to ensure that it was possible to observe outcomes over the full two-year period following the reference date. Considering outcomes over a reasonably long period is necessary to allow time for offenders to be convicted of any subsequent offences.

The three main data sources which were used to produce the analysis presented in this report are briefly described in the following section. The data originated from an ongoing data sharing agreement between the Ministry of Justice, the Department for Work and Pensions and Her Majesty's Revenue and Customs (Ministry of Justice, 2011b). Both the quality of the information available from each source and the coverage of offenders receiving a community order is discussed in this chapter. These are important topics for consideration as they determine the likely reliability and representativeness of the impact estimates presented in Chapter 4. The current chapter also explains the choice of treatment and comparison groups and provides a brief description of the variables used to match offenders. It concludes with a summary which highlights the likely limitations of the analysis which arise from the datasets used.

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1 The re-offending rate includes convictions and cautions, but excludes Police Notices for Disorder.
2 This included convictions, cautions and Police Notices for Disorder.

2.2 Datasets

Offender Assessment System (OASys) data

It is usual for offenders to be assessed by probation staff before they are sentenced, but the type of assessment received varies depending on the complexity of the offender's needs and the risk that they are deemed to pose. Where an electronic OASys assessment is carried out, detailed information is collected on the characteristics of offenders. The range of information available on the OASys dataset is described in the section on the matching variables.

OASys is a valuable resource in seeking to identify a well-matched comparison group, needed to estimate the counterfactual. However, offenders who are thought to pose the lowest risk of re-offending are typically given a standalone requirement to do unpaid work and are given a short paper-based assessment, rather than an electronic OASys. Information on offenders given a paper-based assessment does not appear on the OASys dataset.

The dataset used in the analysis contained the results of OASys assessments for offenders who started a community order in 2008. As some of the characteristics of offenders may change as they participate in requirements, it was decided to use the characteristics observed at the earliest assessment for offenders who received multiple assessments. The assessment which was completed either (i) up to one month before, or (ii) soonest after, the reference date was used to construct variables identifying offender characteristics. Although assessments carried out up to one year after the reference date were included in the dataset, in 2008 there were strict deadlines for the completion of assessments which meant that most of those who went through the OASys process should have been assessed within 15 working days of sentencing.

A further advantage of focusing on the earliest assessment is that it is understood that in 2008, the initial assessment was the one most likely to provide high-quality information on the characteristics of the offender. This is because, for some offenders, a large proportion of information was fed-forward from the initial assessment to subsequent assessments. Unless all fields were reviewed in detail at every assessment, some of the information recorded at later meetings may have been out-of-date.

Much of the information collected during the OASys assessment relies on a subjective rating of the scale of the offender's problems in relation to particular aspects of their life (categorised as 'no problems', 'some problems' or 'significant problems'). When subjective

measures are used, it is possible for probation officers to assess offenders with similar problems differently on these scales. However, it was felt that the three-item scale captured useful information which would be lost if these were collapsed into binary measures indicating whether the offender had no problems or had some, or significant, problems. Appendix A provides a detailed description of each of the matching variables, including the scales of measurement.

Probation and re-offending data

For all offenders who received a community order in 2008, data on previous re-offending and re-offending over the two years following the reference date was available. This research looks at the subset of these offenders for whom an OASys assessment is available.

Tax and benefits data

Offenders who received a community order in 2008 were identified in tax and benefits data originating from Her Majesty's Revenue and Customs (HMRC) and Department of Work and Pensions (DWP) sources. These datasets provide information on participation in employment and active labour market programmes, as well as claims for benefits, in the period before the reference date. Labour market activity prior to starting the community order was expected to be an important predictor of both the type of requirements placed on the offender and their likelihood of re-offending and tax (HMRC) and benefits data provide more detailed information on benefit and P45 employment history than is available on OASys. As with the probation and re-offending data, only information on offenders who had received a community order in 2008 and who had been through at least one OASys assessment were included in the data extract, but in principle this information would be available for the wider population of offenders.

There are some gaps in the coverage of the tax and benefits data which affect how well it captures the employment and benefit history of offenders prior to the reference date (see Appendix B and Ministry of Justice, 2011b for details). However, they are recognised as providing good-quality information on the majority of employees and benefit claimants and unrivalled data on past benefit and employment history. As a result, they are sufficiently well-regarded to be used as the basis for producing national statistics and therefore the information that they provide is likely to be of sufficient quality to enhance the degree of correspondence between treatment and comparison groups on important characteristics related to re-offending behaviour.

2.3 Merging the datasets

The OASys and tax and benefits data contained rich information, which gives grounds to believe that all important differences between offenders in the treatment and comparison groups in the propensity to be placed under particular requirements and to re-offend are likely to be captured. The probation and re-offending data indicated the types of requirements placed on offenders given a community order in 2008 and their rate and frequency of re-offending over the two years following the reference date. To estimate the impact of different requirement types, it was therefore necessary to merge information on individual offenders observed in the three datasets described above.

The earliest probation spell which resulted in a community order within 2008 was selected as the main focus of analysis. By merging the OASys, probation and re-offending, and tax and benefits datasets using the unique individual identifier contained on each,[3] it was possible to build up a complete picture of the offender, including the nature of the crime committed, the sentence received, previous criminal, employment and benefit history and whether they committed further offences following the start of the community order. However, focusing on the subset of offenders for whom information from each of these sources was available does affect the generalisability of the results to the wider cohort of offenders who received a community order and so the implications of this limitation are discussed in greater detail later in this chapter.

For the vast majority (99.3 per cent) of offenders in the merged dataset, the reference date corresponded exactly to the date of conviction. Information on the date of sentencing was missing for 29 per cent of offenders in the merged data, which made it difficult to assess whether the first OASys was completed within 15 working days of sentencing (i.e. to the target timescale). However, the first OASys was completed within nine calendar days (rather than working days) of the reference date for half of all offenders in the merged dataset. On the other hand, for some offenders the assessment was completed more than a month after the reference date and one-quarter of offenders in the merged dataset were assessed 36 days or more afterwards. Nevertheless, selecting the earliest OASys within the period of one month before the reference date to one year after provides information on the characteristics of offenders at the closest observable time to the reference date.

[3] This unique identifier was generated as part of the data improvement project, which provided the linked data for this analysis (Ministry of Justice, 2011b).

2.4 Requirements

Table 1 reports the number and percentage of offenders from the merged datasets who were given a community order in 2008 and started each type of requirement. All tables are derived from the merged dataset, unless otherwise stated. In some cases offenders may have failed to commence a requirement given by the court or may not have completed the requirement. It is possible that the estimated impact of requirements presented in this report would be different if the analysis instead considered the impact of being given a requirement by the court, or the impact of completing a requirement, rather than the impact of commencing a requirement. Also, if the completion rate varied between the treatment and comparison groups this might bias the impact estimates. However, the fact that the two groups are matched on a wide range of other characteristics related to requirement type and re-offending behaviour may implicitly control for differences in the completion rate.

Table 1 Numbers of offenders placed under each requirement type, for the first community order in 2008

Requirement	Number of requirements	Percentage of offenders given requirement (base=total number of offenders)
Supervision	56,118	77.3
Unpaid work	30,429	41.9
Accredited programme	20,060	27.6
Drug rehabilitation	8,855	12.2
Curfew	6,143	8.5
Activity	6,122	8.4
Alcohol treatment	3,429	4.7
Prohibited activity	737	1.0
Residence	626	0.9
Mental health treatment	568	0.8
Exclusion	585	0.8
Attendance centre	151	0.2
Base	133,823	72,641

Offenders who commenced a community order with multiple requirements appear multiple times within Table 1. If an offender was given more than one community order in the year, only the requirements recorded against the first community order of 2008 are included. The reasons for, and implications of, focusing on the first community order in 2008 are discussed in Appendix B. More than three-quarters of community orders involved a supervision requirement, whilst around two-fifths included unpaid work. The requirement to participate in a programme was also relatively common, with more than one-quarter of community orders including this element. Around one-in-eight community orders included a requirement to participate in drug rehabilitation. The least common requirements were prohibited activities, residence requirements, mental health treatment, exclusion and the requirement to visit an attendance centre.

Table 2 provides information on the number of requirements received by offenders observed in the merged datasets. The maximum number of requirements placed on offenders for the first community order in 2008 was four, but it was far more common for offenders to receive just one or two requirements, with the average (mean and median) being two.

Table 2 Number of requirements per offender, for the first community order in 2008

Number of requirements	Offenders with a community order
Mean	1.84 requirements
1	36.5%
2	44.7%
3	16.9%
4	1.9%
Base (total number of offenders)	72,641

When focusing on the first community order received in 2008, there were 234 unique combinations of requirements for offenders observed in the merged datasets. Guidelines affect the prevalence of particular combinations of requirements, e.g. that a supervision requirement should accompany a programme requirement. Table 3 lists the 20 most common combinations of requirements and the numbers of offenders assigned to each. It shows that nearly half of all offenders within the cohort received one of the three most common combinations of requirements and over 90 per cent were assigned to one of the 20 most common combinations. It also illustrates the fact that residency and exclusion requirements, as well as prohibited activities and attendance centres, were rarely used, as they did not appear at all in the 20 most common combinations of requirements.

Table 3 Most common combinations of requirements for the first community order in 2008

Combination	Number of offenders	Percentage of total	Cumulative percentage
Unpaid work only	13,479	18.6	18.6
Supervision only	11,781	16.2	34.8
Supervision and accredited programme only	10,716	14.8	49.5
Unpaid work and supervision only	8,274	11.4	60.9
Supervision and drug rehabilitation only	5,459	7.5	68.4
Unpaid work, supervision and accredited programme only	3,908	5.4	73.8
Supervision and activity only	2,039	2.8	76.6
Supervision and alcohol treatment only	1,793	2.5	79.1
Supervision and curfew only	1,695	2.3	81.4
Supervision, accredited programme and drugs rehabilitation only	1,505	2.1	83.5
Unpaid work, supervision and activity only	977	1.3	84.8
Unpaid work and curfew only	926	1.3	86.1
Supervision, accredited programme and activity only	875	1.2	87.3
Supervision, accredited programme and curfew only	862	1.2	88.5
Curfew only	634	0.9	89.4
Supervision, accredited programme and alcohol treatment	612	0.8	90.2
Unpaid work, supervision and curfew only	586	0.8	91.0
Supervision, drug rehabilitation and activity only	458	0.6	91.7
Supervision and mental health treatment only	404	0.6	92.2
Unpaid work, supervision and alcohol treatment	375	0.5	92.7
Base	72,641		100.0

It is also relevant to consider the length of time that requirements last, as it is possible that offenders are deterred from re-offending whilst they are engaged in completing a requirement. Unfortunately, the recording of the length of requirements in the merged data was inadequate to be able to make comparisons between different requirement types. It is therefore only possible to give an indication of the maximum length of each requirement (Table 4). It is apparent from the table that there is scope for a great deal of variation in the length of requirements, even within each individual requirement type. Therefore, even if two offenders receive identical combinations of requirements, the impact may be very different if one is treated for a much longer period than the other. The impact estimates could be biased if the treatment and comparison groups were treated for different lengths of time.

Table 4 Length of requirements

Requirement	Length (range, or maximum sentence)
Supervision	Up to 36 months
Unpaid work	40–300 hours
Accredited programme	Dependent on the number of sessions
Drug rehabilitation	6–36 months
Curfew	Up to 6 months and for 2–12 hours in any one day
Activity	Up to 60 days
Alcohol treatment	6–36 months
Prohibited activity	Up to 36 months
Residence	Up to 36 months
Mental health treatment	Up to 36 months
Exclusion	Up to 24 months
Attendance centre	12–36 hours with a maximum of 3 hours per attendance

Source: Ministry of Justice (2012b: 5).

The length of some requirements is expressed in hours and so could be spread over an indeterminate number of months. However, it is clear that a curfew requirement, which lasts for a maximum of six months, is likely to be shorter than supervision, prohibited activity, residence and mental health treatment requirements, which can last for up to 36 months.

The average sentence length (across all requirements) for offenders who started a community order in 2008 was 14.9 months (Ministry of Justice, 2009: 14). To give some indication of the actual length of time over which community orders were completed, it is necessary to switch the focus to community orders which ***terminated*** in 2008. Table 5 shows the length of community orders which ended in 2008 after running their full course. This shows that around two-thirds of community orders lasted between one and two years. Around one-fifth lasted two years or more and less than one-in-eight lasted less than one year. However, only 49 per cent of community orders which terminated in 2008 ran their full course. Orders were terminated early for reasons which included the offender making good progress, or because they failed to comply with the requirements or were convicted of another offence.

Table 5 Length of community orders which ran their full course and terminated in 2008

Length	Number of community orders terminated after full course	Percentage of community orders terminated after full course
Under 1 year	7,282	11.8
1 year to less than 2 years	40,742	66.1
2 years to less than 3 years	11,660	18.9
3 years or more	1,931	3.1
Base	61,614	100

Source: Ministry of Justice (2009: Table 5.2), plus author's own calculations.

Notes: The discrepancy between the base and the sum of the cells is due to rounding.

The fact that a proportion of offenders were likely to have been participating in at least some requirements for most of the two-year period over which outcomes were observed means that, to some extent, this study captures the impact on re-offending whilst the offender was still subject to the community order. The length of some requirements meant that it was not feasible to measure outcomes after the end of the order, but it may be worthwhile to consider outcomes over a longer period at a future date to assess impacts on re-offending once all offenders have completed their requirements.

2.5 Categories of requirements

It was apparent from Table 1 that there was significant variation in the number of offenders given each of the 12 different requirements. In deciding whether it was likely to be viable to estimate the impact of particular packages of requirements and identify suitable comparison groups, it was necessary to consider whether the numbers of offenders given a particular requirement were likely to be sufficient to produce a meaningful analysis. To reduce the likelihood that the analysis was inconclusive because of insufficient cases for the analysis of some requirement types, it was decided to group the 12 requirements into broader categories covering practices which were similar in nature. Requirements were classified as follows:

- punitive – curfew and unpaid work;
- supervision;
- programme;
- substance misuse – drug rehabilitation and alcohol treatment;
- activity.

Requirements which were relatively unusual and did not fit within any of the five categories outlined above were excluded from any further analysis.[4] It was decided to seek to estimate the impact of unpaid work and curfew requirements separately, but the vast majority of offenders who were given a punitive requirement were required to do unpaid work (87.7 per cent).

2.6 Defining the treatment and comparison groups

A number of factors were considered in deciding on the treatment and comparison groups to be used in the analysis. Firstly, as one objective for the research was to provide evidence

[4] Whilst it might have been possible to place requirements which were relatively unusual into other categories, if requirements grouped together differed in their impact, the estimated effect of the category as a whole may have been misleading.

which could inform decisions made as a result of the Government consultation on changes to community sentences, there was an interest in analysis which could address the proposals under consideration. For this reason, there was a particular interest in the impact of adding a punitive requirement to community orders which did not contain a punitive element. Secondly, as some combinations of requirements are much less common than others, there were limited prospects for producing conclusive estimates of impact. Also, the impact of packages of requirements which were only relevant to a small proportion of offenders would arguably be of less interest. Finally, the time required to derive impact estimates for each of the four outcome measures considered meant that it was not feasible to consider all combinations of possible treatment and comparison groups. Therefore, it was decided to focus on the more common combinations of requirements, whilst using multiple comparison groups, wherever possible, to assess how impacts varied, depending on the particular combination of requirements considered. However, it may have been possible to identify statistically significant impact estimates for less common combinations of requirements if the impacts were sufficiently strong. Therefore, extending the analysis to look at other treatment and comparison groups may be a worthwhile avenue for further research.

Table 6 lists the treatment and comparison groups which appeared to offer the best prospects for answering the research questions and Appendix B provides a brief discussion of the impact of sample sizes on the choice of treatment and comparison groups. The first column in Table 6 provides a broad summary of what each set of treatment and comparison groups seeks to estimate. These divide into two basic types: estimates of the impact of adding a particular requirement type to a given package; and estimates of the impact of replacing one set of requirements with another. In the latter case, the focus is on replacing packages of non-punitive requirements with those which include a punitive element.

The columns headed ‘Requirement type’ show the combination of requirements which the offender had to have to appear in either the treatment (T) or comparison (C) group. For example, in the first row, those in the treatment group had a punitive requirement (either unpaid work and/or a curfew) as well as a supervision requirement. Those in the comparison group were subject to a supervision requirement alone. Where the cell is blank, no offenders in either the treatment or the comparison group were subject to the requirement. The table also shows the total number of offenders in the merged dataset who appeared in either the treatment or comparison group (but before taking into account whether complete information on all the characteristics used in the propensity score matching was available). There is some duplication within Table 6, in that a cohort which is defined as a treatment group for the purposes of evaluating the impact of one type of requirement can also be used as a

comparison group in the context of estimating the impact of another requirement type. The final column describes what an impact estimate based on the treatment and comparison groups would show.

Table 6 Description of treatment and comparison groups

Impact considered	Requirement type					Number treated	Number of comparators	Description of impact estimate
	Punitive		Supervision	Programme	Activity			
	Unpaid work	Curfew						
Impact of adding a punitive requirement	T		TC			10,841	12,675	Impact of adding a punitive requirement to a supervision requirement
	T		TC			8,464	12,675	Impact of adding an unpaid work requirement to a supervision requirement
		T	TC			1,695	12,675	Impact of adding a curfew requirement to a supervision requirement
	T		TC	TC		5,082	11,097	Impact of adding a punitive requirement to a supervision requirement plus a programme requirement
	T		TC	TC		3,977	11,097	Impact of adding an unpaid work requirement to a supervision requirement plus a programme requirement
		T	TC	TC		862	11,097	Impact of adding a curfew requirement to a supervision requirement plus a programme requirement
	T		TC		TC	1,313	2,127	Impact of adding a punitive requirement to a supervision requirement plus an activity requirement
Impact of adding a supervision requirement	TC		T			10,841	15,275	Impact of adding a supervision requirement to a punitive requirement
Impact of adding a programme requirement			TC	T		11,097	12,675	Impact of adding a programme requirement to a supervision requirement
	TC		TC	T		5,082	10,841	Impact of adding a programme requirement to a supervision requirement plus a punitive requirement

Impact considered	Requirement type					Number treated	Number of comparators	Description of impact estimate
	Punitive		Supervision	Programme	Activity			
	Unpaid work	Curfew						
Impact of adding an activity requirement			TC		T	2,127	12,675	Impact of adding an activity requirement to a supervision requirement
	TC		TC		T	1,313	10,841	Impact of adding an activity requirement to a supervision requirement plus a punitive requirement
Impact of replacing non-punitive requirements with punitive requirements	T		C			15,275	12,675	Impact of replacing a supervision requirement with a punitive requirement
	T		TC	C		10,841	11,097	Impact of replacing a supervision requirement plus a programme requirement with a supervision requirement plus a punitive requirement
	T		TC		C	10,841	2,127	Impact of replacing a supervision requirement plus an activity requirement with a supervision requirement plus a punitive requirement

Notes: T=Treatment group; C=Comparison group.

2.7 Matching variables

As mentioned earlier, for propensity score matching to provide a credible estimate of the impact of the different types of requirement, it is necessary to observe the important characteristics which determine the likelihood both that an individual re-offends and that they are assigned to a given requirement. This section describes the matching variables drawn from the merged datasets. The process of deriving the propensity score and matching the treatment and comparison groups is described in detail in Chapter 3.

Within the merged datasets it was possible to observe the following characteristics which were thought to predict the likelihood of re-offending and of being assigned to particular requirements:

- Demographic information: gender; age at reference date; ethnicity.
- Information on the reference offence: probation start month; offence type.[5]
- Information on criminal history: Copas rate (a measure which gives greater weight to recent offences than those committed in the more distant past); whether any previous offences.
- At time of assessment:
  - Attitudes to offence: offender recognises impact; offender accepts responsibility.
  - Accommodation: suitability of the location to avoid re-offending, i.e. local level of criminal activity, access to criminal contacts, proximity to victims.
  - Education, training and employability: offender unemployed or expected to be unemployed on release; offender has difficult employment history; problem with literacy or numeracy.
  - Relationships: offender is perpetrator of domestic violence; victim of domestic violence.
  - Lifestyle and associates: regular leisure activities encourage offending behaviour.
  - Drug or alcohol misuse: history of drug abuse; current drug user; motivation to tackle drug abuse; current alcohol abuse.
  - Emotional well-being: offender undergoing current or pending psychiatric treatment.

[5] The possibility of using the court's rating of the seriousness of the offence as a further matching variable was considered, but as this information is missing for around half of all offenders, it was decided that it would not be sufficiently informative.

  - Thinking and behaviour: problems controlling temper; problem-solving skills; aware of consequences of actions; able to understand views of others.
  - Attitudes: attitudes supportive of criminal behaviour; recognises impact and consequences of offending on victim/community/society.
  - Health and other considerations: physical or mental health condition which needs to be taken into account in sentencing; factors thought to reduce suitability for unpaid work or electronic monitoring; factors thought to reduce suitability for participation in a programme.
  - Offender group reconviction scale (OGRS3). This is an actuarial measure of the likelihood of re-offending.
  - Perceived risk posed to the community.
- Benefit, employment and labour market programme history prior to the reference date (including whether the offender was observed in the tax and benefits data). Only the history of claiming out-of-work benefits (Jobseeker's Allowance, Employment and Support Allowance, Incapacity Benefit, Income Support, Permanent Injury Benefit and Severe Disablement Allowance) was assessed. Alternative specifications were tried, one using a series of dummy variables to show whether the offender was in a particular state at any point during each week over the year prior to the reference date (i.e. similar to the approach used by Ainsworth and Marlow, 2011) and the other using summary variables indicating the number of weeks spent on benefits, in employment or on a labour market programme over the same year-long period. As both specifications produced very similar results, it was decided to only report results for the version which used the summary variables.

Appendix A provides detailed information on how these characteristics were defined and the source of these data, as well as the reasons for expecting these characteristics to be related to the likelihood of re-offending. However, the general principle applied when deciding which variables to include from OASys was to select those which formed part of what is known as the standard OASys. This was because the standard OASys is comprised of items which are considered most informative in predicting the likelihood of re-offending.[6]

[6] A small number of variables from the standard OASys were omitted where there was a high degree of correlation between items which collected similar information. For example, there was a high correlation between the variables which measured current alcohol abuse and binge drinking in the six months before assessment, and for multiple items on the suitability of the offender's accommodation.

It is possible that some of the characteristics observed in OASys might be affected if the offender had knowledge of the sentence when OASys was completed. However, the date of sentencing was not recorded for 29 per cent of offenders in the merged dataset and in other cases it was uncertain whether the recorded date of sentencing corresponded to the same probation spell. It was therefore not feasible to use this information to reliably determine whether OASys was completed before or after sentencing.

Prior to the data linking project, only information from the probation and re-offending data could be used when carrying out propensity score matching. These data would be adequate to produce well-matched treatment and comparison groups provided they captured all important characteristics likely to influence outcomes. However, as many offenders given a community order do not appear in the OASys data, restricting the analysis to the subset of offenders for whom this information is available means that the impact estimates are only likely to be representative of effects for offenders with more complex needs. To establish whether, in practice, OASys contained information which was important in improving the quality of the match between treatment and comparison groups, the analysis was repeated using a similar set of matching variables to that which has been used in past Ministry of Justice publications, for example the *2011 Compendium of re-offending statistics and analysis* (Ministry of Justice, 2011a).

Only offenders who appeared in the merged data were considered in the analysis, so that it was possible to assess the sensitivity of the results to matching the treatment and comparison groups on a much more limited range of characteristics. If the impact estimates produced were similar when offenders were matched on only those characteristics which could be observed in the probation and re-offending data, this would suggest that there was little additional value in matching offenders using characteristics observed only in the OASys data. This would strengthen the case for estimating impacts for the full population of offenders who started a community order in 2008, since there would be no reason to believe that the OASys data was essential to ensure that the treatment and comparison groups were well-matched.

The matching variables which were used in this alternative, probation and re-offending-only, model were as follows:

- Demographic information: gender; age at sentence date; age at sentence date squared; ethnicity.
- Information on the reference offence: offence type.

- Information on criminal history: Copas rate; number of previous offences; number of previous offences squared; number of previous convictions; number of previous convictions squared; number of previous prison sentences; number of previous prison sentences squared.

The impact estimates produced by this alternative model are reported in Chapter 5. For the sake of clarity, these matching variables are referred to as the **probation and re-offending-only model**, whilst the set of matching variables derived from the OASys, probation and re-offending and tax and benefits data are referred to as **the main model**.

The following section assesses the likelihood that impact estimates based on propensity score matching using the main model give an accurate impression of the probable impact of proposed changes to the current community order regime. Whether the cohort which is the focus of analysis is representative of the population of offenders currently being placed under community orders is therefore an important topic for consideration.

2.8 The representativeness of the cohort

To assess the degree of similarity in requirements placed on offenders who were observed across the probation, re-offending, OASys and tax and benefits datasets and the wider population of offenders given a community order in 2008, comparisons were made with published information on offenders given a community order in 2008 (Ministry of Justice, 2012b). To make a comparison with the available published data, it was necessary to focus on community orders, rather than offenders. As some offenders received multiple community orders within the year, the base reported in Table 7 exceeds that for Table 1.

Table 7 Number of community orders started in 2008 involving each requirement type, comparing merged data and published figures

Requirement	Merged data		Population	
	Number (base=total number of requirements)	Percentage (base=total number of community orders)	Number (base=total number of requirements)	Percentage (base=total number of community orders)
Supervision	63,134	77	77,777	41
Unpaid work	33,767	41	74,629	39
Accredited programme	21,977	27	26,483	14
Drug rehabilitation	10,691	13	13,153	7
Curfew	7,344	9	15,526	8
Activity	6,993	8	9,639	5
Alcohol treatment	3,829	5	4,664	2
Prohibited activity	821	1	1,116	1
Residence	710	1	956	1
Exclusion	669	1	1,029	1
Mental health treatment	610	1	739	0
Attendance centre	175	0	523	0
Base	150,720	82,437	226,234	190,171

Notes: Population numbers reported in Ministry of Justice (2012b).

Table 7 shows that just over two-fifths of all community orders started in 2008 appeared in the merged dataset (82,437 from a total of 190,171). There were also notable differences in the proportion of starts on particular requirement types between the merged data and the official statistics on community orders started during 2008. Whilst nearly four-fifths of community orders in the merged data involved a supervision requirement, only around two-fifths of all community orders included a supervision requirement, according to the figures published by Ministry of Justice. Community orders which involved participation in accredited programmes and drug rehabilitation also appeared to be more common in the merged data than in the published statistics on all community orders. The table demonstrates that focusing the analysis on offenders who received an OASys assessment and for whom information on re-offending was available meant that it was only likely to reflect the impact of requirements on a subset of offenders who are more likely to be placed under some of the requirement types than the general population of offenders sentenced to community orders.

2.9 The interpretation of outcomes

A further consideration is what each of the outcome variables captures and how they should be interpreted. As explained at the beginning of this chapter, two main types of outcome were considered: whether the offender re-offended within one or two years of the reference date; and the number of re-offences within one or two years of the reference date. The disadvantage of the re-offending rate outcome is that it gives no indication of the scale of re-offending. An offender who commits one further offence within two years of the reference

date is classified in the same way as an offender who commits multiple offences over this period. The number of re-offences committed can be used to distinguish between offenders who re-offend very occasionally and those who re-offend on a more frequent basis. It therefore offers advantages over the re-offending rate in this regard. However, where an offender has been convicted of further crimes, it is possible that the number of subsequent offences is reduced by the sentence received for the re-offences.

As the outcome measures vary in their ability to reflect different aspects of re-offending, looking at the impact of a particular package of requirements on each measure is likely to give a more complete understanding of relative effectiveness in achieving different goals compared to focusing on a single outcome. Appendix C provides information on each of the outcomes for the treatment and comparison groups prior to matching.

2.10 Summary

The need to use detailed information on offenders derived from OASys to identify those with a similar likelihood of re-offending affects the likely generalisability of the results of the analysis to the population of offenders receiving community orders, as not all offenders appear on the OASys database. In particular, tier one offenders (those with the least complex needs) who receive a standalone requirement to do unpaid work are unlikely to routinely receive an OASys assessment, so that those who are observed in the merged data are likely to be offenders who are harder to help. The much greater use of supervision requirements for offenders who appear in the merged data may reflect the greater complexity of their needs.

If the impact of a requirement varies with the needs of the offender, the estimated impact of a requirement to do unpaid work alone would be unrepresentative of its impact on the full population of offenders given an unpaid work requirement. There is also evidence that offenders who went through an OASys assessment were placed under a greater number of requirements than the wider population of offenders who received a community order in 2008. This further implies that the analysis will show the impact of particular requirement types on offenders with more complex needs than is typical of all offenders given a community order.

The following chapter explains in greater detail the methods used to produce the impact estimates and the assumptions which determine the credibility of the impact estimates produced. The importance of meeting these assumptions explains the decision to focus on the subset of offenders observed in the OASys data, even though the impact estimates produced may be unrepresentative of average effects across all offenders who received a community order in 2008.

3. Methods

3.1 Introduction

One difficulty that arises in estimating the relative effectiveness of one combination of requirements compared to another is that offenders with different characteristics and perceived likelihoods of re-offending are likely to be placed under different types of requirements. Comparing re-offending rates for offenders given different combinations of requirements would not provide a robust estimate of the impact of one package of requirements compared to another unless underlying differences in the re-offending rate between the two groups were also taken into account. This illustrates the fact that to evaluate the impact of a particular combination of requirements (the 'treatment') for those offenders who are subject to that combination, it is important to devise a credible estimate of what would have happened if they had instead been placed under a different set of requirements (the counterfactual). This is achieved using propensity score matching.

3.2 Propensity score matching

The aim of this approach is to estimate the counterfactual using observed outcomes for offenders in the comparison group who are similar to those in the treatment group in terms of characteristics likely to influence outcomes. This involves predicting the probability (or 'propensity') that offenders are treated (i.e. assigned to a particular package of requirements), given their observed characteristics, and then matching offenders in the treatment group to those in the comparison group who have a similar propensity score. Those identified as similar on this basis are then used as a comparison group whose observed outcomes can, suitably weighted, proxy for the counterfactual outcomes of those in the treatment group.

Deducting the estimated counterfactual outcome from the actual outcome for the treatment group gives the impact estimate. Where the difference between the estimated counterfactual rate of re-offending and the actual rate of re-offending is statistically significant, it is possible to conclude that the treatment has an impact on the re-offending rate, provided that the treatment and comparison groups are well-matched on all important characteristics related to outcomes and the probability of being treated.

3.3 Assumptions

Propensity score matching relies on the available data being sufficiently rich that it can credibly be argued to capture all important variables influencing outcomes and assignment to

the treatment. The assumption (known as the conditional independence assumption) is that after observable differences in characteristics between the treatment and the comparison groups have been controlled for, the two groups could be expected to attain similar outcomes in the absence of the treatment. In this study, OASys provides detailed information on a wide range of characteristics which are thought to be related to the types of requirements placed on offenders, as well as their likelihood of re-offending. This provides a promising basis for the analysis, but it is not possible to prove empirically that all important factors are observed and therefore that the conditional independence assumption has been met. Instead, a judgement as to whether this has been achieved must rely on knowledge of the assignment process and the factors that influence outcomes.

Related to this point, sentencing guidelines advise against the imposition of requirements which 'set an offender up to fail' (Sentencing Guidelines Council, 2004: 6). The aim is also to choose requirements which are thought more likely to reduce the probability of the offender re-offending (Sentencing Guidelines Council, 2004: 8). As a result, it is possible that estimates of the impact of a particular requirement on the offenders to whom it is given may not reflect its likely impact if it were extended to a much wider circle of offenders. It is important to bear in mind that the analysis shows the estimated average impact for a given set of offenders, rather than the average impact across all offenders.

3.4 Common support

It is sometimes the case that the characteristics of offenders in the treatment and comparison groups are so different that it is not possible to find offenders in the comparison group with a similar propensity score for some treated individuals. This is known as the problem of common support. The impact estimates relate only to the subset of offenders in the treatment group for whom similar offenders exist in the comparison group.

Therefore, the proportion of the treatment group who are outside the region of common support provides important information on the representativeness of the impact estimates. Chapter 4 shows that only a small proportion of offenders fall outside the region of common support in the analysis presented in this report. This means that the results are likely to reflect the average impact of each combination of requirements on all offenders within the merged dataset who receive that particular package.

3.5 Types of matching

Having used a probit regression to estimate propensity scores for offenders by predicting the likelihood that they are assigned to a particular set of requirements, given their characteristics, it is then necessary to identify individuals with matching propensity scores in the treatment and comparison groups. In theory it would be possible to select only those individuals from the comparison group with identical propensity scores to those in the treatment group when estimating the counterfactual. However, such a stringent requirement would be likely to mean that many treated offenders could not be matched to offenders in the comparison group, resulting in the eventual impact estimates relating to only a small – and probably unrepresentative – subset of the treatment group. Instead, it is usual to match offenders in the treatment and comparison groups who have propensity scores which fall within a certain range of each other. This is the approach taken here.

Three different matching techniques were used to produce and verify the results presented in this report: Epanechnikov kernel matching (with a bandwidth of 0.06); radius matching (with a caliper of 0.05); and local linear regression matching (using a Gaussian kernel type and bandwidth of 0.06). As well as using the default bandwidths and calipers (the thresholds used to determine whether individuals in the treatment and comparison groups are well-matched) from the software package used to produce the analysis (Stata – psmatch2),[7] the sensitivity of the results to using a much smaller bandwidth (of 0.0002)[8] for the kernel matching was explored. Nearest neighbour matching was not suited to this application as the size of the comparison groups relative to the treatment groups was insufficient to carry out nearest neighbour matching without replacement, whilst nearest neighbour matching with replacement was too computationally-intensive to be feasible for the large number of combinations of requirements considered within the timeframe of the project.

The performance of the kernel, radius and local linear regression matching was very similar, both in terms of the evidence that they resulted in well-matched treatment and comparison groups (discussed in the following section) and in producing similar impact estimates. The small proportion of the treatment group outside the region of common support showed that it was also possible to match the vast majority of the treatment group with offenders in the comparison groups with similar propensity scores, even after reducing the threshold used to

[7] See Leuven and Sianesi (2003) for details.

[8] There is no agreed formula for determining the optimal choice of bandwidth. Here the bandwidth was calculated using Silverman's Rule of Thumb (1986) with a factor of 1.06, i.e. $1.06\sigma n^{-1/5}$, where σ=the standard error of the propensity score and n=the sample size.

match the treatment and comparison groups for the kernel matching.[9] This suggests that the impact estimates are robust to the choice of matching technique and increases confidence in the findings. As a result, it was decided to focus on a single method (kernel matching, with a bandwidth of 0.06) when discussing impact estimates, to enhance the clarity of reporting. However, for the sake of completeness, Appendix D includes the impact estimates produced using radius and local linear regression matching and Appendix E reports the kernel matching with a bandwidth of 0.0002. The estimation of propensity scores for the analysis presented in Chapters 4 and 5 is reported in Appendices F and G respectively.

3.6 Balancing on observable characteristics

Having derived propensity scores by predicting the probability that an offender was assigned to a particular package of requirements, it was then possible to compare the observed characteristics of the treatment and matched comparison groups. If there were statistically significant differences between the two groups after matching, this would suggest that the comparison group did not provide a reliable benchmark against which to measure the impact of the chosen package of requirements.

Table 8 reports all statistically significant (at the 5 per cent level) differences which remained between the treatment and comparison groups after matching, for the 13 different packages of requirements considered. As is usual with propensity score matching, the focus here is on identifying differences between the treatment and matched comparison groups in mean characteristics. However, it is possible that there are differences between the two groups in the distribution of characteristics which are not evident when comparing mean values. Where no statistically significant differences remained after matching, the row is blank (cells indicated with a hyphen). The column headed ‘Mean standardised bias’ provides a summary measure of how the difference between the treatment and comparison groups is affected by the matching (for further details see Speckesser and Bewley, 2006: 84). It is not proposed to estimate impacts for the rows highlighted in grey for reasons which are explained below.

[9] The main impact of reducing the bandwidth to 0.0002 was to increase the proportion of the treatment group who fell outside the region of support and to increase the size of the impact estimates. This is consistent with excluding more extreme outliers from the analysis, but the overall conclusions on the effectiveness of particular combinations of requirements were not affected by requiring a closer match between treatment and comparison groups.

Table 8 Differences between treatment and comparison groups which remain after kernel matching, main model

Characteristic	Unmatched comparison group	Treatment group	Matched comparison group	Mean standardised bias
Adding a punitive requirement to a supervision requirement				
Perpetrator of domestic violence	31.8	32.5	34.2	-3.0**
Adding an unpaid work requirement to a supervision requirement				
Perpetrator of domestic violence	31.8	35.6	38.1	-4.4***
Number of weeks in employment in year before reference date	11.7	16.4	17.2	-3.6**
Adding a curfew requirement to a supervision requirement	-	-	-	-
Adding a punitive requirement to a supervision requirement plus a programme requirement	-	-	-	-
Adding an unpaid work requirement to a supervision requirement plus a programme requirement	-	-	-	-
Adding a curfew requirement to a supervision requirement plus a programme requirement	-	-	-	-
Adding a punitive requirement to a supervision requirement plus an activity requirement	-	-	-	-
Adding a supervision requirement to a punitive requirement				
Copas rate (natural log)	1.281	1.207	1.179	-3.2**
Adding a programme requirement to a supervision requirement				
Copas rate (natural log)	1.129	1.184	1.133	-5.5***
Suitability of location of accommodation (0–2 scale)	0.639	0.522	0.552	-3.4**
Offender unemployed at time of OASys, or expected to be on release	61.1	51.6	53.6	-3.6**
Offender has problematic employment history (0–2 scale)	0.987	0.751	0.792	-4.3***
Offender is victim of domestic violence	19.4	11.2	12.3	-2.6**
Whether regular leisure activities encourage offending behaviour (0–2 scale)	0.636	0.604	0.632	-3.3**
Offender has history of drug abuse	62.3	59.2	61.6	-3.5**
Offender is current drug user	22.8	15.4	17.2	-3.9***
Offender's motivation to tackle drug use (0–2 scale)	0.315	0.248	0.266	-3.1**
Offender has problems controlling temper (0–2 scale)	0.804	0.872	0.907	-3.3**
Offender able to understand views of others (0–2 scale)	0.700	0.711	0.739	-3.0**

Characteristic	Unmatched comparison group	Treatment group	Matched comparison group	Mean standardised bias
Attitudes supportive of criminal behaviour (0–2 scale)	0.349	0.348	0.373	-4.1***
Number of factors thought to reduce suitability for unpaid work or electronic monitoring (0–16 scale)	0.545	0.315	0.338	-2.5**
Highest risk in the community (1–4 scale)	1.634	1.754	1.775	-2.8**
Number of weeks on benefits in year before reference date	31.2	21.5	22.2	-3.0**
Adding a programme requirement to a supervision requirement plus a punitive requirement				
Copas rate (natural log)	1.207	1.049	1.004	-5.3***
Offender has problematic employment history (0–2 scale)	0.812	0.784	0.825	-4.3**
Adding an activity requirement to a supervision requirement	-	-	-	-
Adding an activity requirement to a supervision requirement plus a punitive requirement	-	-	-	-
Replacing a supervision requirement with a punitive requirement				
Asian, including Chinese	3.2	5.4	4.6	3.8***
Sexual offences	13.6	12.5	11.9	2.5**
Motoring offences	0.3	1.0	0.7	3.7***
Drug offences	5.9	5.5	6.2	-3.1***
Public order offences	2.0	4.1	3.1	6.0***
Copas rate (natural log)	1.129	1.281	-1.200	-8.6***
No previous offences, excluding Police Notice for Disorders	10.1	14.8	12.9	5.1***
Offender recognises impact of offending	75.5	79.7	78.5	2.6**
Offender unemployed at time of OASys, or expected to be on release	61.1	44.6	47.2	-3.5***
Offender has problematic employment history (0–2 scale)	0.987	0.666	0.713	-3.9***
Perpetrator of domestic violence	31.8	1.7	24.1	-4.7***
Offender is victim of domestic violence	19.4	7.0	7.8	-2.1**
Whether regular leisure activities encourage offending behaviour (0–2 scale)	0.636	0.447	0.499	-5.7***
Offender has history of drug abuse	62.3	53.3	57.6	-5.1***
Offender is current drug user	22.8	11.7	13.7	-3.8***
Offender's motivation to tackle drug use (0–2 scale)	0.315	0.214	0.242	-4.0***
Offender currently abusing alcohol	69.7	40.3	43.1	-2.3***
Undergoing current or pending psychiatric treatment	14.6	2.1	2.6	-1.4**
Offender has problems controlling temper (0–2 scale)	0.804	0.600	0.655	-4.3***
Offender able to understand views of others (0–2 scale)	0.700	0.473	0.516	-4.2***
Attitudes supportive of criminal behaviour (0–2 scale)	0.349	0.294	0.334	-6.0***

Characteristic	Unmatched comparison group	Treatment group	Matched comparison group	Mean standardised bias
Highest risk in the community (1–4 scale)	1.634	1.474	1.506	-3.2***
Replacing a supervision requirement plus a programme requirement with a supervision requirement plus a punitive requirement				
Copas rate (natural log)	1.184	1.207	1.139	-8.3***
No previous offences, excluding Police Notice for Disorders	9.6	10.7	8.9	5.9***
Offender group reconviction scale	32.2	35.8	37.7	-4.8***
Offender has problematic employment history (0–2 scale)	0.751	0.812	0.849	-4.7***
Whether regular leisure activities encourage offending behaviour (0–2 scale)	0.604	0.547	0.570	-2.9***
Offender has history of drug abuse	59.2	60.7	62.6	-2.8**
Offender has good problem-solving skills (0–2 scale)	1.189	1.084	1.113	-3.7***
Offender aware that actions have consequences (0–2 scale)	1.070	0.980	1.010	-3.9***
Offender able to understand views of others (0–2 scale)	0.711	0.643	0.670	-3.3**
Attitudes supportive of criminal behaviour (0–2 scale)	0.348	0.337	0.364	-4.5***
Number of weeks in employment in year before reference date	15.7	15.3	14.9	2.7**
Replacing a supervision requirement plus an activity requirement with a supervision requirement plus a punitive requirement				
Aged 30–34 at reference date	13.4	12.3	11.3	3.2**
February reference date	9.3	8.5	9.3	-2.8**
May reference date	7.8	7.8	8.7	-3.3**
Robbery	0.2	0.4	0.2	3.7***
Other indictable offences	0.8	1.0	0.6	4.3***
Copas rate (natural log)	1.038	1.207	1.176	-3.3***
Offender group reconviction scale	36.5	35.8	37.3	-3.3**
Offender unemployed at time of OASys, or expected to be on release	68.6	53.2	56.7	-6.7***
Offender has problematic employment history (0–2 scale)	1.164	0.812	0.858	-5.2***
Offender has problems with literacy or numeracy (0–2 scale)	0.585	0.348	0.399	-6.6***
Whether regular leisure activities encourage offending behaviour (0–2 scale)	0.767	0.547	0.582	-4.3***
Offender currently abusing alcohol	75.6	58.7	64.3	-6.3***
Attitudes supportive of criminal behaviour (0–2 scale)	0.367	0.337	0.359	-3.7***

Notes: Only differences which are statistically significant at the 5 per cent level or higher are reported in this table. ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better. Figures are percentages, unless otherwise stated.

It is apparent from Table 8 that the treatment and comparison groups were well-matched on observable characteristics for most of the combinations of requirements considered. Assessing the match between treatment and comparison groups on 35 characteristics, two or fewer differences between the two groups were statistically significant for all of the models which involved adding a punitive requirement to other requirements, or adding a supervision, or activity, requirement, to other packages. This strengthens the case for believing that impact estimates produced using these models would be robust and so impact estimates for these requirements are presented in the following chapter.

Table 8 shows that impact estimates for adding a programme requirement to a supervision requirement may be less reliable. For this reason, it was decided not to report impact estimates for this combination of requirements. However, there were few statistically significant differences in the observed characteristics of the treatment and comparison groups when adding a programme requirement to supervision plus a punitive requirement and so the impact of this combination is considered in the following chapter.[10]

Finally, the table shows the statistically significant differences in the characteristics of treatment and comparison groups when replacing one set of requirements with another. In all cases, the number of outstanding differences after matching was large and these differences were spread across a wide range of characteristics. This is perhaps unsurprising as the reasons for assigning offenders to one package of requirements rather than another are likely to mean that where those in the treatment and comparison groups share fewer requirements, they are more likely to differ on observed characteristics. As the differences in the characteristics of the two groups imply that outcomes for the comparison group are likely to provide a poor estimate of outcomes for the treatment group, the impact of replacing one package of requirements with an alternative package is not considered further in this report.

Although knowing that treatment and comparison groups are similar on observed characteristics increases confidence that the impact estimates reported in the following chapter are likely to be reliable, there are other factors which must also be taken into account. If there are unobserved characteristics which differ between the treatment and comparison groups which affect re-offending behaviour, this could mean that the impact

[10] Given the importance of the Copas rate in predicting re-offending behaviour, further analysis was used to explore whether the treatment and comparison groups were better-matched when the kernel bandwidth was reduced to 0.0001, and whether this affected the estimated impact of adding a supervision requirement to a punitive requirement, or of adding a programme requirement to a supervision requirement plus a punitive requirement. Although this increased the proportion of the treatment group who fell outside the region of common support, the statistically significant difference between the treatment and comparison groups in the Copas rate disappeared, whilst the impact estimates had the same sign and remained statistically significant.

estimates are not robust. For example, there may be an imbalance between the treatment and comparison groups in the proportion of offenders who have a personality disorder. Also, if a large proportion of offenders in the treatment group cannot be matched to members of the comparison group with a similar propensity score, the impact estimates produced would not be representative of impacts for all treated offenders. For this reason, the following chapter will consider the proportion of the treatment group who cannot be matched to offenders in the comparison group before discussing the impact of each package of requirements.

4. Results

4.1 Introduction

This chapter reports the main findings of the analysis which matched offenders using information from probation, re-offending, OASys and tax and benefit records (the main model). This means that results are based on the model which appeared most likely to provide a robust estimate of the impact of each package of requirements on re-offending.

As noted in the previous chapter, there was a good match between the observed characteristics of the treatment and comparison groups used in the analysis presented in this chapter. This increases confidence that, provided the treatment and comparison groups are also well-matched on unobserved characteristics, the impact estimates reported are robust. How representative the impact estimates are of average effects across the whole of each treatment group is considered in the discussion which follows.

Throughout this chapter, we have used the conventionally accepted levels of statistical significance for the results. Results at the 1% level (or better) are highlighted in tables with three asterisks, at the 5% level (or better) with two asterisks. Results at the 10% level (or better), which are generally considered to be just outside the accepted level of statistical significance are highlighted with a single asterisk.

4.2 Impact of adding a punitive requirement

The tables presented in this chapter follow a consistent format and so this section provides detailed guidance on their interpretation which applies throughout the rest of the chapter. Table 9 shows the estimated impact of adding a punitive requirement to a supervision requirement. To take the first outcome as an example, the ‘Counterfactual’ column reports the estimated proportion of offenders who received a punitive requirement plus a supervision requirement expected to re-offend in the year following the reference date if they had received a supervision requirement alone (37.7 per cent).

Table 9 Impact of adding a punitive requirement to a supervision requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-0.9	0.8	37.7	-2.3
Percentage re-offending within 2 years	0.9	0.8	48.8	1.9
Number of re-offences within 1 year	-0.105**	0.044	1.286	-8.1**
Number of re-offences within 2 years	-0.167**	0.069	2.219	-7.5**
Percentage of treatment group off support	0.1			
Number of treatment group off support	11			
Number in treatment group on support	10,175			
Number in comparison group	11,782			
Total sample size	21,957			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better.

The column headed ‘Impact estimate’ shows that adding a punitive requirement to a supervision requirement was estimated to reduce the likelihood of re-offending by -0.9 percentage points. Expressed as a proportion of the expected outcome (the counterfactual), adding a punitive requirement to a supervision requirement reduced the re-offending rate by 2.3 per cent (the ‘Relative impact’). The relatively large standard error in comparison to the size of the impact estimate means that this finding was not statistically significant.

Table 9 shows that there was also evidence that adding a punitive requirement to a supervision requirement had no impact on the re-offending rate when this was measured over a period of two years following the reference date. However, the addition of a punitive requirement reduced the number of re-offences committed within the first year following the reference date by 8.1 per cent. The number of re-offences committed over the full two-year period following the reference date was reduced by 7.5 per cent when a punitive requirement was added to a supervision requirement.

The final rows of Table 9 report statistics which are common across all the outcome measures. The percentage of the treatment group outside the region of common support (‘off support’) indicates the proportion of those in the treatment group who could not be matched to offenders in the comparison group with a similar propensity score. If a large percentage of the treatment group were off support, this would imply that the impact estimates were unlikely to be representative of impacts for the full sample of offenders receiving a given package of requirements. In the case of Table 9, 0.1 per cent of offenders (11 from a total of 10,186) who received a punitive requirement in addition to a supervision requirement could not be matched to an offender with a similar propensity score who received a supervision requirement alone. This suggests that the model is likely to provide

a reliable estimate of the average impact of adding a punitive requirement to a supervision requirement.

Given the high degree of similarity between the treatment and comparison groups after matching and the fact that matches were found for the vast majority of members of the treatment group, there is reason to believe that the impact estimates presented in Table 9 provide a robust estimate of the impact of adding a punitive requirement to a supervision requirement on the re-offending rate and the number of re-offences (so long as there are no other important characteristics that have been omitted). The data appendices shows that a similar pattern was apparent when using alternative matching estimators (Appendix D, Table 34) and a reduced bandwidth (Appendix E, Table 45). This being the case, it is possible to conclude with a reasonable degree of certainty that adding a punitive requirement to a supervision requirement does not deter offenders from committing further crimes, but it does reduce the frequency of re-offending. It also appears that the pattern of punitive requirements reducing the number of re-offences committed was sustained over the full time-period considered.

When focusing on the impact of the unpaid work requirement alone, Table 10 suggests that unpaid work had no impact on the re-offending rate or the number of re-offences committed. When the analysis was repeated imposing stricter criteria for the closeness of the match between the treatment and comparison groups (see Appendix E, Table 46), adding an unpaid work requirement to a supervision requirement reduced the number of re-offences committed within two years of the reference date by 7.0 per cent, although this impact was just outside conventionally-accepted levels of statistical significance, at the 10 per cent level (p-value of 0.07).

Table 10 Impact of adding an unpaid work requirement to a supervision requirement

Outcome, measured from reference date				**Kernel matching**
	Impact estimate	**Standard error**	**Counterfactual**	**Relative impact (per cent)**
Percentage re-offending within 1 year	-0.1	0.9	35.4	-0.3
Percentage re-offending within 2 years	1.3	0.9	46.3	2.9
Number of re-offences within 1 year	-0.047	0.046	1.169	-4.0
Number of re-offences within 2 years	-0.105	0.073	2.016	-5.2
Percentage of treatment group off support	0.1			
Number of treatment group off support	5			
Number in treatment group on support	7,939			
Number in comparison group	11,782			
Total sample size	19,721			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 11 shows that the addition of a curfew requirement to a supervision requirement reduced the number of re-offences committed within one and two years of the reference date, by 12.1 per cent in the first year and 8.5 per cent in the second year. The impact on the percentage of offenders re-offending within one year of the reference date was only statistically significant at the 10 per cent level (p-value of 0.08), although the local linear regression matching (Appendix D, Table 36) and matching with a reduced bandwidth (Appendix E, Table 47) produced stronger evidence that the re-offending rate was reduced over the first year following the reference date (by 6.4 and 7.0 per cent respectively and statistically significant at the 5 per cent level). The results suggest that the impacts from punitive requirements reported in Table 9 were largely driven by the impact of curfew requirements, rather than unpaid work.

Table 11 Impact of adding a curfew requirement to a supervision requirement

Outcome, measured from reference date				**Kernel matching**
	Impact estimate	**Standard error**	**Counterfactual**	**Relative impact (per cent)**
Percentage re-offending within 1 year	-2.3*	1.3	44.6	-5.2*
Percentage re-offending within 2 years	0.0	1.3	56.1	0.1
Number of re-offences within 1 year	-0.202***	0.072	1.664	-12.1***
Number of re-offences within 2 years	-0.245**	0.111	2.879	-8.5**
Percentage of treatment group off support	0.0			
Number of treatment group off support	0			
Number in treatment group on support	1,674			
Number in comparison group	11,782			
Total sample size	13,456			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Returning to the impact of punitive requirements in general, Table 12 shows that adding a punitive requirement to a package which included a supervision requirement and a programme requirement had no impact on either the re-offending rate or the number of offences committed within either one or two years of the reference date. Almost all offenders who received a punitive requirement in addition to a supervision requirement and a programme requirement could be matched to offenders in the comparison group with a similar propensity score and so the findings are likely to be representative of average impacts across treated offenders. However, Appendix D (Table 37) shows that when using local linear regression matching, the addition of a punitive requirement had an impact in reducing the number of re-offences committed within two years of the reference date which approached statistical significance. This equated to a reduction of 5.6 per cent and was statistically significant at the 10 per cent level (p-value of 0.06).

Table 12 Impact of adding a punitive requirement to a supervision requirement plus a programme requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-0.6	0.9	39.1	-1.4
Percentage re-offending within 2 years	-0.7	0.9	52.7	-1.3
Number of re-offences within 1 year	-0.022	0.044	1.254	-1.8
Number of re-offences within 2 years	-0.102	0.066	2.204	-4.6
Percentage of treatment group off support	0.1			
Number of treatment group off support	4			
Number in treatment group on support	4,712			
Number in comparison group	10,339			
Total sample size	15,051			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Again, it was possible to consider whether an unpaid work requirement had an impact on re-offending behaviour when it was added to a package which included a supervision requirement plus a programme requirement. The vast majority of offenders (99.9 per cent) who were given an unpaid work requirement as well as a supervision requirement plus a programme requirement could be matched to offenders given only a supervision requirement plus a programme requirement with a similar propensity score (see Table 13). Although adding an unpaid work requirement to this alternative package did not appear to have any impact on the re-offending rate or number of re-offences committed in the two years following the reference date, the local linear regression model found that the number of re-offences committed within two years of the reference date was reduced by 6.0 per cent, albeit only at the 7 per cent level of statistical significance (Appendix D, Table 38).

Table 13 Impact of adding an unpaid work requirement to a supervision requirement plus a programme requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	0.0	1.0	37.6	0.1
Percentage re-offending within 2 years	-0.3	1.0	51.1	-0.6
Number of re-offences within 1 year	-0.009	0.047	1.189	-0.7
Number of re-offences within 2 years	-0.101	0.070	2.094	-4.8
Percentage of treatment group off support	0.1			
Number of treatment group on support	2			
Number in treatment group on support	3,691			
Number in comparison group	10,339			
Total sample size	14,030			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Adding a curfew requirement to a supervision requirement plus a programme requirement also appeared to have no impact on the rate or frequency of re-offending over the two years following the reference date (Table 14). However, when the closeness of the match between the treatment and comparison groups was increased, the addition of a curfew requirement was shown to reduce the percentage of offenders re-offending within one year of the reference date and the number of re-offences committed over this period (by 11.3 per cent and 12.7 per cent respectively). Also, the number of re-offences committed within two years of the reference date was reduced by 9.9 per cent, although this finding was only statistically significant at the 10 per cent level (p-value of 0.07) (Appendix E, Table 50). Appendix D (Table 39) also shows that there was some evidence from the local linear regression model that the percentage of offenders re-offending within a year of the reference date was reduced by the addition of a curfew requirement to a supervision requirement, but only at the 10 per cent level of statistical significance (p-value of 0.06). It is likely that the small number of offenders in the treatment group explains why the statistical significance of the results varied depending on the matching technique used.

Table 14 Impact of adding a curfew requirement to a supervision requirement plus a programme requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-2.3	1.8	42.6	-5.3
Percentage re-offending within 2 years	-0.7	1.8	56.3	-1.2
Number of re-offences within 1 year	-0.061	0.090	1.427	-4.3
Number of re-offences within 2 years	-0.085	0.131	2.490	-3.4
Percentage of treatment group off support	0.0			
Number of treatment group on support	0			
Number in treatment group on support	826			
Number in comparison group	10,339			
Total sample size	11,165			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Moving on to the impact of adding a punitive requirement to a supervision requirement combined with an activity requirement, Table 15 indicates that the proportion of offenders in the treatment group who could not be matched to offenders with a similar propensity score in the comparison group was 0.5 per cent. However, when the criteria used to identify suitable matches between the treatment and comparison group was tightened, more than two-fifths of treated offenders fell outside the region of common support (Appendix E, Table 51). This suggests that offenders who receive a supervision requirement in combination with an activity requirement are not suitable comparators for offenders who receive this package with a punitive requirement. It is therefore possible that the evidence that the addition of a punitive

requirement to a combination of a supervision requirement plus an activity requirement had no impact on re-offending behaviour was actually due to the poor match between the treatment and comparison groups. For this reason, the impact of adding a punitive requirement to this particular package is not considered any further.

Table 15 Impact of adding a punitive requirement to a supervision requirement plus an activity requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-2.6	2.0	46.1	-5.7
Percentage re-offending within 2 years	-0.4	2.0	58.4	-0.7
Number of re-offences within 1 year	-0.059	0.120	1.651	-3.6
Number of re-offences within 2 years	-0.152	0.185	2.813	-5.4
Percentage in treatment group off support	0.5			
Number of treatment group off support	6			
Number in treatment group on support	1,230			
Number in comparison group	1,975			
Total sample size	3,205			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

4.3 Impact of adding a supervision requirement

This section turns to the impact of adding a supervision requirement to a punitive requirement. Table 16 shows that where a supervision requirement was used in combination with a punitive requirement, the supervision element reduced both the rate of re-offending and the number of re-offences. This pattern was sustained into the second year after the initial offence. In the first year after the reference date, 41.6 per cent of those in the treatment group would have been expected to re-offend if they had been given a punitive requirement alone. The addition of the supervision requirement reduced re-offending by 11.5 per cent. In the second year following the reference date, the impact of the supervision requirement in reducing the re-offending rate was slightly lower, at 6.8 per cent. Over this period 53.3 per cent of those given a supervision requirement in addition to a punitive requirement would have been expected to re-offend if they had been given the punitive requirement alone.

Table 16 Impact of adding a supervision requirement to a punitive requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-4.8***	0.7	41.6	-11.5***
Percentage re-offending within 2 years	-3.6***	0.7	53.3	-6.8***
Number of re-offences within 1 year	-0.173***	0.032	1.354	-12.7***
Number of re-offences within 2 years	-0.196***	0.049	2.247	-8.7***
Percentage of treatment group off support	0.1			
Number of treatment group off support	6			
Number in treatment group on support	10,185			
Number in comparison group	13,834			
Total sample size	24,019			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 16 shows that, on average, giving offenders a supervision requirement in addition to a punitive requirement reduced the number of re-offences committed within one year of the reference date by 12.7 per cent. Within two years of the reference date, the number of re-offences committed was reduced by 8.7 per cent when a supervision requirement was used to supplement a punitive requirement. Similar effects were evident when using alternative matching estimators and requiring a closer match between the treatment and comparison groups.

The findings suggest that supervision is effective in reducing the re-offending rate and the number of offences committed by those placed under a punitive requirement. Whilst the previous section indicated that punitive requirements can be effective in reducing the frequency of re-offending, with the strength of this effect varying depending on the precise combination of requirements, it appears that a supervision requirement can increase the positive impact of a punitive requirement on both the re-offending rate and the frequency of re-offending. However, there were some signs that the magnitude of this effect was reduced in the second year over which outcomes were measured.

4.4 Impact of adding a programme requirement

This section considers the impact of adding a programme requirement to a supervision requirement plus a punitive requirement. Although the possibility of estimating the impact of adding a programme requirement to a supervision requirement alone was explored (as mentioned in Chapter 3), the poor match between the treatment and comparison groups on observed characteristics meant that any impact estimates produced were unlikely to be robust.

Table 17 indicates that it was possible to find offenders who received a supervision requirement plus a punitive requirement who had a similar propensity score to almost all offenders who additionally started a programme requirement. This means that, provided there are no unobserved characteristics which would result in differences in outcomes for the treatment and comparison groups, the impact estimates are likely to be representative of average impacts for treated offenders.

Table 17 Impact of adding a programme requirement to a supervision requirement plus a punitive requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-3.8***	0.9	42.4	-9.0***
Percentage re-offending within 2 years	-4.0***	1.0	56.0	-7.1***
Number of re-offences within 1 year	-0.202***	0.045	1.435	-14.1***
Number of re-offences within 2 years	-0.369***	0.068	2.472	-14.9***
Percentage of treatment group off support	<0.1			
Number of treatment group off support	1			
Number in treatment group on support	4,715			
Number in comparison group	10,186			
Total sample size	14,901			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

The table shows that adding a programme requirement to a supervision requirement plus a punitive requirement reduced the rate of re-offending and the number of re-offences committed over the period considered. More than two-fifths (42.4 per cent) of offenders given a programme requirement in addition to a supervision requirement plus an activity requirement would have been expected to re-offend within one year of the reference date if they had been given a supervision requirement plus the punitive requirement alone. Adding a programme requirement to this package reduced the re-offending rate over this period by 9.0 per cent. Over a two-year period, the re-offending rate was reduced by 7.1 per cent. Also, adding a programme requirement to a supervision requirement plus a punitive requirement reduced the number of re-offences committed within one year of the reference date by 14.1 per cent. Again, this impact was sustained over the second year after the reference date, when the programme requirement reduced the average number of re-offences by 14.9 per cent. Therefore, Table 17 suggests that adding a programme requirement to a package which included a supervision requirement plus a punitive requirement had a sustained effect in reducing the re-offending rate and the number of re-offences committed. Similar findings were evident when impacts were estimated using alternative matching estimators and a reduced bandwidth.

4.5 Impact of adding an activity requirement

Adding an activity requirement to a supervision requirement did not appear to have any impact on the re-offending rate or the number of re-offences committed over the two-year period following the reference date (Table 18). As the vast majority of offenders in the treatment group could be matched to offenders in the comparison group with a similar propensity score, this suggests that there is little benefit in giving offenders an activity requirement in combination with a supervision requirement, rather than just a supervision requirement alone. This was also the case when using alternative matching estimators and requiring a stronger match between treatment and comparison groups.

Table 18 Impact of adding an activity requirement to a supervision requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	0.8	1.2	44.3	1.8
Percentage re-offending within 2 years	0.6	1.2	55.6	1.1
Number of re-offences within 1 year	<0.001	0.072	1.647	0.0
Number of re-offences within 2 years	0.005	0.115	2.834	0.2
Percentage of treatment group off support	0.2			
Number of treatment group off support	4			
Number in treatment group on support	1,971			
Number in comparison group	11,782			
Total sample size	13,753			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 19 shows that there was also evidence that adding an activity requirement to a supervision requirement in combination with a punitive requirement had no impact on either the rate of re-offending or the number of re-offences committed. Of course, it is possible that adding an activity requirement to other combinations of requirements may be effective in reducing the rate or frequency of re-offending, but the lower number of offenders given other packages of requirements including an activity meant that it was not feasible to explore this further in this report.

Table 19 Impact of adding an activity requirement to a supervision requirement plus a punitive requirement

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-0.1	1.5	43.6	-0.3
Percentage re-offending within 2 years	0.8	1.5	57.2	1.5
Number of re-offences within 1 year	0.099	0.086	1.488	6.7
Number of re-offences within 2 years	0.105	0.128	2.550	4.1
Percentage of treatment group off support	0.1			
Number of treatment group off support	1			
Number in treatment group on support	1,235			
Number in comparison group	10,186			
Total sample size	11,421			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

4.6 Summary

This chapter has focused on the impact of adding a requirement to an alternative package. It concentrates on the most common combinations of requirements, to maximise the likelihood that the sample sizes are sufficient to produce conclusive results. Also, the previous chapter showed that, in some cases, it was unlikely to be possible to produce a robust estimate of the impact of a requirement, as there were many remaining differences between the observed characteristics of treatment and comparison groups after matching. Therefore, this chapter has only reported impact estimates for requirements where the treatment and comparison groups were well-matched on observed characteristics, meaning that the impact estimates were likely to be reliable, provided that offenders were also well-matched on unobserved characteristics which determined re-offending behaviour and the requirements received.

For almost all combinations of requirements considered it was possible to find offenders in the comparison group with a similar propensity score. The exception was adding a punitive requirement to a supervision requirement plus an activity requirement when the bandwidth was reduced. With this exception, the impacts reported are likely to be representative of average impacts across almost the entire treatment group. Although this chapter has focused on results produced using kernel matching, Appendix D demonstrates that radius and local linear regression matching produced very similar impact estimates. This was also the case when the bandwidth used to identify close matches was reduced (Appendix E), increasing confidence in the robustness of the findings.

Turning to the impact of particular requirement types, the addition of a punitive requirement to other combinations of requirements did not appear to prevent offenders from re-offending,

but in some cases it did reduce the frequency of re-offending. Adding a punitive requirement to a supervision requirement reduced the number of re-offences committed within the first year of the reference date by 8.1 per cent. Furthermore, this impact was sustained into the second year following the reference date, when the number of re-offences committed was reduced by 7.5 per cent. It appeared that this result was largely driven by the impact of curfew requirements, as whilst all of the matching techniques suggested that the addition of a curfew requirement reduced the number of re-offences committed over the two years following the reference date (by 12.1 per cent in the first year and 8.5 per cent in the second), this was much less evident when an unpaid work requirement was added to supervision. The addition of a curfew requirement to supervision also appeared to reduce the re-offending rate over the first year following the reference date in the models reported in Appendices D and E.

The evidence that adding a punitive requirement to other combinations of requirements affected re-offending was weaker, but there were some signs (from the analysis reported in Appendix D) that when a punitive requirement was added to a supervision requirement, plus a programme requirement, the number of offences committed within two years of the reference date was reduced by 5.6 per cent. Also, there was evidence from the additional analysis that, at least over the two-year period following the reference date, the number of re-offences committed when an unpaid work requirement was added to either a supervision requirement alone, or a supervision requirement plus a programme requirement fell. However, once again there was stronger evidence that adding a curfew requirement to supervision plus a programme requirement reduced the re-offending rate and the number of re-offences committed over the first year following the reference date (see Appendices D and E).

Secondly, the analysis found that a supervision requirement can enhance the effectiveness of a punitive requirement. Adding a supervision requirement to a punitive requirement reduced both the rate of re-offending and the number of re-offences committed in the first and second years after the reference date. This suggests that where offenders are being considered for a punitive requirement, the likelihood of them re-offending may be further reduced by also placing them under supervision.

Adding a programme requirement to a supervision requirement plus a punitive requirement was effective in reducing the re-offending rate and the frequency of re-offending, but there was evidence that adding an activity requirement to a supervision requirement, or to a supervision requirement plus a punitive requirement, had no impact on re-offending outcomes.

5. Prospects for extending the analysis to all offenders placed under a community order

5.1 Introduction

A further avenue for exploration is whether the impact estimates are affected by the characteristics on which the treatment and comparison groups are matched. This is of interest, because one difficulty with using OASys data to estimate the impact of different types of requirements is that it is only available for offenders who went through this assessment process. Offenders with less entrenched and complex problems are less likely to have a comprehensive assessment. If the impact of particular requirements differs between the sample of offenders used in the analysis presented so far and those deemed to have less serious problems who therefore do not appear in the OASys data, the results may not be representative of impacts on the wider population of offenders who received a community order.

The analysis presented in this chapter assesses whether matching the treatment and comparison groups on the more limited range of characteristics which are available for all offenders produces similar impact estimates for the subset of offenders who had an OASys compared to the results which emerged when they were matched on a wider range of characteristics. If both models produced similar results, this would strengthen the case for believing that an analysis which used a reduced set of matching variables for all offenders given a community order would nevertheless give an accurate picture of the impact of different combinations of requirements. On the other hand, if matching using variables available for all produced quite different results to those resulting from the main model, this would suggest that an analysis using the probation and re-offending variables only for all offenders given a community order would be potentially misleading, as unobserved characteristics which affected re-offending behaviour would be omitted.

5.2 Balancing on observable characteristics

Table 20 reports all statistically significant differences between the treatment and comparison groups in the characteristics used in the matching for each combination of outcomes for which impact estimates were reported in Chapter 4. Only variables which were available on the probation and re-offending dataset were used in the matching (known as the probation and re-offending-only model). In most cases, there were no, or few, statistically significant differences between the treatment and comparison groups after matching across the eight characteristics captured by the matching variables. However, given the small number of

matching variables available in the probation and re-offending data, all statistically significant differences between the treatment and comparison groups are a cause for concern.

Table 20 Number and types of differences between treatment and comparison groups which remain after matching on probation and re-offending variables

Characteristic	Unmatched comparison group	Treatment group	Matched comparison group	Mean standardised bias
Adding a punitive requirement to a supervision requirement	-	-	-	-
Adding an unpaid work requirement to a supervision requirement	-	-	-	-
Adding a curfew requirement to a supervision requirement	-	-	-	-
Adding a punitive requirement to a supervision requirement plus a programme requirement	-	-	-	-
Adding an unpaid work requirement to a supervision requirement plus a programme requirement	-	-	-	-
Adding a curfew requirement to a supervision requirement plus a programme requirement				
Age at sentence	32.9	28.5	29.6	-10.6**
Age at sentence squared	1195.3	898.4	967.6	-9.5**
Adding a supervision requirement to a punitive requirement				
Female	9.8	13.0	11.9	3.4**
Adding a programme requirement to a supervision requirement plus a punitive requirement				
Summary motoring	12.0	30.1	27.5	6.5***
Female	13.0	6.3	5.3	3.5**
Copas rate (natural log)	1.207	1.049	1.004	-5.3***
Adding an activity requirement to a supervision requirement	-	-	-	-
Age at sentence	33.6	30.6	31.2	-6.1
Adding an activity requirement to a supervision requirement plus a punitive requirement	-	-	-	-

Notes: Only differences which are statistically significant at the 5 per cent level or higher are reported in this table. ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better. Figures are percentages, unless otherwise stated.

The following sections report the impact estimates produced when matching those in the treatment and comparison groups using only information available on the probation and

re-offending dataset. They also highlight the main similarities and differences between the impact estimates from the probation and re-offending-only model and those produced when matching offenders using a much wider range of information taken from the OASys and tax and benefits datasets, as well as the probation and re-offending data (reported in Chapter 4).

5.3 Impact of adding a punitive requirement

Table 21 shows that when offenders were matched on probation and re-offending variables, both the re-offending rate and the number of re-offences committed appeared to fall when a punitive requirement was added to a supervision requirement. When offenders were matched on a much wider range of characteristics (Table 9), there was evidence that the re-offending rate over either a one- or two-year period was unaffected by the addition of a punitive requirement. The impact on re-offending behaviour of adding a punitive requirement to a supervision requirement therefore appears stronger when matching offenders on a much narrower range of characteristics.

Table 21 Impact of adding punitive requirement to a supervision requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-3.2***	0.7	40.0	-7.9***
Percentage re-offending within 2 years	-1.6**	0.7	51.3	-3.2**
Number of re-offences within 1 year	-0.184***	0.033	1.365	-13.4***
Number of re-offences within 2 years	-0.305***	0.049	2.357	-12.9***
Percentage of treatment group off support	0.1			
Number of treatment group off support	7			
Number in treatment group on support	10,179			
Number in comparison group	11,782			
Total sample size	21,968			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

A similar pattern was apparent when the impact of adding unpaid work to a supervision requirement was estimated (Table 22). The clear effects on all outcome measures contrast with the much weaker evidence (only evident when requiring a stronger match between the treatment and comparison groups and reported in Appendix E, Table 46) that the addition of an unpaid work requirement reduced the number of offences committed within two years of the reference date when the treatment and comparison groups were matched on a wider range of characteristics (Table 10).

Table 22 Impact of adding an unpaid work requirement to a supervision requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-3.1***	0.7	38.3	-8.0***
Percentage re-offending within 2 years	-2.0***	0.7	49.7	-4.1***
Number of re-offences within 1 year	-0.151***	0.034	1.273	-11.9***
Number of re-offences within 2 years	-0.287***	0.050	2.199	-13.1***
Percentage of treatment group off support	0.1			
Number of treatment group off support	7			
Number in treatment group on support	7,937			
Number in comparison group	11,782			
Total sample size	19,726			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

There was a much clearer correspondence between the impact estimate produced by the probation and re-offending model (Table 23) and those from the main model (Table 11) when the impact of adding a curfew requirement to a supervision requirement was considered.

Table 23 Impact of adding a curfew requirement to a supervision requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-2.2*	1.3	44.5	-5.0*
Percentage re-offending within 2 years	0.3	1.3	55.8	0.6
Number of re-offences within 1 year	-0.193***	0.071	1.655	-11.7***
Number of re-offences within 2 years	-0.228***	0.109	2.862	-8.0***
Percentage of treatment group off support	0.0			
Number of treatment group off support	0			
Number in treatment group on support	1,674			
Number in comparison group	11,782			
Total sample size	13,456			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Both the model which matched offenders from the treatment and comparison groups on probation and re-offending variables only (Table 24) and the model which matched them on a much wider range of characteristics suggested that adding a punitive requirement to a supervision requirement plus a programme requirement reduced the number of re-offences committed within two years of the reference date. However, for the main model, this effect was only apparent when using the local linear regression matching estimator (see Appendix D, Table 37).

Table 24 Impact of adding a punitive requirement to a supervision requirement plus a programme requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent
Percentage re-offending within 1 year	-1.3	0.8	39.8	-3.2
Percentage re-offending within 2 years	-1.2	0.8	53.3	-2.3
Number of re-offences within 1 year	-0.042	0.041	1.276	-3.3
Number of re-offences within 2 years	-0.118**	0.059	2.223	-5.3**
Percentage of treatment group off support	0.0			
Number of treatment group off support	0			
Number in treatment group on support	4,716			
Number in comparison group	10,339			
Total sample size	15,055			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

In the case of adding an unpaid work requirement to a supervision requirement plus a programme requirement (Table 25), when offenders were matched using only probation and re-offending records, adding an unpaid work requirement appeared to reduce the number of re-offences committed within two years of the reference date. The evidence for this was weaker when offenders were matched on a much more detailed range of characteristics (Table 13), but there were signs that this was the case when using the local linear regression estimator (see Appendix D, Table 38).

Table 25 Impact of adding an unpaid work requirement to a supervision requirement plus a programme requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-0.8	0.9	38.5	-2.1
Percentage re-offending within 2 years	-1.0	0.9	51.8	-2.0
Number of re-offences within 1 year	-0.033	0.042	1.214	-2.7
Number of re-offences within 2 years	-0.127**	0.061	2.120	-6.0**
Percentage of treatment group off support	0.1			
Number of treatment group off support	2			
Number in treatment group on support	3,689			
Number in comparison group	10,339			
Total sample size	14,030			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

As with the main model (Table 14), the probation and re-offending model (Table 26) found that adding a curfew requirement to a supervision requirement plus a programme requirement had no impact on any of the re-offending outcomes considered.

Table 26 Impact of adding a curfew requirement to a supervision requirement plus a programme requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-1.7	1.8	42.0	-4.1
Percentage re-offending within 2 years	0.1	1.8	55.5	0.2
Number of re-offences within 1 year	-0.032	0.089	1.398	-2.3
Number of re-offences within 2 years	-0.024	0.130	2.428	-1.0
Percentage of treatment group off support	0.0			
Number of treatment group off support	0			
Number in treatment group on support	826			
Number in comparison group	10,339			
Total sample size	11,165			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

5.4 Impact of adding a supervision requirement

The impact of adding a supervision requirement to a punitive requirement appeared much greater when offenders in the treatment and comparison groups were matched on a wider range of characteristics. As Table 27 shows, only the likelihood of the offender re-offending within one year of the reference date was reduced (by 3.1 per cent) when a supervision requirement was added to a punitive requirement for offenders matched using only the probation and re-offending variables. When offenders were matched on the full set of matching variables, this reduction in re-offending appeared to be sustained over a two-year period and the number of re-offences committed within one and two years of the reference date was also reduced (as shown in Table 16).

Table 27 Impact of adding a supervision requirement to a punitive requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-1.2**	0.6	38.0	-3.1**
Percentage re-offending within 2 years	-0.1	0.6	49.8	-0.2
Number of re-offences within 1 year	-0.031	0.028	1.212	-2.6
Number of re-offences within 2 years	0.005	0.041	2.046	0.2
Percentage of treatment group off support	<0.1			
Number of treatment group off support	2			
Number in treatment group on support	10,184			
Number in comparison group	13,834			
Total sample size	24,025			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

5.5 Impact of adding a programme requirement

When offenders in the treatment and comparison groups were matched on the probation and re-offending variables only (Table 28), the impact of adding a programme requirement to a package which included a supervision requirement and a punitive requirement was similar to that which emerged when matching using a much wider range of characteristics (Table 17). In both cases, the one- and two-year re-offending rates and the number of re-offences committed within one and two years of the reference date were reduced by the addition of the programme requirement. However, the model which matched offenders on a more complete set of characteristics suggested that the impact of the programme requirement on the number of re-offences committed was greater.

Table 28 Impact of adding a programme requirement to a supervision requirement plus a punitive requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-2.3***	0.8	40.8	-5.6***
Percentage re-offending within 2 years	-2.4***	0.8	54.4	-4.3***
Number of re-offences within 1 year	-0.099**	0.041	1.333	-7.4**
Number of re-offences within 2 years	-0.197***	0.060	2.302	-8.6***
Percentage of treatment group off support	<0.1			
Number of treatment group off-support	2			
Number in treatment group on support	4,714			
Number in comparison group	10,186			
Total sample size	14,902			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

5.6 Impact of adding an activity requirement

Adding an activity requirement to a supervision requirement did not appear to have any impact on re-offending behaviour in either the model which matched the treatment and comparison groups using only probation and re-offending variables (Table 29), or the model which matched offenders on a more comprehensive range of characteristics (Table 18).

Table 29 Impact of adding an activity requirement to a supervision requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	1.0	1.1	44.0	2.3
Percentage re-offending within 2 years	0.7	1.1	55.4	1.3
Number of re-offences within 1 year	0.028	0.065	1.619	1.7
Number of re-offences within 2 years	0.049	0.101	2.795	1.7
Percentage of treatment group off support	0.0			
Number of treatment group off-support	0			
Number in treatment group on support	1,975			
Number in comparison group	11,782			
Total sample size	13,757			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Adding an activity requirement to a supervision requirement plus a punitive requirement did not have an impact on the rate of re-offending or the number of re-offences committed within one or two years of the reference date in either the model which matched treatment and comparison groups on a wide range of characteristics (Table 19), or that which matched them on only variables from the probation and re-offending data (Table 30). However, the impact of adding an activity requirement on the number of re-offences committed within one year of the reference date was only just outside the 5 per cent level of statistical significance when offenders were only matched on characteristics observed in the probation and re-offending data.

Table 30 Impact of adding an activity requirement to a supervision requirement plus a punitive requirement, probation and re-offending-only model

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	0.5	1.4	42.9	1.2
Percentage re-offending within 2 years	1.5	1.4	56.5	2.7
Number of re-offences within 1 year	0.154*	0.079	1.435	10.7*
Number of re-offences within 2 years	0.192*	0.115	2.466	7.8*
Percentage of treatment group off support	0.2			
Number of treatment group off support	2			
Number in treatment group on support	1,236			
Number in comparison group	10,186			
Total sample size	11,424			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

5.7 Summary

Although for some combinations of requirements matching offenders on the probation and re-offending variables detailed in Chapter 2 produced similar impact estimates to those which

resulted from the model which matched treatment and comparison groups on a much wider range of characteristics, in other cases the impact estimates were quite different. For example, when estimating the impact of adding a programme requirement to a supervision requirement plus a punitive requirement, the general conclusions about whether a programme requirement had an impact on re-offending behaviour drawn from either model would be similar. By contrast, adding a punitive requirement to a supervision requirement appeared to reduce the re-offending rate as well as the number of re-offences when the treatment and comparison groups were matched on the probation and re-offending variables, but only the latter was evident when offenders were matched on a wider range of characteristics. Also, the positive impact of adding a supervision requirement to a punitive requirement on re-offending behaviour would be far less apparent when matching on the probation and re-offending variables only, rather than when additionally using the OASys data. As well as the fact that matching the treatment and comparison groups on a far more limited range of characteristics changes some of the broad conclusions which would be drawn from the models, in some cases, excluding characteristics had an impact on the magnitude of the impact estimates.

Turning to the reasons for the differences between the impact estimates produced when matching treatment and comparison groups on information available on the probation and re-offending data compared to matching them on a greater number of characteristics, there is clearly a risk of bias from unobserved variables if only a small range of factors which affect the requirement type the offender receives and their likelihood of re-offending are used to identify suitable matches. The probation and re-offending variables alone are unlikely to capture many of the differences between offenders which determine the requirements that they receive and the probability that they commit further offences. For this reason, it is clearly preferable to use OASys data in addition to information from the probation, re-offending and tax and benefits datasets when estimating the impact of particular combinations of requirements for all offenders for whom these data are available.

It is possible that the characteristics which are observed in the OASys dataset are not predictive of requirement type or re-offending behaviour for the offenders who are not observed in the OASys data. However, the analysis has suggested that these characteristics are important at least for the subset of offenders observed in the OASys data, so if they were ignored, this would be likely to affect the estimated average impact of some packages of requirements.

Even if the model statistics suggest that the treatment and comparison groups are well-matched on observed characteristics and it is possible to find comparison group members with a similar propensity score for almost all offenders in the treatment group, the impact estimates produced using propensity score matching are unlikely to be accurate if important observed or unobserved characteristics which affect the requirement type chosen and the likelihood of re-offending are omitted from the estimation of the propensity score. It is unsurprising that the two models often produce different impact estimates (in magnitude and/or statistical significance), given that one clearly does much more to seek to reduce differences between the treatment and comparison groups which are likely to result in differences in outcomes. This chapter has shown that the conclusions on the impact of particular combinations of requirements would in some cases be different if the same sample of offenders were matched using probation and re-offending data, rather than the more detailed information which is available on the OASys dataset. This suggests that repeating the analysis reported in this chapter for the full population of offenders given a community order could produce misleading results.

6. Conclusions

6.1 Summary

Purpose

The purpose of this study has been to estimate the relative effectiveness of the different types of requirements placed on offenders who receive a community order in reducing re-offending. This analysis is designed to expand the evidence base on community sentences. As re-offending behaviour is only one of the considerations which affects the choice of requirements made by the sentencer, the analysis is limited in scope. For example, the need to provide reparation, punishment and a deterrent to others may also shape the choice of requirements. However, it is difficult to measure the achievement of some of the goals which sentences seek to address, and so the analysis focuses on observable outcomes.

To be able to estimate the impact of requirements over a two-year period after starting on probation, the analysis focused on offenders who received a community order in 2008. However, any differences between the regime which existed at the time and that which is currently in place were considered unlikely to affect the generalisability of the results to the present time-period.

The treatment

As there are 12 different types of requirement, and offenders can be given any combination of these, there are a huge potential number of different packages of requirements. It was therefore not feasible to estimate the impact of every possible combination of requirements. Instead it was decided to group together those which were deemed to be similar in their intent and likely impact. This resulted in five main categories of requirement: punitive; supervision; accredited programmes; activities; and substance misuse. Requirements which did not fall into these main categories were excluded from further analysis, as the numbers of offenders given these requirements were unlikely to be sufficient to produce a conclusive estimate of impact. It was also decided to exclude substance misuse requirements from further analysis, given the differences between offenders with drug and alcohol problems and other groups of offenders.

Having developed the categorisation of requirements, the analysis then focused on estimating the impact of the most common combinations of requirements. The results produced therefore show the impact on re-offending behaviour of a given group of offenders

being placed under one package of requirements compared with another set of requirements.

Method and limitations

The impact estimates were produced using propensity score matching. With this method, results are only likely to reflect the true impact of a particular combination of requirements if offenders in the treatment and comparison groups are well-matched on all important characteristics related to the package of requirements received and their likelihood of re-offending. If important characteristics which differ between the two groups are omitted when estimating the propensity score for individuals, the estimated impact of a given package of requirements may be biased.

The OASys dataset contains detailed information on offender characteristics. Using this information reduces the likelihood that the treatment and comparison groups would be poorly-matched on important characteristics compared to an analysis which used variables from the probation and re-offending data alone. Chapter 5 highlighted the fact that for some packages of requirements, different conclusions would be reached if offenders were matched using the probation and re-offending variables alone, rather than the more complete information from the OASys and tax and benefits records. However, the disadvantage of using the OASys data is that this information is only collected for offenders with more complex needs. This means that an analysis of the impact of particular combinations of requirements which is based on the subset of offenders who are observed in the OASys dataset is unlikely to be representative of impacts for the wider group of offenders sentenced to a community order.

The analysis focused on the impact of starting a community order, rather than the impact of all requirements given by the court, regardless of whether the offender complied with them, or the impact of completing a requirement. It is possible that the estimated impact of requirements would be different if the analysis considered the impact of being given a requirement by the court, or the impact of completing a requirement. Related to this point, if the completion rate varied between the treatment and comparison groups this might bias the impact estimates. However, the fact that the two groups are matched on a wide range of other characteristics related to requirement type and re-offending behaviour may implicitly control for differences in the completion rate.

A further limitation which arises when seeking to estimate the impact of community orders is the fact that offenders who received a community order in 2008 may differ in their likelihood

of re-offending depending on the length of time that they spend on probation and whether they subsequently received other sentences which affected their re-offending behaviour in the two years over which outcomes were measured. If the treatment and comparison groups differed in the length of requirements or the likelihood that they receive other sentences, this might bias the impact estimates. Observing re-offending outcomes after the end of the community order might overcome this difficulty, but would require a much longer lag between the start of the order and the point at which outcomes could be measured.

Focusing first on offenders who re-offend, in this case the offender may receive a subsequent sentence which either acts as a stronger deterrent against re-offending than the initial community order, or prevents them from committing further offences, e.g. a custodial sentence. Without detailed information on the length of all subsequent sentences and custodial spells, it is not possible to control for the impact of any such differences between offenders in estimating the average impact of a particular package of requirements. However, whilst this might affect the estimated impact of a package of requirements on the number of re-offences committed, it would not affect the re-offending rate.

It may also be important to control for the proportion of time spent on probation in the year, or two years, over which outcomes are observed if offenders were less likely to commit further offences whilst they were on probation. The probation and re-offending dataset contained the start and end dates of probation spells for community orders and suspended sentences which started in 2008. However, other probation spells which began within the one- or two-year period following the reference date were not observed. Also, it is uncertain whether the start and end dates of probation spells are sufficiently well-recorded to be meaningful if the analysis focused solely on the length of the first community order within 2008.[11] It may be useful to explore the recording of information on the length of probation spells in some detail to assess the potential value of using these data in future analyses.

In practice, the matching process itself may minimise the difference between the treatment and comparison groups in the length of time spent on probation, or serving subsequent custodial sentences. Certainly it seems likely that the length of the probation spell is likely to be determined by the types of characteristics which also shape the choice of requirements and the likelihood of re-offending. If this is the case, the propensity score matching may ensure that the treatment and comparison groups are effectively similar in terms of the

[11] For example, in some cases there was no end date for the first probation spell, indicating that it was ongoing, yet subsequent spells were recorded within 2008. Also, if the offender moved to another probation area, the probation spell was recorded as having ended.

amount of time subsequently spent on probation, or serving custodial sentences, thus reducing the likelihood that differences in re-offending behaviour between the treatment and matched comparison groups are due to the composition of each.

Results

Table 31 summarises the estimated impact of each combination of requirements considered in the analysis. The impact of adding some requirement types to other packages could not be considered due to small sample sizes, or evidence that the treatment and comparison groups were not well-matched on important characteristics likely to influence re-offending behaviour. Table 31 shows the relative impact of each additional requirement type and the number of characteristics where there were statistically significant differences between the treatment and comparison groups after matching. The final two columns give the percentage of the treatment group who could not be matched to offenders with a similar propensity score in the comparison group and the total number of offenders in the treatment and comparison groups on which the estimates are based.

Table 31 Summary of impact estimates from the main model

Combination of requirements	Relative impact on: Re-offending within: 1 year	2 years	Number of re-offences within: 1 year	2 years	Kernel matching Unbal.	% off support	Base
Adding a punitive requirement to a supervision requirement	-2.3	1.9	-8.1**	-7.5**	1	0.1	21,968
Adding an unpaid work requirement to a supervision requirement	-0.3	2.9	-4.0	-5.2	2	0.1	19,726
Adding a curfew requirement to a supervision requirement	-5.2*	0.1	-12.1***	-8.5**	0	0.0	13,456
Adding a punitive requirement to a supervision requirement plus a programme requirement	-1.4	-1.3	-1.8	-4.6	0	0.1	15,055
Adding an unpaid work requirement to a supervision requirement plus a programme requirement	0.1	-0.6	-0.7	-4.8	0	0.1	14,032
Adding a curfew requirement to a supervision requirement plus a programme requirement	-5.3	-1.2	-4.3	-3.4	0	0.0	11,165
Adding a supervision requirement to a punitive requirement	-11.5***	-6.8***	-12.7***	-8.7***	1	0.1	24,025
Adding a programme requirement to a supervision requirement plus a punitive requirement	-9.0***	-7.1***	-14.1***	-14.9***	2	<0.1	14,902
Adding an activity requirement to a supervision requirement	1.8	1.1	0.0	0.2	0	0.2	13,757
Adding an activity requirement to a supervision requirement plus a punitive requirement	-0.3	1.5	6.7	4.1	0	0.1	11,422

Notes: Unbal.=number of characteristics where statistically significant differences remained between the treatment and comparison groups after matching. ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

The analysis found that adding a punitive requirement to a supervision requirement did not have any impact on the re-offending rate. However, it did reduce the number of re-offences committed over the first two years following the reference date. There was evidence that the impact of adding a punitive requirement to a supervision requirement was driven by the impact of curfew requirements, rather than unpaid work. There was weak evidence that the number of re-offences committed within two years of the reference date was lower when a punitive requirement was add to a supervision requirement plus a programme requirement. However, effects were not as strong as those which were apparent when a punitive requirement was added to a supervision requirement.

Adding a supervision requirement to a punitive requirement reduced both the rate of re-offending and the number of re-offences committed in the first and second years after the

reference date. However, the size of the effects was slightly reduced in the second year. The analysis implies that where the option of giving an offender a standalone punitive requirement is being considered, adding supervision to this may reduce re-offending, at least in the two-year period over which outcomes were measured. There was also evidence that the re-offending rate and the frequency of re-offending were reduced when a programme requirement was added to a package which included a supervision requirement and a punitive requirement. Adding the requirement to take part in an activity to a supervision requirement, or to a supervision requirement plus a punitive requirement, had no impact on re-offending outcomes over the two-year period considered.

The impact estimates reported are likely to be representative of the average impact of each package of requirements on offenders observed in the merged dataset, as few offenders given a particular package of requirements could not be matched to similar offenders in the comparison group. Also, impact estimates produced using different techniques of identifying the best matches for each treated offender were similar, so the results do not appear to be sensitive to the choice of matching estimator or to the closeness of the match required. Nevertheless, carrying out an analysis using alternative methods of identifying causal impact would provide a check on the robustness of the impact estimates produced using propensity score matching.

In conclusion, for the combinations of requirements that it was possible to consider in this report, there was evidence that increasing the punitive element of community orders would not have a detrimental effect on the re-offending rate. Furthermore, in some combinations it may reduce the number of re-offences committed by those subject to a community order. However, it is important to ensure that punitive requirements are used in combination with other requirements which can be used to enhance their effectiveness, such as supervision and programme requirements. It is also necessary to consider the costs of increasing the use of requirements. This is discussed in further detail in the following section.

6.2 Extensions

The need for further analysis of the impact of substance misuse requirements has been noted elsewhere. The following sections suggest a number of other avenues for research which may increase understanding of the relative effectiveness of different requirement types and produce evidence which could assist in making policy decisions in this area. There is a distinction between analysis designed to address additional research questions and that which might enhance understanding of the results of this study, but where the prospects of producing conclusive evidence may be weaker.

Additional research questions

Additional outcome measures

Looking at the impact of packages of requirements on different outcome measures is important in gaining a nuanced understanding of effectiveness. As outcome measures differ in what they capture, a study which focused on a single outcome measure may fail to identify important effects from a particular combination of requirements. Whilst to some extent this study avoided this pitfall by assessing impacts on both the re-offending rate and the number of re-offences committed, it may be informative to extend the analysis to consider other outcomes, such as the rate of violent re-offending. It is possible that where requirement types did not reduce the rate or number of re-offences when added to other packages, they might still have had an impact on other outcome measures. Exploring this further would give a more detailed understanding of the impact of particular packages of requirements.

Longer-term impacts

As noted in Chapter 2, the length of community orders and particular requirement types implies that many offenders would have been participating in the order into at least the early part of the second year over which outcomes were measured. However, only around one-fifth of offenders who completed a community order had a sentence which lasted for two years or more. Repeating the analysis to look at the impact of requirements on re-offending rates over three years or longer, would give an indication of impacts over a period which would be less likely to be affected by continued participation in the community order. An assessment of the quality of available information on the length of requirements might also make it possible to control for the impact of continued participation in future analyses.

Cost-benefit analysis

Whilst the analysis explored whether adding a particular requirement type to an alternative package reduces re-offending, it is possible that the costs of increasing the use of some requirements would outweigh the benefits. For example, although it appeared that placing offenders who were given a punitive requirement under supervision was likely to reduce both their likelihood of re-offending and the number of re-offences committed, the savings resulting from reduced re-offending may be outweighed by the costs of adding a supervision requirement to every standalone punitive requirement. If, alternatively, the use of supervision requirements was increased without a commensurate increase in staffing, the effectiveness of supervision requirements may fall. If this is the case, there may be no justification for using supervision requirements for all offenders who receive a punitive requirement. The likely costs and benefits associated with adding requirements to packages which involved fewer requirements would therefore be an important consideration in making policy decisions.

A further consideration in any cost-benefit analysis is that rates of compliance with requirements by offenders may change if particular packages are used more frequently. The analysis focuses on the impact of starting a requirement, but in practice, some offenders do not begin the sentence given by the court. It cannot be assumed that offenders will start requirements at the same rate if the proportion given particular combinations increases.

Analysis to enhance understanding of results and their generalisability

Assessing how well OASys captures differences between offenders given particular packages of requirements

Qualitative research with probation officers may give a more detailed understanding of how well OASys captures differences between offenders given particular combinations of requirements. It would be helpful to identify any important offender characteristics which affect the choice of requirements and re-offending behaviour which probation officers feel are not captured by OASys and to determine whether such reports are common across probation trusts (suggesting that they might result in biased impact estimates).

Assessing the stability of the results over time

Having estimated the impact of particular combinations of community order requirements in 2008, further work is needed to establish whether the effects observed for this particular year are typical of the impact of requirements for later cohorts of offenders. Repeating the study for offenders starting a community order in 2009 would give some indication of whether the estimated impacts were stable over time. However, it would be necessary to ensure that any observed changes in impact were due to actual changes in effectiveness over time, rather than changes in the composition of the groups of offenders given particular packages of requirements.

Analysis of impacts on subsets of offenders

It is possible that combinations of requirements vary in their effectiveness for different groups of offenders. It may be informative to carry out further analysis for offenders with a greater likelihood of re-offending (as measured by the OGRS), to see how their re-offending behaviour is affected by particular packages of requirements. However, such an analysis may be inconclusive if sample sizes for the sub-groups are insufficient.

Exploring the generalisability of the findings to all offenders who received a community order

Chapter 2 demonstrated that the sample of offenders on which the analysis presented in this report is based were far more likely to be placed under a supervision requirement than the

wider population of offenders who received a community order in 2008. They were also more likely to be required to participate in an accredited programme or drug rehabilitation. The fact that the OASys data was only collected for offenders who were thought to have more complex needs means that the sample is likely to be skewed towards offenders who are more likely to re-offend. The differences in the impact estimates produced when the analysis was repeated for the subset of offenders observed in the OASys data, but using only matching variables observed in the probation and re-offending data, suggested that the treatment and comparison groups would be poorly-matched if the OASys data was ignored. However, matching offenders using tax and benefits data, as well as the probation and re-offending data, would be likely to improve the comparability between the treatment and comparison groups on employment and benefit characteristics. Therefore, it may be useful to explore whether using this additional information results in impact estimates for the sample of offenders in the merged data which are similar to those produced when offenders were additionally matched using characteristics observed in the OASys data.

Estimating the impact of completed requirements

In some cases an offender may be placed under requirements which they do not subsequently commence, for example if the offender fails to attend. As mentioned previously, this report has focused on the impact of requirements which the offender started to comply with. However, some offenders do not complete all the requirements which are given as part of the community order and, if reliable data is available, it may be useful to assess whether there are differences in the re-offending rate between offenders who start a requirement, but do not complete it, and those who do complete the full course. On the other hand, if completion rates vary between different requirement types, even if one type of requirement appears to be highly-effective for those who complete it, its overall effectiveness may be poor if most offenders placed under that requirement fail to finish it.

In addition, it is possible that the timing of requirements within a package shapes their effectiveness. For example, some packages of requirements may be more effective when they are administered at the same time, whilst others may have a greater impact when they occur in a particular sequence. If detailed and accurate information on the start and end dates of each requirement was available, an analysis of these data might provide a useful insight which could help to maximise the effectiveness of particular combinations of requirements.

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Appendix A
Matching variables

The following table provides detailed information on the matching variables used in the analysis presented in Chapter 4. It gives the source of each variable, the method of construction and the reasons for inclusion.

Table 32 Matching variables used in the main model

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
female	Gender	PROB	0=Male 1=Female		Gender differences in the likelihood of committing the initial offence which may mean women have different characteristics to men on other matching variables, e.g. criminal history
ageband	Age at reference date	PROB	**1=18–20** 2=21–24 3=25–29 4=30–34 5=35–39 6=40–49 7=50 and over	Used to derive a series of seven dummy variables (age1–age7). Consistent with the banding used in *2011 Compendium of re-offending statistics and analysis*. Using version from PROB as the OASYS version is banded, with only 4 categories and almost half of all offenders in the 25–40 age band	Age at time of offence appears on Standard OASys, i.e. it is one of the factors most highly correlated with the likelihood of re-offending
ethbroad	Ethnicity	PROB	**1=White, including Irish and other** 2=Mixed, including other ethnic group 3=Asian, including Chinese 4=Black 5=Refusal/Not recorded	Detailed classification (ethnic) used to derive a series of 5 dummy variables (eth1–eth5) as may not be feasible to use more detailed categories in the matching	Known links between ethnicity, labour market, participation and region, which may affect alternatives to crime

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
pmonth	Reference month	PROB	1–12 corresponding to the 12 months of the year with January as the reference category	Used to derive a series of 12 dummy variables (pmon1–pmon12)	Relevant if seasonal patterns in offending behaviour, i.e. if financial pressures which result in increased offending at particular times of year
offence	Offence type	PROB	1=Sexual offences 2=Robbery 3=Theft and handling stolen goods 4=Fraud and forgery 5=Arson and criminal damage 6=Motoring offences 7=Other indictable 8=Summary motoring **9=Summary offences** 10= Burglary 11=Vehicle theft and unauthorised taking 12=Drug offences 13=Public order	Derived from offence2 (2-digit offence code) with categories collapsed into the broad offence groups used in Ministry of Justice publications. Three smallest categories of offence excluded from further analysis as they accounted for less than 100 offenders each: dangerous driving; violence against the person; non-criminal offences and payment default	Hazard of re-offending known to vary for different offence types (see *2011 Compendium of re-offending statistics and analysis*)
copas_rate_excpnds	Natural log of the number of court convictions and cautions and excluding Police Notice for Disorders+1 and divided by the length of the criminal career in years+10	PROB	Range from -3.95 to 1.99		Thought to be the best predictor of the likelihood of re-offending from the available criminal history variables as it reflects the density of previous offences, rather than just the raw number, i.e. greater weight to recent offences than those committed in the more distant past

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
noprev	No previous offences, excluding Police Notice for Disorders	PROB	0=No 1=Yes	Derived from prev_offences_excpnds (all offences including court convictions and cautions and all offences primary and non primary). Coded to 0 if no previous offences and 1 if 1 or more (and not missing)	Used in conjunction with Copas rate to distinguish between those who committed an offence a long time in the past and those who have never committed an offence, as these two groups of offenders would have similar Copas scores
s2q6_offender_recognise_impact	Offender recognises impact of offending	OASYS	0=No 1=Yes		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s2q11_resp_of_offence	Offender accepts responsibility for offence	OASYS	0=No 1=Yes		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s3q6_location	Suitability of location of accommodation	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
ounemp	Offender unemployed at time of OASys, or expected to be on release	OASYS	0=No 1=Yes	The original data item was coded to zero or 2 and this was used to derive a dummy variable	From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s4q3_employment_history	Offender has problematic employment history	OASYS	0=No problems 1=Some problems 2=Significant problems	Used to provide a summary of longer-term employment history, to supplement the more detailed DWP and HMRC variables	Not on the Standard OASys, but previous employment history likely to shape alternatives to re-offending
s4q7_problems	Offender has problems with literacy or numeracy	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
S6q7_perpetrator	Offender is perpetrator of domestic violence	OASYS	0=No 1=Yes		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
S6q7_victim	Offender is victim of domestic violence	OASYS	0=No 1=Yes		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s7q2_activities_encourage	Whether regular leisure activities encourage offending behaviour	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s8q1_drugs_used	Offender has history of drug abuse	OASYS	0=No 1=Yes		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
curdrug	Offender is current drug user	OASYS	0=No 1=Yes	The original data item was coded to zero or 2 and this was used to derive a dummy variable	From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s8q8_motivation_tackle_misuse	Offender's motivation to tackle drug use	OASYS	0=No problems 1=Some problems 2=Significant problems	Only relevant to those who are a current drug user	From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s9q1_current_use	Offender currently abusing alcohol	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s10q7_current_pend_treatment	Offender is undergoing current or pending psychiatric treatment	OASYS	0=No 1=Yes		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s11q4_temper_control	Offender has problems controlling temper	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s11q6_problem_solving_skills	Offender has good problem-solving skills	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
s11q7_consequences_awareness	Offender aware that actions have consequences	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s11q9_understands_people_views	Offender able to understand views of others	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s12q1_procriminal_attitudes	Attitudes supportive of criminal behaviour	OASYS	0=No problems 1=Some problems 2=Significant problems		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
s13q1_general_health	Offender has physical or mental health conditions which need to be taken into account	OASYS	0=No 1=Yes		Offenders with health problems known to be less likely to be given certain types of requirements

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
nbarpun	Number of factors thought to reduce suitability for unpaid work or electronic monitoring	OASYS	Continuous variable with values ranging from zero to 16	Derived from the section 13 variables on suitability for community punishments orders (unpaid work) or electronic monitoring. These record whether the offender faces either a barrier to carrying out unpaid work or electronic monitoring for 16 different reasons. Having derived a binary variable indicating whether the offender faces each of the different barriers in relation to their suitability to do either unpaid work or to take part in electronic monitoring, a 16-item index was constructed. No offenders are judged unsuitable for a punitive requirement across all 16 areas	Thought to predict the type of requirement received and to contain information which is not captured within the other sections of OASys
nbarpro	Number of factors thought to reduce suitability for programme requirement	OASYS	Continuous variable with values ranging from zero to 16	16-item index derived from the binary section 13 variables on suitability for programme requirement	Thought to predict the type of requirement received and to contain information which is not captured within the other sections of OASys
ogrs3	Offender group reconviction scale	OASYS	Continuous variable ranging from 0 to 100, indicating likelihood of re-offending		From Standard OASys, i.e. factors most highly correlated with the likelihood of re-offending
topcommrisk	Highest risk in the community	OASYS	1=Low 2=Medium 3=High 4=Very high		Shapes requirement type

Name	Brief description of contents	Source	Codes (reference category in bold)	Notes on cleaning and variable construction	Reason for inclusion
novalid	Offender has no valid employment, benefit or labour market programme spells	DWP HMRC	0=No 1=Yes	Indicates that there is either no record of the offender being in employment, claiming benefits or participating in a labour market programme over the period from 2000 onwards, or that any records which were found were removed during data cleaning	Work/benefit/programme participation history may shape alternatives to re-offending. Therefore, there is a need to identify offenders for whom status prior to the reference date is uncertain
nwben	Number of weeks claiming benefits in year prior to reference date	DWP	Continuous variable ranging from zero to 52	Indicates amount of time the offender was claiming any out-of-work benefit (ESA, IB, SDA, PIB, JSA, IS) at some point during each week-long period in the year prior to the reference date	Work/benefit/programme participation history may shape alternatives to re-offending
nwemp	Number of weeks employed in year prior to reference date	HMRC	Continuous variable ranging from zero to 52	Indicates amount of time the offender was employed at any point during each week-long period	Work/benefit/programme participation history may shape alternatives to re-offending
nwprog	Number of weeks participating in a labour market programme in year prior to reference date	DWP	Continuous variable ranging from zero to 52	Indicates amount of time the offender was participating in a labour market programme at any point during each week-long period	Work/benefit/programme participation history may shape alternatives to re-offending

Notes: PROB=Probation and re-offending dataset; OASYS=OASys dataset; HMRC=tax records; DWP=benefit and labour market programme records.

ESA=Employment and Support Allowance; IB=Incapacity Benefit; SDA=Severe Disablement Allowance; PIB= Permanent Injury Benefit; JSA=Jobseeker's Allowance; IS=Income Support

Appendix B
Data

DWP and HMRC data

The tax and benefits data used in the analysis offers better coverage of the population of employees and benefit claimants than alternative sources and provides information of sufficient quality to be used to produce national statistics. Nevertheless, this section describes a number of known omissions from these datasets.

Firstly, the HMRC (tax) data does not cover the work history of the self-employed and provides incomplete coverage of employees who fall below Pay-As-You-Earn (PAYE) thresholds. Whilst employers making PAYE returns for at least some employees may provide records on all staff, regardless of whether they exceed the threshold or not, they are not required to do so by law. As a result, some employees below the PAYE threshold will not appear in the HMRC data and those working for small employers (who are less likely to use automated systems of filing returns covering all employees) are particularly likely to be excluded. This means that some offenders who are in fact in work, will not be recorded as being in employment in the HMRC dataset.

Similarly the benefits data has limitations in terms of the comprehensiveness of its coverage. As it is constructed from scans of live benefits records, spells on some types of benefit which fall between scans are missed. Also, for most out-of-work benefits (the exception being Jobseeker's Allowance), the end dates of spells are imputed to fall between scans, rather than being accurately recorded.

Data checking and cleaning

Ministry of Justice staff carried out a number of checks on the data used in this analysis before the project commenced. This process was as follows:

- where individuals observed in Ministry of Justice datasets were matched to more than one individual in the tax and benefits data, the best match was selected and other less well-matched records were discarded;
- where prison sentences were overlapping, superfluous spells were cleaned from the dataset and multiple spells combined into single spells;
- where the end of a prison spell overlapped with the start of a benefit claim, the date that the prison spell ended was reset to the day before the start of the benefit spell;

- employment spells which were recorded as starting on the same date as a Jobseeker's Allowance (JSA) spell were removed;
- employment spells were deleted if the end date was missing; if the start date was on or after the end date; or if the start date was in the future at the time of the data extract;
- if the end date of an employment spell was in the future, this was set to 1 January 9999;
- spells on the 'ONE' employment support programme were dropped (due to the fact that this was wrongly classified as a labour market programme);
- for benefits where the actual end date is not observed and the end of the spell overlapped with the start of a prison spell, the end date of the benefit spell was reset to the day before the prison start date;
- where either the start or the end of the employment spell was not observed and had been randomly assigned, the start and end dates of benefit and prison spells were used to set the employment end date to the day before a benefit or prison spell started, or the start date to the day after the benefit or prison spell ended;
- where an employment spell started before a prison spell and the end date overlapped the start of the prison spell, the end of the employment spell was amended to fall the day before the start of the prison spell.

Before commencing analysis, additional checks were carried out to explore the completion rate of key fields and to ensure that the datasets contained information on offenders who began their period on probation within 2008 and who were aged 18 or more at this start date. Further checking and cleaning was carried out as follows:

- records were removed if the offender was not assigned to any of the 12 requirement types (affecting 59 offenders), or if they died (derived from the reason why the probation spell had ended and affecting 480 offenders) at some point in the two-year period following the start of their first probation spell in 2008;
- since the primary interest was in claims for out-of-work benefits (defined as Employment and Support Allowance, Incapacity Benefits, Severe Disablement Allowance, Permanent Injury Benefit, Jobseeker's Allowance and Income Support) records relating to claims for all other benefit types were removed;
- the pattern of employment start and end dates within each year was examined to check that no dates were unusually common;
- programme spells were checked to verify that ONE spells had been dropped;

- employment, benefit and programme spells were deleted where the spell appeared to start in the future;
- in a small number of cases, the end date of a programme spell was recorded as occurring before the start date and so these spells were deleted;
- additional employment, programme and benefit spells were identified where the start and end dates occurred on the same day and so these spells were deleted;
- duplicate employment and benefit spells were deleted; 2,674 employment spells appeared to be duplicates, compared to only 3 benefit spells. There were no duplicate programme spells.

The treatment of offenders who received multiple community orders in 2008

The analysis focused on the first community order that the offender received in 2008. Some offenders were observed starting more than one community order within the year and so it is necessary to consider how focusing on the first order might affect the interpretation of the results. It is possible that the number and type of requirements placed on offenders varied depending on the number of community orders received within a given period of time. However, the timing of selection into the cohort is arbitrary, so some offenders who only received one community order in 2008 may have been placed under a previous order shortly before the start of 2008. As a result there is no reason to believe that focusing on the first community order received in 2008 would bias the sample towards particular requirement types.

An alternative approach would be to consider re-offending outcomes for each community order made within 2008. The results would then show the impact of a particular type of requirement on the re-offending rate, or number of re-offences committed, for each community order made within the year, rather than the re-offending rate or number of re-offences committed by offenders who received at least one community order. Arguably a focus on offenders is more intuitive and it was thought that the interpretation of results would be more straightforward if the analysis was carried out at offender-level. This also provides comparability with other Ministry of Justice publications on re-offending.

It is unlikely that focusing on the first community order received by an offender would affect the estimated impact of each combination of requirements on re-offending behaviour. Whilst offenders who committed multiple offences in 2008 may have been less likely to re-offend following later offences as the seriousness of the consequences of re-offending increased, it is probable that this would be offset by the fact that a proportion of offenders would have

committed previous offences prior to 2008. Focusing the analysis on the first offence committed in 2008 would only be likely to bias the impact estimates if the treatment and comparison groups differed in their propensity to commit a further offence which resulted in a community order. Since the matching sought to ensure that the treatment and comparison groups were similar on all important characteristics which affected the likelihood of re-offending and the requirements received, this should minimise the risk of such a bias occurring.

The impact of sample sizes on the choice of treatment and comparison groups

As less than one-quarter of offenders are unsupervised, the numbers given any of the other types of requirement who were not placed under a supervision requirement were generally thought likely to be too small for the impact estimates produced to be meaningful. However, as Table 6 demonstrated, a sizeable number of offenders observed in the merged datasets were given a standalone punitive requirement and so it was decided to attempt to estimate the impact of replacing a supervision requirement with a punitive requirement.

The other consequence of having a small number of offenders who were not subject to a supervision requirement was that the available comparison groups for assessing the impact of a supervision requirement were small. Again, the number of offenders who received a standalone punitive requirement was sufficient to have a reasonable prospect of identifying an impact from the addition of a supervision requirement, if one existed. However, the numbers of offenders receiving other requirements which did not involve supervision were likely to be too small to have a realistic prospect of producing a conclusive estimate of the impact of adding a supervision requirement to other packages of requirements.

The numbers of offenders who received unpaid work in combination with a supervision requirement plus an activity requirement were thought too small to yield a reasonable prospect of being able to produce a reliable estimate of the impact of adding an unpaid work requirement to this package. However, the likelihood of being able to produce a conclusive estimate of the impact of adding an unpaid work requirement to a supervision requirement, or a supervision requirement plus a programme requirement, was greater and so it was decided to focus on these two comparison groups.

Appendix C
Re-offending outcomes for the treatment and unmatched comparison groups

Table 33 Re-offending outcomes for treatment and comparison groups before matching

	Outcome			Number of observations	
	Treatment group	Comparison group	Difference	Treatment group	Comparison group
Adding a punitive requirement to a supervision requirement					
Percentage re-offending within 1 year	36.8	40.1	-3.3***	10,186	11,782
Percentage re-offending within 2 years	49.7	51.0	-1.3*	10,186	11,782
Number of re-offences within 1 year	1.181	1.461	-0.280***	10,186	11,782
Number of re-offences within 2 years	2.052	2.529	-0.478***	10,186	11,782
Adding an unpaid work requirement to a supervision requirement					
Percentage re-offending within 1 year	35.3	40.1	-4.9***	7,944	11,782
Percentage re-offending within 2 years	47.6	51.0	-3.4***	7,944	11,782
Number of re-offences within 1 year	1.122	1.461	-0.400***	7,944	11,782
Number of re-offences within 2 years	1.910	2.529	-0.619***	7,944	11,782
Adding a curfew requirement to a supervision requirement					
Percentage re-offending within 1 year	42.2	40.1	2.1*	1,674	11,782
Percentage re-offending within 2 years	56.2	51.0	5.1***	1,674	11,782
Number of re-offences within 1 year	1.462	1.461	<0.000	1,674	11,782
Number of re-offences within 2 years	2.634	2.529	0.105	1,674	11,782
Adding punitive requirement to a supervision requirement plus a programme requirement					
Percentage re-offending within 1 year	38.6	35.3	3.3***	4,716	10,339
Percentage re-offending within 2 years	52.0	47.7	4.4***	4,716	10,339
Number of re-offences within 1 year	1.234	1.104	0.130***	4,716	10,339
Number of re-offences within 2 years	2.105	1.930	0.174***	4,716	10,339

	Outcome			Number of observations	
	Treatment group	Comparison group	Difference	Treatment group	Comparison group
Adding an unpaid work requirement to a supervision requirement plus a programme requirement					
Percentage re-offending within 1 year	37.7	35.3	2.4***	3,693	10,339
Percentage re-offending within 2 years	50.8	47.7	3.1***	3,693	10,339
Number of re-offences within 1 year	1.180	1.104	0.076*	3,693	10,339
Number of re-offences within 2 years	1.994	1.930	0.064	3,693	10,339
Adding a curfew requirement to a supervision requirement plus a programme requirement					
Percentage re-offending within 1 year	40.3	35.3	5.1***	826	10,339
Percentage re-offending within 2 years	55.6	47.7	7.9***	826	10,339
Number of re-offences within 1 year	1.366	1.104	0.261***	826	10,339
Number of re-offences within 2 years	2.404	1.930	0.474***	826	10,339
Adding punitive requirement to a supervision requirement plus activity requirement					
Percentage re-offending within 1 year	43.5	45.0	-1.5	1,236	1,975
Percentage re-offending within 2 years	58.1	56.2	1.9	1,236	1,975
Number of re-offences within 1year	1.592	1.647	-0.054	1,236	1,975
Number of re-offences within 2 years	2.660	2.843	-0.183	1,236	1,975
Adding a supervision requirement to a punitive requirement					
Percentage re-offending within 1 year	36.8	37.3	-0.5	10,186	13,834
Percentage re-offending within 2 years	49.7	48.9	0.8	10,186	13,834
Number of re-offences within 1 year	1.181	1.203	-0.022	10,186	13,834
Number of re-offences within 2 years	2.052	2.025	0.027	10,186	13,834

	Outcome			Number of observations	
	Treatment group	Comparison group	Difference	Treatment group	Comparison group
Adding a programme requirement to a supervision requirement plus a punitive requirement					
Percentage re-offending within 1 year	38.7	36.8	1.8**	4,716	10,186
Percentage re-offending within 2 years	52.0	49.7	2.3***	4,716	10,186
Number of re-offences within 1 year	1.234	1.181	0.053	4,716	10,186
Number of re-offences within 2 years	2.105	2.052	0.053	4,716	10,186
Adding an activity requirement to a supervision requirement					
Percentage re-offending within 1 year	45.0	40.1	4.9***	1,975	11,782
Percentage re-offending within 2 years	56.2	51.0	5.1***	1,975	11,782
Number of re-offences within 1 year	1.647	1.461	0.185***	1,975	11,782
Number of re-offences within 2 years	2.843	2.529	0.314***	1,975	11,782
Adding activity requirement to supervision plus punitive requirement					
Percentage re-offending within 1 year	43.5	36.8	6.7***	1,236	10,186
Percentage re-offending within 2 years	58.1	49.7	8.4***	1,236	10,186
Number of re-offences within 1 year	1.592	1.181	0.411***	1,236	10,186
Number of re-offences within 2 years	2.660	2.052	0.609***	1,236	10,186

Notes: Re-offending outcomes for the treatment group include those for offenders who are outside the region of common support after matching. ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Appendix D
Impact estimates produced using radius and local linear regression matching, for the main model

Table 34 Impact of adding a punitive requirement to a supervision requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-0.9	0.8	37.7	-2.3	-1.1	0.8	37.9	-2.9
Re-offend within 2 years	0.9	0.8	48.8	1.9	0.7	0.9	49.0	1.4
Number of re-offences within 1 year	-0.105**	0.043	1.286	-8.1**	-0.110**	0.045	1.291	-8.5**
Number of re-offences within 2 years	-0.168**	0.069	2.220	-7.6**	-0.170**	0.072	2.222	-7.7**
Percentage of treatment group off support	0.1				0.1			
Number of treatment group off support	11				11			
Number in treatment group on support	10,175				10,175			
Number in comparison group	11,782				11,782			
Total sample size	21,968				21,968			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 35 Impact of adding an unpaid work requirement to a supervision requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-0.1	0.9	35.4	-0.3	-0.2	0.9	35.5	-0.6
Re-offend within 2 years	1.3	0.9	46.3	2.9	1.3	0.9	46.3	2.7
Number of re-offences within 1 year	-0.047	0.046	1.169	-4.0	-0.045	0.048	1.168	-3.9
Number of re-offences within 2 years	-0.106	0.073	2.017	-5.3	-0.099	0.075	2.010	-4.9
Percentage of treatment group off support	0.1				0.1			
Number of treatment group off support	5				5			
Number in treatment group on support	7,939				7,939			
Number in comparison group	11,782				11,782			
Total sample size	19,726				19,726			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 36 Impact of adding a curfew requirement to a supervision requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-2.3*	1.3	44.5	-5.1*	-2.9**	1.3	45.1	-6.4**
Re-offend within 2 years	0.1	1.3	56.0	0.2	-0.6	1.4	56.7	-1.0
Number of re-offences within 1 year	-0.199***	0.072	1.660	-12.0***	-0.229***	0.073	1.691	-13.6***
Number of re-offences within 2 years	-0.239**	0.111	2.874	-8.3**	-0.290***	0.113	2.924	-9.9***
Percentage of treatment group off support	0.0				0.0			
Number of treatment group off support	0				0			
Number in treatment group on support	1,674				1,674			
Number in comparison group	11,782				11,782			
Total sample size	13,456				13,456			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 37 Impact of adding a punitive requirement to a supervision requirement plus programme requirements, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-0.5	0.9	39.1	-1.4	-0.7	0.9	39.3	-1.9
Re-offend within 2 years	-0.6	0.9	52.7	-1.2	-0.9	0.9	52.9	-1.7
Number of re-offences within 1 year	-0.021	0.044	1.252	-1.7	-0.036	0.044	1.267	-2.8
Number of re-offences within 2 years	-0.100	0.066	2.202	-4.5	-0.124*	0.067	2.226	-5.6*
Percentage of treatment group off support	0.1				0.1			
Number of treatment group off support	4				4			
Number in treatment group on support	4,712				4,712			
Number in comparison group	10,339				10,339			
Total sample size	15,055				15,055			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 38 Impact of adding an unpaid work requirement to a supervision requirement plus programme requirements, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	0.1	1.0	37.6	0.1	-0.2	1.0	37.9	-0.6
Re-offend within 2 years	-0.3	1.0	51.1	-0.6	-0.7	1.0	51.4	-1.3
Number of re-offences within 1 year	-0.007	0.047	1.188	-0.6	-0.026	0.047	1.206	-2.2
Number of re-offences within 2 years	-0.099	0.070	2.092	-4.7	-0.128*	0.071	2.121	-6.0*
Percentage of treatment group off support	0.1				0.1			
Number of treatment group off support	2				2			
Number in treatment group on support	3,691				3,691			
Number in comparison group	10,339				10,339			
Total sample size	14,032				14,032			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 39 Impact of adding a curfew requirement to a supervision requirement plus programme requirements, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-2.0	1.8	42.3	-4.8	-3.4*	1.8	43.7	-7.8*
Re-offend within 2 years	-0.4	1.8	56.0	-0.7	-1.8	1.9	57.4	-3.2
Number of re-offences within 1 year	-0.049	0.090	1.415	-3.5	-0.115	0.091	1.481	-7.8
Number of re-offences within 2 years	-0.066	0.131	2.470	-2.7	-0.171	0.133	2.575	-6.6
Percentage of treatment group off support	0.0				0.0			
Number of treatment group off support	0				0			
Number in treatment group on support	826				826			
Number in comparison group	10,339				10,339			
Total sample size	11,165				11,165			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 40 Impact of adding punitive requirement to a supervision requirement and an activity requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-2.6	2.0	46.1	-5.6	-3.0	2.1	46.5	-6.5
Re-offend within 2 years	-0.4	2.0	58.3	-0.6	-0.7	2.1	58.7	-1.2
Number of re-offences within 1 year	-0.055	0.120	1.647	-3.4	-0.069	0.122	1.661	-4.2
Number of re-offences within 2 years	-0.147	0.184	2.808	-5.2	-0.157	0.187	2.818	-5.6
Percentage of treatment group off support	0.5				0.5			
Number of treatment group off support	6				6			
Number in treatment group on support	1,230				1,230			
Number in comparison group	1,975				1,975			
Total sample size	3,211				3,211			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 41 Impact of adding a supervision requirement to a punitive requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-4.7***	0.7	41.5	-11.4***	-4.9***	0.7	41.7	-11.7***
Re-offend within 2 years	-3.6***	0.7	53.3	-6.8***	-3.7***	0.7	53.4	-7.0***
Number of re-offences within 1 year	-0.171***	0.032	1.353	-12.7***	-0.179***	0.033	1.360	-13.1***
Number of re-offences within 2 years	-0.194***	0.049	2.246	-8.6***	-0.201***	0.050	2.253	-8.9***
Percentage of treatment group off support	<0.1				<0.1			
Number of treatment group off support	1				1			
Number in treatment group on support	10,185				10,185			
Number in comparison group	13,834				13,834			
Total sample size	24,020				24,020			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 42 Impact of adding a programme requirement to a supervision requirement plus a punitive requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	-3.8***	0.9	42.3	-8.9***	-3.6***	0.9	42.1	-8.4***
Re-offend within 2 years	-4.0***	1.0	56.0	-7.1***	-3.7***	1.0	55.7	-6.6***
Number of re-offences within 1 year	-0.200***	0.045	1.434	-14.0***	-0.195***	0.045	1.428	-13.6***
Number of re-offences within 2 years	-0.367***	0.068	2.470	-14.9***	-0.358***	0.068	2.461	-14.5***
Percentage of treatment group off support	<0.1				<0.1			
Number of treatment group off support	1				1			
Number in treatment group on support	4,715				4,715			
Number in comparison group	10,186				10,186			
Total sample size	14,902				14,902			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 43 Impact of adding an activity requirement to a supervision requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	0.9	1.2	44.2	2.0	0.6	1.2	44.5	1.3
Re-offend within 2 years	0.7	1.2	55.4	1.3	0.5	1.2	55.7	0.9
Number of re-offences within 1 year	0.003	0.072	1.644	0.2	-0.013	0.073	1.660	-0.8
Number of re-offences within 2 years	0.012	0.115	2.828	0.4	-0.007	0.116	2.846	-0.2
Percentage of treatment group off support	0.2				0.2			
Number of treatment group off support	4				4			
Number in treatment group on support	1,971				1,971			
Number in comparison group	11,782				11,782			
Total sample size	13,757				13,757			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 44 Impact of adding an activity requirement to a supervision requirement plus a punitive requirement, using alternative matching estimators

Outcome, measured from reference date	Radius matching				Local linear regression matching			
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Re-offend within 1 year	0.0	1.5	43.5	0.1	-0.6	1.5	44.1	-1.4
Re-offend within 2 years	1.0	1.5	57.0	1.8	0.5	1.5	57.6	0.8
Number of re-offences within 1 year	0.107	0.086	1.480	7.2	0.064	0.087	1.523	4.2
Number of re-offences within 2 years	0.120	0.127	2.536	4.7	0.056	0.128	2.600	2.2
Percentage of treatment group off support	0.1				0.1			
Number of treatment group off support	1				1			
Number in treatment group on support	1,235				1,235			
Number in comparison group	10,186				10,186			
Total sample size	11,422				11,422			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Appendix E
Impact estimates produced using reduced bandwidth kernel matching, for the main model

Table 45 Impact of adding a punitive requirement to a supervision requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-1.0	0.9	37.7	-2.6
Percentage re-offending within 2 years	0.6	0.9	48.8	1.3
Number of re-offences within 1 year	-0.122***	0.048	1.286	-9.5***
Number of re-offences within 2 years	-0.179**	0.075	2.219	-8.1***
Percentage of treatment group off support	5.1			
Number of treatment group off support	517			
Number in treatment group on support	9,669			
Number in comparison group	11,782			
Total sample size	21,968			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better.

Table 46 Impact of adding an unpaid work requirement to a supervision requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-0.7	1.0	35.7	-1.9
Percentage re-offending within 2 years	0.8	1.0	46.5	1.8
Number of re-offences within 1 year	-0.068	0.050	1.188	-5.8
Number of re-offences within 2 years	-0.143*	0.080	2.052	-7.0*
Percentage of treatment group off support	5.8			
Number of treatment group off support	461			
Number in treatment group on support	7,483			
Number in comparison group	11,782			
Total sample size	19,726			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 47 Impact of adding a curfew requirement to a supervision requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-3.1**	1.5	44.7	-7.0**
Percentage re-offending within 2 years	-0.6	1.5	55.9	-1.2
Number of re-offences within 1 year	-0.240***	0.081	1.682	-14.3***
Number of re-offences within 2 years	-0.276**	0.125	2.874	-9.6**
Percentage of treatment group off support	4.7			
Number of treatment group off support	78			
Number in treatment group on support	1,596			
Number in comparison group	11,782			
Total sample size	13,456			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 48 Impact of adding a punitive requirement to a supervision requirement plus a programme requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-0.7	1.0	38.7	-1.9
Percentage re-offending within 2 years	-0.9	1.0	52.3	-1.7
Number of re-offences within 1 year	-0.015	0.048	1.216	-1.3
Number of re-offences within 2 years	-0.084	0.073	2.140	-3.9
Percentage of treatment group off support	4.9			
Number of treatment group off support	231			
Number in treatment group on support	4,485			
Number in comparison group	10,339			
Total sample size	15,055			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 49 Impact of adding an unpaid work requirement to a supervision requirement plus a programme requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	0.1	1.1	37.0	0.2
Percentage re-offending within 2 years	-0.9	1.1	51.0	-1.8
Number of re-offences within 1 year	-0.002	0.052	1.153	-0.2
Number of re-offences within 2 years	-0.089	0.078	2.040	-4.4
Percentage of treatment group off support	5.2			
Number of treatment group off support	191			
Number in treatment group on support	3,502			
Number in comparison group	10,339			
Total sample size	14,032			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 50 Impact of adding a curfew requirement to a supervision requirement plus a programme requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-5.1**	2.0	44.9	-11.3**
Percentage re-offending within 2 years	-2.5	2.0	57.7	-4.4
Number of re-offences within 1 year	-0.195**	0.099	1.530	-12.7**
Number of re-offences within 2 years	-0.258*	0.144	2.610	-9.9*
Percentage of treatment group off support	4.5			
Number of treatment group off support	37			
Number in treatment group on support	789			
Number in comparison group	10,339			
Total sample size	11,165			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 51 Impact of adding punitive requirement to a supervision requirement plus an activity requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-2.8	2.8	46.5	-6.0
Percentage re-offending within 2 years	2.3	2.8	56.2	4.1
Number of re-offences within 1 year	-0.215	0.159	1.742	-12.4
Number of re-offences within 2 years	-0.244	0.248	2.909	-8.4
Percentage in treatment group off support	41.2			
Number of treatment group off support	509			
Number in treatment group on support	727			
Number in comparison group	1,975			
Total sample size	3,211			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 52 Impact of adding a supervision requirement to a punitive requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-5.1***	0.7	41.6	-12.4***
Percentage re-offending within 2 years	-3.8***	0.8	53.1	-7.1***
Number of re-offences within 1 year	-0.186***	0.035	1.355	-13.7***
Number of re-offences within 2 years	-0.202***	0.053	2.242	-9.0***
Percentage of treatment group off support	3.6			
Number of treatment group off support	370			
Number in treatment group on support	9,816			
Number in comparison group	13,834			
Total sample size	24,020			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 53 Impact of adding a programme requirement to a supervision requirement plus a punitive requirement, reduced bandwidth

Outcome, measured from reference date	Kernel matching

	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-3.7***	1.0	42.1	-8.7***
Percentage re-offending within 2 years	-3.4***	1.1	55.5	-6.1***
Number of re-offences within 1 year	-0.209***	0.050	1.429	-14.7***
Number of re-offences within 2 years	-0.330***	0.077	2.431	-13.6***
Percentage of treatment group off support	8.5			
Number of treatment group off support	403			
Number in treatment group on support	4,313			
Number in comparison group	10,186			
Total sample size	14,902			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 54 Impact of adding an activity requirement to a supervision requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	0.1	1.3	44.8	0.2
Percentage re-offending within 2 years	-0.1	1.3	56.0	-0.1
Number of re-offences within 1 year	-0.063	0.078	1.706	-3.7
Number of re-offences within 2 years	-0.076	0.124	2.905	-2.6
Percentage of treatment group off support	2.0			
Number of treatment group off support	40			
Number in treatment group on support	1,935			
Number in comparison group	11,782			
Total sample size	13,757			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Table 55 Impact of adding an activity requirement to a supervision requirement plus a punitive requirement, reduced bandwidth

Outcome, measured from reference date				Kernel matching
	Impact estimate	Standard error	Counterfactual	Relative impact (per cent)
Percentage re-offending within 1 year	-1.1	1.7	43.9	-2.5
Percentage re-offending within 2 years	0.2	1.7	57.3	0.3
Number of re-offences within 1 year	-0.036	0.088	1.551	-2.3
Number of re-offences within 2 years	-0.085	0.134	2.658	-3.2
Percentage of treatment group off support	3.2			
Number of treatment group off support	39			
Number in treatment group on support	1,197			
Number in comparison group	10,186			
Total sample size	11,422			

Notes: ***=statistically significant at the 1 per cent level or better; **=statistically significant at the 5 per cent level or better; *=statistically significant at the 10 per cent level or better.

Appendix F
Propensity score estimation for the main model, kernel matching

Table 56 Propensity score estimation when adding a punitive requirement to a supervision requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):	-0.090	0.032	2.776	0.005
21–24	-0.158	0.033	4.713	0.000
25–29	-0.299	0.036	8.305	0.000
30–34	-0.408	0.036	11.187	0.000
35–39	-0.425	0.036	11.961	0.000
40–49	-0.636	0.047	13.449	0.000
50 and over	-0.090	0.032	2.776	0.005
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.023	0.054	0.427	0.669
Asian, including Chinese	0.088	0.049	1.806	0.071
Black	-0.036	0.047	0.762	0.446
Refusal/Not recorded	-0.161	0.061	2.643	0.008
Reference date (reference category, January):				
February	0.043	0.043	1.010	0.313
March	0.065	0.044	1.484	0.138
April	0.046	0.042	1.104	0.270
May	0.061	0.044	1.385	0.166
June	0.060	0.043	1.398	0.162
July	0.022	0.043	0.509	0.611
August	0.086	0.045	1.924	0.054
September	0.052	0.043	1.208	0.227
October	0.033	0.042	0.772	0.440
November	0.037	0.045	0.831	0.406
December	0.067	0.045	1.485	0.137
Offence type (reference category, summary offences):				
Sexual offences	0.048	0.029	1.685	0.092
Robbery	0.255	0.161	1.584	0.113
Theft and handling stolen goods	-0.189	0.032	5.815	0.000
Fraud and forgery	0.113	0.057	1.980	0.048
Arson and criminal damage	-0.260	0.047	5.577	0.000
Motoring offences	0.414	0.131	3.161	0.002
Other indictable	-0.083	0.089	0.933	0.351
Summary motoring	0.216	0.035	6.249	0.000
Burglary	0.242	0.052	4.673	0.000
Vehicle theft and unauthorised taking	0.243	0.074	3.296	0.001
Drug offences	-0.232	0.047	4.883	0.000
Public order	0.173	0.060	2.893	0.004
Female	-0.448	0.028	16.118	0.000
Copas rate excluding Police Notice for Disorders	-0.101	0.019	5.412	0.000
No previous offences, excluding Police Notice for Disorders	-0.057	0.035	1.630	0.103
OGRS3 score	0.003	0.000	7.879	0.000
Offender recognises impact of offending on victim or wider community	-0.025	0.026	0.959	0.337

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offender accepts responsibility for offence	-0.040	0.029	1.408	0.159
Suitability of location of accommodation to avoid re-offending	-0.106	0.012	8.954	0.000
Offender unemployed at time of OASys, or expected to be on release	0.014	0.021	0.678	0.498
Offender has problematic employment history	-0.026	0.016	1.646	0.100
Offender has problems with literacy or numeracy	-0.014	0.015	0.954	0.340
Evidence that offender is perpetrator of domestic violence	-0.066	0.023	2.850	0.004
Evidence that offender is victim of domestic violence	-0.018	0.029	0.617	0.538
Regular leisure activities encourage offending behaviour	0.011	0.016	0.647	0.518
Offender has history of drug abuse	0.084	0.023	3.617	0.000
Offender is current drug user	-0.253	0.028	9.150	0.000
Offender's motivation to tackle drug use	-0.006	0.019	0.296	0.767
Offender current problem with use of alcohol	-0.063	0.013	4.925	0.000
Offender is undergoing current or pending psychiatric treatment	-0.461	0.035	13.248	0.000
Offender has problems controlling temper	0.037	0.016	2.348	0.019
Quality of problem-solving skills	-0.028	0.017	1.607	0.108
Offender recognises that actions have consequences	0.049	0.017	2.916	0.004
Offender able to understand views of others	-0.043	0.017	2.517	0.012
Attitudes supportive of criminal behaviour	0.076	0.019	3.936	0.000
Offender has physical or mental health conditions which need to be taken into account	-0.379	0.020	18.835	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.073	0.014	5.371	0.000
Number of factors thought to reduce suitability for programme requirement	-0.078	0.015	5.223	0.000
Rating of risk the offender poses to the community	-0.020	0.020	0.984	0.325
Offender has no valid employment, benefit or labour market programme spells	-0.136	0.043	3.178	0.001
Number of weeks on benefits in year prior to probation start date	-0.007	0.001	13.596	0.000
Number of weeks in employment in year prior to probation start date	0.000	0.001	0.245	0.806
Number of weeks participating in a programme in year prior to probation start date	0.002	0.001	2.107	0.035
Constant	0.621	0.073	8.502	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.140			
Base	21,968			

Table 57 Propensity score estimation when adding an unpaid work requirement to a supervision requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):	-0.050	0.035	1.416	0.157
21–24	-0.119	0.036	3.291	0.001
25–29	-0.278	0.039	7.121	0.000
30–34	-0.385	0.040	9.701	0.000
35–39	-0.414	0.039	10.716	0.000
40–49	-0.660	0.052	12.686	0.000
50 and over	-0.050	0.035	1.416	0.157
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.075	0.057	1.322	0.186
Asian, including Chinese	0.131	0.051	2.555	0.011
Black	0.031	0.049	0.623	0.533
Refusal/Not recorded	-0.119	0.065	1.833	0.067
Reference date (reference category, January):				
February	0.031	0.047	0.666	0.505
March	0.038	0.048	0.791	0.429
April	0.031	0.046	0.679	0.497
May	0.063	0.048	1.312	0.190
June	0.061	0.047	1.312	0.189
July	0.022	0.046	0.476	0.634
August	0.062	0.049	1.278	0.201
September	0.014	0.047	0.301	0.764
October	0.022	0.046	0.477	0.633
November	0.009	0.049	0.187	0.852
December	0.064	0.049	1.305	0.192
Offence type (reference category, summary offences):				
Sexual offences	0.029	0.031	0.933	0.351
Robbery	0.221	0.181	1.223	0.222
Theft and handling stolen goods	-0.179	0.036	4.991	0.000
Fraud and forgery	0.140	0.061	2.275	0.023
Arson and criminal damage	-0.238	0.050	4.712	0.000
Motoring offences	0.472	0.138	3.425	0.001
Other indictable	-0.020	0.096	0.211	0.833
Summary motoring	0.238	0.037	6.350	0.000
Burglary	0.149	0.058	2.547	0.011
Vehicle theft and unauthorised taking	0.238	0.082	2.895	0.004
Drug offences	-0.176	0.051	3.424	0.001
Public order	0.153	0.065	2.346	0.019
Female	-0.482	0.031	15.669	0.000
Copas rate excluding Police Notice for Disorders	-0.156	0.021	7.531	0.000
No previous offences, excluding Police Notice for Disorders	-0.055	0.037	1.485	0.138
OGRS3 score	0.003	0.000	7.447	0.000
Offender recognises impact of offending on victim or wider community	-0.010	0.028	0.346	0.729
Offender accepts responsibility for offence	-0.034	0.031	1.087	0.277
Suitability of location of accommodation to avoid re-offending	-0.058	0.013	4.524	0.000
Offender unemployed at time of OASys, or expected to be on release	0.045	0.023	1.953	0.051
Offender has problematic employment history	-0.029	0.017	1.713	0.087
Offender has problems with literacy or numeracy	0.001	0.017	0.066	0.948

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	0.006	0.025	0.250	0.802
Evidence that offender is victim of domestic violence	-0.018	0.031	0.572	0.568
Regular leisure activities encourage offending behaviour	-0.025	0.018	1.364	0.173
Offender has history of drug abuse	0.094	0.025	3.721	0.000
Offender is current drug user	-0.327	0.031	10.572	0.000
Offender's motivation to tackle drug use	-0.011	0.021	0.498	0.618
Offender current problem with use of alcohol	-0.095	0.014	6.701	0.000
Offender is undergoing current or pending psychiatric treatment	-0.551	0.041	13.345	0.000
Offender has problems controlling temper	0.045	0.017	2.606	0.009
Quality of problem-solving skills	-0.026	0.019	1.401	0.161
Offender recognises that actions have consequences	0.049	0.018	2.665	0.008
Offender able to understand views of others	-0.030	0.019	1.615	0.106
Attitudes supportive of criminal behaviour	0.069	0.021	3.214	0.001
Offender has physical or mental health conditions which need to be taken into account	-0.475	0.022	21.716	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.076	0.015	4.942	0.000
Number of factors thought to reduce suitability for programme requirement	-0.113	0.017	6.497	0.000
Rating of risk the offender poses to the community	-0.040	0.022	1.798	0.072
Offender has no valid employment, benefit or labour market programme spells	-0.177	0.046	3.884	0.000
Number of weeks on benefits in year prior to probation start date	-0.010	0.001	17.250	0.000
Number of weeks in employment in year prior to probation start date	0.000	0.001	0.580	0.562
Number of weeks participating in a programme in year prior to probation start date	0.003	0.001	3.185	0.001
Constant	0.461	0.080	5.785	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.178			
Base	19,726			

Table 58 Propensity score estimation when adding a curfew requirement to a supervision requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.179	0.053	3.375	0.001
25–29	-0.255	0.054	4.682	0.000
30–34	-0.333	0.058	5.741	0.000
35–39	-0.368	0.058	6.347	0.000
40–49	-0.373	0.057	6.584	0.000
50 and over	-0.416	0.073	5.674	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.132	0.094	1.403	0.161
Asian, including Chinese	-0.004	0.086	0.049	0.961
Black	-0.348	0.093	3.750	0.000
Refusal/Not recorded	-0.196	0.103	1.900	0.057
Reference date (reference category, January):				
February	0.104	0.069	1.517	0.129
March	0.174	0.069	2.530	0.011
April	0.089	0.068	1.313	0.189
May	0.016	0.072	0.220	0.826
June	0.060	0.070	0.863	0.388
July	0.029	0.070	0.411	0.681
August	0.172	0.071	2.415	0.016
September	0.156	0.069	2.265	0.024
October	0.069	0.069	1.007	0.314
November	0.118	0.072	1.646	0.100
December	0.058	0.075	0.774	0.439
Offence type (reference category, summary offences):				
Sexual offences	0.014	0.046	0.294	0.768
Robbery	0.258	0.243	1.064	0.288
Theft and handling stolen goods	-0.230	0.050	4.617	0.000
Fraud and forgery	-0.015	0.094	0.160	0.873
Arson and criminal damage	-0.252	0.076	3.309	0.001
Motoring offences	-0.074	0.268	0.276	0.782
Other indictable	-0.355	0.164	2.168	0.030
Summary motoring	0.125	0.055	2.270	0.023
Burglary	0.323	0.075	4.303	0.000
Vehicle theft and unauthorised taking	0.275	0.104	2.644	0.008
Drug offences	-0.339	0.077	4.405	0.000
Public order	0.077	0.097	0.790	0.429
Female	-0.232	0.043	5.448	0.000
Copas rate excluding Police Notice for Disorders	0.059	0.029	2.046	0.041
No previous offences, excluding Police Notice for Disorders	-0.101	0.064	1.563	0.118
OGRS3 score	0.002	0.001	3.542	0.000
Offender recognises impact of offending on victim or wider community	-0.067	0.041	1.643	0.100
Offender accepts responsibility for offence	-0.016	0.046	0.351	0.726
Suitability of location of accommodation to avoid re-offending	-0.217	0.020	10.977	0.000
Offender unemployed at time of OASys, or expected to be on release	-0.032	0.033	0.968	0.333
Offender has problematic employment history	-0.021	0.025	0.838	0.402
Offender has problems with literacy or numeracy	-0.045	0.023	1.924	0.054

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.308	0.038	8.088	0.000
Evidence that offender is victim of domestic violence	-0.054	0.046	1.181	0.238
Regular leisure activities encourage offending behaviour	0.105	0.025	4.258	0.000
Offender has history of drug abuse	0.075	0.039	1.937	0.053
Offender is current drug user	-0.010	0.041	0.232	0.816
Offender's motivation to tackle drug use	-0.006	0.029	0.212	0.832
Offender current problem with use of alcohol	0.023	0.019	1.191	0.234
Offender is undergoing current or pending psychiatric treatment	-0.205	0.047	4.344	0.000
Offender has problems controlling temper	0.015	0.025	0.593	0.553
Quality of problem-solving skills	-0.042	0.028	1.473	0.141
Offender recognises that actions have consequences	0.060	0.027	2.209	0.027
Offender able to understand views of others	-0.086	0.027	3.126	0.002
Attitudes supportive of criminal behaviour	0.087	0.030	2.948	0.003
Offender has physical or mental health conditions which need to be taken into account	0.004	0.033	0.133	0.894
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.060	0.020	3.035	0.002
Number of factors thought to reduce suitability for programme requirement	-0.002	0.021	0.080	0.937
Rating of risk the offender poses to the community	0.052	0.032	1.648	0.099
Offender has no valid employment, benefit or labour market programme spells	0.076	0.074	1.017	0.309
Number of weeks on benefits in year prior to probation start date	0.002	0.001	2.531	0.011
Number of weeks in employment in year prior to probation start date	0.000	0.001	0.527	0.598
Number of weeks participating in a programme in year prior to probation start date	-0.002	0.001	1.272	0.203
Constant	-0.759	0.116	6.542	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.069			
Base	13,456			

Table 59 Propensity score estimation when adding a punitive requirement to a supervision requirement plus a programme requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.200	0.038	5.234	0.000
25–29	-0.294	0.040	7.326	0.000
30–34	-0.390	0.044	8.868	0.000
35–39	-0.469	0.046	10.163	0.000
40–49	-0.542	0.045	12.082	0.000
50 and over	-0.679	0.062	11.015	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.011	0.061	0.183	0.855
Asian, including Chinese	0.107	0.056	1.927	0.054
Black	0.102	0.047	2.165	0.030
Refusal/Not recorded	-0.026	0.078	0.327	0.744
Reference date (reference category, January):				
February	0.026	0.051	0.507	0.612
March	0.061	0.053	1.147	0.251
April	0.053	0.050	1.065	0.287
May	0.101	0.052	1.944	0.052
June	0.119	0.052	2.291	0.022
July	0.005	0.052	0.087	0.930
August	0.035	0.054	0.641	0.521
September	0.008	0.053	0.143	0.886
October	0.049	0.051	0.947	0.343
November	0.034	0.054	0.634	0.526
December	0.007	0.056	0.133	0.895
Offence type (reference category, summary offences):				
Sexual offences	0.007	0.038	0.179	0.858
Robbery	0.611	0.251	2.431	0.015
Theft and handling stolen goods	0.059	0.047	1.263	0.207
Fraud and forgery	0.503	0.095	5.285	0.000
Arson and criminal damage	-0.044	0.064	0.688	0.491
Motoring offences	0.551	0.147	3.760	0.000
Other indictable	0.078	0.125	0.622	0.534
Summary motoring	0.405	0.036	11.147	0.000
Burglary	0.438	0.064	6.808	0.000
Vehicle theft and unauthorised taking	0.428	0.089	4.785	0.000
Drug offences	0.065	0.072	0.910	0.363
Public order	0.273	0.088	3.085	0.002
Female	-0.289	0.045	6.422	0.000
Copas rate excluding Police Notice for Disorders	0.058	0.024	2.431	0.015
No previous offences, excluding Police Notice for Disorders	-0.210	0.051	4.143	0.000
OGRS3 score	0.001	0.000	2.402	0.016
Offender recognises impact of offending on victim or wider community	-0.042	0.032	1.306	0.192
Offender accepts responsibility for offence	0.032	0.037	0.859	0.391
Suitability of location of accommodation to avoid re-offending	-0.044	0.015	2.939	0.003
Offender unemployed at time of OASys, or expected to be on release	0.060	0.026	2.317	0.021
Offender has problematic employment history	-0.005	0.020	0.245	0.807
Offender has problems with literacy or numeracy	0.001	0.020	0.035	0.972

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.166	0.030	5.559	0.000
Evidence that offender is victim of domestic violence	-0.021	0.041	0.518	0.605
Regular leisure activities encourage offending behaviour	0.000	0.019	0.026	0.979
Offender has history of drug abuse	0.050	0.028	1.760	0.078
Offender is current drug user	-0.201	0.036	5.600	0.000
Offender's motivation to tackle drug use	-0.015	0.024	0.631	0.528
Offender current problem with use of alcohol	0.009	0.015	0.607	0.544
Offender is undergoing current or pending psychiatric treatment	-0.201	0.066	3.051	0.002
Offender has problems controlling temper	0.067	0.019	3.455	0.001
Quality of problem-solving skills	0.030	0.021	1.435	0.151
Offender recognises that actions have consequences	0.032	0.020	1.595	0.111
Offender able to understand views of others	-0.031	0.021	1.478	0.139
Attitudes supportive of criminal behaviour	0.026	0.023	1.144	0.253
Offender has physical or mental health conditions which need to be taken into account	-0.194	0.026	7.468	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.028	0.021	1.323	0.186
Number of factors thought to reduce suitability for programme requirement	-0.043	0.024	1.755	0.079
Rating of risk the offender poses to the community	-0.046	0.025	1.849	0.064
Offender has no valid employment, benefit or labour market programme spells	-0.138	0.054	2.540	0.011
Number of weeks on benefits in year prior to probation start date	-0.004	0.001	5.309	0.000
Number of weeks in employment in year prior to probation start date	-0.001	0.001	1.137	0.255
Number of weeks participating in a programme in year prior to probation start date	0.002	0.001	1.529	0.126
Constant	-0.113	0.092	1.221	0.222
Prob>chi-squared	0.000			
Pseudo R-squared	0.074			
Base	15,055			

Table 60 Propensity score estimation when adding an unpaid work requirement to a supervision requirement plus a programme requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.178	0.041	4.322	0.000
25–29	-0.275	0.043	6.369	0.000
30–34	-0.379	0.047	7.985	0.000
35–39	-0.422	0.049	8.557	0.000
40–49	-0.515	0.048	10.718	0.000
50 and over	-0.655	0.066	9.885	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.011	0.064	0.176	0.860
Asian, including Chinese	0.116	0.059	1.979	0.048
Black	0.140	0.049	2.865	0.004
Refusal/Not recorded	-0.025	0.083	0.306	0.760
Reference date (reference category, January):				
February	0.052	0.055	0.946	0.344
March	0.057	0.057	0.990	0.322
April	0.063	0.054	1.162	0.245
May	0.134	0.056	2.408	0.016
June	0.148	0.056	2.653	0.008
July	0.047	0.055	0.844	0.399
August	0.076	0.058	1.309	0.191
September	0.018	0.057	0.317	0.751
October	0.085	0.055	1.542	0.123
November	0.082	0.058	1.410	0.159
December	0.003	0.060	0.057	0.954
Offence type (reference category, summary offences):				
Sexual offences	-0.015	0.041	0.368	0.713
Robbery	0.491	0.284	1.731	0.083
Theft and handling stolen goods	0.081	0.051	1.569	0.117
Fraud and forgery	0.552	0.101	5.481	0.000
Arson and criminal damage	0.011	0.068	0.157	0.875
Motoring offences	0.606	0.154	3.926	0.000
Other indictable	0.101	0.135	0.747	0.455
Summary motoring	0.427	0.039	10.902	0.000
Burglary	0.405	0.071	5.715	0.000
Vehicle theft and unauthorised taking	0.411	0.098	4.206	0.000
Drug offences	0.121	0.077	1.566	0.117
Public order	0.278	0.095	2.925	0.003
Female	-0.317	0.049	6.435	0.000
Copas rate excluding Police Notice for Disorders	0.030	0.025	1.195	0.232
No previous offences, excluding Police Notice for Disorders	-0.199	0.053	3.739	0.000
OGRS3 score	0.000	0.000	0.513	0.608
Offender recognises impact of offending on victim or wider community	-0.052	0.034	1.512	0.131
Offender accepts responsibility for offence	0.027	0.040	0.674	0.501
Suitability of location of accommodation to avoid re-offending	-0.005	0.016	0.321	0.748
Offender unemployed at time of OASys, or expected to be on release	0.070	0.028	2.504	0.012
Offender has problematic employment history	-0.001	0.022	0.041	0.967
Offender has problems with literacy or numeracy	0.003	0.022	0.140	0.888

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.103	0.032	3.211	0.001
Evidence that offender is victim of domestic violence	-0.010	0.044	0.230	0.818
Regular leisure activities encourage offending behaviour	-0.034	0.020	1.647	0.100
Offender has history of drug abuse	0.048	0.030	1.608	0.108
Offender is current drug user	-0.263	0.040	6.629	0.000
Offender's motivation to tackle drug use	-0.024	0.026	0.946	0.344
Offender current problem with use of alcohol	-0.001	0.017	0.055	0.956
Offender is undergoing current or pending psychiatric treatment	-0.277	0.076	3.668	0.000
Offender has problems controlling temper	0.076	0.021	3.626	0.000
Quality of problem-solving skills	0.044	0.022	1.965	0.049
Offender recognises that actions have consequences	0.022	0.021	1.042	0.297
Offender able to understand views of others	-0.019	0.022	0.854	0.393
Attitudes supportive of criminal behaviour	0.015	0.025	0.588	0.556
Offender has physical or mental health conditions which need to be taken into account	-0.262	0.028	9.324	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.043	0.024	1.836	0.066
Number of factors thought to reduce suitability for programme requirement	-0.025	0.027	0.928	0.354
Rating of risk the offender poses to the community	-0.073	0.027	2.703	0.007
Offender has no valid employment, benefit or labour market programme spells	-0.148	0.057	2.588	0.010
Number of weeks on benefits in year prior to probation start date	-0.005	0.001	6.791	0.000
Number of weeks in employment in year prior to probation start date	-0.001	0.001	1.573	0.116
Number of weeks participating in a programme in year prior to probation start date	0.003	0.001	2.915	0.004
Constant	-0.238	0.100	2.387	0.017
Prob>chi-squared	0.000			
Pseudo R-squared	0.077			
Base	14,032			

Table 61 Propensity score estimation when adding a curfew requirement to a supervision requirement plus a programme requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.201	0.063	3.207	0.001
25–29	-0.250	0.066	3.812	0.000
30–34	-0.302	0.072	4.211	0.000
35–39	-0.474	0.079	6.024	0.000
40–49	-0.506	0.077	6.613	0.000
50 and over	-0.553	0.105	5.274	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.111	0.109	1.018	0.309
Asian, including Chinese	0.114	0.094	1.213	0.225
Black	-0.085	0.090	0.938	0.348
Refusal/Not recorded	-0.100	0.146	0.687	0.492
Reference date (reference category, January):				
February	-0.050	0.083	0.599	0.549
March	0.042	0.086	0.486	0.627
April	0.034	0.080	0.427	0.669
May	-0.050	0.087	0.580	0.562
June	-0.011	0.086	0.124	0.901
July	-0.102	0.086	1.190	0.234
August	-0.145	0.093	1.561	0.118
September	-0.005	0.085	0.062	0.950
October	-0.114	0.087	1.308	0.191
November	-0.098	0.090	1.082	0.279
December	-0.098	0.093	1.049	0.294
Offence type (reference category, summary offences):				
Sexual offences	0.047	0.064	0.732	0.464
Robbery	0.817	0.340	2.402	0.016
Theft and handling stolen goods	-0.027	0.075	0.367	0.714
Fraud and forgery	0.191	0.166	1.150	0.250
Arson and criminal damage	-0.099	0.111	0.900	0.368
Motoring offences	-0.190	0.318	0.596	0.551
Other indictable	-0.044	0.212	0.205	0.837
Summary motoring	0.229	0.060	3.822	0.000
Burglary	0.435	0.095	4.574	0.000
Vehicle theft and unauthorised taking	0.301	0.141	2.133	0.033
Drug offences	-0.204	0.126	1.616	0.106
Public order	0.136	0.149	0.916	0.360
Female	-0.118	0.071	1.659	0.097
Copas rate excluding Police Notice for Disorders	0.130	0.040	3.230	0.001
No previous offences, excluding Police Notice for Disorders	-0.190	0.099	1.920	0.055
OGRS3 score	0.002	0.001	3.431	0.001
Offender recognises impact of offending on victim or wider community	-0.005	0.055	0.091	0.927
Offender accepts responsibility for offence	0.012	0.064	0.185	0.854
Suitability of location of accommodation to avoid re-offending	-0.170	0.027	6.236	0.000
Offender unemployed at time of OASys, or expected to be on release	0.028	0.043	0.637	0.524
Offender has problematic employment history	-0.010	0.034	0.304	0.761
Offender has problems with literacy or numeracy	0.011	0.033	0.329	0.742

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.320	0.051	6.243	0.000
Evidence that offender is victim of domestic violence	-0.053	0.070	0.753	0.451
Regular leisure activities encourage offending behaviour	0.087	0.031	2.794	0.005
Offender has history of drug abuse	0.047	0.049	0.973	0.331
Offender is current drug user	-0.037	0.056	0.665	0.506
Offender's motivation to tackle drug use	0.008	0.038	0.221	0.825
Offender current problem with use of alcohol	0.039	0.025	1.528	0.126
Offender is undergoing current or pending psychiatric treatment	0.024	0.093	0.255	0.799
Offender has problems controlling temper	0.004	0.033	0.137	0.891
Quality of problem-solving skills	-0.016	0.036	0.432	0.666
Offender recognises that actions have consequences	0.055	0.035	1.593	0.111
Offender able to understand views of others	-0.058	0.035	1.643	0.100
Attitudes supportive of criminal behaviour	0.059	0.037	1.588	0.112
Offender has physical or mental health conditions which need to be taken into account	0.067	0.043	1.569	0.117
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	0.031	0.032	0.971	0.332
Number of factors thought to reduce suitability for programme requirement	-0.095	0.039	2.420	0.016
Rating of risk the offender poses to the community	0.063	0.041	1.520	0.128
Offender has no valid employment, benefit or labour market programme spells	-0.138	0.102	1.348	0.178
Number of weeks on benefits in year prior to probation start date	0.001	0.001	1.092	0.275
Number of weeks in employment in year prior to probation start date	0.001	0.001	0.779	0.436
Number of weeks participating in a programme in year prior to probation start date	-0.005	0.002	2.419	0.016
Constant	-1.243	0.152	8.161	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.085			
Base	11,165			

Table 62 Propensity score estimation when adding a punitive requirement to a supervision requirement plus an activity requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.025	0.073	0.345	0.730
25–29	-0.244	0.079	3.092	0.002
30–34	-0.312	0.092	3.399	0.001
35–39	-0.554	0.099	5.610	0.000
40–49	-0.493	0.094	5.261	0.000
50 and over	-0.423	0.150	2.824	0.005
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.026	0.138	0.190	0.849
Asian, including Chinese	0.052	0.147	0.352	0.725
Black	0.220	0.113	1.947	0.052
Refusal/Not recorded	0.066	0.196	0.335	0.738
Reference date (reference category, January)				
February	-0.066	0.116	0.567	0.571
March	-0.034	0.120	0.283	0.777
April	0.096	0.115	0.834	0.404
May	-0.026	0.119	0.218	0.827
June	-0.042	0.123	0.338	0.735
July	0.043	0.117	0.365	0.715
August	0.028	0.117	0.242	0.808
September	-0.071	0.118	0.597	0.551
October	0.057	0.116	0.496	0.620
November	0.187	0.115	1.631	0.103
December	0.026	0.114	0.230	0.818
Offence type (reference category, summary offences):				
Sexual offences	0.204	0.080	2.553	0.011
Robbery	0.271	0.468	0.580	0.562
Theft and handling stolen goods	-0.282	0.080	3.523	0.000
Fraud and forgery	0.296	0.152	1.950	0.051
Arson and criminal damage	0.039	0.115	0.338	0.736
Motoring offences	0.520	0.351	1.480	0.139
Other indictable	0.303	0.253	1.201	0.230
Summary motoring	0.098	0.090	1.093	0.274
Burglary	0.415	0.116	3.576	0.000
Vehicle theft and unauthorised taking	0.150	0.163	0.918	0.359
Drug offences	-0.277	0.118	2.348	0.019
Public order	0.304	0.178	1.712	0.087
Female	-0.258	0.073	3.540	0.000
Copas rate excluding Police Notice for Disorders	-0.002	0.048	0.035	0.972
No previous offences, excluding Police Notice for Disorders	-0.090	0.111	0.815	0.415
OGRS3 score	0.002	0.001	2.746	0.006
Offender recognises impact of offending on victim or wider community	0.065	0.067	0.968	0.333
Offender accepts responsibility for offence	-0.104	0.077	1.352	0.176
Suitability of location of accommodation to avoid re-offending	-0.122	0.030	4.006	0.000
Offender unemployed at time of OASys, or expected to be on release	0.263	0.059	4.487	0.000
Offender has problematic employment history	-0.069	0.040	1.727	0.084
Offender has problems with literacy or numeracy	-0.024	0.034	0.714	0.475

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.063	0.063	0.994	0.320
Evidence that offender is victim of domestic violence	0.008	0.077	0.100	0.920
Regular leisure activities encourage offending behaviour	-0.016	0.041	0.390	0.697
Offender has history of drug abuse	-0.011	0.062	0.184	0.854
Offender is current drug user	-0.149	0.071	2.111	0.035
Offender's motivation to tackle drug use	0.034	0.048	0.707	0.480
Offender current problem with use of alcohol	-0.059	0.033	1.783	0.075
Offender is undergoing current or pending psychiatric treatment	-0.347	0.102	3.415	0.001
Offender has problems controlling temper	-0.045	0.042	1.085	0.278
Quality of problem-solving skills	-0.070	0.047	1.484	0.138
Offender recognises that actions have consequences	0.050	0.045	1.115	0.265
Offender able to understand views of others	-0.019	0.045	0.412	0.680
Attitudes supportive of criminal behaviour	0.089	0.051	1.744	0.081
Offender has physical or mental health conditions which need to be taken into account	-0.324	0.053	6.143	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.024	0.034	0.692	0.489
Number of factors thought to reduce suitability for programme requirement	-0.043	0.039	1.114	0.265
Rating of risk the offender poses to the community	0.135	0.054	2.510	0.012
Offender has no valid employment, benefit or labour market programme spells	-0.195	0.115	1.701	0.089
Number of weeks on benefits in year prior to probation start date	-0.006	0.001	3.974	0.000
Number of weeks in employment in year prior to probation start date	0.001	0.001	0.736	0.462
Number of weeks participating in a programme in year prior to probation start date	0.001	0.002	0.309	0.757
Constant	0.113	0.189	0.599	0.549
Prob>chi-squared	0.000			
Pseudo R-squared	0.115			
Base	3,211			

Table 63 Propensity score estimation when adding a supervision requirement to a punitive requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.018	0.026	0.670	0.503
25–29	0.033	0.028	1.175	0.240
30–34	0.007	0.032	0.229	0.819
35–39	0.046	0.034	1.350	0.177
40–49	0.041	0.033	1.252	0.210
50 and over	0.082	0.049	1.680	0.093
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.003	0.047	0.059	0.953
Asian, including Chinese	0.045	0.039	1.148	0.251
Black	-0.092	0.040	2.298	0.022
Refusal/Not recorded	-0.073	0.056	1.315	0.188
Reference date (reference category, January):				
February	0.003	0.039	0.090	0.928
March	0.048	0.039	1.212	0.226
April	0.063	0.038	1.650	0.099
May	0.058	0.040	1.462	0.144
June	0.177	0.040	4.487	0.000
July	0.091	0.039	2.329	0.020
August	0.123	0.041	3.037	0.002
September	0.202	0.040	5.030	0.000
October	0.222	0.039	5.660	0.000
November	0.169	0.042	4.067	0.000
December	0.276	0.043	6.465	0.000
Offence type (reference category, summary offences):				
Sexual offences	0.048	0.027	1.753	0.080
Robbery	0.649	0.162	4.015	0.000
Theft and handling stolen goods	-0.190	0.030	6.248	0.000
Fraud and forgery	-0.332	0.048	6.914	0.000
Arson and criminal damage	-0.172	0.047	3.687	0.000
Motoring offences	0.033	0.090	0.368	0.713
Other indictable	-0.228	0.077	2.951	0.003
Summary motoring	-0.161	0.029	5.629	0.000
Burglary	0.160	0.046	3.463	0.001
Vehicle theft and unauthorised taking	-0.186	0.059	3.166	0.002
Drug offences	-0.145	0.043	3.351	0.001
Public order	-0.213	0.048	4.419	0.000
Female	0.273	0.030	8.990	0.000
Copas rate excluding Police Notice for Disorders	-0.155	0.018	8.722	0.000
No previous offences, excluding Police Notice for Disorders	-0.149	0.031	4.802	0.000
OGRS3 score	0.003	0.000	10.217	0.000
Offender recognises impact of offending on victim or wider community	0.011	0.025	0.447	0.655
Offender accepts responsibility for offence	0.137	0.027	5.135	0.000
Suitability of location of accommodation to avoid re-offending	0.062	0.012	5.102	0.000
Offender unemployed at time of OASys, or expected to be on release	0.055	0.020	2.737	0.006
Offender has problematic employment history	0.034	0.015	2.209	0.027
Offender has problems with literacy or numeracy	0.029	0.015	1.973	0.049

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	0.188	0.022	8.390	0.000
Evidence that offender is victim of domestic violence	0.091	0.032	2.846	0.004
Regular leisure activities encourage offending behaviour	-0.004	0.016	0.243	0.808
Offender has history of drug abuse	0.059	0.021	2.816	0.005
Offender is current drug user	0.004	0.028	0.127	0.899
Offender's motivation to tackle drug use	0.033	0.018	1.775	0.076
Offender current problem with use of alcohol	0.131	0.013	9.902	0.000
Offender is undergoing current or pending psychiatric treatment	0.209	0.050	4.221	0.000
Offender has problems controlling temper	0.027	0.015	1.776	0.076
Quality of problem-solving skills	0.133	0.016	8.340	0.000
Offender recognises that actions have consequences	0.064	0.016	4.093	0.000
Offender able to understand views of others	0.057	0.016	3.441	0.001
Attitudes supportive of criminal behaviour	-0.079	0.018	4.275	0.000
Offender has physical or mental health conditions which need to be taken into account	0.104	0.020	5.181	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.054	0.015	3.623	0.000
Number of factors thought to reduce suitability for programme requirement	0.054	0.018	3.007	0.003
Rating of risk the offender poses to the community	0.132	0.019	7.051	0.000
Offender has no valid employment, benefit or labour market programme spells	0.007	0.037	0.199	0.843
Number of weeks on benefits in year prior to probation start date	0.002	0.001	4.653	0.000
Number of weeks in employment in year prior to probation start date	0.001	0.000	1.349	0.177
Number of weeks participating in a programme in year prior to probation start date	0.000	0.001	0.142	0.887
Constant	-1.445	0.065	22.099	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.061			
Base	24,020			

Table 64 Propensity score estimation when adding a programme requirement to a supervision requirement plus a punitive requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.011	0.035	0.310	0.757
25–29	-0.013	0.038	0.347	0.729
30–34	0.014	0.043	0.314	0.754
35–39	-0.035	0.046	0.754	0.451
40–49	-0.020	0.045	0.436	0.663
50 and over	0.013	0.068	0.185	0.853
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.125	0.062	2.021	0.043
Asian, including Chinese	0.051	0.054	0.943	0.346
Black	0.371	0.051	7.287	0.000
Refusal/Not recorded	0.060	0.080	0.756	0.450
Reference date (reference category, January):				
February	0.008	0.053	0.161	0.872
March	-0.093	0.054	1.722	0.085
April	0.004	0.052	0.072	0.943
May	0.039	0.053	0.738	0.460
June	-0.041	0.053	0.781	0.435
July	-0.041	0.053	0.782	0.434
August	-0.067	0.055	1.227	0.220
September	-0.064	0.054	1.178	0.239
October	-0.051	0.052	0.983	0.325
November	-0.029	0.056	0.515	0.607
December	-0.052	0.057	0.923	0.356
Offence type (reference category, summary offences):				
Sexual offences	-0.057	0.037	1.527	0.127
Robbery	-0.091	0.181	0.501	0.616
Theft and handling stolen goods	0.067	0.045	1.485	0.137
Fraud and forgery	0.169	0.080	2.111	0.035
Arson and criminal damage	-0.048	0.063	0.760	0.447
Motoring offences	0.193	0.122	1.581	0.114
Other indictable	0.067	0.120	0.558	0.577
Summary motoring	0.801	0.037	21.738	0.000
Burglary	0.207	0.057	3.634	0.000
Vehicle theft and unauthorised taking	0.246	0.079	3.096	0.002
Drug offences	-0.040	0.067	0.598	0.550
Public order	-0.119	0.074	1.603	0.109
Female	-0.320	0.045	7.148	0.000
Copas rate excluding Police Notice for Disorders	0.169	0.024	7.126	0.000
No previous offences, excluding Police Notice for Disorders	-0.237	0.051	4.655	0.000
OGRS3 score	-0.001	0.000	2.948	0.003
Offender recognises impact of offending on victim or wider community	0.073	0.033	2.247	0.025
Offender accepts responsibility for offence	0.126	0.037	3.399	0.001
Suitability of location of accommodation to avoid re-offending	-0.034	0.015	2.193	0.028
Offender unemployed at time of OASys, or expected to be on release	0.041	0.026	1.567	0.117
Offender has problematic employment history	-0.074	0.020	3.671	0.000
Offender has problems with literacy or numeracy	-0.071	0.020	3.592	0.000

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.146	0.030	4.878	0.000
Evidence that offender is victim of domestic violence	-0.030	0.042	0.721	0.471
Regular leisure activities encourage offending behaviour	0.036	0.020	1.793	0.073
Offender has history of drug abuse	0.105	0.028	3.728	0.000
Offender is current drug user	-0.107	0.036	2.941	0.003
Offender's motivation to tackle drug use	-0.074	0.023	3.141	0.002
Offender current problem with use of alcohol	0.071	0.016	4.363	0.000
Offender is undergoing current or pending psychiatric treatment	-0.302	0.067	4.479	0.000
Offender has problems controlling temper	0.103	0.020	5.239	0.000
Quality of problem-solving skills	0.168	0.021	7.814	0.000
Offender recognises that actions have consequences	0.105	0.021	5.082	0.000
Offender able to understand views of others	0.004	0.021	0.212	0.832
Attitudes supportive of criminal behaviour	-0.020	0.023	0.863	0.388
Offender has physical or mental health conditions which need to be taken into account	-0.095	0.027	3.533	0.000
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	-0.047	0.021	2.266	0.023
Number of factors thought to reduce suitability for programme requirement	-0.041	0.024	1.757	0.079
Rating of risk the offender poses to the community	0.166	0.026	6.459	0.000
Offender has no valid employment, benefit or labour market programme spells	-0.210	0.054	3.859	0.000
Number of weeks on benefits in year prior to probation start date	-0.003	0.001	4.463	0.000
Number of weeks in employment in year prior to probation start date	-0.001	0.001	2.322	0.020
Number of weeks participating in a programme in year prior to probation start date	0.000	0.001	0.338	0.735
Constant	-1.005	0.091	11.068	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.091			
Base	14,902			

Table 65 Propensity score estimation when adding an activity requirement to a supervision requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.139	0.050	2.756	0.006
25–29	-0.143	0.051	2.803	0.005
30–34	-0.217	0.054	4.021	0.000
35–39	-0.264	0.054	4.882	0.000
40–49	-0.263	0.053	4.986	0.000
50 and over	-0.482	0.073	6.573	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.052	0.081	0.646	0.518
Asian, including Chinese	-0.047	0.084	0.568	0.570
Black	-0.021	0.072	0.291	0.771
Refusal/Not recorded	-0.277	0.103	2.685	0.007
Reference date (reference category, January):				
February	0.104	0.064	1.634	0.102
March	0.083	0.066	1.269	0.204
April	-0.001	0.065	0.009	0.993
May	0.087	0.066	1.309	0.190
June	-0.012	0.067	0.175	0.861
July	0.054	0.065	0.838	0.402
August	0.150	0.066	2.256	0.024
September	0.077	0.065	1.178	0.239
October	0.068	0.064	1.060	0.289
November	0.098	0.067	1.456	0.145
December	0.256	0.066	3.899	0.000
Offence type (reference category, summary offences):				
Sexual offences	-0.125	0.047	2.679	0.007
Robbery	-0.198	0.301	0.656	0.512
Theft and handling stolen goods	0.029	0.044	0.648	0.517
Fraud and forgery	0.031	0.086	0.364	0.716
Arson and criminal damage	-0.096	0.067	1.437	0.151
Motoring offences	-0.060	0.270	0.223	0.823
Other indictable	-0.205	0.142	1.441	0.150
Summary motoring	0.087	0.054	1.612	0.107
Burglary	-0.029	0.082	0.353	0.724
Vehicle theft and unauthorised taking	0.078	0.109	0.712	0.476
Drug offences	0.057	0.064	0.879	0.380
Public order	-0.160	0.106	1.500	0.134
Female	-0.086	0.038	2.238	0.025
Copas rate excluding Police Notice for Disorders	-0.044	0.027	1.657	0.097
No previous offences, excluding Police Notice for Disorders	-0.108	0.058	1.844	0.065
OGRS3 score	0.000	0.000	0.329	0.742
Offender recognises impact of offending on victim or wider community	-0.003	0.038	0.067	0.946
Offender accepts responsibility for offence	0.045	0.044	1.024	0.306
Suitability of location of accommodation to avoid re-offending	-0.010	0.017	0.578	0.563
Offender unemployed at time of OASys, or expected to be on release	0.090	0.031	2.862	0.004
Offender has problematic employment history	0.104	0.023	4.566	0.000
Offender has problems with literacy or numeracy	0.166	0.020	8.235	0.000

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.068	0.035	1.940	0.052
Evidence that offender is victim of domestic violence	-0.002	0.040	0.051	0.959
Regular leisure activities encourage offending behaviour	0.115	0.023	4.998	0.000
Offender has history of drug abuse	0.093	0.036	2.572	0.010
Offender is current drug user	-0.156	0.039	4.009	0.000
Offender's motivation to tackle drug use	-0.064	0.028	2.280	0.023
Offender current problem with use of alcohol	0.034	0.018	1.874	0.061
Offender is undergoing current or pending psychiatric treatment	-0.209	0.044	4.690	0.000
Offender has problems controlling temper	0.032	0.024	1.360	0.174
Quality of problem-solving skills	-0.017	0.026	0.633	0.527
Offender recognises that actions have consequences	0.027	0.025	1.052	0.293
Offender able to understand views of others	-0.014	0.026	0.525	0.600
Attitudes supportive of criminal behaviour	-0.073	0.029	2.529	0.011
Offender has physical or mental health conditions which need to be taken into account	-0.073	0.030	2.433	0.015
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	0.017	0.017	1.000	0.317
Number of factors thought to reduce suitability for programme requirement	-0.046	0.019	2.421	0.015
Rating of risk the offender poses to the community	-0.111	0.030	3.718	0.000
Offender has no valid employment, benefit or labour market programme spells	-0.018	0.067	0.273	0.785
Number of weeks on benefits in year prior to probation start date	-0.001	0.001	1.363	0.173
Number of weeks in employment in year prior to probation start date	-0.001	0.001	1.101	0.271
Number of weeks participating in a programme in year prior to probation start date	-0.001	0.001	0.688	0.492
Constant	-1.003	0.110	9.142	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.043			
Base	13,757			

Table 66 Propensity score estimation when adding an activity requirement to a supervision requirement plus a punitive requirement, main model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Age at reference date (reference category, 18–20):				
21–24	-0.065	0.047	1.367	0.172
25–29	-0.165	0.053	3.102	0.002
30–34	-0.243	0.063	3.857	0.000
35–39	-0.345	0.070	4.913	0.000
40–49	-0.292	0.066	4.422	0.000
50 and over	-0.270	0.105	2.565	0.010
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.018	0.093	0.195	0.846
Asian, including Chinese	-0.143	0.091	1.571	0.116
Black	0.236	0.075	3.164	0.002
Refusal/Not recorded	-0.157	0.127	1.232	0.218
Reference date (reference category, January):				
February	-0.020	0.080	0.245	0.806
March	-0.017	0.081	0.206	0.837
April	0.061	0.077	0.797	0.425
May	0.040	0.081	0.500	0.617
June	-0.098	0.082	1.196	0.232
July	0.061	0.079	0.777	0.437
August	0.107	0.080	1.334	0.182
September	0.009	0.081	0.111	0.912
October	0.046	0.078	0.594	0.552
November	0.283	0.077	3.656	0.000
December	0.193	0.079	2.439	0.015
Offence type (reference category, summary offences):				
Sexual offences	-0.006	0.052	0.121	0.904
Robbery	-0.288	0.266	1.081	0.280
Theft and handling stolen goods	0.004	0.060	0.069	0.945
Fraud and forgery	0.118	0.105	1.124	0.261
Arson and criminal damage	0.126	0.081	1.556	0.120
Motoring offences	0.029	0.185	0.154	0.877
Other indictable	0.054	0.163	0.330	0.742
Summary motoring	0.011	0.060	0.177	0.859
Burglary	0.143	0.075	1.911	0.056
Vehicle theft and unauthorised taking	0.072	0.111	0.648	0.517
Drug offences	0.054	0.087	0.617	0.537
Public order	-0.079	0.104	0.763	0.445
Female	0.073	0.055	1.321	0.186
Copas rate excluding Police Notice for Disorders	0.040	0.034	1.189	0.235
No previous offences, excluding Police Notice for Disorders	-0.101	0.071	1.410	0.158
OGRS3 score	-0.001	0.001	1.104	0.269
Offender recognises impact of offending on victim or wider community	0.030	0.047	0.646	0.518
Offender accepts responsibility for offence	-0.010	0.052	0.192	0.848
Suitability of location of accommodation to avoid re-offending	-0.009	0.022	0.407	0.684
Offender unemployed at time of OASys, or expected to be on release	0.300	0.040	7.581	0.000
Offender has problematic employment history	0.082	0.028	2.911	0.004
Offender has problems with literacy or numeracy	0.198	0.025	7.958	0.000

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Evidence that offender is perpetrator of domestic violence	-0.100	0.043	2.314	0.021
Evidence that offender is victim of domestic violence	0.041	0.056	0.722	0.470
Regular leisure activities encourage offending behaviour	0.078	0.029	2.723	0.006
Offender has history of drug abuse	0.045	0.041	1.101	0.271
Offender is current drug user	-0.045	0.051	0.895	0.371
Offender's motivation to tackle drug use	-0.020	0.033	0.612	0.541
Offender current problem with use of alcohol	0.062	0.023	2.649	0.008
Offender is undergoing current or pending psychiatric treatment	-0.021	0.084	0.254	0.800
Offender has problems controlling temper	-0.026	0.028	0.913	0.361
Quality of problem-solving skills	-0.058	0.032	1.836	0.066
Offender recognises that actions have consequences	-0.010	0.031	0.336	0.737
Offender able to understand views of others	0.011	0.031	0.369	0.712
Attitudes supportive of criminal behaviour	-0.069	0.034	2.032	0.042
Offender has physical or mental health conditions which need to be taken into account	-0.029	0.038	0.758	0.449
Number of factors thought to reduce suitability for unpaid work or electronic monitoring	0.050	0.026	1.911	0.056
Number of factors thought to reduce suitability for programme requirement	-0.035	0.030	1.172	0.241
Rating of risk the offender poses to the community	0.009	0.037	0.237	0.813
Offender has no valid employment, benefit or labour market programme spells	-0.038	0.077	0.491	0.624
Number of weeks on benefits in year prior to probation start date	0.000	0.001	0.192	0.847
Number of weeks in employment in year prior to probation start date	0.000	0.001	0.188	0.851
Number of weeks participating in a programme in year prior to probation start date	-0.003	0.002	1.940	0.052
Constant	-1.434	0.130	11.066	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.061			
Base	11,422			

Appendix G
Propensity score estimation for the probation and re-offending-only model, kernel matching

Table 67 Propensity score estimation when adding a punitive requirement to a supervision requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	0.012	0.027	0.442	0.659
Robbery	0.082	0.154	0.533	0.594
Theft and handling stolen goods	-0.211	0.028	7.578	0.000
Fraud and forgery	0.160	0.054	2.981	0.003
Arson and criminal damage	-0.303	0.045	6.752	0.000
Motoring offences	0.502	0.125	4.004	0.000
Other indictable	-0.065	0.085	0.758	0.448
Summary motoring	0.271	0.031	8.697	0.000
Burglary	0.186	0.048	3.847	0.000
Vehicle theft and unauthorised taking	0.211	0.070	3.019	0.003
Drug offences	-0.213	0.042	5.006	0.000
Public order	0.139	0.057	2.426	0.015
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.008	0.051	0.158	0.874
Asian, including Chinese	0.097	0.046	2.095	0.036
Black	0.002	0.045	0.043	0.966
Refusal/Not recorded	-0.189	0.059	3.206	0.001
Female	-0.577	0.023	24.873	0.000
Copas rate, excluding Police Notice for Disorders	-0.165	0.027	6.105	0.000
Age at reference date	-0.053	0.005	10.655	0.000
Age at reference date squared	0.000	0.000	5.274	0.000
Number of previous offences, excluding Police Notice for Disorders	-0.004	0.002	1.713	0.087
Number of previous offences squared	0.000	0.000	2.222	0.026
Number of previous court appearances	0.010	0.006	1.776	0.076
Number of previous court appearances squared	0.000	0.000	2.975	0.003
Number of previous custodial sentences	0.009	0.009	1.030	0.303
Number of previous custodial sentences squared	0.000	0.000	0.394	0.694
Constant	1.115	0.083	13.496	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.075			
Base	21,968			

Table 68 Propensity score estimation when adding an unpaid work requirement to a supervision requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	-0.024	0.029	0.827	0.408
Robbery	-0.052	0.171	0.305	0.760
Theft and handling stolen goods	-0.224	0.030	7.410	0.000
Fraud and forgery	0.175	0.057	3.074	0.002
Arson and criminal damage	-0.288	0.048	6.040	0.000
Motoring offences	0.526	0.131	4.022	0.000
Other indictable	-0.041	0.090	0.454	0.650
Summary motoring	0.260	0.033	7.845	0.000
Burglary	0.083	0.054	1.546	0.122
Vehicle theft and unauthorised taking	0.152	0.077	1.974	0.048
Drug offences	-0.199	0.045	4.391	0.000
Public order	0.109	0.062	1.770	0.077
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.051	0.054	0.946	0.344
Asian, including Chinese	0.139	0.048	2.888	0.004
Black	0.085	0.047	1.830	0.067
Refusal/Not recorded	-0.155	0.062	2.485	0.013
Female	-0.656	0.025	25.784	0.000
Copas rate, excluding Police Notice for Disorders	-0.229	0.030	7.624	0.000
Age at reference date	-0.047	0.005	8.768	0.000
Age at reference date squared	0.000	0.000	3.601	0.000
Number of previous offences, excluding Police Notice for Disorders	-0.001	0.002	0.639	0.523
Number of previous offences squared	0.000	0.000	1.641	0.101
Number of previous court appearances	0.009	0.007	1.242	0.214
Number of previous court appearances squared	-0.001	0.000	4.167	0.000
Number of previous custodial sentences	0.017	0.010	1.598	0.110
Number of previous custodial sentences squared	0.000	0.001	0.075	0.940
Constant	0.821	0.090	9.137	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.088			
Base	19,726			

Table 69 Propensity score estimation when adding a curfew requirement to a supervision requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	0.051	0.045	1.153	0.249
Robbery	0.352	0.238	1.476	0.140
Theft and handling stolen goods	-0.139	0.043	3.201	0.001
Fraud and forgery	0.071	0.090	0.792	0.429
Arson and criminal damage	-0.241	0.074	3.246	0.001
Motoring offences	0.050	0.258	0.195	0.845
Other indictable	-0.316	0.162	1.947	0.052
Summary motoring	0.241	0.051	4.727	0.000
Burglary	0.356	0.071	5.017	0.000
Vehicle theft and unauthorised taking	0.368	0.100	3.667	0.000
Drug offences	-0.180	0.071	2.553	0.011
Public order	0.115	0.095	1.211	0.226
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.165	0.091	1.803	0.071
Asian, including Chinese	-0.041	0.083	0.493	0.622
Black	-0.363	0.090	4.033	0.000
Refusal/Not recorded	-0.191	0.101	1.895	0.058
Female	-0.193	0.035	5.444	0.000
Copas rate, excluding Police Notice for Disorders	0.035	0.044	0.783	0.433
Age at reference date	-0.049	0.008	6.311	0.000
Age at reference date squared	0.000	0.000	4.507	0.000
Number of previous offences, excluding Police Notice for Disorders	-0.007	0.003	2.427	0.015
Number of previous offences squared	0.000	0.000	1.846	0.065
Number of previous court appearances	0.032	0.008	3.741	0.000
Number of previous court appearances squared	0.000	0.000	2.840	0.005
Number of previous custodial sentences	-0.009	0.013	0.739	0.460
Number of previous custodial sentences squared	0.000	0.001	0.462	0.644
Constant	-0.086	0.130	0.661	0.509
Prob>chi-squared	0.000			
Pseudo R-squared	0.037			
Base	13,456			

Table 70 Propensity score estimation when adding a punitive requirement to a supervision requirement plus a programme requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	0.003	0.037	0.078	0.938
Robbery	0.608	0.248	2.450	0.014
Theft and handling stolen goods	0.056	0.041	1.355	0.176
Fraud and forgery	0.515	0.092	5.613	0.000
Arson and criminal damage	-0.010	0.063	0.162	0.871
Motoring offences	0.627	0.145	4.325	0.000
Other indictable	0.111	0.122	0.909	0.363
Summary motoring	0.481	0.029	16.597	0.000
Burglary	0.450	0.061	7.398	0.000
Vehicle theft and unauthorised taking	0.463	0.086	5.357	0.000
Drug offences	0.062	0.067	0.932	0.352
Public order	0.316	0.087	3.629	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.004	0.060	0.059	0.953
Asian, including Chinese	0.101	0.054	1.852	0.064
Black	0.114	0.045	2.497	0.013
Refusal/Not recorded	-0.036	0.077	0.465	0.642
Female	-0.356	0.041	8.763	0.000
Copas rate, excluding Police Notice for Disorders	0.141	0.039	3.627	0.000
Age at reference date	-0.056	0.007	8.152	0.000
Age at reference date squared	0.000	0.000	5.202	0.000
Number of previous offences, excluding Police Notice for Disorders	0.001	0.003	0.354	0.724
Number of previous offences squared	0.000	0.000	0.038	0.970
Number of previous court appearances	-0.006	0.008	0.797	0.425
Number of previous court appearances squared	0.000	0.000	0.852	0.394
Number of previous custodial sentences	-0.004	0.011	0.311	0.756
Number of previous custodial sentences squared	0.001	0.001	0.881	0.378
Constant	0.788	0.108	7.287	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.058			
Base	15,055			

Table 71 Propensity score estimation when adding an unpaid work requirement to a supervision requirement plus a programme requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	-0.044	0.039	1.111	0.266
Robbery	0.468	0.278	1.682	0.093
Theft and handling stolen goods	0.034	0.045	0.758	0.449
Fraud and forgery	0.520	0.097	5.380	0.000
Arson and criminal damage	0.027	0.067	0.405	0.685
Motoring offences	0.631	0.152	4.150	0.000
Other indictable	0.097	0.132	0.739	0.460
Summary motoring	0.461	0.031	15.044	0.000
Burglary	0.366	0.067	5.484	0.000
Vehicle theft and unauthorised taking	0.412	0.094	4.377	0.000
Drug offences	0.062	0.071	0.865	0.387
Public order	0.283	0.094	3.019	0.003
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.035	0.063	0.555	0.579
Asian, including Chinese	0.109	0.057	1.893	0.058
Black	0.174	0.047	3.680	0.000
Refusal/Not recorded	-0.022	0.081	0.276	0.783
Female	-0.420	0.045	9.395	0.000
Copas rate, excluding Police Notice for Disorders	0.115	0.041	2.798	0.005
Age at reference date	-0.048	0.007	6.623	0.000
Age at reference date squared	0.000	0.000	4.009	0.000
Number of previous offences, excluding Police Notice for Disorders	0.003	0.003	0.975	0.329
Number of previous offences squared	0.000	0.000	0.001	0.999
Number of previous court appearances	-0.017	0.008	2.090	0.037
Number of previous court appearances squared	0.000	0.000	0.002	0.998
Number of previous custodial sentences	0.001	0.012	0.081	0.935
Number of previous custodial sentences squared	0.000	0.001	0.291	0.771
Constant	0.521	0.116	4.500	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.055			
Base	14,032			

Table 72 Propensity score estimation when adding a curfew requirement to a supervision requirement plus a programme requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	0.121	0.061	1.976	0.048
Robbery	0.939	0.332	2.827	0.005
Theft and handling stolen goods	0.096	0.065	1.462	0.144
Fraud and forgery	0.305	0.161	1.899	0.058
Arson and criminal damage	-0.059	0.107	0.546	0.585
Motoring offences	0.028	0.310	0.091	0.927
Other indictable	0.045	0.208	0.215	0.830
Summary motoring	0.396	0.050	7.967	0.000
Burglary	0.574	0.089	6.448	0.000
Vehicle theft and unauthorised taking	0.428	0.135	3.173	0.002
Drug offences	-0.071	0.120	0.594	0.552
Public order	0.285	0.143	1.993	0.046
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.124	0.106	1.170	0.242
Asian, including Chinese	0.116	0.091	1.270	0.204
Black	-0.151	0.087	1.740	0.082
Refusal/Not recorded	-0.150	0.144	1.041	0.298
Female	-0.059	0.062	0.953	0.341
Copas rate, excluding Police Notice for Disorders	0.189	0.068	2.776	0.006
Age at reference date	-0.059	0.012	5.150	0.000
Age at reference date squared	0.001	0.000	3.766	0.000
Number of previous offences, excluding Police Notice for Disorders	-0.005	0.004	1.165	0.244
Number of previous offences squared	0.000	0.000	0.044	0.965
Number of previous court appearances	0.027	0.013	2.083	0.037
Number of previous court appearances squared	0.000	0.000	1.604	0.109
Number of previous custodial sentences	-0.012	0.017	0.713	0.476
Number of previous custodial sentences squared	0.001	0.001	1.201	0.230
Constant	-0.229	0.180	1.271	0.204
Prob>chi-squared	0.000			
Pseudo R-squared	0.059			
Base	11,165			

Table 73 Propensity score estimation when adding a punitive requirement to a supervision requirement plus an activity requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	0.166	0.077	2.144	0.032
Robbery	0.140	0.444	0.316	0.752
Theft and handling stolen goods	-0.270	0.071	3.828	0.000
Fraud and forgery	0.283	0.145	1.949	0.051
Arson and criminal damage	0.020	0.111	0.177	0.859
Motoring offences	0.588	0.347	1.695	0.090
Other indictable	0.222	0.242	0.918	0.359
Summary motoring	0.166	0.082	2.018	0.044
Burglary	0.380	0.109	3.482	0.000
Vehicle theft and unauthorised taking	0.163	0.156	1.043	0.297
Drug offences	-0.213	0.106	2.016	0.044
Public order	0.270	0.170	1.593	0.111
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.060	0.133	0.451	0.652
Asian, including Chinese	0.117	0.144	0.816	0.415
Black	0.315	0.109	2.886	0.004
Refusal/Not recorded	0.026	0.190	0.136	0.891
Female	-0.356	0.061	5.806	0.000
Copas rate, excluding Police Notice for Disorders	-0.086	0.073	1.180	0.238
Age at reference date	-0.083	0.016	5.240	0.000
Age at reference date squared	0.001	0.000	3.486	0.000
Number of previous offences, excluding Police Notice for Disorders	0.001	0.006	0.247	0.805
Number of previous offences squared	0.000	0.000	0.520	0.603
Number of previous court appearances	0.008	0.014	0.587	0.557
Number of previous court appearances squared	0.000	0.000	0.504	0.614
Number of previous custodial sentences	-0.009	0.025	0.366	0.714
Number of previous custodial sentences squared	-0.001	0.001	0.782	0.434
Constant	1.262	0.243	5.198	0.000
Prob>chi-squared	0.000			
Pseudo R-squared	0.068			
Base	3,211			

Table 74 Propensity score estimation when adding a punitive requirement to a supervision requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	-0.001	0.026	0.024	0.981
Robbery	0.587	0.156	3.761	0.000
Theft and handling stolen goods	-0.286	0.028	10.382	0.000
Fraud and forgery	-0.465	0.046	10.131	0.000
Arson and criminal damage	-0.139	0.045	3.062	0.002
Motoring offences	-0.148	0.088	1.687	0.092
Other indictable	-0.374	0.076	4.941	0.000
Summary motoring	-0.298	0.026	11.379	0.000
Burglary	0.080	0.044	1.816	0.069
Vehicle theft and unauthorised taking	-0.287	0.057	5.053	0.000
Drug offences	-0.286	0.040	7.144	0.000
Public order	-0.279	0.046	6.009	0.000
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.039	0.046	0.853	0.394
Asian, including Chinese	-0.047	0.038	1.215	0.224
Black	-0.167	0.039	4.299	0.000
Refusal/Not recorded	-0.139	0.055	2.544	0.011
Female	0.269	0.027	10.023	0.000
Copas rate, excluding Police Notice for Disorders	0.224	0.025	8.976	0.000
Age at reference date	0.012	0.005	2.258	0.024
Age at reference date squared	0.000	0.000	0.888	0.374
Number of previous offences, excluding Police Notice for Disorders	0.000	0.002	0.089	0.929
Number of previous offences squared	0.000	0.000	0.201	0.841
Number of previous court appearances	-0.015	0.006	2.580	0.010
Number of previous court appearances squared	0.000	0.000	1.335	0.182
Number of previous custodial sentences	-0.015	0.009	1.657	0.098
Number of previous custodial sentences squared	0.001	0.000	1.586	0.113
Constant	0.011	0.083	0.137	0.891
Prob>chi-squared	0.000			
Pseudo R-squared	0.018			
Base	24,020			

Table 75 Propensity score estimation when adding a programme requirement to a supervision requirement plus a punitive requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	-0.038	0.036	1.066	0.287
Robbery	-0.057	0.177	0.321	0.748
Theft and handling stolen goods	-0.058	0.040	1.445	0.148
Fraud and forgery	0.045	0.076	0.587	0.557
Arson and criminal damage	-0.024	0.062	0.395	0.693
Motoring offences	0.189	0.119	1.584	0.113
Other indictable	-0.034	0.118	0.291	0.771
Summary motoring	0.743	0.031	23.930	0.000
Burglary	0.125	0.053	2.340	0.019
Vehicle theft and unauthorised taking	0.158	0.076	2.073	0.038
Drug offences	-0.146	0.062	2.347	0.019
Public order	-0.087	0.073	1.198	0.231
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.097	0.061	1.597	0.110
Asian, including Chinese	0.036	0.053	0.685	0.493
Black	0.336	0.049	6.802	0.000
Refusal/Not recorded	0.057	0.078	0.730	0.465
Female	-0.397	0.040	9.907	0.000
Copas rate, excluding Police Notice for Disorders	0.395	0.038	10.494	0.000
Age at reference date	0.004	0.007	0.505	0.613
Age at reference date squared	0.000	0.000	0.255	0.799
Number of previous offences, excluding Police Notice for Disorders	-0.006	0.003	2.278	0.023
Number of previous offences squared	0.000	0.000	1.171	0.242
Number of previous court appearances	-0.009	0.008	1.154	0.249
Number of previous court appearances squared	0.000	0.000	1.160	0.246
Number of previous custodial sentences	0.021	0.012	1.740	0.082
Number of previous custodial sentences squared	0.000	0.001	0.283	0.778
Constant	-0.107	0.113	0.946	0.344
Prob>chi-squared	0.000			
Pseudo R-squared	0.064			
Base	14,902			

Table 76 Propensity score estimation when adding an activity requirement to a supervision requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	-0.123	0.045	2.729	0.006
Robbery	-0.172	0.292	0.590	0.555
Theft and handling stolen goods	0.071	0.039	1.842	0.065
Fraud and forgery	0.056	0.083	0.678	0.498
Arson and criminal damage	-0.075	0.065	1.140	0.254
Motoring offences	-0.053	0.255	0.208	0.835
Other indictable	-0.148	0.140	1.061	0.288
Summary motoring	0.113	0.051	2.236	0.025
Burglary	0.052	0.079	0.663	0.507
Vehicle theft and unauthorised taking	0.150	0.106	1.416	0.157
Drug offences	0.104	0.058	1.775	0.076
Public order	-0.172	0.106	1.628	0.104
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	0.001	0.079	0.018	0.985
Asian, including Chinese	-0.112	0.081	1.369	0.171
Black	-0.054	0.070	0.769	0.442
Refusal/Not recorded	-0.278	0.101	2.756	0.006
Female	-0.069	0.032	2.179	0.029
Copas rate, excluding Police Notice for Disorders	0.117	0.040	2.948	0.003
Age at reference date	-0.018	0.008	2.338	0.019
Age at reference date squared	0.000	0.000	0.775	0.438
Number of previous offences, excluding Police Notice for Disorders	-0.003	0.003	0.895	0.371
Number of previous offences squared	0.000	0.000	0.527	0.598
Number of previous court appearances	-0.010	0.007	1.417	0.157
Number of previous court appearances squared	0.000	0.000	0.297	0.766
Number of previous custodial sentences	0.023	0.012	1.861	0.063
Number of previous custodial sentences squared	0.000	0.001	0.649	0.517
Constant	-0.345	0.129	2.667	0.008
Prob>chi-squared	0.000			
Pseudo R-squared	0.018			
Base	13,757			

Table 77 Propensity score estimation when adding an activity requirement to a supervision requirement plus a punitive requirement, probation and re-offending-only model

Characteristic	Coefficient	Standard error	Z-statistic	P-value
Offence type (reference category, summary offences):				
Sexual offences	0.031	0.050	0.624	0.533
Robbery	-0.227	0.261	0.870	0.385
Theft and handling stolen goods	0.077	0.053	1.441	0.150
Fraud and forgery	0.139	0.099	1.399	0.162
Arson and criminal damage	0.194	0.079	2.449	0.014
Motoring offences	0.037	0.177	0.212	0.832
Other indictable	0.117	0.158	0.737	0.461
Summary motoring	0.050	0.054	0.932	0.351
Burglary	0.259	0.069	3.737	0.000
Vehicle theft and unauthorised taking	0.164	0.106	1.541	0.123
Drug offences	0.113	0.079	1.426	0.154
Public order	-0.027	0.101	0.268	0.789
Ethnicity (reference category, White, including Irish and other):				
Mixed, including other ethnic group	-0.018	0.091	0.194	0.846
Asian, including Chinese	-0.177	0.088	1.996	0.046
Black	0.228	0.072	3.170	0.002
Refusal/Not recorded	-0.147	0.123	1.194	0.232
Female	0.136	0.047	2.880	0.004
Copas rate, excluding Police Notice for Disorders	0.218	0.051	4.287	0.000
Age at reference date	-0.046	0.011	4.336	0.000
Age at reference date squared	0.000	0.000	3.315	0.001
Number of previous offences, excluding Police Notice for Disorders	0.002	0.004	0.388	0.698
Number of previous offences squared	0.000	0.000	1.074	0.283
Number of previous court appearances	-0.021	0.012	1.772	0.076
Number of previous court appearances squared	0.000	0.000	2.091	0.037
Number of previous custodial sentences	0.016	0.018	0.879	0.380
Number of previous custodial sentences squared	-0.001	0.001	1.150	0.250
Constant	-0.143	0.161	0.888	0.375
Prob>chi-squared	0.000			
Pseudo R-squared	0.027			
Base	11,422			

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The effectiveness of different community order requirements for offenders who received an OASys assessment

The study used propensity score matching to explore the impact of different community order requirements on the re-offending rate and frequency of re-offending within two years of the initial offence. The analysis used data from the Offender Assessment System, probation and re-offending records and administrative data on employment and benefit receipt. The study found no evidence to suggest that increasing the punitive element of community orders would have a detrimental effect on re-offending, for the combinations of requirements considered. However, combining other types of requirement, such as supervision, with a punitive element, can increase the effectiveness of the community order.

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