National Evaluation of the Troubled Families Programme: National Impact Study Report

Findings from the Analysis of National Administrative Data and local data on programme participation

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Abbreviations

CIN	Child In Need
CLA	Child Looked After
DCLG	Department for Communities and Local Government
DfE	Department for Education
DWP	Department for Work and Pensions
ESA	Employment Support Allowance
HMRC	Her Majesty's Revenue and Customs
IB	Incapacity Benefit
IS	Income Support
IMD	Index of Multiple Deprivation
JSA	Jobseeker's Allowance
LA	Local Authority
LLR	Local Linear Regression
MSB	Mean Standardised Bias
MoJ	Ministry of Justice
NPD	National Pupil Database
PbR	Payment by Results
PNC	Police National Computer
PSM	Propensity Score Matching
SDA	Severe Disability Allowance
WPLS	Work and Pensions Longitudinal Study

Executive summary

Aims

The purpose of the analysis upon which this report is based was to estimate the impact of participation in the initial phase of the Troubled Families programme on a range of outcomes encompassing benefit receipt, employment, educational participation, child welfare and offending. This analysis estimates the impact of programme participation on these outcomes, relative to non-participation. That is, the findings that overall participation in the programme had no significant or systemic impact does not mean that there were no changes in the relevant outcomes for families; simply that any changes (positive or negative) cannot be attributed to participation in the programme, because similar changes were observed for comparable non-participants. In other words, participation in the programme did not in itself result in or cause any change in outcomes. This applies to all impact estimates described below. This report should be read alongside the separate and independent analysis of the impact of participation in the Troubled Families programme using survey data.[1] This analysis, which uses administrative data, is consistent with the analysis of the survey data.

The data used in this analysis was compiled from information provided by local authorities and from national administrative datasets covering tax and benefits receipt, offending, educational attainment, schooling and child social care. Information provided by local authorities allowed records for individuals to be linked together to build up a detailed picture of family circumstances prior to starting on the programme and outcomes following entry. The main advantage of using administrative data was that it provided information on a larger sample of families than would have been possible if it had been necessary to survey Troubled Families programme participants. However, the use of partial and incomplete data, reflecting in part the novel nature of the process for local authorities, means that there are a number of caveats attached to the findings.

Data issues and caveats

56 local authorities provided the data used in this study between October and November 2014.[2] These data were then matched to national level administrative datasets. Data were obtained on approximately 25 per cent of the 120,000 families that participated in the programme, representing a large sample, and enabling us to undertake detailed analysis. However, the data supplied were of variable quality. As a result, some important data were missing, and it was necessary to make certain assumptions in assigning individuals to treatment and control groups. In addition, a significant number of individuals were not

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[1] Evaluation of the Troubled Familied Programme, "Impact evaluation using survey data", Susan Purdon and Caroline Bryson.

[2] 59 authorities provided useable data, of which three were excluded from the final dataset as data from these areas was not matched to one of the administrative datasets (cf. Annex A). In addition to the 59 local authorities, a further four areas provided data that could not be used in the study because a signed data-sharing agreement was not supplied and one area was omitted because the data sharing agreement was returned too late for the local authority to be included in the extract of data sent to departments for matching.

matched to certain of the administrative datasets, and this necessitated further assumptions – for example, we assume that individuals not matched to employment records were not employed.[3] Further details are set out in the data chapter and in Annex A.

It is possible that in some cases these assumptions did not reflect the true circumstances of particular families and, as a result, the findings may be subject to measurement error. However, as long as the prevalence of missing or incomplete data is random and/or does not differ systematically between the treated and control groups, the conclusions will remain unbiased. None of the available evidence suggests that such systematic differences exist, and the possibility of significant bias therefore appears unlikely. The fact that separate analysis, using survey data, produces results consistent with our analysis is further evidence that any bias that would impact our results to a significant degree is unlikely. However, given the data issues this possibility cannot be entirely excluded. It is not possible to say with certainty how this might affect the reported results.

Methods

Local authorities were asked to supply information on all those families who met at least two of the national eligibility criteria for the programme. Thus, local authorities were asked to provide information on a comparison group of families that fell just below the eligibility threshold for the programme, as well as those who actually started on the programme following its introduction in April 2012.

The three national criteria covered anti-social behaviour or youth offending, worklessness and child truancy or exclusion. Families were only eligible for the programme if they met three national criteria, or two of the national criteria plus local discretionary criteria. The local criteria were designed to identify families that resulted in high costs to the taxpayer.

Two methods were used to estimate the causal impact of the Troubled Families programme. The main focus in the report is on the analysis which uses a technique known as propensity score matching (PSM), as it is thought that this was most likely to be robust in the current application. Both approaches seek to estimate what could have been expected to happen to members of families that participated in the programme if they had not taken part, so that observed outcomes following participation in the programme for this group of families can be compared against this estimate. PSM matches those subject to the programme to a comparison group of families that have a similar propensity to be treated, based on their observed characteristics, but who do not in fact receive assistance. Provided the two groups are matched on all characteristics which determine both whether the family participates in the programme and which impact on the outcomes that they experience as a result of participation, the impact estimate should provide an accurate and unbiased estimate of the true impact of the intervention. The analysis used a number of different ways of selecting matches for participating families and also explored the sensitivity of the results to including families that started on the programme at a later point in time as a comparison group for families that were offered support at an earlier date. The impact of the programme on families that were offered more intensive support was also explored.

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[3] See Tables 4 and 5, page 39.

PSM is the standard technique used to estimate impact in programme evaluation when, as here, a randomised control trial was not feasible, and was therefore considered appropriate here. However, as is generally the case with impact evaluation for which a randomly selected control group does not exist, it is impossible to exclude entirely that there were systematic differences between the two groups that are not observed in the available data, which could potentially bias the results.

A supplementary analysis exploited the fact that families started on the programme at different points in time. This was known as the waiting list analysis. Those who started on the programme at a later date were used as a comparison group for families that started earlier, with outcomes for the comparison group observed in the period before they started to receive support.

Key findings

The key finding is that across a wide range of outcomes, covering the key headline objectives of the programme - employment, benefit receipt, school attendance, safeguarding and child welfare - we were unable to find consistent evidence that the Troubled Families programme had any significant or systematic impact. That is to say, our analysis found no impact on these outcomes attributable to the programme. The vast majority of impact estimates were statistically insignificant, with a very small number of positive or negative results. These results are consistent with those found by the separate and independent impact analysis using survey data, which also found no significant or systemic impact on outcomes related to employment, job seeking, school attendance, or anti-social behaviour.[4] This gives us further confidence in the reliability of our results.

However, given the quite major limitations imposed by data quality, our results in isolation cannot be taken as conclusive evidence that the programme had no impact at all, and it is important to consider this result in conjunction with the other evidence contained in the evaluation as a whole. Although our conclusions are robust to a variety of checks detailed below, and consistent with the separate analysis of the survey data, they are subject to caveats and the results below should be read in this light.

The clearest and most reliable estimates, bearing in mind the limitations of the data, were for impacts on benefit receipt and employment. Our analysis found no significant impact of participation in the Troubled Families programme on any of the key outcome variables. We found no significant impact on the proportion of adults claiming out-of-work benefits either 12 or 18 months after starting on the programme. This was also the case when focusing specifically on JSA or incapacity benefits. Participation in the programme also had no detectable impact on the number of weeks that adult family members spent on out-of-work benefits in the year following the date that they started on the programme. Nor did we find any impact on the likelihood that adults shifted from other out-of-work benefits to JSA.

The analysis also suggested that participation in the Troubled Families programme had no impact on the likelihood that adults were employed 12 or 18 months after starting on the programme. The number of weeks spent in employment over each of these time periods

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[4] Evaluation of the Troubled Familied Programme, "Impact evaluation using survey data", Susan Purdon and Caroline Bryson.

seems to have been unaffected and we found no evidence that more intensive contact affected employment outcomes.

For other outcomes, including on absence from school, the likelihood of children being in care or classified as "in need", and child and adult offending, some "significant" estimates were obtained. However, these were not consistently either positive or negative (that is, when testing different analytical models, in some cases participation appeared to improve outcomes, but in others to worsen them). Moreover, given the number of hypotheses tested, some significant "impact" estimates would be expected to occur by chance in any case[5]. In no case did such estimates appear to be robust. The conclusion therefore remains that there is no evidence from this analysis to suggest that the programme had any positive or negative impact, although this is once again subject to the caveats above.

We also examined whether participation in the programme had a differential impact on families that were said to have received more intensive support. There was no evidence from this analysis to support this hypothesis.

Generalising the analysis

It was not possible to estimate the impact that participation in a local Troubled Families programme had on all the outcomes that it is potentially possible to observe in the national administrative datasets within the timeframe for the analysis, because only a limited subset of families could be observed at a point when they could be expected to have completed their participation in the programme. For this reason, the study was unable to assess the impact of the programme on exclusions or educational attainment. Even when outcomes could be observed for a sizeable sample of families 12 months after starting on the programme, there was still a possibility that the family was continuing to receive support at this point, particularly for the hardest to help. There could be greater confidence that the programme would have had time to take effect 18 months after families had started on the intervention, but outcomes at this point could only be observed for a smaller sample of families and for the benefit receipt, employment and offending outcomes. As a result, the findings for this sample of families may not have been representative of those for the wider population of participants.

The generalisability of the findings may have also been affected by the fact that participation in the study by local authorities was voluntary. Whilst a sizeable proportion of areas did participate (nearly two-fifths), it is possible that the efforts devoted to the success of the Troubled Families programme in these areas were not replicated in other parts of the country. These issues could potentially be overcome in any future evaluation if it were possible to integrate the collection of data required for the evaluation into the reporting requirements for Payment by Results, as well as incentivising local authorities to screen families in a systematic way.

It was not possible to look at variation in performance by local authority. It is therefore possible, particularly given that there was a very large amount of discretion on how the

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[5] This is because the conventional measure of statistical significance is a result that would occur by chance in fewer than 1 in 20 cases. Since we have tested several hundred hypotheses in this analysis, a number of "significant" results would be expected to occur by chance alone

programme was delivered locally, that analysis in the aggregate might mask differing levels of impact. That is, it is possible that, while the aggregate analysis finds no significant impact on a particular outcome, in fact participation in the programme improved outcomes significantly in some areas while worsening them significantly in others (so leading to no significant impact on average overall).

Conclusion

Whilst it was not possible to assess the impact of participation in the Troubled Families programme on all the outcomes that it seeks to affect, a large number of measures were used, with similar outcomes defined in different ways. Also, the sample sizes that the national administrative data provided meant that it should have been feasible to detect impacts which were relatively small in magnitude. Our analysis of the available data suggested that programme participation did not have any significant or systemic impact on families within the time frame over which it was possible to observe its effects.

Given the quite major limitations imposed by data quality, our results in isolation cannot be taken as conclusive evidence that the programme had no impact at all, and it is important to consider this result in conjunction with the other evidence contained in the evaluation as a whole. The poor quality of some of the data limited our findings and, as such, our results in isolation cannot be taken as conclusive evidence of the programme's impact. However, our results, in particular our findings of no significant and systemic impact across a range of key outcomes, are consistent with the separate and independent analysis of survey data, which also found no significant or systemic impact on key outcomes.

Introduction

The Troubled Families programme

In December 2011 the Government committed to investing £448 million to 'turn around' the lives of 120,000 of the most 'troubled' families in England. The 120,000 figure was based on earlier Cabinet Office analyses of the Families and Children Study (Cabinet Office 2009). This found that 120,000 families in England were estimated to meet five of the following seven criteria:

- no parent in the family was in work;

- the family lived in poor-quality or overcrowded housing;

- no parent had any qualifications;

- the mother had mental health problems;

- at least one parent had a long-standing limiting illness, disability or infirmity;

- the family had a low income (below 60 per cent of the median); and

- the family could not afford a number of items of food and clothing.

The decision to introduce the programme was also based on fiscal analysis by the Department for Communities and Local Government (DCLG) which estimated that £9 billion would be spent on these families by central government and local public bodies during the period covered by the 2010-2015 Spending Review (DCLG 2013). Of this amount, the majority (£8 billion) of costs were expected to be incurred as a result of reactive, rather than targeted, interventions. The largest share of costs for reactive interventions (£3.5bn) was that generated by the need to protect children, such as placing them in care. Around £2.6bn was estimated to be incurred as a result of crimes committed by these families, whilst the rest arose from the cost of providing benefits and healthcare and dealing with pupils excluded from school.

Targeted interventions were largely accounted for by early years programmes, for example Sure Start, as well as preventative work with young people, family interventions and health programmes. A portion of costs for targeted interventions related to welfare provision, such as the European Social Fund for families with complex needs, and work to prevent further anti-social behaviour or offending.

Following the 2011 announcement, the Troubled Families programme, led by the Troubled Families Unit at DCLG, was launched in April 2012. The programme is aimed at families with multiple needs. However, while the 120,000 figure was adopted as the total number of families to be assisted by the programme, a different set of criteria were used to identify eligible families. Instead, local authorities were asked to identify families that:

- were involved in crime and anti-social behaviour;

- had children absent from school either due to truancy or exclusion;

- had an adult on out-of-work benefits[6]; and

- resulted in high costs to the public purse.

Eligibility for the programme was determined by whether the family met these criteria. Families that met all three national criteria (the first three listed above) were automatically included in the programme. Additionally, local authorities were able to include other families that met two of the three criteria if the family also met local discretionary criteria which were intended to correspond to the fourth bullet above, i.e. the family generated high costs for the taxpayer (DCLG 2012). Examples of local criteria suggested by DCLG included families with a child subject to a Child Protection Plan, those where the local authority was considering taking children into care, families that were the subject of frequent calls to the police, or engaged in gang-related crime, and those with particular types of health problems, such as long-term health conditions, emotional and mental health problems, drug and alcohol abuse, pregnancy by those under the age of 18 or health problems as a result of domestic abuse. Quotas for the number of families to be worked with by each local authority were assigned based on their population and scores on the Index of Multiple Deprivation and Child Wellbeing Index.

The Troubled Families programme aims to alter the life course of families by moving provision from services targeted at individuals to integrated family support, whilst reducing costs to the taxpayer (DCLG 2011; 2013). DCLG provides up to 40 per cent of the cost of extra interventions for eligible families, with the remainder coming from local authorities. This amounts to a maximum DCLG contribution of £4,000 per family, which is made up of an attachment fee[7] and a Payment by Results (PbR) element. The latter is an arrears payment which is only made if specific outcomes are achieved. In the first year of operation the attachment fee was £3,200 (80 per cent of the maximum DCLG spend per family). This fell to 60 and 40 per cent respectively in the following two years. This was offset by increasing the proportion of the total £4,000 payment which was made as a results-based arrears payment, i.e. the PbR element was 20, 40 and 60 per cent of the total in each successive year of the intervention.

It was announced in the 2013 Spending Round that the programme would be expanded to 400,000 children with an additional £200 million investment from central government for 2015-2016. Families were to be eligible for the expanded programme if they met two of the following criteria:

- parents or children were involved in crime or anti-social behaviour;

- children were not attending school regularly;

- children were in need of help, i.e. they were identified as in need, or subject to a Child Protection Plan;

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[6] This includes: Income Support (IS) and/or Jobseeker's Allowance (JSA), Employment and Support Allowance (ESA), Incapacity Benefit (IB), Carer's Allowance and Severe Disability Allowance (SDA).

[7] The attachment fee is an upfront payment for the costs involved in restructuring services, recruitment of staff, commissioning services and the increased risks in the earlier years as services become established. However, local authorities only receive attachment fees for those who they are considered to have worked with successfully, rather than every family who starts on the programme.

- adults were out-of-work or at risk of financial exclusion, or young people within the family were at risk of worklessness;
- families were affected by domestic violence and abuse;
- parents or children were experiencing a range of health problems.

Once again, local authorities were allowed to exercise some discretion over which families to include in the programme, but were asked to prioritise those with multiple problems that were 'most likely to benefit from an integrated, whole family approach' and families that were likely to result in the highest costs to the taxpayer (DCLG 2015: 8-9).

The evaluation

Overview of research

The impact of the initial stage of the Troubled Families programme is being evaluated by an independent research consortium. The evaluation consists of a number of complementary strands which, as a whole, are designed to provide a detailed understanding of the implementation and operation of the programme and its impact across the range of outcomes that it seeks to affect. The research strands include case studies, a quantitative estimate of impact based on a survey of participants and a comparison group, monitoring data provided by local authorities and a study of the cost-effectiveness of the programme, in addition to the quantitative impact estimates using linked national administrative datasets described in this report.

Purpose of the report

The purpose of this report is to report the analysis and findings of the National Impact Study of the Troubled Families programme. The analysis is based on information provided by local authorities and data on members of participating families compiled from national administrative datasets containing records of benefit receipt, employment, educational participation and attainment, child welfare and offending. As administrative data are not collected specifically for the purpose of evaluating the impact of the programme, they do not provide information on every outcome that the programme aims to effect, and are not defined in a way that directly corresponds to the measures set out in the financial framework used to determine PbR payments. The national administrative datasets also lack some of the more detailed information on families that it might be feasible to collect in a survey. However, the fact that the national administrative datasets are not specifically collected for the purposes of evaluating the Troubled Families programme also means that the analysis is less likely to be based on a biased sample of families than with a survey which may be affected by systematic differences in response rates for families that achieve particular outcomes. For example, where family members enter work, they may be less likely to be available to complete a survey. The ability to obtain data on a much larger sample of families than it would be feasible to survey also gives an analysis of administrative data greater statistical power. This means that even small effects from the programme can potentially be identified, whereas the effect size would need to be much greater if the same analysis were carried out on a (typically smaller) survey sample.

The analysis seeks to identify the causal impact of the Troubled Families programme using a quasi-experimental technique known as propensity score matching (PSM). This analysis is supplemented with a waiting list analysis, based on survival analysis. Both

approaches seek to estimate what could have been expected to happen to members of families that participated in the programme - known as the treatment group - if they had not taken part. This estimate of the outcomes that family members would have attained in the absence of the treatment is known as the counterfactual. A comparison group, not subject to the treatment, or observed over a period prior to being treated, is used to estimate the counterfactual, taking into account known differences between two groups. Where the comparison group did not have a real start date on the programme, they were given a 'pseudo' start date at random, so that 'outcomes' could be evaluated from this point, in the same way as they were for the treatment group. The robustness of the findings to varying the sample on which it is based and the choice of comparison group is explored in the analysis. Results are also presented for families that received more intensive support from the programme.

Caveats

As the following chapter on the data used in the course of the study explains, it was necessary to ask local authorities to provide information on the families who participated in the programme.

56 local authorities provided the data used in this study between October and November 2014. This data was then matched to national level administrative datasets. However, the data supplied by local authorities was of variable quality. As a result, some important data was missing, and it was necessary to make certain assumptions in assigning individuals to treatment and comparison groups. In addition, a significant number of individuals were not matched to certain of the administrative datasets, and this necessitated further assumptions – for example, we assume that individuals not matched to employment records were not employed (see Table 10). Further details on the data cleaning process and data checks in relation to unmatched administrative data and the assignment of individuals to the treatment and comparison groups are provided in Annex A.

It is possible that in some cases these assumptions did not reflect the true circumstances of particular families and, as a result, the findings may be subject to measurement error. If the prevalence of missing or incomplete data is random and/or does not differ systematically between the treated and comparison groups, the conclusions will remain unbiased. There is no obvious reason to believe from the data that such systematic differences exist, but given the data issues this possibility cannot be excluded. It is not possible to say with certainty how this might affect the reported results.

Report outline

The following chapter describes the main features of the datasets used in this study, including their coverage, contents and limitations. It also describes the process of linking the datasets together and the resulting coverage of families within the linked administrative data. The report then moves on to describe the characteristics of programme participants in terms of the eligibility criteria that they met, the period of their involvement in the programme and information on individual, family and local area characteristics. The chapter concludes with a description of family and personal history prior to starting on the Troubled Families programme and family- and individual-level outcomes following programme participation. The methods of analyses and the key assumptions which determine whether they are able to provide a robust estimate of impact are described in

the chapter on methods. The following two chapters then report the main findings from the PSM and waiting list analyses on benefit receipt, employment, educational participation, child welfare and offending. The report concludes with a summary of the main findings of the analyses and a discussion of their limitations. Supplementary analyses are provided in appendices.

Throughout the report, results that are statistically significant at conventionally-accepted levels (the five per cent level or better), are highlighted in the text. However, some impact estimates can be expected to appear statistically significant due to sampling error, rather than because the programme actually affected a given outcome. It is important to bear this in mind when considering the impact of the programme across such a large number of outcome measures. As a result, it is vital to consider whether impact estimates are statistically significant across a range of similar outcomes and when using different estimation techniques, rather than just in a single model.

Data

Overview of data sources

This chapter describes each of the datasets which were combined during the course of the study to compile detailed information on the history, characteristics and outcomes experienced by families that were assessed for eligibility for the Troubled Families programme, as well as their participation in the programme. In addition to the information provided by local authorities administering the programme, data extracts were supplied by the Department for Education (DfE), the Ministry of Justice (MoJ) and the Department for Work and Pensions (DWP) (including information from Her Majesty's Revenue and Customs (HMRC)). The following sections describe the contents of the datasets and the main limitations of the data in terms of their suitability for analysing the impact of the Troubled Families programme. Details are given of the approach taken to reduce any potential limitations where it was possible to do so.

Overall, as explained below, the data supplied was of variable quality. As a result, some important data was missing, and it was necessary to make certain assumptions in assigning individuals to treatment and comparison groups. In addition, a significant number of individuals were not matched to certain of the administrative datasets, and this necessitated further assumptions – for example, we assume that individuals not matched to employment records were not employed. Annex A provides details of data checks in relation to unmatched administrative data and the assignment of individuals to the treatment and comparison group.

It is possible that in some cases these assumptions did not reflect the true circumstances of particular families and as a result, the findings may be subject to measurement error. If the prevalence of missing or incomplete data is random and/or does not differ systematically between the treated and comparison groups, the conclusions will remain unbiased. There is no obvious reason to believe from the data that such systematic differences exist, but given the data issues this possibility cannot be excluded. It is not possible to say with certainty how this might affect the reported results.

Programme data

Contents and coverage

Local authorities were asked to provide information on all members of families that met at least two of the eligibility criteria for the Troubled Families programme. DCLG gave local authorities advanced notice of the data request on 12 September 2014. The National Institute of Economic Research (NIESR) then sent the 152 English local authorities with a Troubled Families co-ordinator a data template to complete, along with a one-page questionnaire, a data sharing agreement and detailed notes on how to populate the template on 24 September 2014. Areas were asked to return the data, questionnaire and agreement by 17 October 2014. The returns were made by encrypted e-mail. Areas were asked to prioritise key fields where they were unlikely to be able to collect all the

information required in the time available, but local authorities that got in touch to request an alternative deadline were given slightly longer to collate the relevant data where possible. Also, in some cases, areas provided incomplete returns and so they were asked to supply further information after the deadline. A total of 59 local authorities provided useable data for the study over the period to 14 November 2014.[8]

As well as being asked to provide the sort of personal data that could be used to find records relating to the individual in each of the national administrative datasets, i.e. forename, surname, date of birth, gender and postcode, local authorities were asked to supply details of any other unique identifiers that were known to them, such as National Insurance number, National Health Service number, Unique Pupil number, Police National Computer number and a School Unique reference number. Known aliases and the postcodes of any alternative addresses were also requested. Local authorities were asked to provide a family identifier so that it was possible to group individuals into families. The absence of a family identifier meant that three of the 59 areas that supplied data were excluded from the WPLS and NPD data extracts (see Annex A for further details). Local authorities were also asked to indicate when the family was screened for eligibility for the programme, and which of the national and local criteria they met. Finally, they were asked to indicate whether the family had received support from the programme and if so, when this commenced. They were asked to classify support as intensive or less intensive, whether the family had been worked with in the initial phase of the programme, or in the expansion phase, and when the family finished receiving support from the programme, or whether it was ongoing.

As mentioned previously, local authorities were asked to complete a short data questionnaire, as well as the detailed data template on individual family members. The questionnaire asked whether the data extract contained information on all families that had ever been worked with as part of the Troubled Families programme and whether it included all members of those families. Local authorities were asked to provide a description of any known exclusions from the data extract. They were also asked to provide basic information on the way in which the programme had been rolled out in their area. For example, they were asked whether support had been offered to families with the greatest need/problems first, or in no particular order. Finally, the respondent was given the opportunity to provide any further information that they thought relevant on the data extract or the answers that they had given. The purpose of the questionnaire was to provide information that could be used to explore the sensitivity of the results to the particular method of implementing the programme, or peculiarities of the particular data extract supplied. The questionnaire is included in Appendix A.

Two areas (accounting for 657 families) did not return the data questionnaire (Table 1). From the 54 areas that did complete the questionnaire, nearly three-quarters (74.1 per cent) included information on all family members within the data extract. The fact that some local authorities did not claim to include all members of each family is likely to be explained by areas focusing their record-keeping on family members who were known to

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[8]In addition to the 59 areas which provided useable data, a further four areas provided data that could not be used in the study because a signed data-sharing agreement was not supplied and one area was omitted because the data sharing agreement was returned too late for the local authority to be included in the extract of data sent to departments for matching.

have triggered the eligibility criteria for the programme. Also, discussions with local authorities suggested some were cautious about claiming that they held records on every family member due to transience in the composition of households.

Table 1 Coverage of the data extract

	%
Returned data questionnaire (base=56 areas)	96.4
Of those returning questionnaire:	**54 areas**
Supplied information on all individuals within families	74.1
Features of local implementation:	
Support offered to families with the greatest need/problems first	31.5
Support offered to families with the lowest need/problems first	0.0
Support offered as families referred to service by agencies	29.6
Support offered as families identified through data analysis	27.8
Support offered in no particular order	11.1
Supplying information on all families ever worked with	38.9
Families known to be excluded from data extract:	**33 areas**
All/some receiving a lower level of support	27.3
All/some receiving a higher level of support	3.0
All/some who started receiving support <u>before</u> a certain date	12.1
All/some who started receiving support <u>after</u> a certain date	9.1
Other exclusions	24.2
Not answered	24.2

Almost one-third (31.5 per cent) of the areas that completed the questionnaire said that families with the greatest needs or problems were prioritised over those with lesser needs. None of the local authorities which provided data for the study systematically helped those requiring a lower level of support before those with more entrenched problems. In the remaining two-thirds of areas, the order in which families started on the programme depended on when they were identified as meeting the criteria, through systematic data analysis, referrals by agencies, or some other method which was unlikely to result in either those with greater or lesser needs being prioritised.

From the 54 areas that did complete the questionnaire, around two-fifths (38.9 per cent) reported that they provided information on all families that they had ever worked with. Whilst this percentage seems low, it is probably partly explained by the fact that local authorities were asked to provide what data they could in the time available, rather than being required to supply complete information on all the families that they had ever worked with. Discussions with areas indicated that in some cases, it was difficult to provide information on all families that they had worked with because the local authority was still in the process of developing a dedicated programme database.

Where respondents said that only a subset of the families that they had worked with were included in the sample, they were asked to provide information on the nature of known exclusions. Generally, record-keeping was better for families that required a higher level of support and around one-quarter (27.3 per cent) of areas that did not include all families in

their data extract said that it was those receiving a lower level of support who were excluded. The point in time at which support was received also affected whether families were included in the data extract, with some areas excluding families that participated in the programme at an early stage, or very recently, from the data supplied. Around one-quarter (24.2 per cent) of areas did not provide information on why particular families were excluded and the same percentage gave some other reason for families being excluded, such as data quality being poor or families not consenting to data sharing.

More than half (53.6 per cent) of the local authorities that supplied data for the study included some families that had been screened for eligibility, but had not started on the programme at the time that the extract was supplied. Within the final sample for analysis, 70.8 per cent of families and 79.5 per cent of individuals had participated in the programme.

The data supplied by the 56 local authorities that provided useable data for the study covered a total of 135,313 individuals. Before the data extracts were sent to the government departments supplying data for the study they were combined into a single dataset and a preliminary process of data cleaning was conducted. This ensured that family-level information was recorded against all family members, corrected obvious typographical errors and resolved inconsistencies in recording between areas. Each case was given a pseudo-anonymised unique identifier before the personal data extract was supplied to each department. After this preliminary stage of cleaning, 135,225 individuals remained on the file. A further round of data cleaning was carried out after the data had been sent to departments. This included carrying out more detailed work on the programme data (something that was not required for the matching) and identifying and removing duplicates from the dataset.[9] Records relating to 134,009 individuals were retained following cleaning (see Table 150 Annex A for details of the data cleaning process).

Limitations

As only a proportion of all local authorities that operated the Troubled Families programme provided data for the study, there is a risk that the findings are not representative of the impact of the programme on all families that received support. Furthermore, a large proportion of the local authorities that participated in the study only provided information on a subset of families that they worked with, and some family members were thought to have been excluded from the sample. However, data was obtained on around one-quarter (25.3 per cent) of the 120,000 families that participated in the initial phase of the programme across the 56 local authorities included in the sample, i.e. a sizeable proportion of the population.

Whilst some fields within the data supplied by local authorities were better completed than others, the key items of personal data that were required to identify records relating to the individual in the national administrative datasets were available for the vast majority of individuals included in the sample. Table 2 shows that forename or surname were missing for less than one per cent of individuals in the programme data, whilst postcode was

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[9] Duplicates were retained on the dataset sent to departments to maximize the likelihood that, where two records diverged, matches were found in the administrative data.

missing for around one in forty (2.4 per cent). Date of birth was the least well-recorded item of personal data, but was nevertheless available for nearly 85 per cent of the sample. The impact of these missing items of personal data on the number of individuals who could be identified in the national administrative datasets is considered in the final section in this chapter (on data linking), whilst the completion of other information on participation in the programme is considered in the following chapter.

Table 2 Percentage of records complete in the raw data

	% of records complete
Forename	99.1
Surname	99.4
Date of birth	84.6
Postcode	97.6
Gender	94.2
Base (raw data)	*135,313*

Response to known limitations

As previously mentioned, where relevant information was missing for individuals, but available for other family members, cases were recoded. For example, in some cases the postcode was recorded against a single family member, rather than for all individuals who were part of the same family. In these cases, the postcode could be assigned to all family members to maximize the likelihood that matching records would be correctly identified within the national administrative datasets. Where missing, gender was matched on using Office for National Statistics data on names registered for children born in 2013. This included all names registered against that were unique to either boys or girls. Government departments were sent relevant unique identifiers in addition to the personal data wherever these were available.

Information on programme participation was aggregated up to the family level where it was only provided for particular individuals within the family. For example, some local authorities recorded whether a particular family member met each of the national criteria. To establish which criteria the family met, it was necessary to aggregate the individual-level information to the family-level. Similarly, inconsistencies in the recording of information between family members were resolved by using the earliest screening or start dates for any family member and the latest end date. Likewise, if any family member was recorded as receiving intensive support from the programme, or participating in the expansion phase, records for other family members were recoded to be consistent with this. This was to ensure that the estimate of impact was based on families that had definitely participated in the initial phase of the programme, over a time period when any family member was being worked with (see Table 150 Annex A).

National pupil database

Contents and coverage

The National Pupil Database (NPD) extract was provided by DfE on 14 January 2014. It contained extensive information on educational participation, attainment and welfare which was used to derive the outcome measures described below.

Information on absenteeism included the percentage of sessions a child was absent from school and whether the absence was authorised or unauthorised in each academic term for each academic year. These variables, combined with information on when the family started on the programme, were used to derive the absence rate three terms before, and in the term prior to, starting on the programme, as well as whether the child had an absence rate of 15 per cent or more at both these points in time.

The exclusions dataset contained information on permanent, fixed-term and lunch-time exclusions. The variables on fixed-term and permanent exclusions were combined to identify those excluded from school 12 months after starting on the programme.

The Child Looked After (CLA) and Child In Need (CIN) datasets contained start and end dates of spells in care and start and end dates of periods when the child was classified as in need respectively. These variables were used to ascertain whether children had CIN status or were in care 12 months after starting on the programme.

In addition, the NPD contained detailed information on attainment at each Key Stage. A number of different measures of GCSE attainment were derived from the Key Stage 4 data.[10] The Key Stage 3 data captured whether the pupil achieved the expected level in English, Maths and Science, whilst average points score was used to measure attainment at Key Stage 2. The Key Stage 1 dataset recorded whether the child had achieved the expected level in Reading, Writing, Speaking and Listening, Maths and Science.

In addition to the information which was specific to particular datasets, a number of other control variables used in the study were recorded within multiple sources e.g. whether the child had received free school meals in any given academic year, whether they had a statement of Special Educational Needs (SEN), their gender and age, whether English was not their first language, and the deprivation score for the area in which they lived. In total, the data extract sent to DfE contained records on 104,246 individuals.

Limitations

As Table 3 shows, there was some variation in the time periods covered by each of the NPD datasets. The Exclusions data in particular only covered the period up to the end of July 2013. Given that few children receive fixed term or permanent exclusions, this meant that the impact of the programme on this particular outcome could only be observed over a relatively short period following the introduction of the Troubled Families programme.

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[10] Those were: capped GCSE and equivalent points score; five GCSEs (or equivalent) at grades A*-C; five A*-C GCSEs including English and Maths; A*-C GCSE English; A*-C GCSE Maths; and A*-C in Maths and English GCSEs.

Table 3 Time period covered by each of the NPD datasets

	Time period covered (Academic year)
Absence	2007/2008 to Spring 2014
Alternative provision	2007-2008 to 2012/2013
Child In Need	31 March 2006 to 31 March 2014
Children Looked After	31 March 2006 to 31 March 2014
Early Years Census	2007/2008-2013/2014
Exclusions	2007/2008 to 2012/2013
Key Stage 4	2005/2006 to 2013/2014
Key Stage 3	2003-2004 to 2012/2013
Key Stage 2	2000/2001 to 2013/2014
Key Stage 1	1997/1998 to 2013/2014
Pupil Referral Unit	2008/2009 to January 2013
School Census	2007/2008 to 2013/2014

One potential problem which arises in relation to families with the types of problems that the programme sought to tackle is that children may change schools on a frequent basis. If there was no way of tracking these children over time, it might be more difficult to observe the impact of the programme on these children than for those in more stable homes.

Finally, the documentation for the NPD notes that there are inconsistencies between schools in whether absences are classified as authorised or unauthorised. In some cases, an absence which is classified as unauthorised at the time it is recorded may be amended to indicate that it was in fact authorised if a legitimate explanation for the absence is later given (DfE 2011: 9-10). If the treatment group were more likely than the comparison group to attend schools which had a greater propensity to classify absences as unauthorised, an absence measure based on unauthorised absences alone may result in biased estimates of impact.

Responses to known limitations

The NPD contains a unique personal identifier which is used to ensure that records for any given child can be linked even when there are changes of surname or address. This reduces the likelihood that it is more difficult to identify records relating to those subject to the programme in the NPD. Local authorities were also asked to provide information on known aliases and alternative postcodes, as well as the unique pupil identifier, where this was recorded. This therefore increased the ability to obtain NPD records for children included in the programme data.

The fact that schools may vary in the extent to which they record absences as authorised or unauthorised means that the overall absence rate is a more consistent indicator of absence than the unauthorised absence measure. Therefore the overall absence rate was used in preference to the indicator of unauthorised absence.

Police national computer

Contents and coverage

The Police National Computer (PNC) is a record of cautions and convictions received by offenders. The data extract was supplied by the MoJ and included detailed information on when the offence was committed (if this was known), the police force area, the date of caution or conviction, the type of offence committed, whether the offender was cautioned or convicted, the number of co-offenders associated with the offence, the primary offence (where an offender was convicted or cautioned for multiple offences on the same date), the type of sentence received (known as the disposal type) and the length of custodial sentences. It also included some information on the personal characteristics of offenders, including gender and ethnicity. The data extract was supplied on 22 December 2014.

Offenders are given a unique PNC number which allows multiple cautions or convictions received by the same individual to be linked, even when the offender uses aliases or changes addresses. The extract of data used in this study contained information on all offences committed by the individual prior to 6 November 2014. Those who had never committed an offence resulting in a caution or conviction, and children under the age of ten when the extract was drawn (21 November 2014) would not be found within the PNC extract supplied by MoJ. The dataset included information on 30,002 individuals and contained 245,062 records.

Limitations

One of the main limitations of the PNC in relation to the Troubled Families programme is that it does not contain records on any criminal activity which did not result in a caution or conviction. This could be relevant to local eligibility criteria, which may take into account the type of behaviour which means that the family is known to the police, even if no family members have been cautioned or convicted of an offence in the recent past. Also, the PNC does not include information on anti-social behaviour. Since one of the national eligibility criteria for the Troubled Families programme is whether a family member has engaged in criminal or anti-social behaviour in the year prior to screening, the fact that the PNC does not cover incidents of anti-social behaviour means that it does not offer full coverage of the types of outcomes that the programme seeks to affect.

A further limitation of the PNC is that, whilst the date of conviction or caution is recorded for all offences, the date that the offence was committed is not always complete. This creates potential difficulties in determining whether an offence was committed before or after the date that the family member started on the programme. Where both the date that the offence was committed and the date of caution or conviction were recorded, the date of conviction was a median average of 64 days after the offence date.[11] This creates potential difficulties in calculating the offending rate for family members following contact with the programme, if offences committed before the family started on the programme are mistakenly treated as having occurred following programme start. However, whilst the date that the offence was committed was not recorded for 19.0 per cent of offences recorded on

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[11] The median was lower for cautions (19 days).

the PNC, in practice, the incomplete recording of the offence date largely affected the time-period prior to the introduction of the Troubled Families programme.[12]

Responses to known limitations

As the date that the offence was committed was available for the vast majority of offences which occurred since the programme began, the date of offending was used in preference to the date of caution or conviction when calculating the offending rate. Furthermore, offending behaviour following contact with the programme was observed from a point in time at least seven months after the family started to receive support. The initial six month period was omitted from the measure to allow time for the programme to change behaviour before subsequent offending was observed. As a result, offending following the start on the programme was measured between seven and 18 months after programme start, or between seven and 24 months in the case of the offending rate over an 18-month period.

Work and pensions longitudinal study

Coverage

The Work and Pensions Longitudinal Study (WPLS) extract, provided by the Department for Work and Pension (DWP), contained information on claims for benefits and participation in employment and active labour market programmes. Only those who have made a claim for benefits, or who earned above the National Insurance Lower Earnings Limit before April 2013, or have been in work since then, are consistently included in the dataset.[13]

Information on employment spells was based on the P45 and P46 forms which are returned by an employer when an individual starts or finished a job. In the current study, start and end dates were combined with the date when the family member started on the programme to derive employment history and outcomes, including whether the individual was employed at particular points in time and the number of weeks that they were employed in the year before starting on the programme.

The start and end dates of benefit spells were recorded and the analysis focused on those claiming one of six different types of out-of-work benefits, namely Jobseeker's Allowance (JSA), Employment and Support Allowance (ESA), Incapacity Benefit (IB), Severe Disablement Allowance (SDA), Carer's Allowance and Income Support (IS). The information on benefit spells and types was combined to derive monthly outcomes and the history of claiming out-of-work benefits, as well as the number of weeks spent claiming out-of-work benefits. In addition to the general measure of spells on out-of-work benefits, the analysis considered the impact of the programme on claims for incapacity benefits, i.e. ESA, IB or SDA, and on JSA.

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[12] 24.6 per cent of cautions or convictions prior to 1 April 2012 lacked an offence date, compared to 0.1 per cent of all cautions or convictions which occurred after this date.

[13] Some employers made returns for employees below the Lower Earnings Limit prior to April 2013, but this was not an HMRC requirement. From April 2013 PAYE information was updated in real time, improving the coverage of low income employment (Moore 2014: 18).

DWP was asked to provide all benefit and employment records for those aged 16 to 64 on 21 November 2014. The data extract supplied covered all known benefit spells in the period from January 2004 to 13 November 2014, and all known employment spells from January 2004 to 31 July 2014. This consisted of 638,830 records for 63,213 individuals. The data extract was supplied on 22 December 2014.

Limitations and responses

As the WPLS is compiled from snapshots downloaded from live benefits data, for some benefits the date that the benefit spell ended is approximate and is set, at random, to a date between downloads. This also means that very short periods on benefits which fall between two download dates may be missed.

As previously noted, prior to April 2013, some employees would have been omitted from the employment data and so it does not provide comprehensive coverage of low earners, or the self-employed. Start and end dates for specific employment spells are also missing in cases where the employer does not comply with reporting requirements, resulting in missing end dates, or spells where only the tax year in which the employment started is known. Whilst both the benefits and employment data are subject to inaccuracies and omissions however, these are unlikely to bias the observed impact of the Troubled Families programme unless they affect the treatment and comparison groups differently.

Data linking

Departments were only asked to provide data on individuals who were within an appropriate age range for each of the administrative datasets. Table 4 below shows the number of individuals included in each extract and the exclusion criteria. It also shows the number of individuals included in the data extracts supplied by departments.[14] Only a subset of all individuals was expected to appear in any given dataset. For example, only those who had been convicted or cautioned for a criminal offence would be found in the PNC.

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[14] The NPD was supplied as 11 separate datasets.

Table 4 Data requested from departments

	Exclusion criteria	Number of individuals:		
		In personal data extract	In data extract supplied	In final matched dataset
PNC	Excluded those under the age of 10 (at 21 Nov 2014)	117,952	30,002	23,411
WPLS	Excluded those under the age of 16 (at 21 Nov 2014)	88,097	63,213	50,939
NPD:	Excluded those born before 1 Sep 1989	104,246		57,904
Absence			64,648	53,202
Children Looked After			5,026	4,035
Children in Need			39,678	32,402
Exclusions			24,103	19,315
School Census			67,814	55,925
Early Years Census			7,599	6,352
Key Stage Results			67,649	55,751
Alternative Provision			2,964	2,307
Pupil Referral Unit			3,659	2,877

A pseudo-anonymised unique identifier was included in the extracts of personal data supplied to each department. The personal data was removed from the data extract after matching, and the national administrative data sent to NIESR only contained the pseudo-anonymised unique identifier. This identifier was then used to link records from each of the datasets together, to create a record containing all the matched data on each individual. Information on programme participation was also matched from the data supplied by local authorities, again using the pseudo-anonymised unique identifier.

Table 4 shows that around 30,000 individuals from the extract of 117,952 who were aged 10 or more on 21 November 2014 were positively identified as having received a caution or conviction at some point prior to the data extract being created. The data sent to DWP excluded those under the age of 16 at 21 November 2014, but adults only appear in the WPLS if they have made a claim for benefits at some point, or earned above the National Insurance Lower Earnings Limit before April 2013. Therefore, it is likely that some young adults in particular would not be found on the WPLS because they had not yet had a benefit or employment spell, rather than because the matching failed to identify relevant records for them. Around seven-in-ten adults (71.2) per cent were found on the WPLS.

Finally, DfE were sent records on 104,246 individuals who were born on or after 1 September 1989. Those born before 1 September 1989 were excluded from the extract on the grounds that any information provided for this group would relate solely to a period before they started on the Troubled Families programme. As previously mentioned, some of the data requested was only available for more recent academic years, meaning that coverage of some of this age group was patchy across the datasets. However, nearly two-thirds of the sample sent to DfE were found in the datasets with broader coverage and a longer run of years, such as the Key Stage datasets, the School Census and the Absence data.

For adults, the match rate was expected to be highest for the WPLS as, at least amongst older adults, most would be expected to have worked or claimed benefits at some point. Only younger adults would be matched to the NPD and only those who had offended at some point would be matched to the PNC. This proved to be the case, as more than four out of five individuals (85.7 per cent) aged 18 or more on 19 October 2014 and in the final sample for analysis were matched to either benefit or employment records (Table 5). Only one in twelve adults (8.4 per cent) could not be matched to any of the data sources. Around one in twenty-five adults (3.9 per cent) were matched to the PNC, but did not appear to have any benefit or employment records, whilst two per cent only appeared in the NPD. This would be consistent with them being young adults who had not yet started work.

Table 5 Matched sample - Adults

	%
Programme data only	8.4
WPLS (including WPLS plus other sources)	85.7
NPD only (younger adults)	2.1
PNC, but not WPLS (including PNC and NPD)	3.9
Base	45,898

Notes: Adults were defined as those aged 18 or more on 19 October 2014.

For children, the expectation was that most should be matched to records from the NPD, although the very young would only be included if they were receiving some form of childcare provision, were in care or classified as a Child in Need. A small percentage of older children might have some work history, whilst others might have received a caution or conviction at some point. Again, the percentage of children matched to each of the national administrative datasets was consistent with this (Table 6). More than four-fifths of children (85.8 per cent) were found in the NPD and around one in a hundred had a criminal record or were matched to WPLS data. A slightly higher proportion of children (12.4 per cent) than adults were not found in any of the datasets, but this may perhaps be explained by the fact that the very young may, quite legitimately, not appear in any of the datasets.

Table 6 Matched sample - Children

	%
Programme data only	12.4
NPD (including NPD plus other sources)	85.8
WPLS only	1.0
PNC, but not NPD (including PNC and WPLS)	0.9
Base	52,111

Notes: Children were defined as those aged less than 18 on 19 October 2014.

Over seven in ten families (73.3 per cent) in the final sample for analysis were matched to both the NPD and WPLS. It was rare for no family members to be matched to any of the datasets, with only one in twenty-seven families (3.6 per cent) being completely unmatched.

A similar proportion of adults from families that participated in the programme were matched to either benefits or employment data compared with those who did not start on

the programme in the period before the data extract was supplied (the main comparison group). However, a slightly higher proportion of the treatment group were not matched to any of the administrative datasets (Table 7).

Table 7 Matched sample for treatment and comparison groups - Adults

	Treatment group	Comparison group
	%	%
Programme data only	8.6	7.3***
WPLS (including WPLS plus other sources)	85.6	86.1
NPD only	2.0	2.2
PNC, but not WPLS (including PNC and NPD)	3.8	4.4**
Base	36,825	9,073

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

Children in the treatment group were less likely to be matched to NPD data than children in the comparison group and were slightly less likely to be matched to any of the three datasets (Table 8).

Table 8 Matched sample for treatment and comparison groups - Children

	Treatment group	Comparison group
	%	%
Programme data only	12.7	11.1***
NPD (including NPD plus other sources)	85.4	87.3***
WPLS only	1.1	0.5***
PNC, but not NPD (including PNC+WPLS)	0.8	1.1***
Base	41,573	10,538

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

Although individuals in the treatment group were slightly less likely to be matched to any of the national administrative datasets than those in the comparison group, the larger number of family members included in the treatment group sample meant that overall, a greater proportion of families in the treatment group than the comparison group were matched to both the NPD and the WPLS (Table 9). Whilst nearly four-fifths (78.9 per cent) of participating families were matched to both datasets, only three-fifths (59.8 per cent) of the comparison group were found in both the employment or benefits and education datasets. However, a similar proportion of families in either group were matched to one or more sources (97 per cent of participating families and 96 per cent of families that did not start on the programme over the period to the end of October 2014),

Table 9 Matched sample for treatment and comparison group families

	Treatment group Per cent	Comparison group Per cent
Programme data only	3.3	4.3***
Family members in NPD and WPLS (including PNC)	78.9	59.8***
Base	24,794	10,237

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

Unmatched individuals

Whilst WPLS records were found for most adults and NPD records were found for most children included in the final dataset used in the analysis, it was necessary to make assumptions about their status at any given point in time for the small proportion of cases where this information was missing. The general assumption made was that if an individual was not observed in a dataset, this was because they were not in a given state. Table 10 lists the assumptions made for each of the main types of outcome, or history, considered. The same assumptions apply at all points in time.

Table 10 Assumptions made where outcomes (or history) not observed

Outcome/History	Assumption
Benefit status	Not on benefits
Employment	Not employed
Offending	Had not offended
Educational participation	Absence rate of zero Not excluded from school
Children in Need status	Not classified as 'in Need'
In care	Not in care

A possible alternative approach would have been to impute each of these statuses at random, based on observed proportions for individuals who were matched to each of the datasets. However, this was complicated by the fact that those who had never offended would not appear on the PNC and younger children who had never been in care or given Children in Need status might not appear on the NPD. Likewise, as mentioned previously, some adults might not appear on the WPLS for legitimate reasons. As it was complicated to impute statuses at different points in time in a way which allowed for the likelihood that an individual would be observed in a particular state, and a limited number of individuals were affected, it was assumed that the absence of an individual from a dataset meant that they were not in a given state at any of the time points considered in the analysis.

Whilst most adults were matched to WPLS records and most children were matched to NPD records, it is possible that varying the assumption that those not observed in each source were not in a given state might affect the findings of the analysis. Unfortunately, time and resource constraints limited the extent to which this was possible.

Assigning the comparison group to a pseudo-start date

As those in the main comparison group used in the analysis did not start on the programme in the period before the data extract was supplied, they were given a pseudo-start date.[15] This date was chosen at random and was required to evaluate outcomes for the comparison group from a particular date, mirroring the approach taken for families that participated in the programme. Whilst the pseudo-start date was generated at random, it followed the distribution of actual start dates for families in the treatment group and so reflected the fact that some start dates were more common than others.

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[15] As with the treatment group, all family members were given the same pseudo-start date.

Figure 1 shows the distribution of start dates for families that participated in the Troubled Families programme compared to families in the comparison group. It is evident from the figure that the pseudo-start dates generated followed the distribution of actual start dates observed for the comparison group, so any differences in the distribution when considering the individual-level data would be due to differences in the numbers of family members in either group.

Figure 1 Comparison of actual and pseudo-start dates

Treatment group (actual)
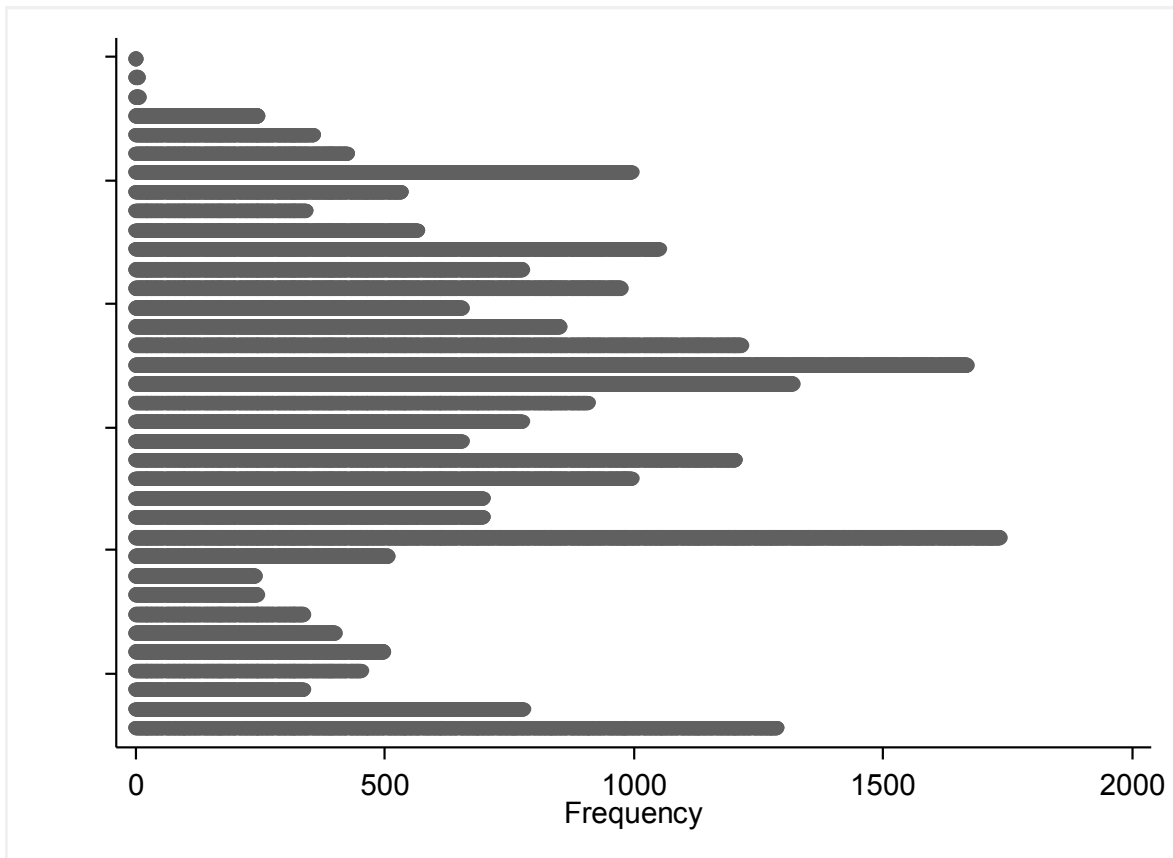
Comparison group (pseudo)
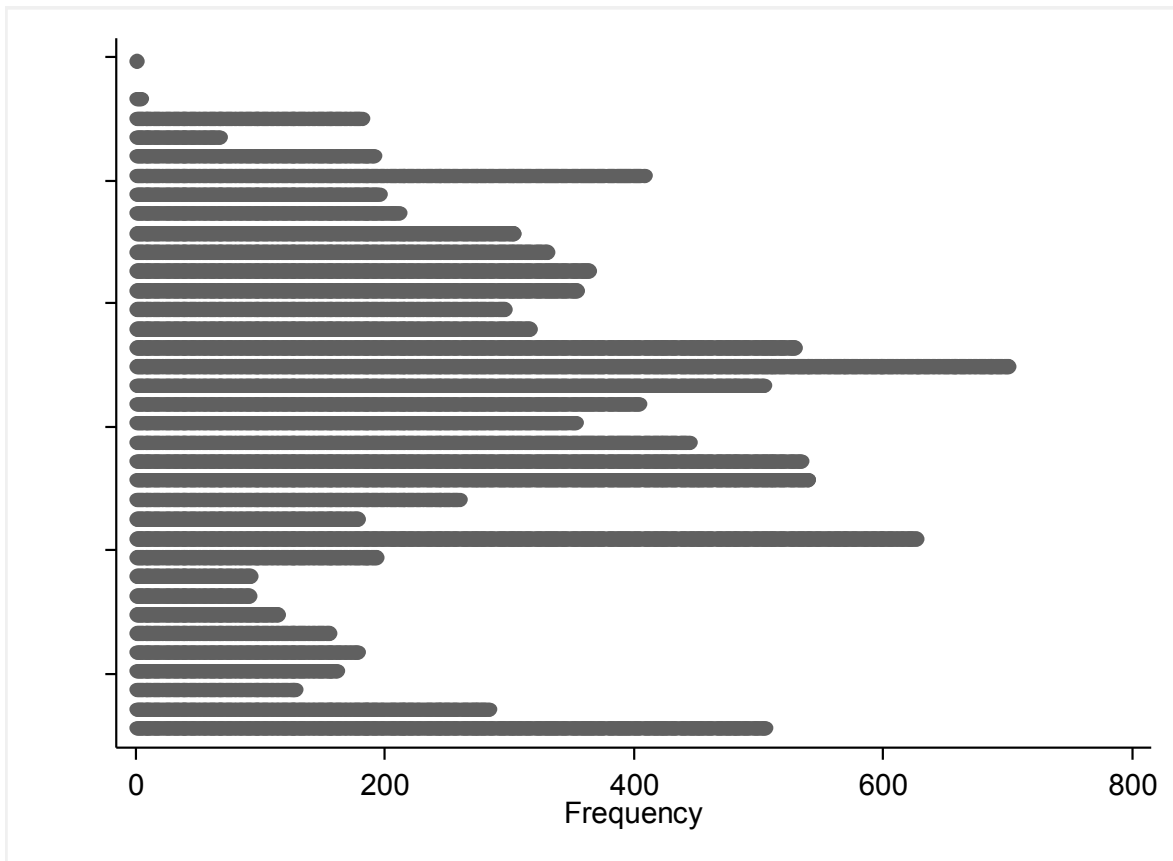
Notes: Based on 24,794 families in the treatment group and 10,237 families in the comparison group.

Characteristics of participants

Introduction

This chapter describes the main features of participation in the Troubled Families programme, including the characteristics of family members who received support. A comparison is made between these individuals and those who were assessed for eligibility, but did not participate in the programme in the period up to the point when local authorities provided data for the study. Therefore the treatment and comparison groups here equate to those used in the PSM analysis described later.[16] The characteristics of these two groups are shown prior to matching and differences that are statistically significant at the 95 per cent level of confidence are highlighted in the text.

The chapter begins with an analysis of the information provided by local authorities. It provides background information on when families were screened for eligibility for the programme. It then describes the national eligibility criteria and assesses the extent to which it is possible to establish whether families met each of the criteria by using the administrative datasets alone. The process of dealing with missing information on when families started on the programme is set out and the distribution of dates when families started on the programme is detailed. Similar information is presented in relation to the date at which the family was recorded to have completed their participation in the programme. The amount of time that families typically spent on the programme is assessed, given that this also determines when the programme could realistically be expected to have had an effect. The nature of the support, i.e. intensive or less-intensive, offered to families participating in the programme is also considered.

Having described the main features of the programme for the sample of families supplied by local authorities, the chapter moves on to describe the characteristics of these local authorities. The make-up of families in the treatment and comparison groups is considered, as are the characteristics of individuals in either group. Family and individual history in relation to each of the main outcome measures are described and these outcomes are also shown following participation in the programme by the treatment group. The chapter concludes with a brief summary of the main findings from the descriptive analysis, highlighting key differences between the treatment and comparison groups that it is important to address to produce a robust estimate of impact.

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[16] It is not possible to carry out a descriptive analysis for the waiting list comparison group, because the composition of the group changes over time. However, the descriptive analysis for the PSM comparison group provides an insight into the likelihood that those treated earlier are fundamentally different to those treated later. This chapter therefore highlights important characteristics that need to be controlled for in the waiting list analysis for it to be robust.

Timing and nature of participation

Screening

A screening date was recorded for around four-fifths of individuals included in the sample of families supplied by local authorities (Table 11). This percentage rose slightly after the initial cleaning process, which involved removing duplicates, dealing with obvious errors in recording and recoding all family members to the earliest observed screening date. A further stage of cleaning removed families that appeared to have started on the programme before 1 April 2012 or that had participated in the expansion phase of the programme (see Table 150 Annex A for details of the data cleaning process).[17] Within the sample of families that started on the initial phase of the programme after 1 April 2012, a screening date was recorded for 87.5 per cent of individuals.

Table 11 Percentage of sample with recorded screening date

	%
Any screening date[18] in raw data file	82.3
Base	*135,313*
Screening date following preliminary cleaning	82.8
Base	*134,009*
Screening date following sample selection	87.5
Base	*110,286*

The time of screening differed between families that participated in the programme and those that did not participate within the observation period (Table 12). Generally speaking, screening dates tended to be later for families in the treatment group than those within the comparison group. However, when the top and bottom one per cent of outliers were excluded, the earliest and latest screening dates for each group were around two weeks apart. This means that there was a reasonable degree of overlap in the screening dates of the two groups - something that was important in terms of the feasibility of the propensity score matching (described later). It was noticeable that within some areas a high proportion of families had the same screening date, but this may have been due to variations between local authorities in the approach to screening, with some identifying eligible families through data analysis, and others carrying out screening once agencies had come into contact with a family that was thought potentially eligible. It is likely that the systematic screening that took place in some areas explains the relatively early modal screening dates for both treatment and comparison groups, i.e. a subset of areas used data analysis to identify potentially eligible families in the period prior to the introduction of the programme.

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[17] Local authorities were able to make Payment by Results claims for families that started on the programme before the official start date of 1 April 2012, but these families were excluded from the analysis.
[18] This included some dates which were clearly invalid e.g. 12 March 2114.

Table 12 Distribution of screening dates for families

	Treatment group	Comparison group
Earliest screening date	1 June 2010	2 October 2010
1st percentile	4 February 2011	1 January 2011
25th percentile	1 July 2012	1 January 2011
Median	1 April 2013	1 April 2012
75th percentile	22 October 2013	1 October 2013
99th percentile	22 September 2014	1 October 2014
Latest screening date	20 December 2014	15 October 2014
Mode	1 April 2012	1 January 2011
Mean	21 March 2013	1 August 2012
Number of screening dates after 19 October 2014	3	0
Base (number of families with screening date recorded)	21,454	9,412

National criteria met

Local authorities were asked to provide information on the number and type of eligibility criteria met by families. In some cases this information was incomplete. For example, the eligibility criteria might be recorded against a single family member. In these cases, the information was propagated to all family members. Having cleaned the data in this way, most families that were recorded as having participated in the programme appeared to meet at least some of the eligibility criteria. Local authorities varied in whether they recorded the detail of the criteria that the family had met for all families in the sample supplied. However, as Table 13 shows, more than nine out of ten families that were recorded as participating in the programme met two or more national criteria, so it seems likely that any inconsistency between recorded participation and the number of criteria met was due to some local authorities failing to record all the criteria met by a family (or failing to supply full information on this), rather than families being mistakenly categorised as having been treated when in fact they had not. It is therefore assumed that any inconsistency between the number of criteria met and recorded participation in the programme was due to poor recording of the eligibility criteria, rather than families not actually fulfilling the criteria, or not actually having been offered support from the programme.

Table 13 shows the proportion of families that participated in the programme over the period to October 2014 who could be observed to meet each of the national eligibility criteria in the administrative data. This can be compared with local authority reports on the eligibility criteria met by these same families. Only a subset of families that met each of the criteria, according to local authorities, could be clearly identified as meeting the criteria when using the national administrative data. There are two main reasons for the discrepancy between these two sources:

- the national administrative data does not contain information on all of the eligibility criteria;

- in some cases, the precise time period used to determine whether the family meets the eligibility criteria is not stated in the financial framework for the programme.

The impact of the first of these two issues on the ability to identify families that could be observed as meeting the eligibility criteria using the national administrative data alone is illustrated most starkly in the case of the crime/anti-social behaviour criteria. The PNC can be used to identify families where children had received a caution or conviction in the 12 months prior to the family starting on the programme, but it was not possible to identify those where a family member had engaged in some form of anti-social behaviour over the same time period. As a result, only around one in ten families could be identified as meeting the crime/anti-social behaviour criteria according to the information that was available on the PNC. By contrast, local authorities reported that half of all families in this same sample met the crime/anti-social behaviour criteria.

Table 13 Percentage of families meeting each of the national criteria

	Treatment group %
Crime/anti-social behavior	
Household with one or more under 18-year-olds with a proven offence in the last 12 months[19]	10.3
and/or	
Households where one or more member has an anti-social behaviour order, anti-social behaviour injunction, anti-social behaviour contract, or where the family has been subject to a housing-related anti-social behaviour intervention in the last 12 months	Not known
Any of crime/anti-social behaviour criteria, according to local authority reports	48.8
Education	
Child subject to permanent exclusion; three or more fixed school exclusions across the last three consecutive terms;	16.2
Or	
Is in a pupil referral unit[20]	2.4
or alternative provision	1.5
or is not on a school roll	Not known
Is in a pupil referral unit or alternative provision because they have previously been excluded; or is not on a school roll;	3.9
And/or	
Has had 15 per cent unauthorised absences[21] or more from school across the last three consecutive terms	38.2
Any of the education criteria	47.2
According to local authority reports	78.0
Work	
Adult on out-of-work benefits[22]	72.5
According to Local authority reports	86.1
At least two national criteria	39.4
According to local authority reports	92.7
Base (number of families)	17,184

Notes: Families consisting of both adults and children.

There were also some notable omissions in the education data when trying to use it to identify families that met the education criteria. Whether a child was in a pupil referral unit

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[19] Defined as caution or conviction in the 12 months prior to programme start.
[20] This is only observed up to January 2013.
[21] Using all absences, rather than only unauthorised absence.
[22] Defined as being on ESA, IB, CA, IS and/or JSA, SDA within one month of programme start.

was only recorded for academic years prior to January 2013, so these data were missing for a large proportion of treated families. It was also not possible to ascertain from the NPD that a child was not on a school roll. The measure of persistent absence used in the analysis of national administrative data was broader than that used to identify whether a family met the eligibility criteria, as both authorised and unauthorised absence were included, for the reasons set out in the previous chapter. The omissions from the NPD meant that only around half of all families (47 per cent) could be positively identified as having met the education criteria prior to starting on the programme when using the national administrative data alone. By contrast, local authority reports suggested that nearly four-fifths of participating families (78 per cent) met the education criteria.

Of the three national criteria, it was most straightforward to identify families that met the worklessness eligibility criteria. However, in this case the financial framework did not specify when, or for how long, an adult within the family should be on out-of-work benefits before the family would be considered eligible for the programme. Around 73 per cent of families had an adult on out-of-work benefits in the month before the family started on the programme, but local authority reports suggested that 86 per cent of families met this particular criterion. This may be due to local authorities assessing eligibility some time before the family starts on the programme, so that the proportion of families with an adult on out-of-work benefits had fallen by this point.

Whilst local authority reports suggested that more than nine in ten families that participated in the Troubled Families programme and appeared in the sample used in the analysis met at least two of the national eligibility criteria, only 39 per cent of participating families could be positively identified as meeting the criteria when using the national administrative data. However, as noted above, this is likely to be largely due to the fact that the national administrative data did not include information on a number of key items needed to identify eligible families, as well as ambiguities over when, and exactly how, eligibility was assessed, rather than a large proportion of families in the sample used for analysis not actually meeting the national eligibility criteria.

Starting on the programme

As the screening date was recorded for families that had been assessed for eligibility but either met too few criteria to be offered support from the programme, or had not yet started to receive support, as well as those who had actually participated in the programme, the date that the family started being worked with was recorded for a smaller sample of families than the screening date. Within the raw data, just over 70 per cent of individuals who were part of families in the treatment group had a start date (Table 14). However, some local authorities only recorded the start date, or whether the family participated in the programme, against a single family member and so once the date was transferred to all family members, this increased to over 72 per cent.

Table 14 Percentage of treatment group with recorded start date

	%
Start date recorded in raw data file[23]	70.9
Base	*109,274*
Start date recorded following preliminary cleaning	72.4
Start date missing, but screening date available	19.1
Start date and screening date missing, but end date available	3.0
Base	*109,316*
Start date recorded following sample selection	100.0
Base	*87,261*

Again, the sample for analysis was limited to families that started on the Troubled Families programme on or after 1 April 2012. Where a start date was not recorded for any family members, but the local authority reported that the family had participated in the programme and a screening date was recorded, the screening date was used as a proxy for the start date. In the remaining cases where the screening date was also missing, but an end date was recorded, it was assumed that the family started on the programme 12 months before the end date if they received an intensive version of the programme, and eight months before the end date if they were given less intensive support.

Any remaining cases where the start date was missing for families that were recorded as having participated in the programme were dropped, as it was uncertain whether they started on the programme after 1 April 2012. From the final sample of individuals that participated in the programme on or after 1 April 2012 and had a start date, the screening date was used as a proxy for the start date in around one in five (18.8 per cent) cases and the end date was used to derive an approximate start date for one in 27 (3.7 per cent) individuals (Table 15).

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[23] This included some dates which were clearly invalid e.g. 12mar2114

Table 15 Distribution of recorded start dates

	%
Start date recorded	77.5
Start date missing and set to screening date	18.8
Start date missing and set to 8/12 months before end date	3.7
Base	*87,261*
From cases where start date recorded:	
Screening date not recorded	13.1
Screening date recorded as being after start	6.8
Screening date same as start	32.3
Start date within 3 months (1-91 days) of screening date	14.5
Start date 3-6 months (92-183 days) after screening date	8.1
Start date 6-9 months (184-274 days) after screening date	6.5
Start date 9-12 months (275-364 days) after screening date	3.5
Start date 12 months or more (365 days) after screening date	15.2
Base	*67,604*
Including proxy start-dates:	
Screening date not recorded	13.8
Screening date recorded as after start	5.3
Screening date same as start	43.9
Start date within 3 months of screening date	11.3
Start date 3-6 months after screening date	6.3
Start date 6-9 months after screening date	5.0
Start date 9-12 months after screening date	2.7
Start date 12 months or more after screening date	11.8
Base	*87,261*

Notes: The base includes cases where the screening date was missing.

Table 15 also shows the distribution of start dates relative to when screening took place, firstly for cases where the start date was recorded by local authorities and secondly when proxy start dates were included. This therefore shows the impact of supplementing observed start dates with proxy start dates derived from screening dates and end dates. Setting the start date to the screening date naturally increased the percentage of cases where the screening date was the same as the start date (from 32.3 to 43.9 per cent), but in other respects the length of time between screening and starting on the programme was similar after including the proxy start dates.

The date that the family started on the programme was used as the point in time from which outcomes were measured. It was also used to derive information on behaviour and family circumstances in the recent past. To derive history and outcomes on a similar basis for those in the comparison group who did not start on the programme over the time period considered in the analysis, it was necessary to randomly assign these families to a 'pseudo' start date. As mentioned in the previous chapter, each comparison group family was given a start date at random from the observed distribution of start dates for families that did participate in the programme over the period from April 2012 to November 2015.

Supplementary analyses explored the impact of the programme when the comparison group was expanded to include families that started on the programme at a later point in

time.[24] These families were also given a 'pseudo' start date at random. This fell on or after the date that they were screened for eligibility and was more than 12 months before they actually started on the programme.[25] This was to ensure that their outcomes 12 months after the pseudo-start were not observed at a point when they had in fact started on the programme.

The recording of end dates

Families within the comparison group, or with an ongoing spell at the time that the data were supplied by local authorities, did not have a recorded end date, although local authorities were asked to indicate whether a spell was ongoing. In practice, only around one-third of individuals had a recorded end date and a further third had an ongoing spell (Table 16). These proportions changed slightly when the sample for analysis was selected, as excluding spells which started before 1 April 2012 increased the proportion of individuals with an ongoing spell a little.

Table 16 Percentage of treatment group with recorded end date

	%
Spell ongoing after 19 October 2014 in raw date file	36.8
Spell ended before 20 October 2014	33.2
Base	*109,274*
Ongoing programme spell following preliminary cleaning	36.1
End date recorded following preliminary cleaning	33.1
Base	*109,316*
Programme spell ongoing following sample selection	38.0
End date recorded following sample selection	30.6
End date not recorded (and spell not ongoing)	28.1
Base	*87,261*

There are a number of possible explanations for the high proportion of cases where the end date was missing. Firstly, local authorities may have left cells blank where the spell was ongoing, rather than using the specified code. Secondly, there may have been a distinction between spells that were ongoing and cases where the local authority had finished working with a family but had not yet made the PbR claim. If the area had stopped working with the family, but not yet claimed an outcome payment, they may have held the cases on file without an end date. Finally, some local authorities stored data on families across multiple datasets. It is possible that the date of the PbR claim may have generally been stored separately, making it more difficult for local authorities to compile this information in the time available. It was necessary to observe outcomes at a fixed point after the start date (rather than at the end date) due to the high proportion of the treatment group who were missing an end date.

Table 17 shows the distribution of end dates within the subset of cases where these were observed. This suggests that the vast majority of the treatment group with a recorded end date finished their spell on the Troubled Families programme within the period outcomes

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[24] The reasons for this are described in the following chapter.
[25] The pseudo-start date was also constrained to fall on or after 1 April 2012.

could be observed within the WPLS and PNC datasets. The shorter period of time covered in the NPD meant that outcomes would only be observed for a subset of the treatment group when considering some outcomes for children. For example, only around half of the treatment group with a recorded end date would have completed the programme within the period covered by the CIN data. The analysis excluded individuals who could not be observed within the outcomes data for at least 12 months following the date when the family started on the programme, so the impact estimates only included individuals who could be tracked for at least 12 months following their start on the programme.

Table 17 Distribution of end dates

Spells ended before 20 October 2014:	Treatment group
Earliest end date	1 April 2012
1st percentile	22 January 2013
25th percentile	1 October 2013
Median	1 March 2014
75th percentile	1 July 2014
99th percentile	1 October 2014
Latest end date	17 October 2014
Mode	1 July 2014
Mean	8 February 2014
Base (number of families with end date before 20 October 2014)	26,727

Programme length and intensity

As well as considering when individuals finished their spell on the Troubled Families programme in relation to the period over which outcomes could be observed in each of the administrative datasets, it was important to know how long participation in the programme lasted in order to observe outcomes at a point when the programme could have been expected to have had an effect. Of course, it was only possible to carry out this analysis on the subset of individuals who had a recorded end date. If there were systematic differences between start and end dates for these individuals and those with only a start date, the findings might not hold for the wider sample of individuals who participated in the programme.

Table 18 shows that over two-thirds of individuals who participated in the programme and had a recorded end date completed the programme within 12 months of starting on it, after excluding the cases where a missing start date was inferred from the end date. Where the end date was known, the majority of individuals appeared to complete the programme within 12 months, but a significant proportion had an ongoing spell 12 months after programme start. This suggests that ideally outcomes would be observed at a later point in time than is possible with the administrative data that was available for this study.

Table 18 Distribution of recorded end dates relative to start dates

	%
Excluding spells where end date used to derive a proxy start date:	
End date same as start	3.5
End date within 3 months of start date	15.2
End date 3-6 months after start date	22.6
End date 6-9 months after start date	15.5
End date 9-12 months after start date	14.3
End date 12 months or more after start date	28.9
Mean programme length (from spells that ended by 19 October 2014)	271 days
Base	23,505

Local authorities were also asked to provide information on the intensity of support offered to families that participated in the programme by classifying it as intensive or less-intensive. Around one-third (34.6 per cent) of families in the sample received intensive support, whilst in the remaining two-thirds of families the level of support offered was less-intensive, or unknown. Unfortunately, this field was only completed for around three-quarters of the treatment group, so it seems likely that some families that received an intensive version of the programme were excluded from the high-intensity sample.[26] This means that the proportion of families receiving intensive support is likely to be an underestimate. Also, the impact estimates for those receiving the intensive version of the programme may be less likely to be statistically significant, due to the smaller sample sizes. Finally, they may not be representative of the true impact of the intensive version of the programme on the full sample of families that received it, since some of them will have been excluded from the analysis. Nevertheless, the results for families that received a more intensive version of the programme are reported in Appendix B and described in the chapter on the PSM results as they give some insight into whether families that could be observed to have received a greater degree of support experienced improved outcomes.

Regional distribution and area characteristics

Table 19 reports the unemployment rate[27] and deprivation index[28] across the 56 local authorities which provided data for the study. The unemployment rate in England in April 2012 was 3.8 per cent[29]. In comparison, the sample for analysis had a mean unemployment rate of 8.6 per cent and even the value at the 10th percentile (4.6 per cent) was higher than the national average. This indicates that the sample areas were skewed towards those with higher levels of unemployment. The unemployment rate for areas that provided information on both treatment and comparison groups was broadly similar to that

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[26] These families were excluded to avoid the estimate for high-intensity families being biased by the inclusion of families that may have actually received a lower-intensity version of the programme.

[27] The unemployment rate is the claimant count as a proportion of the working age population as at April 2012 (source: Nomis).

[28] The index of deprivation is derived from individual children's deprivation indices available in the NPD data; it was not available in one area included in the sample.

[29] This figure is obtained from the claimant count in April 2012 in England and 2012 mid-year working age population figures for England, available through Nomis.

in areas which provided information on the treatment group only, but was slightly higher in areas that only provided information on families that participated in the programme.

Table 19 Area characteristics

	Mean	p1	p10	p25	p50	p75	p90	p99
Unemployment rate[†] (%)	8.6	3.2	4.6	5.7	8.3	10.5	13.4	17.3
Areas supplying data on treatment group only	9.4	3.4	4.1	5.3	9.5	11.8	16.2	17.3
Areas supplying data on treatment and comparison groups	7.8	3.2	4.8	5.8	7.1	9.5	10.6	14.6
Index of deprivation	0.33	0.17	0.20	0.26	0.31	0.40	0.46	0.54

Notes: †The unemployment rate is the claimant count as a proportion of the working age population as at April 2012 (source: Nomis). Base: 56 local authorities for the unemployment rate across all areas; 26 local authorities which provided date on the treatment group only. 29 local authorities that provide data on both the treatment and comparison groups for the unemployment rate[30]; and families in 55 local authorities for the deprivation index.

The NPD data contained an individual income deprivation score for children for the academic years 2007-2008 to 2013-2014. It also included a deprivation score based on pupils' postcodes for the academic years 2008-2009 to 2011-2012. These measures were used to derive an average area-level score. The NPD deprivation scores are components of the Index of Multiple Deprivation (IMD), which itself is a weighted combination of the English Indices of Deprivation. The latter consists of seven elements, of which one is income deprivation. The IMD is a continuous measure of deprivation, and so deprivation is considered in relative terms. The most deprived ten per cent of areas in the sample were located in the South and the Midlands and included a number of affluent local authorities, so families appeared to live within pockets of deprivation.[31]

Family characteristics

Tables 19 to 20 summarise the characteristics of the families in the treatment and comparison groups. Those in the treatment group were on average larger than families in the comparison group (a mean family size of 3.5 individuals compared to 2.2 in the comparison group). This is reflected in the slightly higher number of adults and children in the treatment group. A preliminary consultation exercise with ten local authorities suggested that they tended to hold less information on families that only met some of the eligibility criteria. This means that it was probable that fewer members of comparison group families were included in the data extracts supplied by local authorities, rather than these families actually being smaller than those in the treatment group. It is difficult to predict the likely impact of this on the analysis. Whilst it may mean that the comparison

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[30] After data cleaning LA2 did not have any treatment group observations (cf. Table 151 in Annex A). Therefore the number of local authorities that provided data on the treatment and both the treatment and comparison group totalled 55.
[31] This is the cut-off point used in the latest available statistical release on the English Indices of Deprivation (DCLG, 2010).

group sample was skewed towards family members who met some of the eligibility criteria, local authority reports suggested that this was also likely to be the case for families in the treatment group. A more serious problem may be that if only a single adult or child was observed within a family, family-level information on some characteristics would be missing. Focusing on characteristics observed at the individual level reduces the likely effect of this problem on the impact estimates, but missing family-level data would weaken the match between the treatment and comparison group on some family-level characteristics in particular. For example, if the characteristics of adult family members could not be observed for some of the comparison group children, by default these children would be classified as having parents who were economically inactive, i.e. not in employment and not claiming out-of-work benefits prior to starting on the programme, when in fact this may not have been the case. However, where children were found to meet the eligibility criteria, it seems likely that the local authority would have sought to establish whether adults were claiming out-of-work benefits. Therefore, the assumptions made about the previous history of adult family members in those cases where this could not be directly observed, may have been a reasonably close approximation to the truth.

Table 20 Family characteristics

	Mean	p1	p25	p50	p75	p99
Number of family members:						
Treatment group	3.5***	1	2	3	4	9
Comparison group	2.2***	1	1	2	3	7
Number of adults in family:						
Treatment group	1.5***	0	1	1	2	5
Comparison group	0.9***	0	0	1	1	4
Number of children in family:						
Treatment group	1.7***	0	1	1	2	6
Comparison group	1.0***	0	0	1	1	4

Notes: Based on 24,794 treatment group and 10,237 comparison group families observed at 19 October 2014. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

When comparing the average age of those in the treatment and comparison groups (Table 21), treatment group families were more likely to include a child aged between ten and 17 than families in the comparison group (73 per cent and 53 per cent respectively). They were also more likely to have an adult of working age (74 per cent compared with 37 per cent). Additionally, treated families were more likely to contain at least one child or adult of either gender. In terms of ethnicity, just under a quarter of comparison group families had a family member from a non-white ethnic background in contrast to 15 per cent of families in the treatment group.

Table 21 Age, gender and ethnic composition of families

	Treatment (%)	Comparison (%)
At least one family member under 5	12.8***	6.1***
At least one family member 5-9	29.4***	22.4***
At least one family member 10-17	73.0***	53.0***
At least one family member 18-22	35.8	35.4
At least one family member 23-61/23-64	73.7***	36.6***
At least one family member 62+/65+	1.5***	0.8***
At least one female child in household	51.5***	35.8***
At least one male child in household	62.8***	46.3***
At least one female adult in household	71.9***	41.6***
At least one male adult in household	45.4***	34.4***
Any family member non-white ethnicity	14.8***	24.0***
Base	24,794	10,237

Notes: Families observed at 19 October 2014. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Personal characteristics

The characteristics of individuals in the treatment and comparison groups are shown in Tables 21 and 22. Children in treatment and comparison families were equivalent in terms of age (Table 22). The gender composition of children in both groups was similar, but adults in the treatment group were more likely to be female than those in the comparison group (60 per cent and 55 per cent respectively).

Table 22 Age

	Mean	p1	p25	p50	p75	p99	Base
Age of children:							
Treatment group	11.4	1	8	12	15	17	41,573
Comparison group	11.5	2	8	12	15	17	10,538
Age of adults:							
Treatment group	33.6***	18	21	34	43	64	36,825
Comparison group	31.0***	18	19	26	42	63	9,073

Notes: Observed at 19 October 2014. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Table 23 Gender, ethnicity and family membership

	Treatment (%)	Comparison (%)
Children:		
Female	44.0	44.1
Male	56.0	55.9
Base	38,920	9,756
Adults:		
Female	59.8***	55.0***
Male	40.2***	45.0***
Base	35,441	8,744
Non-white ethnicity	8.8***	18.4***
Part of a single family	98.9***	97.9***
Base	87,261	23,025

Notes: Observed at 19 October 2014. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

History prior to programme start

Family history prior to programme start

This section details the behaviour of families prior to starting on the Troubled Families programme. It examines differences between the treatment and comparison group families in relation to adult worklessness, children's education and welfare and the offending history of adults and children. Where possible, history is shown for the point in time one year (or the closest equivalent) and one month before programme start. However, for some variables, the data are only available on a yearly basis, for example, whether a child had a statement of SEN or was in receipt of free school meals within a particular academic year.

Children in treatment group families were more likely to experience problems than those in the comparison group prior to programme start. The highest absence rate for any child within the family was greater than that for children in the comparison group both three, and one, terms before starting on the programme (Table 24) and treated families were also more likely to have a child who had received a fixed-term exclusion (Table 25). There was a difference in the proportion of families in either group who had a child classified as 'in need'; just over one-third of treated families had a child 'in need' 12 months before entry to the programme, compared with approximately one-fifth of comparison group families. This difference was accentuated in the month prior to programme start where 43 per cent of treated families had a child 'in need' in contrast to 22 per cent of families in the comparison group. Table 26 also shows that there were substantial differences in the number of families with a child who had a statement of SEN (55 per cent of treated families and 35 per cent of families in the comparison group). Similarly, over half of all treated families had a child in receipt of free school meals, whereas this was only the case in just under one-third of comparison group families.

Greater proportions of treated families than those in the comparison group had an adult making some form of benefit claim (Table 25). The greatest difference was seen in relation to out-of-work benefits, where around three-fifths of treated families had an adult claiming out-of-work benefits compared with just over one-quarter of families in the comparison group. This was the case both one year and one month prior to programme start. However, a greater proportion of treated families had an adult in employment. In the month prior to programme start, over two-fifths of all treated families had at least one adult in work compared with 30 per cent of comparison group families.

Table 24 Maximum absence rate for any child within family

	Mean	p1	p25	p50	p75	p99
Maximum absence rate for any child three terms prior to programme start (%)						
Treatment group	13.6***	0	0	5.7	19.4	99.2
Comparison group	8.8***	0	0	0	11.4	89.4
Maximum absence rate for any child one term prior to programme start (%)						
Treatment group	13.5***	0	0	4.0	19.0	100.0
Comparison group	8.0***	0	0	0	9.6	88.5

Notes: Based on analysis of 24,794 families in the treatment group and 10,237 in the comparison group. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Table 25 Family exclusions, welfare, benefits and employment history

	12 months prior to programme start		one month prior to programme start	
	Treatment (%)	Comparison (%)	Treatment (%)	Comparison (%)
Any child permanently excluded from school	0.3***	0.1***	0.1*	0.0*
Any child with fixed exclusion from school	5.1***	2.6***	2.3***	1.4***
Any child 'in need'	37.8***	19.6***	43.2***	22.3***
Any child 'looked after'	4.3***	3.6***	2.5	2.4
Any adult on JSA	16.1***	8.1***	16.6***	8.6***
Any adult on incapacity benefit	20.8***	8.5***	23.3***	9.9***
Any adult on out-of-work benefits (national criteria)	57.0***	27.6***	58.5***	29.0***
Any adult in employment	35.9***	24.3***	42.2***	29.5***

Notes: Based on analysis of 24,794 families in the treatment group and 10,237 families in the comparison group. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Table 26 Family history of SEN or receipt of free school meals

	Academic year prior to programme start	
	Treatment (%)	Comparison (%)
Any child with SEN statement	54.6***	35.0***
Any child receipt of FSM	55.5***	31.4***
Base	24,794	10,237

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

More treated than comparison group families had at least one adult or child engaged in offending in the year prior to starting on the Troubled Families programme (Table 27). The greatest differences between the two groups were seen with respect to children. For example, 11 per cent of families in the treatment group had a child who received a caution or conviction over this period, compared to only six per cent of families in the comparison group.

Table 27 Family offending history

	Within 12 months of programme start	
	Treatment (%)	Comparison (%)
Any child with a caution or conviction	10.7***	5.8***
Any child with a conviction	5.1***	2.8***
Any child with a caution	6.7***	3.7***
Base	21,087	6,993
Any adult with a caution or conviction	16.8***	14.3***
Any adult with a conviction	12.7***	10.1***
Any adult with a caution	5.5	5.4
Base	20,589	6,330
Any custodial sentence	2.4***	1.3***
Any community sentence	9.0***	5.0***
Base	24,794	10,237

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

Personal history prior to programme start

Tables 28 to 29 present individuals' history prior to programme start. Similar patterns are evident to those observed when considering family-level history. For example, Table 29 shows that a greater proportion of children in the treatment group were classified as being 'in need' immediately before starting on the programme than those in the comparison group (36 per cent and 23 per cent respectively). However, in some cases, differences seen at family level were less pronounced when viewed at the individual level. For example, whilst differences in the absence rate were statistically significant, they were small in magnitude (Table 28).

Table 28 Absence history

	Mean	p1	p25	p50	p75	p99
Absence rate three terms prior to programme start (%)						
Treatment group	8.3***	0	0	0	11.3	79.4
Comparison group	7.9***	0	0	0	10.1	78.9
Absence rate one term prior to programme start (%)						
Treatment group	8.7***	0	0	0	11.1	89.6
Comparison group	8.1***	0	0	0	10.3	83.7

Notes: Based on analysis of 41,573 children in the treatment group and 10,538 in the comparison group. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Table 29 Persistent absence, exclusions and child welfare

	12 months prior to programme start		one month prior to programme start	
	Treatment (%)	Comparison (%)	Treatment (%)	Comparison (%)
Absence rate of 15 per cent or more	19.4***	17.5***	19.6***	18.1***
Fixed or permanent exclusion from school	2.8**	2.4**	1.4	1.3
Children 'in need'	30.5***	19.3***	36.0***	22.5***
Children 'looked after'	1.2**	1.7**	1.5***	1.9***

Notes: Based on analysis of 41,573 children in the treatment group and 10,538 in the comparison group. The measurement periods for absence are three terms and one term prior to programme start. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Table 30 History of SEN and receipt of free school meals

	12 months prior to programme start	
	Treatment (%)	Comparison (%)
Statement of SEN	40.8***	35.5***
Receipt of FSM	53.0***	40.1***
Base	41,573	10,538

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

Turning to worklessness, a greater percentage of adults within the treatment group claimed out-of-work benefits prior to starting on the Troubled Families programme than those in the comparison group (Table 31). They also spent more time on out-of-work benefits on average than the comparison group.

Table 31 History of claiming benefits

	12 months prior to programme start		one month prior to programme start	
	Treatment (%)	Comparison (%)	Treatment (%)	Comparison (%)
Adults on JSA	11.9***	9.9***	12.2***	10.3***
Adults on incapacity benefit	14.9***	10.4***	16.8***	12.1***
Adults on out-of-work-benefits (national criteria)	45.6***	35.5***	47.7***	37.2***
Adults in employment	29.0***	30.7***	34.9***	37.7***

Notes: Based on analysis for 36,825 adults in the treatment group and 9,073 in the comparison group. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Table 32 History of time spent on benefits

	Within 12 months of programme start	
	Treatment (%)	Comparison (%)
Average number of weeks claiming JSA	10.7***	9.7***
Average number of weeks claiming incapacity benefits	11.0***	7.9***
Average number of weeks claiming out-of-work benefits	28.8***	23.8***
Average number of weeks in employment	22.2***	23.9***
Base	36,825	9,073

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

With respect to offending history (Table 33), though some statistically significant differences between the past behaviour of treatment and comparison groups were seen for children and adults in relation to cautions and community sentences, these differences were not large.

Table 33 Offending history

| | Within 12 months of programme start | |
	Treatment (%)	Comparison (%)
Children cautioned or convicted	5.6***	3.9***
Children convicted	2.6***	1.9***
Children cautioned	3.5***	2.4***
Base	41,573	10,538
Adults cautioned or convicted	10.3	10.5
Adults convicted	7.7	7.4
Adults cautioned	3.2***	3.8***
Base	36,825	9,073
Any custodial sentence	0.7	0.6
Any community sentence	2.7***	2.3***
Base	87,261	23,025

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

The treatment and comparison groups were similar in terms of the type of offences committed by adult family members, with only violent offending being more common within the treatment group than the comparison group 12 months prior to starting on the programme (Table 40).

Table 34 History of committing particular types of offence

| | 12 months prior to programme start | | one month prior to programme start | |
	Treatment (%)	Comparison (%)	Treatment (%)	Comparison (%)
Adults committed violent offence	0.2**	0.1**	0.1	0.1
Adults committed theft or fraud	0.4	0.4	0.3	0.3
Adults - anti-social behaviour or other	0.9	1.1	0.9	0.9
Adults committed a breach offence	0.2	0.2	0.2	0.2
Adults committed an indictable offence	0.9	0.8	0.7	0.6

Notes: Based on analysis for 36,825 adults in the treatment group and 9,073 in the comparison group. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Observed outcomes

Family-level outcomes

This section reports the outcomes that families experienced 12 months after starting on the Troubled Families programme. It also shows outcomes for the comparison group. As the analysis presented here does not adjust for any observed differences between the two groups, it reflects the raw differences in outcomes that the two groups experienced, rather than providing a causal estimate of impact from the programme.

Table 35 shows that, even after participating in the programme, there were large differences between the treatment and comparison groups in the percentage of families with a child 'in need' (45 per cent and 24 per cent respectively). This pattern of a greater need for ongoing support within treatment group families was also seen in relation to receipt of free school meals. Whilst a greater percentage of treated families had an individual claiming any of the benefit types after participating in the programme for 12 months, the difference with families in the comparison group was greatest in relation to out-of-work benefits, where 59 per cent of those in the treatment group had an adult claiming this type of benefit 12 months after starting on the programme, compared with 30 per cent of those in the comparison group. However, families in the treatment group were also more likely than those in the comparison group to have at least one adult in employment 12 months after starting on the programme (48 per cent and 32 per cent respectively).

Table 35 Family-level outcomes for absence, exclusions, child welfare and benefit receipt

	12 months after programme start	
	Treatment (%)	Comparison (%)
Average maximum absence rate for any child (mean value)	25.3***	17.9***
Base	8,869	3,367
Any child permanently excluded from school	0.1	0.1
Any child fixed exclusion from school	3.7**	2.3**
Base	2,647	1,011
Any child 'in need'	45.1***	23.8***
Any child 'looked after'	4.1***	2.8***
Base	8,236	3,081
Any child has statement of SEN	70.1***	53.3***
Base	8,599	3,112
Any child in receipt of FSM	53.7***	34.3***
Base	11,537	4,532
Any adults on JSA	15.4***	8.9***
Any adults on incapacity benefits	26.4***	10.5***
Any adult on out-of-work benefits (national criteria)	58.8***	29.5***
Any adults in employment	48.2***	32.2***
Base	16,218	6,711

Notes: The time period for the absence rate is 3 terms after starting on the programme. The time period for SEN and free school meals is the academic year after programme start. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Offending measures are typically constructed by determining whether an individual commits an offence that results in a caution or conviction within a given period of time. As the Troubled Families programme was not of a fixed length, it is difficult to know when it might start to have an impact on offending. Whilst it might be preferable to allow the programme a year to take effect before starting to measure the impact on offending, this was not feasible, due to the short run of outcomes data available at the time of carrying out this study. Therefore, the impact of the programme on offending is considered over the six-month period starting seven months after the family member started on the programme in the case of the outcomes observed at the 12-month point. Outcomes observed at the 18-month point were based on offences committed over the year-long period starting seven months after programme start.

A greater proportion of families in the treatment group had a child or adult who offended between seven and 12 months after starting on the programme (Table 36). Relatively large differences were apparent in relation to child offending, where 12 per cent of families in the treatment group and six per cent of families in the comparison group had a child who had received a caution or conviction seven to 12 months after starting on the programme.

Table 36 Family-level offending outcomes

| | Within 12 months of programme start | |
	Treatment (%)	Comparison (%)
Any child with cautions or convictions	11.6***	6.4***
Any child with convictions	7.0***	3.6***
Any child with cautions	6.1***	3.5***
Base	13,351	4,602
Any adult with cautions or convictions	15.8***	12.3***
Any adult with convictions	13.1***	9.6***
Any adult with cautions	4.2	3.8
Base	13,833	4,132
Any custodial sentence	3.1***	1.7***
Any community sentence	9.5***	4.9***
Base	16,218	6,711

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

Individual-level outcomes

The large differences between the treatment and comparison groups prior to programme start remained evident when looking at outcomes following programme participation at an individual level. For example, 56 per cent of children within the treatment group had a SEN statement 12 months after starting on the programme, compared to 46 per cent of those in the comparison group (Table 37). Also, 63 per cent of children in the treatment group were in receipt of free school meals, compared with 47 per cent of those in comparison group. Table 37 shows that approximately two-fifths of children in the treatment group were classified as 'in need' 12 months after starting on the programme, compared with around one-quarter of children in the comparison group. For adults, the proportion of those in the treatment and comparison groups on benefits 12 months after starting on the Troubled Families programme seemed closer than prior to programme start.

Table 37 Absence, exclusions, child welfare, benefit receipt and employment outcomes

	12 months after programme start	
	Treatment (%)	Comparison (%)
Average absence rate*	9.6	9.6
Absence rate of 15 per cent or more*	20.3	20.0
Base	13,255	3,483
Excluded from school (permanent or fixed)	2.8	2.3
Base	3,531	1,003
Children 'in need'	40.1***	24.3***
Children 'looked after'	3.1	2.7
Base	12,008	3,158
Statement of SEN	55.9***	46.0***
Base	14,873	4,185
Receipt of FSM	63.0***	46.6***
Base	17,023	4,726
Adults on JSA	10.8	10.5
Adults on incapacity benefits	18.2***	12.8***
Adults on out-of-work benefits (national criteria)	46.2***	38.2***
Base	25,515	5,921
Adults in employment	38.0***	40.9***
Base	19,459	4,360

Notes: The time period for the absence rate is three terms after starting on the programme. The time period for SEN and free school meals is the academic year after programme start. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

In terms of educational attainment, Table 38 shows that a smaller percentage of children in the treatment group than the comparison group achieved the expected level of attainment in KS1, KS3 and at GCSE level. Large differences between the two groups were apparent across all of the GCSE outcome measures. For example, over two-fifths of children in the comparison group obtained five GCSEs (or equivalents) at A*-C grades, whereas only around a quarter of children in treatment group managed to achieve the same level of attainment. The differences were less stark at the lower Key Stages and the means values of the average points score at KS2 and KS1 were similar for children in the treatment and comparison groups.

Table 38 Educational attainment outcomes

	Within 12 months of programme start	
	Treatment (%)	Comparison (%)
Educational attainment		
Five A*-C GCSEs (or equivalents)	25.4***	43.8***
Five A*-C GCSEs inc. English and Maths	10.8***	27.3***
A*-C GCSE English	14.3***	29.8***
A*-C GCSE Maths	18.1***	38.0***
A*-C in both Maths and English and Maths	10.8***	27.3***
Base	574	121
Achieved expected level in KS3 English TA	45.4**	55.5**
Achieved expected level in KS3 Maths TA	46.5*	54.7*
Achieved expected level in KS3 Science TA	47.9	55.5
Achieved expected level in KS3 English, Maths and Science TA	29.8**	39.1**
Base	493	128
Achieved expected level in KS1 Reading	66.7**	73.3**
Achieved expected level in KS1 Writing	58.9**	66.2**
Achieved expected level in KS1 Maths	76.5	75.6
Achieved expected level in KS1 Speaking and listening	69.2*	74.7*
Achieved expected level in KS1 Science	71.8	74.1
Base	893	352
KS2 average points score (mean values)	24.7	25.2
Base	1,064	299
KS1 average points score (mean values)	13.0*	13.4*
Base	893	352

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

Differences in offending between treatment and comparison groups 12 months after starting on the Troubled Families programme were relatively small (Table 39). As with family-level history prior to programme start, the largest differences between the two groups were for children, where six per cent of those in the treatment group committed an offence that resulted in a caution or conviction seven to 12 months after programme start, compared with four per cent of those in the comparison group.

Table 39 Offending outcomes

	Within 12 months of programme start	
	Treatment (%)	Comparison (%)
Children cautions or convictions	6.2***	4.3***
Children convictions	3.7***	2.4***
Children with cautions	3.2***	2.3***
Base	25,966	6,925
Adults cautions or convictions	9.5	9.1
Adults convictions	7.7*	7.0*
Adults cautions	2.3*	2.7*
Base	25,515	5,921
Any custodial sentence	0.9	0.8
Any community sentence	2.9***	2.2***
Base	57,182	15,046
Adults violent offence	0.1*	0.0*
Adults theft or fraud	0.3	0.2
Adults anti-social behaviour or other	0.8	0.6
Adults breach offence	0.2	0.2
Adults indictable offence	0.6	0.5
Base	25,515	5,921

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

Summary

The date when families were screened for eligibility to participate in the Troubled Families programme was known for most of those in the treatment and comparison groups. The timing of screening was similar for the treatment and comparison groups once outliers were excluded. It was not possible to observe whether families met each of the eligibility criteria for the Troubled Families programme within the national administrative datasets alone, but information provided by local authorities suggested that most families that were said to have taken part in the programme did meet at least two of the national criteria. The date of starting on the programme was recorded for around three-quarters of individuals in the treatment group and this percentage was increased by making some assumptions about when the start date might have fallen, based on observed screening and end dates. The date that the spell ended was not well recorded and so it was difficult to be certain how long participation in the Troubled Families programme typically lasted within the sample of families used in the analysis. The percentage of families receiving a more intensive version of the programme was also uncertain, but was likely to exceed one-third of the sample.

Families in the treatment group tended to be larger than those in the comparison group and had a greater proportion of family members aged 10-17 and of working age. Also, a

greater proportion of adults in the treatment group were female, compared to the comparison group. The treatment group were more likely to have a history of children being classified as 'in need' or having a statement of SEN prior to programme start. Children in the treatment group were also more likely to be in receipt of free school meals and to have a history of being cautioned or convicted prior to starting on the programme compared with children in the comparison group. There were noticeable differences between the treatment and comparison groups in terms of the percentage of adults claiming out-of-work benefits, which was higher in the treatment group than the comparison group, although treated families were more likely to have an adult in employment prior to programme start.

When looking at family and individual-level outcomes for the treatment and comparison groups 12 months after programme start, large differences were observed in relation to the percentage of families with a child classified as in need. This was much higher within the treatment group than in the comparison group. It was also more common for children to be in receipt of free school meals in the treatment group. Families in the treatment group were more likely to include a child who had received a caution or conviction in the period seven to 12 months after starting on the programme compared with comparison group families. They were also more likely to contain at least one adult on out-of-work benefits, but were more likely to include an adult in employment. Again, the patterns which were evident at the family level were generally replicated in the individual-level analysis, although a lower proportion of adults in the treatment group were employed 12 months after starting on the programme than those in the comparison group, in contrast to the finding at the family level.

Educational attainment differed markedly between the treatment and comparison groups, particularly at GCSE level, where attainment by children in treated families was lower than it was for children in the comparison group. The observed differences between the two groups, in terms of characteristics and history, as well as outcomes observed following programme participation, therefore highlight the importance of adjusting the impact estimates to reflect these known differences. The following chapter explains the methods used to seek to achieve this in the current study.

Methods

Introduction

This chapter explains how the impact of the Troubled Families programme was estimated and the assumptions underlying the methods used. The standard evaluation problem is that it is not possible to observe what would have happened to individuals if they had not received the support offered by any given intervention. In the case of the Troubled Families programme, it is possible that families would have attained particular outcomes even if they had not participated in the programme. For example, some adults claiming out-of-work benefits would have been likely to enter work even if they had not come into contact with the programme. To estimate the true impact of the programme, it is necessary to take into account the fact that a proportion of families would have been likely to experience improvements in outcomes even without the programme. Therefore, evaluation methods generally involve estimating the counterfactual, i.e. the outcomes that participating individuals would have been likely to experience had they not received support from the programme. The sections on each of the methods used in this study explain how the counterfactual is estimated in each case.

Using experimental methods would minimize the likelihood that impact estimates were biased, as families that met the eligibility criteria would be assigned to the programme at random. This is because random assignment reduces the risk that there are systematic differences between the treatment and comparison groups in the outcomes that they could have been expected to attain in the absence of the treatment. With an experiment, the outcomes experienced by the comparison group provide a direct estimate of the counterfactual. Given the nature of this programme, using experimental methods was not felt to be feasible.

As eligible families were not allocated to the Troubled Families programme at random, it was necessary to instead use statistical techniques (known as quasi-experimental methods) to estimate the counterfactual. These involve using observed outcomes for a comparison group of families who had similar characteristics to the treatment group, but did not participate in the programme, or only participated at a later point in time, to estimate the outcomes that the treatment group might have experienced if they had not received support from the programe. Propensity Score Matching (PSM) was considered suitable for estimating the counterfactual in the case of the Troubled Families programme as the available data was sufficiently detailed to ensure that the treatment and comparison groups were well matched on a wide range of observable characteristics. In addition, the waiting list analysis exploited the fact that families were treated at different points in time, so that it was possible to observe whether their circumstances changed markedly after the date that they started on the programme.

A further consideration which is common to any evaluation is whether the aim is to estimate the impact of eligibility for the intervention on outcomes, or to estimate the impact of participation. In the case of the Troubled Families programme, it is not possible to ascertain whether a family is indeed eligible for the programme purely by reference to administrative data. This is because local authorities are allowed to develop their own local discretionary criteria which may result in families that only meet two of the national criteria

being admitted to the programme. Furthermore, it is not possible to observe family groups in the administrative data, as each data source is based on individual-level data. As a result, whilst local authorities were asked to provide information on as many eligible families (and as many individuals within those families) as possible, it is only possible to estimate the impact of the programme on those who were recorded as having participated in it.

This chapter begins with a detailed description of propensity score matching, which is the main focus in this report. The assumptions underlying the approach are outlined and the method of identifying whether the approach is likely to be valid in this application is assessed. The chapter then moves on to describe the alternative waiting list approach which is used to explore whether the results are sensitive to using a different method of analysis. The chapter concludes with a brief overview of the likely robustness of each approach in the current application.

Propensity score matching

Description of methods

Propensity Score Matching (PSM) seeks to estimate the counterfactual by using observed outcomes for family members in the comparison group who are similar to those in the treatment group in terms of their past behaviour and the characteristics that are likely to influence the outcomes that they attain. This involves predicting the propensity of family members to be treated (i.e. offered support from the Troubled Families programme), given their observed characteristics. This is carried out by using a probit regression to estimate the probability of the individual being treated, based on their characteristics. Having estimated the propensity score for all those in the treatment and comparison groups, individuals in the treatment group were then matched to those in the comparison group with a similar propensity score. Outcomes for those in the matched comparison group who were identified as similar on this basis were then used as a 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 outcome and the actual outcome is statistically significant, it is possible to conclude that the treatment has an impact on that particular outcome, provided that the treatment and comparison groups are well matched on all important characteristics related to outcomes and the probability of being treated. The main comparison group was drawn from families that were screened for eligibility for the programme but that did not start on the programme over the period prior to local authorities providing data for the study.

Assumptions

Propensity score matching relies on the available data being sufficiently rich that it can credibly be argued to capture all important variables influencing both 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 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, combining information from a number of administrative datasets on all family members included in the data extract supplied by local authorities resulted in a dataset which provided rich

information on both family and individual history and characteristics. Given that families are assigned to the programme depending on their history of worklessness, offending and educational participation, it seems reasonable to assume that it is possible to observe factors related to the likelihood that the family participates in the programme. Furthermore, as the datasets include information on the past history of family members across a similar range of measures to the outcomes that the programme is designed to effect, it is likely that many of the factors which determine whether a family member attains particular outcomes are also observed.

It is important to note that with any voluntary programme there is a risk that less-motivated individuals or families choose not to participate. Since it is not possible to observe whether families in the comparison group would have had a similar level of motivation to those in the treatment group, there is a risk that the analysis overstates the impact of the programme. This is because the comparison group may be composed of less-motivated individuals who would have experienced worse outcomes than those in the treatment group. However, it is possible that some local authorities included all families that were offered support from the programme in the sample for analysis, regardless of whether the family actually chose to participate. This would lessen the likelihood that the treatment group were more likely to attain positive outcomes than the comparison group.

A further issue which arises in relation to the sample of families included in the analysis is that only a subset of all local authorities operating the Troubled Families programme chose to participate in the study. Whilst more than one-third of areas supplied information on families that had been through the programme, it is in principle possible that there were systematic reasons why some areas chose to participate and others did not. There is, however, no evidence to suggest that this is the case, or to indicate in which direction this might bias the result. If, for example, local authorities that felt that the programme had been less successful were unwilling to take part, then the results might be biased in a positive direction (that is, towards overstating the impact of the programme). If we had found evidence of positive impact, this would be a concern; however, given the absence of such impact, it may be less plausible that such a bias is in fact present. In any case, it is important to note that the impact estimates here relate to the impact of the programme for a given set of families, rather than its average impact across all families that participated in the initial phase of the programme. It is also important to note that the data do not permit us to look at differences in impact between specific local areas.

There was a risk that families that were screened for eligibility, but did not start on the programme in the period before local authorities supplied data for the study, were not subject to the programme because they experienced improved outcomes without the need for assistance. If the comparison group was likely to attain better outcomes than the treatment group in the absence of the programme, the impact estimates might give an underestimate of the true impact of the programme. To explore whether this was likely to be the case, the analysis was also carried out using an expanded comparison group which included families that started on the programme more than 12 months after they were screened for eligibility. Whilst these families may also have experienced a delayed start on the programme because their circumstances improved for a period after screening, the fact that they went on to the programme at least indicates that they did eventually receive support.

Families in the expanded comparison group were given a pseudo-start date at random between the date that they were screened for eligibility and the date 12 months before they started on the programme. Outcomes for this comparison group were then observed

over the 12-month period following this pseudo-start date. For those who were given a pseudo-start date that was close to the point 12 months before they actually started on the programme, there was a risk that outcomes were observed at the time that they were experiencing deteriorating circumstances, which then triggered their start on the Troubled Families programme. As a result, the PSM which used this comparison group may have over-inflated the impact of the programme. Nonetheless, the analysis provides some insight into the estimated effect of the programme when the counterfactual was estimated using a more favourable comparison group. The results of this analysis are presented in Appendix C. Seeking to estimate outcomes over a period of 18 months, rather than 12, would have reduced the size of the expanded comparison group, and so all the analyses which use the expanded comparison group consider impacts observed 12 months after the treatment group started on the programme, rather than over an 18-month period. Impacts over an 18-month period were estimated for the main analysis (kernel, radius and LLR estimators) and the analysis which focused on families that received intensive support, as the comparison group was drawn from families who did not start on the programme in the period covered by the programme data.

Common support

It is necessary for the comparison group to include individuals with similar characteristics to those in the treatment group. If there is no overlap between the two groups for some treated individuals, it may not be possible to find comparators with a similar propensity score and the treated individuals will lack what is known as 'common support'. As a result, the impact estimates will only be applicable to the subset of families that participated in the programme who could be matched to family members in the comparison group. The portion of the treatment group who cannot be matched to similar comparators are referred to as 'off support'. If a large proportion of the treatment group are outside the region of common support, the impact estimates are less likely to be representative of the impact of the programme on the full sample of families that participated in the programme.

Types of matching

Having used a probit regression to estimate propensity scores for family members by predicting the likelihood that they received support from the programme, given their characteristics, it is then necessary to identify individuals with similar 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. However, such a stringent requirement would be likely to mean that many family members who received support from the programme could not be matched to individuals in the comparison group. This would mean that the impact estimates would only relate to a small – and probably unrepresentative – subset of treated families. Instead, it is usual to match individuals 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 (LLR) matching (using a Gaussian kernel type and bandwidth of 0.06). Kernel and LLR estimators use different techniques to weight all members of the comparison group in proportion to their similiarity to the treatment group, whilst radius matching selects only those members of the comparison group within a certain range of the propensity score for the treated individual. 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 (Leuven and Sianesi 2003)), the sensitivity of the results to using a much smaller bandwidth (of 0.00005)[32] for the kernel matching was explored.

The kernel, radius and LLR matching produced similar results, both in terms of well-matched treatment and comparison groups (discussed in the following section) and the impact estimates. The small proportion of the treatment group outside the region of common support showed that it was possible to match the vast majority of the treatment group with individuals in the comparison group with similar propensity scores.[33] 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, the findings from the other models are discussed in the text and a table summarising the impact estimates from all of the models is given at the end of the chapter which presents the results from the PSM analysis. Appendices E-G show the impact estimates in full produced using radius, LLR and kernel matching with a bandwidth of 0.00005 respectively.

Matching variables

For propensity score matching to give a credible estimate of the impact of the Troubled Families programme, it is necessary to observe the characteristics which determine the likelihood both that an individual achieves a given outcome and that they start on the programme. This section describes the matching variables drawn from each of the national administrative datasets. As noted above, data quality was an issue with some variables.

The datasets included information on the following characteristics which were identified as suitable matching variables:

- Individual demographic information: gender; age in years at 19 October 2014; ethnicity.

- Family characteristics: number of adults; number of children.

- Ratio of claimant count to vacancies in the local authority (also known as the unemployment to vacancies ratio).[34]

- Date of starting on the programme.

In addition to these variables, which were used in the PSM for both adults and children, the analysis for adults also used the following variables:

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[32] 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.
[33] The main impact of reducing the bandwidth to 0.00005 was to increase the proportion of the treatment group who fell outside the region of support. This is consistent with excluding more extreme outliers from the analysis, but generally speaking the overall conclusions from the analysis were not affected by requiring a closer match between treatment and comparison groups.
[34] This is used as an indicator of the availability of jobs in the local area. It is likely to be more difficult for unemployed individuals to enter work in areas where the claimant count is high, relative to the number of vacancies notified to Jobcentre Plus, compared with areas where the unemployment to vacancies ratio is lower.

- History of claiming out-of-work benefits prior to programme start: claiming out-of-work benefits one month before start; claiming out-of-work benefits 12 months before start; number of weeks claiming out-of-work benefits in the year prior to programme start; claiming JSA one month before start; claiming JSA 12 months before start; number of weeks claiming JSA in the year prior to programme start; claiming incapacity benefits one month before start; claiming incapacity benefits 12 months before start; number of weeks claiming incapacity benefits in the year prior to programme start.

- Employment history prior to programme start: employed one month before programme start; employed 12 months before programme start; number of weeks employed in the year prior to programme start.

- Offending history in the year prior to programme start: whether convicted; whether cautioned; whether received a custodial sentence; whether received a community sentence.

- History of child truancy prior to programme start: maximum absence rate for any child in the family observed three terms prior to start; maximum absence rate for any child in the family observed one term prior to start.

- Number of months at least one child in family classified as in need in year prior to programme start

- Whether any family member on free school meals in the academic year prior to programme start

- Whether any family member with special educational needs in year prior to programme start

- At least one child in care one month before programme start.

Instead of the characteristics listed above, children were matched on:

- Offending history in the year prior to programme start: whether convicted; whether cautioned.

- History of truancy prior to programme start: percentage of time absent from school in the term three terms prior to programme start; percentage of time absent from school in the term prior to programme start.

- Number of months classified as in need in year prior to programme start

- Whether receiving free school meals in the academic year prior to programme start

- Whether classified as having special educational needs in year prior to programme start

- In care one month before programme start

- At least one family member claiming out-of-work benefits prior to programme start: claiming out-of work benefits one month before start; claiming out-of-work benefits 12 months before start; maximum number of weeks any family member claiming out-of-work benefits in the year prior to programme start; claiming JSA one month before start; claiming JSA 12 months before start; maximum number of weeks any family member claiming JSA in the year prior to programme start; claiming incapacity benefits one month before start; claiming incapacity benefits 12 months before start; maximum number of weeks any family member claiming incapacity benefits in the year prior to programme start.

- Family employment history prior to programme start: at least one family member employed one month before programme start; employed 12 months before programme start; maximum number of weeks any family member employed in the year prior to programme start.

The extent to which each of these characteristics predicted whether the individual participated in the programme is shown in Appendix D. The following section shows how well-matched the treatment and comparison groups appeared after the propensity score matching.

Testing whether the assumptions were met

If the observed characteristics of the comparison group do not mirror those of the full treatment group following matching, the resulting impact estimates may be biased. This may be a particular issue given the data issues identified above. Therefore, this section considers whether the comparison group appeared similar to the treatment group after the PSM. It focuses on the balance between the two groups for the kernel matching estimator, but differences between this and the findings from the other matching estimators are noted in the text.

The matching tables show the percentage (or, in some cases a different unit of measurement is used e.g. weeks, years, etc) of the treatment and comparison groups with each of the listed characteristics. The final column reports the Mean Standardised Bias (MSB). This is a measure of the difference in the characteristics of those in the treatment and comparison groups following matching, taking into account the variation in the characteristic within each of the two groups.[35] Given the large sample of individuals in the treatment and comparison groups, small differences in the MSB can appear statistically significant and so the size of the MSB is also important. For this reason, only biases greater than five per cent are highlighted in Table 40 below, even though other differences are statistically significant at the five per cent level or greater (as indicated by two or more asterisks).

Rubin's B[36] and R[37] give an indication of the overall balance on covariates. The treatment and matched comparison group samples are considered balanced if B is less than 25 and R is between 0.5 and 2. This was the case across of the samples considered in the analysis, except where specifically noted in the text. Comparison group matches were found for the vast majority of the treatment group when using kernel, radius and LLR matching, meaning that the impact estimates (reported in the following chapter) were likely to be representative of the impact of the programme on almost all of the adults and children who participated in the programme. Again, where this was not the case, this is noted in the text. When the kernel matching was adjusted to use a reduced bandwidth, close matches were only found for a subset of the treatment group, and so these results are less likely to be representative of the impact of the programme on the full sample of families that participated in the programme. The reduced bandwidth kernel matching was

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[35] The MSB is calculated by dividing the difference in means between the treatment and matched comparison groups by the square root of the mean sample variance and is expressed as a percentage.
[36] The absolute standardized difference of the means of the linear index of the propensity score in the treated and matched comparison groups.
[37] The ratio of treated to matched comparison group variances of the propensity score index.

only used when looking at outcomes over a 12-month period, as the smaller number of individuals who could be observed for 18 months following programme start meant that it was not possible to estimate effects using this matching estimator for this time period.

The overall balance on covariates in Table 40 suggests that for adults, the treatment and comparison groups were sufficiently matched when looking at benefit and offending outcomes over a period of 12 months following the start on the programme. The table also shows that only 0.1 per cent of the treatment group could not be matched to adults in the comparison group with characteristics which meant that they had a similar propensity to be offered support from the programme.

Table 40 Balance between treatment and comparison groups after PSM kernel matching for benefits and offending sample - adults observed for 12 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	46.2	46.4	-0.5
Claiming out-of-work benefits 12 months before programme start	43.8	44.6	-1.6*
Number of weeks on out-of-work benefits in year before programme start	28.2	28.4	-0.8
Employed one month before programme start	32.1	32.9	-1.6*
Employed 12 months before programme start	26.4	27.0	-1.2
Number of weeks employed in year before programme start	21.2	21.3	-0.7
Claiming JSA one month before programme start	12.7	13.0	-1.0
Claiming JSA 12 months before programme start	11.5	12.0	-1.6*
Number of weeks on JSA in year before programme start	11.0	11.1	-0.6
Claiming incapacity benefits one month before programme start	15.9	16.8	-2.5***
Claiming incapacity benefits 12 months before programme start	14.5	15.1	-2.0**
Number of weeks on sickness benefits in year before programme start	10.7	11.0	-1.9**
Conviction in year prior to programme start	8.6	8.1	1.7*
Caution in year prior to programme start	3.6	3.4	0.9
Custodial sentence in year prior to programme start	1.5	1.4	0.7
Community sentence in year prior to programme start	4.6	4.4	0.7
Start month	637.1	637.3	-4.2***
Age at 19 Oct 2014 (years)	33.4	34.4	**-8.1*****
Age squared	1275.9	1343.1	**-7.1*****
Female	58.7	59.3	-1.3
Non-white	7.5	8.6	-3.5***
Ethnicity missing	18.7	21.5	**-7.1*****
Number of adults in family	2.4	2.4	-3.4***
Number of children in family	1.6	1.5	**5.8*****
Ratio of claimant count to vacancies in LA	4.5	4.8	**-8.6*****
	17.0	15.3	**8.8*****

	Treatment group	Matched comparison group	Mean standardised bias (%)
Maximum absence rate for any child in family in the term prior to programme start			
Maximum absence rate for any child in family three terms prior to programme start	17.9	16.7	**6.2*****
Number of months at least one child in family in need prior measurement date	5.1	4.9	3.3***
Family member on free school meals in academic year prior to start of programme	59.2	57.4	3.8***
Family member with Special Educational Needs in academic year prior to start of programme	60.9	58.7	4.6***
At least one child in care one month before programme start	3.1	2.6	3.1***
Comparison group	5,921		
Treatment group:			
Off support	31		
On support	24,484		
% off support	0.1		
Rubin's B	18.4		
Rubin's R	1.0		

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

Table 40 shows that, following PSM, adults in the treatment and comparison groups were well matched in terms of benefit and offending history prior to starting on the Troubled Families programme. There were however, some outstanding differences in terms of personal and family characteristics. On average, the comparison group was a year older than the adults in families that participated in the programme. Ethnicity was also less likely to be recorded for matched comparators than for the treatment group. This did not appear to be because the comparison group were less likely to be matched to administrative data records, as the earlier section on data linking showed no differences between the treatment and comparison groups in the proportion of adults found on the WPLS. At the family level, the main difference between the treatment and comparison groups after matching was in the mean number of children in the family, which was slightly lower in the comparison group than in the treatment group. The rate of absence from school for children within the family was greater for those in the treatment group compared with the comparison group. Finally, the matched comparison group were more likely to live in areas where unemployment was higher relative to the number of vacancies available, meaning that the prospects of entering work were likely to be lower for this group compared with the treatment group.

The match between adults in the treatment and comparison groups on each of the characteristics was similar regardless of the matching estimator used. The radius matching estimator was most similar to the kernel estimator, with the MSB exceeding five per cent on the same set of characteristics as when using the kernel matching estimator. With the LLR estimator, the treatment and comparison groups were more closely matched in terms of the number of children in the family and the maximum absence rates one and three terms before the family started on the programme. However, with the LLR specification the two groups were less well matched in terms of the number of adults in the family. The reduced bandwidth kernel matching estimator had the best match between treatment and comparison groups, with only age, the unemployment to vacancies ratio and the proportion of cases where ethnicity was not recorded being poorly matched between the groups. Whilst Rubin's B and R were within acceptable ranges regardless of the matching estimator used, a much greater percentage of the treatment group (38.1 per cent) were off support with the reduced bandwidth kernel matching. This was unsurprising, as a much closer match was required between the treatment and comparison groups.

Table 41 shows the match between the treatment and comparison groups when focusing on the sample of adults for whom employment outcomes could be observed for a period of 12 months following programme start. The match was similar when using the kernel and radius matching estimators, with the MSB greater than five per cent on exactly the same set of characteristics – namely age, the number of children, the maximum absence rate for any child in the family three terms and one term prior to programme start and whether ethnicity was unknown. The match was better for the LLR estimator and the MSB only exceeded five per cent in the case of age and the number of adults in the family. The match was also good in the case of the kernel matching estimator with reduced bandwidth. In this case, the MSB was greater than five per cent in the case of age and missing ethnicity and also whether the adult was claiming incapacity benefits 12 months before starting on the Troubled Families programme, but on all other characteristics the treatment and comparison groups were well-matched. However, 49.9 per cent of the treatment group could not be matched, so the employment impact estimates produced using the reduced bandwidth kernel matching estimator were only representative of the impact of the programme on around half of the treatment group sample. For all models, Rubin's B and R were within acceptable ranges, indicating that the overall match between the treatment and comparison groups was reasonable.

Table 41 Balance between treatment and comparison groups after PSM kernel matching for employment sample - adults observed for 12 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	44.5	45.2	-1.6
Claiming out-of-work benefits 12 months before programme start	41.5	42.5	-2.0*
Number of weeks on out-of-work benefits in year before programme start	27.2	27.5	-1.5
Employed one month before programme start	30.3	31.5	-2.6**
Employed 12 months before programme start	24.8	25.6	-1.9*
Number of weeks employed in year before programme start	20.2	20.6	-1.7*
Claiming JSA one month before programme start	12.7	13.5	-2.4**
Claiming JSA 12 months before programme start	10.9	11.2	-1.3
Number of weeks on JSA in year before programme start	11.0	11.2	-1.0
Claiming incapacity benefits one month before programme start	15.1	16.8	-4.8***
Claiming incapacity benefits 12 months before programme start	13.7	15.1	-4.3***
Number of weeks on sickness benefits in year before programme start	10.1	10.9	-3.9***
Conviction in year prior to programme start	9.5	8.9	2.2**
Caution in year prior to programme start	3.9	3.7	1.0
Custodial sentence in year prior to programme start	1.7	1.4	2.2**
Community sentence in year prior to programme start	5.3	5.3	0.0
Start month	634.8	634.8	0.9
Age at 19 Oct 2014 (years)	33.0	34.1	**-8.1*****
Age squared	1257.8	1327.2	**-7.3*****
Female	57.4	57.8	-0.7
Non-white	6.1	6.0	0.3
Ethnicity missing	18.2	20.5	**-5.9*****
Number of adults in family	2.5	2.5	-1.0
Number of children in family	1.5	1.4	**7.0*****
Ratio of claimant count to vacancies in LA	4.4	4.5	-2.4**

	Treatment group	Matched comparison group	Mean standardised bias (%)
Maximum absence rate for any child in family in the term prior to programme start	17.9	16.3	**8.1*****
Maximum absence rate for any child in family three terms prior to programme start	19.4	18.2	**5.3*****
Number of months at least one child in family in need prior measurement date	5.1	4.9	3.5***
Family member on free school meals in academic year prior to start of programme	59.4	57.1	4.7***
Family member with Special Educational Needs in academic year prior to start of programme	62.9	61.5	2.8***
At least one child in care one month before programme start	3.1	2.5	3.2***
Comparison group	4,360		
Treatment group:			
Off support	24		
On support	19,435		
% off support	0.1		
Rubin's B	16.6		
Rubin's R	1.1		

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

The PSM was repeated for the sample of adults for whom outcomes could be observed over an 18-month period following the start on the Troubled Families programme (Table 42). The two groups were well-matched on most characteristics and the overall balancing on covariates was within the acceptable range. However, even after matching, the treatment group were slightly less likely to have been on incapacity benefits 12 months before starting on the programme. They also tended to be younger than the comparison group and were part of families with more children and were more likely to have a child on free school meals in the academic year prior to programme start. The maximum absence rate for any family member in the term prior to programme start was also higher in the treatment group than in the comparison group. These patterns were also evident with the radius matching estimator, but the two groups were more closely-matched with the LLR estimator, where the differences between the two groups in the history of claiming incapacity benefits and having a child on free school meals disappeared and the age match was closer. The only additional matching variable with an MSB in excess of five per cent when using the LLR estimator was the number of adults within the family, which was lower in the treatment group than in the comparison group.

Table 42 Balance between treatment and comparison groups after PSM kernel matching for benefits and offending sample - adults observed for 18 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	43.9	44.9	-2.0*
Claiming out-of-work benefits 12 months before programme start	40.4	41.8	-2.7**
Number of weeks on out-of-work benefits in year before programme start	26.8	27.4	-2.4**
Employed one month before programme start	29.3	30.8	-3.3***
Employed 12 months before programme start	23.9	25.4	-3.4***
Number of weeks employed in year before programme start	19.7	20.4	-3.1***
Claiming JSA one month before programme start	12.7	13.9	-3.8***
Claiming JSA 12 months before programme start	10.5	11.2	-2.3*
Number of weeks on JSA in year before programme start	11.0	11.3	-1.8
Claiming incapacity benefits one month before programme start	15.1	16.6	-4.5***
Claiming incapacity benefits 12 months before programme start	13.6	15.5	**-5.8***
Number of weeks on sickness benefits in year before programme start	10.0	10.8	-3.9***
Conviction in year prior to programme start	10.0	9.4	2.2*
Caution in year prior to programme start	4.1	3.8	1.1
Custodial sentence in year prior to programme start	1.8	1.5	2.6**
Community sentence in year prior to programme start	5.6	5.8	-0.8
Start month	633.2	633.3	-1.0
Age at 19 Oct 2014 (years)	32.9	33.9	**-7.5***
Age squared	1256.0	1320.0	**-6.8***
Female	57.0	57.0	0.2
Non-white	6.3	5.9	1.5*
Ethnicity missing	17.8	19.3	-3.9***
Number of adults in family	2.5	2.5	-0.7
Number of children in family	1.5	1.3	**10.3***
Ratio of claimant count to vacancies in LA	4.3	4.3	0.6
Maximum absence rate for any child in family in the term	18.2	16.4	**8.7***

	Treatment group	Matched comparison group	Mean standardised bias (%)
prior to programme start			
Maximum absence rate for any child in family three terms prior to programme start	20.0	19.1	4.2***
Number of months at least one child in family in need prior measurement date	4.9	4.9	1.2
Family member on free school meals in academic year prior to start of programme	58.9	56.3	**<u>5.3***</u>**
Family member with Special Educational Needs in academic year prior to start of programme	62.5	61.5	2.0*
At least one child in care one month before programme start	3.2	2.8	2.5**
Comparison group	3,113		
Treatment group:			
Off support	24		
On support	15,349		
% off support	0.2		
Rubin's B	18.7		
Rubin's R	1.3		

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

The match between adults in the treatment and comparison groups was similar when considering the sample whose employment outcomes could be observed for a period of 18 months following their start on the programme (Table 43). Again, the characteristics that the two groups were less well-matched on were age, the number of children in the family, whether children were eligible for free school meals and the absence rate prior to programme start. The kernel, radius and LLR matching estimators were comparable in this regard. However, in addition to this, with the LLR estimator, the matched comparison group was more likely to be claiming JSA in the month prior to programme start and on average had a greater number of adults within the family. On the other hand, across all three matching estimators the overall balancing on covariates was within acceptable limits.

Table 43 Balance between treatment and comparison groups after PSM kernel matching for employment sample - adults observed for 18 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	42.6	43.4	-1.6
Claiming out-of-work benefits 12 months before programme start	39.3	40.1	-1.7
Number of weeks on out-of-work benefits in year before programme start	26.2	26.7	-2.0
Employed one month before programme start	28.5	29.6	-2.3*
Employed 12 months before programme start	23.3	24.4	-2.5*
Number of weeks employed in year before programme start	19.2	19.6	-1.9
Claiming JSA one month before programme start	12.3	13.6	-4.0***
Claiming JSA 12 months before programme start	10.2	10.8	-2.1
Number of weeks on JSA in year before programme start	10.8	11.1	-1.7
Claiming incapacity benefits one month before programme start	14.8	16.0	-3.6**
Claiming incapacity benefits 12 months before programme start	13.6	15.1	-4.9***
Number of weeks on sickness benefits in year before programme start	9.9	10.5	-3.5**
Conviction in year prior to programme start	10.4	9.5	3.0**
Caution in year prior to programme start	4.2	3.6	2.7**
Custodial sentence in year prior to programme start	1.7	1.3	3.5***
Community sentence in year prior to programme start	5.9	5.9	0.4
Start month	631.7	631.6	3.3**
Age at 19 Oct 2014 (years)	32.8	33.8	**_-7.7***_**
Age squared	1253.6	1321.8	**_-7.2***_**
Female	56.4	56.1	0.7
Non-white	5.4	4.4	2.9***
Ethnicity missing	17.4	19.0	-3.9***
Number of adults in family	2.5	2.5	-2.0
Number of children in family	1.4	1.3	**_10.9***_**
Ratio of claimant count to vacancies in LA	4.2	4.1	2.6**
Maximum absence rate for any child in family in the term	18.6	16.2	**_11.3***_**

	Treatment group	Matched comparison group	Mean standardised bias (%)
prior to programme start			
Maximum absence rate for any child in family three terms prior to programme start	20.2	19.3	4.2***
Number of months at least one child in family in need prior measurement date	4.9	4.8	2.5*
Family member on free school meals in academic year prior to start of programme	58.1	54.7	**7.0*****
Family member with Special Educational Needs in academic year prior to start of programme	62.8	61.6	2.6**
At least one child in care one month before programme start	3.3	2.9	2.4*
Comparison group	2,253		
Treatment group:			
Off support	20		
On support	11,787		
% off support	0.2		
Rubin's B	20.4		
Rubin's R	1.2		

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

When considering the subset of children for whom offending could be observed over the 12-month period following the start on the Troubled Families programme, there were few differences in characteristics between the treatment and comparison groups where the MSB was statistically significant and greater than five per cent (Table 44). The comparison group was less likely to be white and more likely to be of unknown ethnicity than the treatment group. Also, the ratio of unemployed to vacancies was greater for the comparison group and the treatment group were more likely to have received a caution in the year before starting on the programme, but in other respects the two groups were fairly similar. The overall balance on covariates was acceptable, and almost all those in the treatment group could be matched to comparators with a similar propensity score.

Table 44 Balance between treatment and comparison groups after PSM for offending sample - children observed for 12 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.3	63.9	0.7
Family member claiming out-of-work benefits 12 months before programme start	63.6	63.2	0.8
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.3	31.8	2.2**
Any adult in family employed one month prior to programme start	39.6	41.8	-4.7***
Any adult in family employed 12 months prior to programme start	33.6	35.6	-4.7***
Max number of weeks any family member employed in year prior to programme start	24.9	26.0	-4.7***
Family member claiming JSA one month before programme start	17.3	17.7	-1.2
Family member claiming JSA 12 months before programme start	16.0	16.6	-1.9*
Maximum number of weeks any family member on JSA in year prior to programme start	14.2	14.1	0.6
Family member claiming sickness benefits one month before programme start	21.7	21.2	1.5
Family member claiming sickness benefits 12 months before programme start	19.4	18.0	4.1***
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.4	13.8	3.1***
Conviction in year prior to programme start	2.9	2.7	0.9
Caution in year prior to programme start	4.0	3.0	**<u>5.5***</u>**
Start month	638.0	638.1	-2.4***
Age at 19 Oct 2014 (years)	11.8	11.6	3.3***
Age squared	157.5	155.2	2.5***
Female	44.9	45.8	-1.8**
Non-white	11.2	14.2	**<u>-8.0***</u>**
Ethnicity missing	13.8	17.6	**<u>-11.3***</u>**
Number of adults in family	1.6	1.5	1.1
Number of children in family	2.7	2.7	1.3
Ratio of claimant count to vacancies in LA	4.8	5.1	**<u>-9.8***</u>**
Percentage of time absent from school one term prior to programme start	10.6	9.8	4.8***
Percentage of time absent from school three terms prior to programme start	9.9	9.4	3.3***

	Treatment group	Matched comparison group	Mean standardised bias (%)
Total number of months child in need prior measurement date	4.0	3.8	4.4***
Free school meals in academic year prior to start of programme	54.9	54.4	1.0
Statement of Special Educational Needs in academic year prior to start of programme	43.0	41.2	3.7***
In care one month before programme start	1.7	1.6	0.9
Comparison group	6,925		
Treatment group:			
Off support	20		
On support	25,946		
% off support	0.1		
Rubin's B	20.3		
Rubin's R	0.9		

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

The match between the treatment and comparison groups was similar using the kernel, radius and reduced bandwidth kernel matching estimators. Greater differences between the treatment and matched comparison groups were evident when using the LLR matching estimator. With this, the MSB was greater than five per cent on the family employment matching variables. The matched comparison group also appeared to be part of families with more children and more adults than those in the treatment group. No suitable comparators existed for 40.2 per cent of children in the treatment group when using the reduced bandwidth kernel matching.

The sample of children for whom absence outcomes could be observed for a period of 12 months following the start on the Troubled Families programme were well matched on almost all observed characteristics (Table 45). The only two characteristics where the MSB exceeded five per cent were the percentage of cases where ethnicity was missing and the ratio of the claimant count to vacancies within local authorities. This was also the case with the radius matching estimator, whilst the MSB for ethnicity was below three per cent for the reduced bandwidth kernel matching estimator (although 65.6 per cent of the treatment group were not matched). However, with the reduced bandwidth matching estimator, the two groups were less well matched in terms of the history of claiming benefits and children being entitled to free school meals. When using the LLR matching estimator, the proportion of the treatment and comparison groups who were part of a family where one adult claimed JSA one year prior to starting on the programme differed, as did the number of adults within the household, but the two groups were better matched than when using the kernel and radius estimators on the average unemployment to vacancy ratio.

Table 45 Balance between treatment and comparison groups after PSM with kernel matching estimator for absence sample - children observed for 12 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.1	62.8	2.6**
Family member claiming out-of-work benefits 12 months before programme start	62.6	60.5	4.4***
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.3	31.4	3.7***
Any adult in family employed one month prior to programme start	36.6	38.0	-3.2**
Any adult in family employed 12 months prior to programme start	30.7	32.3	-3.8***
Max number of weeks any family member employed in year prior to programme start	23.4	24.3	-3.8***
Family member claiming JSA one month before programme start	17.9	18.6	-1.8
Family member claiming JSA 12 months before programme start	15.1	16.2	-3.4**
Maximum number of weeks any family member on JSA in year prior to programme start	14.8	14.6	1.0
Family member claiming sickness benefits one month before programme start	21.2	21.8	-1.7
Family member claiming sickness benefits 12 months before programme start	18.6	18.9	-1.1
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.1	14.1	0.0
Conviction in year prior to programme start	2.8	3.1	-1.9
Caution in year prior to programme start	4.2	3.4	4.3***
Start month	633.4	633.3	3.0**
Age at 19 Oct 2014 (years)	12.0	12.0	1.0
Age squared	163.4	163.0	0.5
Female	45.3	45.8	-1.1
Non-white	10.6	11.5	-2.6**
Ethnicity missing	13.1	15.4	**-6.9*****
Number of adults in family	1.6	1.6	2.8**
Number of children in family	2.7	2.7	2.6*
Ratio of claimant count to vacancies in LA	4.5	4.7	**-5.7*****
Percentage of time absent from school one term prior to programme start	10.6	10.6	0.1
Percentage of time absent from school 3 terms prior to	11.2	11.4	-1.4

	Treatment group	Matched comparison group	Mean standardised bias (%)
programme start			
Total number of months child in need prior measurement date	4.0	3.8	4.0***
Free school meals in academic year prior to start of programme	55.5	55.8	-0.6
Statement of Special Educational Needs in academic year prior to start of programme	44.8	44.4	0.9
In care one month before programme start	1.8	1.8	-0.1
Comparison group	3,483		
Treatment group:			
Off support	27		
On support	13,228		
% off support	0.2		
Rubin's B	17.4		
Rubin's R	1.1		

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

For the sample of children for whom exclusions from school could be observed for a 12-month period following the start on the Troubled Families programme, the overall balancing on covariates was outside the acceptable range for Rubin's B for all the matching estimators, suggesting that the PSM would not provide a robust estimate of the impact of the Troubled Families programme (Table 46). This is likely to be partly because the data on exclusions were only available for a short period following the introduction of the programme. Therefore, the impact of the programme on exclusions is not considered further.

Table 46 Balance between treatment and comparison groups after PSM with kernel matching estimator for exclusions sample - children observed for 12 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	56.7	53.6	**6.3****
Family member claiming out-of-work benefits 12 months before programme start	53.4	50.1	**6.9*****
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	28.8	26.7	**8.7*****
Any adult in family employed one month prior to programme start	31.9	32.0	-0.2
Any adult in family employed 12 months prior to programme start	28.4	29.0	-1.2
Max number of weeks any family member employed in year prior to programme start	21.0	20.6	1.8
Family member claiming JSA one month before programme start	13.2	13.3	-0.3
Family member claiming JSA 12 months before programme start	11.8	11.7	0.1
Maximum number of weeks any family member on JSA in year prior to programme start	11.6	11.0	3.2
Family member claiming sickness benefits one month before programme start	19.0	22.8	**-10.6*****
Family member claiming sickness benefits 12 months before programme start	16.5	18.1	-4.7*
Maximum number of weeks any family member on sickness benefits in year prior to programme start	12.8	13.4	-3.3
Conviction in year prior to programme start	2.5	2.1	3.6
Caution in year prior to programme start	5.1	5.0	0.6
Start month	627.8	627.6	**22.3*****
Age at 19 Oct 2014 (years)	12.4	12.4	0.4
Age squared	171.5	170.8	0.7
Female	43.3	42.4	1.8
Non-white	11.8	9.0	**7.5*****
Ethnicity missing	12.9	14.9	**-5.8****
Number of adults in family	1.5	1.5	**5.7****
Number of children in family	2.5	2.4	**5.6****
Ratio of claimant count to vacancies in LA	3.6	3.6	2.3
Percentage of time absent from school one term prior to programme start	11.1	10.6	2.9
Percentage of time absent from school three terms prior	11.6	11.3	1.7

	Treatment group	Matched comparison group	Mean standardised bias (%)
to programme start			
Total number of months child in need prior measurement date	4.3	3.7	**13.2***
Free school meals in academic year prior to start of programme	52.9	52.9	-0.1
Statement of Special Educational Needs in academic year prior to start of programme	47.0	47.9	-1.8
In care one month before programme start	1.5	1.0	3.7*
Comparison group	1,003		
Treatment group:			
Off support	2		
On support	3,529		
% off support	0.1		
Rubin's B	37.0		
Rubin's R	1.0		

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

The overall balance on covariates for each of the samples where educational attainment was observed after the family started on the programme was poor. This was likely to be due to the small number of children who went through each of the Key Stage assessments within the limited time following the start of the Troubled Families programme in April 2012. The total number of children in the treatment and comparison groups with outcomes for each of the Key Stage levels which post-dated their family's start on the Troubled Families programme is shown in Table 47. It was not possible to produce robust estimates of impact using PSM on samples of this size.

Table 47 Number of children undergoing key stage assessments following participation in the Troubled Families programme

	Treatment Group (%)	Comparison Group (%)
Keystage 4	574	121
Keystage 3	493	128
Keystage 2	1064	299
Keystage 1	893	352

The treatment and comparison groups were well-matched across most observed characteristics for the sample of children used to estimate the impact of the programme on child welfare outcomes (Table 48). The only differences where the MSB exceeded five per cent was that children in the treatment group were more likely to be part of a family where at least one family member was claiming out-of-work benefits 12 months before programme start. They were also less likely to be of unknown ethnicity or to live in an area

where the ratio of the claimant count to vacancies was as high as for children in the comparison group. This was the case when using the kernel, radius and reduced bandwidth kernel matching estimators. However, no match was found for 68.6 per cent of the treatment group when using the reduced bandwidth model.

The difference between the treatment and comparison groups on the unemployment to vacancies ratio and the history of claiming benefits disappeared when the LLR matching estimator was used. On the other hand, the treatment and comparison groups were less well-matched in terms of the family history of claiming JSA one month and 12 months prior to starting on the programme and whether the child had received a conviction within the previous year. The comparison group also had a greater number of children within the family than the treatment group.

Table 48 Balance between treatment and comparison groups after PSM with kernel matching estimator for child welfare sample - children observed for 12 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.8	63.2	3.4***
Family member claiming out-of-work benefits 12 months before programme start	63.2	60.6	**5.5*****
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.7	31.6	4.6***
Any adult in family employed one month prior to programme start	36.8	37.5	-1.5
Any adult in family employed 12 months prior to programme start	30.8	31.8	-2.3*
Max number of weeks any family member employed in year prior to programme start	23.5	23.9	-1.9
Family member claiming JSA one month before programme start	18.4	19.4	-3.0**
Family member claiming JSA 12 months before programme start	15.3	16.5	-3.5**
Maximum number of weeks any family member on JSA in year prior to programme start	15.1	14.9	0.7
Family member claiming sickness benefits one month before programme start	21.0	21.0	0.0
Family member claiming sickness benefits 12 months before programme start	18.5	18.0	1.5
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.1	13.8	1.6
Conviction in year prior to programme start	2.9	3.4	-3.4**
Caution in year prior to programme start	4.2	3.7	3.2**
Start month	632.9	632.7	3.9***
Age at 19 Oct 2014 (years)	12.1	12.0	0.7
Age squared	164.0	163.9	0.2
Female	45.2	45.7	-1.0
Non-white	9.3	9.6	-1.0
Ethnicity missing	12.9	15.1	**-6.6*****
Number of adults in family	1.6	1.6	3.8***
Number of children in family	2.7	2.7	0.9
Ratio of claimant count to vacancies in LA	4.4	4.5	**-5.0*****
Percentage of time absent from school one term prior to programme start	10.8	10.7	0.2
Percentage of time absent from school three terms prior	11.3	11.4	-0.6

	Treatment group	Matched comparison group	Mean standardised bias (%)
to programme start			
Total number of months child in need prior measurement date	4.0	3.8	4.6***
Free school meals in academic year prior to start of programme	55.1	55.1	-0.1
Statement of Special Educational Needs in academic year prior to start of programme	45.0	45.0	0.0
In care one month before programme start	1.8	1.9	-0.3
Comparison group	3,158		
Treatment group:			
Off support	23		
On support	11,985		
% off support	0.2		
Rubin's B	16.9		
Rubin's R	1.2		

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

Finally, it was possible to consider offending outcomes over an 18-month period for some children, so Table 49 shows the balance between the treatment and comparison groups for this sample. The match was similar when using the kernel and radius matching estimators, with a smaller percentage of children in the treatment group being part of families where at least one adult was claiming JSA 12 months before starting on the programme, compared with the comparison group. Information on ethnicity was also more likely to be missing for those in the comparison group than children in the treatment group when using both the radius and kernel matching estimators. In addition, the unemployment to vacancy ratio was higher for the comparison group than for the treatment group when the matching was carried out using the radius matching estimator. This was not the case for the kernel or LLR estimators, but the treatment and comparison groups were less well-matched on employment history in the LLR model. Also, children in the comparison group tended to be part of families with a greater number of children compared with the treatment group.

Table 49 Balance between treatment and comparison groups after PSM - children observed for 18 months following programme start

	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	63.9	62.9	2.0*
Family member claiming out-of-work benefits 12 months before programme start	62.4	60.6	3.7***
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.1	31.3	3.5***
Any adult in family employed one month prior to programme start	36.7	38.8	-4.7***
Any adult in family employed 12 months prior to programme start	30.8	32.8	-4.7***
Max number of weeks any family member employed in year prior to programme start	23.4	24.6	**-5.1***
Family member claiming JSA one month before programme start	18.0	19.0	-3.1**
Family member claiming JSA 12 months before programme start	15.0	16.7	**-5.3***
Maximum number of weeks any family member on JSA in year prior to programme start	14.8	14.7	0.2
Family member claiming sickness benefits one month before programme start	21.0	21.5	-1.2
Family member claiming sickness benefits 12 months before programme start	18.6	18.5	0.1
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.0	13.9	0.4
Conviction in year prior to programme start	2.9	3.2	-1.7
Caution in year prior to programme start	4.2	3.4	4.5***
Start month	633.7	633.6	1.7
Age at 19 Oct 2014 (years)	12.0	12.0	0.7
Age squared	163.6	163.4	0.2
Female	0.5	0.5	-1.1
Non-white	0.1	0.1	-1.8
Ethnicity missing	13.1	15.2	**-6.3***
Number of adults in family	1.6	1.6	3.2**
Number of children in family	2.7	2.7	1.3
Ratio of claimant count to vacancies in LA	4.5	4.6	-4.8***
Percentage of time absent from school one term prior to programme start	10.7	10.6	0.3
Percentage of time absent from school 3 terms prior to programme start	11.2	11.4	-1.1

	Treatment group	Matched comparison group	Mean standardised bias (%)
Total number of months child in need prior measurement date	4.0	3.8	4.4***
Free school meals in academic year prior to start of programme	0.6	0.6	-1.2
Statement of Special Educational Needs in academic year prior to start of programme	0.4	0.4	0.3
In care one month before programme start	1.8	1.9	-0.5
Comparison group	3,632		
Treatment group:			
Off support	25		
On support	13,834		
% off support	0.2		
Rubin's B	17.9		
Rubin's R	1.2		

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

Summary of findings from assumption testing

In conclusion, comparison group matches were found for the vast majority of the treatment group, indicating that the impact estimates would be likely to be representative of the impact of the Troubled Families programme on the full range of treated families contained in the data extract. In most cases treatment and comparison groups were well matched on observable characteristics, both in terms of overall comparability across the range of matching variables included and the proportion of either group with specific characteristics. This means that, for most outcomes, the assumption testing suggested that the PSM was likely to provide a reasonably unbiased estimate of impact, unless the data provided is in some way systematically biased towards areas or individuals where the programme had a greater or lesser chance of having a positive or negative impact. As noted above, there is no evidence to suggest that this is the case, and the most likely bias would be to overstate positive impacts.

The exceptions were exclusions from school, where outcomes could only be observed for 12 months after the start on the programme for a small subset of children, and attainment at each of the Key Stages, which could only be observed for a small number of those in the treatment and comparison groups. The impact of the programme on exclusions and educational attainment is not reported, because of the risk that the findings would not be robust.

The expanded comparison group, mentioned previously, was also used to assess the impact of the programme in the subset of areas where the order in which families started

on the programme was thought to be random (rather than systematically related to the extent of the problems that they faced), as the smaller sample sizes meant that it was not possible to obtain a robust estimate of impact for these areas with the smaller comparison group. The purpose of this analysis was to assess the sensitivity of the findings to excluding areas where families that started on the programme at an earlier point in time were likely to be different in terms of history compared with those who started later. The results for these areas are reported in Appendix H. Again, as some of those in the expanded comparison group potentially started on the programme 12 months after they were screened for eligibility, the analysis of areas where the start order was considered random focused on impact estimates observed 12 months after programme start, rather than than also at the 18-month point.

The balance between treatment and the matched comparison group was within acceptable limits in terms of Rubin's B and R for the versions of the analyses which used the expanded comparison group and excluded areas where families with a higher level of problems started on the programme before those with a lower level of need. However, in the latter case, it was necessary to use the expanded comparison group to achieve balancing on covariates. Families that received a more intensive version of the programme could be matched to the main comparison group and so this comparison group was used in preference to the expanded comparison group so that the estimate of the programme on outcomes 18 months after starting on the programme could be assessed.

Waiting list analysis

Description of methods

The waiting list analysis exploited the fact that whilst the Troubled Families programme began in April 2012, families started to receive support from the programme at different points in time after this. Families that started on the programme later were used as a comparison group for those who started sooner, with outcomes for the comparison group observed over a period prior to the family starting on the programme.

The analysis considers whether the programme had any effect on the length of time before individuals progressed away from an initial state. For example, if individuals were unemployed initially, the analysis assessed whether the programme reduced the percentage of individuals who were still unemployed at given points in time following their start on the programme. As with the propensity score matching, the basic approach involved estimating the counterfactual, i.e. the percentage of individuals in the treatment group who would be expected to still be unemployed at each point in time, and then comparing this with the actual percentage of those who started on the programme who were unemployed at fixed points following this start date. This method is known as a survival analysis.

Assumptions

Survival analysis assesses the impact of an intervention on the hazard rate, i.e. the probability of changing state, given that the change has not already occurred. The hazard rate reflects the fact that a change of state may be more or less likely at particular points in time. For example, the longer an individual spends on out-of-work benefits, the less likely they are to end the benefit spell. A survival analysis takes into account these known

patterns in the probability of exit to ensure that the counterfactual is a robust estimate of what could be expected to happen to programme participants if they were not treated.

Under a proportional hazards specification, the hazard rate comprises two elements: the baseline hazard, which reflects likely changes in the probability of leaving the initial state over time, and a systematic part, which reflects the impact on the hazard rate of individual and family characteristics. This includes the impact of participating in the programme at a particular point in time. In the current application, the analysis includes a variable which indicates when the family member started on the Trouble Families programme, so that it is possible to assess whether the hazard rate varies from this point onwards.

The validity of the approach depends on an assumption that when the family starts on the Troubled Families programme is not affected by an unobserved factor which affects the likelihood that they leave the initial state. If families that started on the programme at an earlier point in time were more, or less, likely to leave the initial state than those who started on the programme at a later date, the analysis would not provide a robust estimate of the impact of the programme. It is possible that families that started on the programme later may not have met the eligibility criteria at an earlier date. If they were not experiencing the same problems as families that were already participating in the programme, this might potentially bias downwards the estimated impact of the programme. It is difficult to assess whether this was likely to be the case without any means of identifying whether families met the eligibility criteria at different points in time. However, given that the criteria were measured at the family level, rather than for individuals, and families only became eligible for the programme if they met at least three different criteria, it seems likely that, even if families did not meet three or more criteria for the whole period from 1 April 2012 to the point when they started on the programme, they would be likely to meet at least some of them.

A further consideration is that, as participation in the Troubled Families programme is voluntary, there is a risk that less-motivated families, who are less likely to attain particular outcomes, may choose not to engage. This might bias the estimate of impact upwards, because whilst the comparison group might include less-motivated families, the treatment group would not. There are two reasons why this problem is unlikely to arise in the current application. Firstly, a recent paper by Biewen et al. (2014) suggests that it may be unnecessary to have information on attitudes where rich data are available on family and individual characteristics (of the type available in the national administrative datasets). These characteristics may be sufficient to capture differences in attitudes. Secondly, whilst some families may choose not to engage with the programme, any family which meets some of the criteria is likely to have some contact with agencies and the main emphasis in the programme is on local authorities improving the existing support offered to families, rather than placing many additional requirements on families. The incentive for families to choose not to engage is therefore likely to be far lower than for other types of voluntary programme which require individuals to maintain active participation over a long period of time.

Control variables

The waiting list analysis controlled for a similar set of area, family and individual characteristics as the PSM. The following control variables were common to the analysis for both adults and children:

- Individual demographic information: gender; age in years at 19 October 2014; ethnicity.

- Family characteristics: number of adults; number of children.

- Ratio of claimant count to vacancies in the local authority.

- Date of starting on the programme.

- Offending history in the year prior to programme start: whether convicted; whether cautioned.

In addition to the variables which were used as controls for both adults and children, the analysis for adults also took into account differences in outcomes related to the following characteristics:

- History of claiming out-of-work benefits prior to programme start: number of weeks claiming out-of-work benefits in the year prior to programme start; number of weeks claiming JSA in the year prior to programme start; number of weeks claiming incapacity benefits in the year prior to programme start.

- Number of weeks employed in the year prior to programme start.

- Offending history in the year prior to programme start: whether received a custodial sentence; whether received a community sentence.

- History of child truancy prior to programme start: maximum absence rate for any child in the family observed three terms prior to start; maximum absence rate for any child in the family observed one term prior to start.

- Number of months at least one child in family classified as in need in year prior to programme start.

- Whether any family member on free school meals in the academic year prior to programme start.

- Whether any family member with special educational needs in year prior to programme start.

- At least one child in care one month before programme start.

- Average score on the deprivation index for all children within family.

For children, the following control variables were substituted for those listed above:

- History of truancy prior to programme start: percentage of time absent from school in the term three terms prior to programme start; percentage of time absent from school in the term prior to programme start

- Number of months classified as in need in year prior to programme start

- Whether receiving free school meals in the academic year prior to programme start

- Whether classified as having special educational needs in year prior to programme start

- In care one month before programme start

- Family history of claiming benefits in year prior to programme start: maximum number of weeks any family member claiming out-of-work benefits; maximum number of weeks

any family member claiming JSA; maximum number of weeks any family member claiming incapacity benefits

- Maximum number of weeks any family member employed in the year prior to programme start

- Score on the deprivation index

Testing whether the assumptions were met

Whilst some local authorities indicated that the order in which families started on the programme was determined by their perceived level of need, as mentioned in the section on the programme data, the sample included areas in which the start order was closer to random. These included local authorities which said that families started on the programme as they were referred to it by agencies, as they were identified as eligible through systematic data analysis or in no particular order. It was therefore possible to exclude from the sample areas where the assumption that the timing of programme start was not related to outcomes may have been violated and look only at areas where the start order was random. The similarity between the treatment and comparison groups should be greater in the areas where the start order is random, so that they give a more accurate estimate of the impact of the programme. However, this may be offset by the loss of statistical power resulting from the smaller sample sizes available. Therefore, the analysis for the areas where the start order is random is compared with that for the wider sample in the chapter where the results are presented, to highlight any differences which emerge when the impact estimates are produced under conditions where the assumptions underlying the model are less likely to be violated.

Results from propensity score matching

Introduction

This chapter reports the main findings from the PSM for adults and children. The results presented here focus on the analysis using a kernel estimator, but results using alternative matching methods (radius, LLR and a reduced bandwidth kernel) are presented in Appendices E to G.

The chapter begins by estimating the impact of the programme on benefit receipt and employment for adults, 12 and 18 months after starting on the programme. It then moves on to assess impacts on participation in education and child welfare. Whilst these are considered as outcome measures for the purposes of assessing the impact of the programme, in practice, they are of greatest interest as intermediate outcomes, insofar as they affect other outcomes with long-term consequences for children and the taxpayer, such as educational attainment, workforce participation or offending. The chapter concludes by considering the estimated impact of the programme on offending by adults and children, for those who could be observed 12 and 18 months after starting on the programme.

As noted in the chapter on Methods, the treatment and comparison groups were similar on most observed characteristics following matching. This increases confidence that, provided the treatment and comparison groups are also well matched on unobserved characteristics, the impact estimates reported are robust, subject to the caveats reported elsewhere. There is no obvious reason to believe from the data that any such systematic differences exist, but given the data issues this possibility cannot be excluded (for details of the data cleaning process and additional data checks see Annex A). It is not possible to say with certainty how this might affect the reported results.

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. The first column reports the outcome following programme participation for the treatment group, whilst the second shows the estimated outcome for those who were similar in their propensity to be treated and to obtain a given outcome (the matched comparison group), but were not subject to the programme. The final column reports the difference between the two, i.e. the estimated impact of the programme, in percentage points.

The analysis considers whether, compared to a null hypothesis that the programme had no effect on each of the outcomes considered, the magnitude of any impact was large enough to say with a 95 per cent degree of certainty that the programme did make a difference. As elsewhere in the report, the text focuses on results which are statistically significant at conventionally-accepted levels, i.e. the five per cent level or better. However, it should be noted that given the large numbers of hypotheses tested, a certain number of "significant" results would be expected purely by chance.

Effects of programme on benefit receipt

The Troubled Families programme seeks to move adult family members who are claiming benefits towards work. This might be manifest through a reduction in the proportion of the treatment group claiming incapacity benefits, JSA or out-of-work benefits in general, or a

reduction in the number of weeks that adults claimed each of these benefits following their start on the programme. However, there might also be an increase in the proportion claiming JSA, or the amount of time spent on JSA, as those claiming other out-of-work benefits (such as incapacity benefits) become more work-ready. Therefore, whilst a reduction in claims for JSA, incapacity benenefits and out-of-work benefits in general would provide the strongest evidence that the Troubled Families programme was effective, a reduction in claims for incapacity benefits or an increase in claims for JSA might also be consistent with the programme having a positive effect.

Table 50 reports the effects of the programme on benefit receipt, measured by the proportion of adults on out-of-work benefits, JSA and incapacity benefits 12 or 18 months after starting on the programme, and the average number of weeks spent on each of the different types of benefit over the 12 or 18 months following programme start. Our analysis did not find any statistically significant impact on any of the outcomes considered over either time frame. This finding was consistent regardless of the estimator used (LLR, radius and reduced bandwidth for 12-month outcomes and LLR and radius only for 18-month outcomes). The results of a series of pre-programme tests indicated that treatment and comparison groups were well matched when considering outcomes in a period before either group started on the programme. These results are reported in Appendix I. This confirms that the two groups were similar in terms of their benefit history prior to any contact with the programme.

As mentioned previously, the analysis was repeated using an expanded comparison group which included families that started on the programme more than 12 months after screening. Impact estimates were also produced for the subset of areas where the order in which families started on the programme was thought unrelated to the extent of the problems that they faced. Both these sets of analyses confirmed the finding that the programme did not affect the likelihood that adults claimed out-of-work benefits, or specifically JSA, or incapacity benefits, 12 months after starting on the programme, or the number of weeks spent on benefits over this period. There was also no evidence that families that received a more intensive version of the programme experienced any benefit effects when these outcomes were considered over either a 12- or 18-month period.

Table 50 PSM Benefit impact estimates for adults, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12 month estimates					
Claiming out-of-work benefits 12 months after programme start	46.3	46.5	-0.3	-2.1	1.5
Number of weeks on out-of-work benefits in year following programme start	23.5	23.6	-0.1	-1.0	0.7
Claiming JSA 12 months after programme start	10.8	11.2	-0.3	-1.5	0.8
Number of weeks on JSA in year following programme start	10.8	11.2	-0.3	-1.5	0.8
Claiming incapacity benefits 12 months after programme start	18.2	18.7	-0.5	-1.8	0.7
Number of weeks on sickness benefits in year following programme start	8.7	9.0	-0.3	-0.9	0.3
% off support	0.1				
Panel B. 18 month estimates					
Claiming out-of-work benefits 18 months after programme start	45.3	45.3	0.0	-2.5	2.5
Number of weeks on out-of-work benefits in 18 months following programme start	33.8	34.6	-0.8	-2.6	0.9
Claiming JSA 18 months after programme start	10.9	11.6	-0.6	-2.2	1.0
Number of weeks on JSA in 18 months following programme start	8.6	9.0	-0.5	-1.4	0.5
Claiming incapacity benefits 18 months after programme start	18.6	19.3	-0.7	-2.5	1.1
Number of weeks on incapacity benefits in 18 months following programme start	12.8	13.8	-1.1*	-2.3	0.1
% off support	0.2				

Effects of programme on employment

A further aim of the Troubled Families programme is to move adults claiming out-of-work benefits into continuous employment. If the programme has a positive effect in this regard, an increase in the proportion of adults employed at particular points after starting on the programme should be evident. The number of weeks spent in employment following programme start should also rise following contact with the programme.

Table 51 reports the estimated impact of the Troubled Families programme on the likelihood that adult family members were employed 12 and 18 months after starting on the programme and the number of weeks that they spent in employment over a 12- or 18-month period following programme start. Again, the programme did not appear to affect either the likelihood that adults were employed 12 or 18 months after starting on the programme, or the amount of time that they were employed. This finding was largely consistent regardless of the matching estimator used, the only exception being that the treatment group appeared to be less likely to be employed 18 months after starting on the programme than would have been expected when using the LLR estimator. However, as outcomes could only be observed over an 18-month period for a subset of those observed for 12 months, it is uncertain whether this finding would hold if employment outcomes could be observed for all individuals observed at the 12-month point. Pre-programme tests indicated that treatment and comparison groups experienced similar 'outcomes' in the period before either group started on the programme.

Table 51 PSM Employment impact estimates for adults, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Employed 12 months after programme start	38.0	39.5	-1.5	-3.7	0.7
Number of weeks employed in year following programme start	17.5	18.0	-0.6	-1.6	0.5
% off support	0.1				
Panel B. 18-month impact					
Employed 18 months after programme start	40.7	43.6	-2.9*	-5.9	0.1
Number of weeks employed in 18 months following programme start	26.3	27.8	-1.5	-3.5	0.5
% off support	0.2				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 19,459 adults for whom outcomes observed for a minimum of 12 months following programme start and 11,807 adults for whom outcomes observed for a minimum of 18 months following programme start.

The analysis which used an expanded comparison group and also that which was based on a restricted sample of areas where the order in which families started on the programme was thought to be random also suggested that the programme had no impact on adult employment over the time periods observed. By contrast, negative employment effects emerged over a 12-month period for families that received an intensive version of the programme. This finding should be treated with caution however, given that it was based on a smaller subset of individuals than that used in the main analysis, and also disappeared over an 18-month period.

Effects of programme on educational participation

This section presents the estimates of the impact of the Troubled Families programme on the participation of children in schooling, measured by the average percentage of the time that a child was absent from school, observed three terms after starting on the programme, and whether the absence rate was 15 per cent or more within this same term. The programme sought to reduce the incidence of unauthorised absence, so whilst the measures used here included authorised absence, if the programme was effective in reducing overall absence rates, both absence measures should fall following contact with the programme. If this were the case, the programme could be considered to have had a positive effect on absence.

As Table 52 shows, our analysis shows that the programme did not have a statistically significant effect on either of these outcome measures. This was the case across all of the

matching estimators, although the pre-programme tests indicated that a greater percentage of children in the treatment group were absent from school at least 15 per cent of the time in the term immediately prior to starting on the programme when using the kernel, radius and LLR estimators. This suggests that the PSM was unable to fully correct for pre-programme differences in absence between the treatment and comparison groups when using the binary indicator of absenteeism. However, this difficulty did not affect the absence rate.

Table 52 PSM Absence impact estimates for children, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school three terms after programme start	9.6	9.9	-0.3	-1.2	0.7
Absent for 15% or more of time three terms after programme start	20.3	21.2	-0.9	-3.2	1.3
% off support	0.2				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 13,255 children for whom outcomes observed for a minimum of 12 months following programme start.

When using the expanded comparison group, the pre-programme differences in outcomes on the binary absence indicator between the treatment and comparison groups disappeared and the programme appeared to reduce both the absence rate (by 0.9 ppts, from 10.4 per cent to 9.5 per cent) and the likelihood that a child was absent for at least 15 per cent of the time three terms after programme start (by 2.5 ppts, from 22.5 per cent to 20.0 per cent). The fact that outcomes for the comparison group used in this analysis might be observed at a point in time when, in practice, their circumstances were deteriorating, thus triggering their start on the programme, may partly explain this finding. However, it is also possible that a positive impact from the programme became more apparent once pre-programme differences in absenteeism between the treatment and comparison groups were removed. A positive impact from the programme on both absence outcome measures was also evident when the analysis was restricted to areas where the order in which families started on the programme was not related to the severity of the problems that they faced, although again, this used the expanded comparison group. Again, no pre-programme differences in outcomes were observable when the analysis focused on areas where the order in which families started on the programme was random.

When families that received a more intensive version of the treatment were considered, there was no evidence that the programme had an impact on the absence rate, but again,

the proportion of the treatment group with an absence rate of 15 per cent or more in the term prior to starting on the programme was higher than for the comparison group.[38] As a result, it seems likely that the inability to obtain a good match between the treatment and comparison groups for this particular outcome measure reduced the likelihood of observing a statistically significant impact from the programme following participation.

Effects of programme on child welfare

This section turns to the impact of the programme on child welfare measured by the proportion of children classified as in need, or looked after, 12 months after starting on the programme. If focusing exclusively on the stated aim of the programme to reduce costs, it could be said to have had a positive impact if it reduced the proportion of children classified as in need, or who are looked after. However, in terms of child welfare, there may be greater ambiguity over whether reducing the likelihood of a child going into care or being classified as in need was incontrovertibly beneficial for the child. Therefore, whilst a positive impact from the programme (on costs and child welfare) might be expected to be manifest as a reduction in the percentage of children in need or in care, an increase might also be considered a positive outcome in terms of child welfare (but not costs).

The estimates show that the programme appeared to increase the percentage of children with CIN status and reduce the proportion in care. Whilst the finding that the programme apparently reduced the percentage of children in care was generally consistent across matching estimators, the findings were less clear-cut when considering the impact of the programme on CIN status. There was evidence that a greater proportion of children in the treatment group were classified as in need before they started on the programme compared to the comparison group, even after matching. This was the case when using both the kernel and radius matching estimators, but not LLR or reduced bandwidth kernel matching. For the latter two estimators, where treatment and comparison groups appeared better-matched in the pre-programme period, the programme did not appear to increase the percentage of children classified as in need at conventionally accepted levels of statistical significance.[39]

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[38] This was also the case when considering the period three terms before the family started on the programme.

[39] This was also the case when the impact estimates produced using the kernel and radius matching estimators were adjusted to take account of the observed pre-programme differences.

Table 53 PSM 12-month impact estimates for children, child welfare kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status 12 months after programme start	40.1	36.7	3.3**	0.7	5.9
In care 12 months after programme start	3.1	4.8	-1.7***	-2.6	-0.7
% off support	0.2				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,008 children for whom outcomes observed for a minimum of 12 months following programme start.

The analysis using the expanded comparison group encountered similar problems in matching, with children in the treatment group being more likely to be classified as in need in the month before starting on the programme than those in the comparison group, even after matching. However, when the analysis was restricted to the subset of areas where families were not thought to be put forward to start on the programme in any particular order, the programme did not have a statistically significant impact on any of the child welfare outcomes, including the percentage of children in care 12 months after programme start. This suggests that there were unresolved differences between the treatment and comparison groups in the main analysis which were lessened when more similar treatment and comparison groups were matched.

There was little evidence that the programme reduced the likelihood that children who received intensive support were in care 12 months after their family started to receive assistance. Also, the impact on whether a child was classified as in need was uncertain for those receiving high-intensity support, as there were differences between the treatment and comparison groups in the proportion who had CIN status prior to starting on the programme that could not be adequately addressed in the analysis.[40]

Effect of programme on offending

This section describes the estimated impact of the Troubled Families programme on the likelihood that adults and children offended after being offered support. The programme seeks to reduce the involvement of families in crime and so a positive impact would be apparent if there was a reduction in each of the outcomes considered here following contact with the programme. The treatment and comparison groups were well matched when considering 'outcomes' observed before the treatment group started on the

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[40] As with the analysis which used the kernel and radius matching estimators, when the impact estimates which used the expanded comparison group and for children who received more intensive support were adjusted to take account of the pre-programme differences between treatment and comparison groups, the impact estimates became statistically insignificant.

programme and there was little evidence that participation in the programme had an impact on adult offending when considering either six-month or 12-month offending rates. When using the kernel (Table 54) and radius matching estimators, the treatment group was more likely to commit an offence that resulted in a caution or conviction than the matched comparison group within the period 7-12 months after starting on the programme. However, this was not the case for the LLR or reduced bandwidth matching estimators and the negative impact of programme participation on this outcome disappeared when offending was considered over a longer period of time. This suggests that the finding that the programme increased the likelihood that the treatment group offended 7-12 months after starting on the programme was due to this outcome being observed at a point in time when the intervention was still taking effect, rather than because the programme actually increased adult offending.

Table 54 PSM Offending impact estimates for adults, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Any offence resulting in a caution or conviction 7-12 months after programme start	4.8	4.0	0.8**	0.0	1.6
Any offence resulting in a conviction 7-12 months following programme start	4.0	3.3	0.7*	0.0	1.4
Any offence resulting in a caution 7-12 months after programme start	1.0	0.9	0.1	-0.3	0.5
Any offence resulting in a custodial sentence 7-12 months after programme start	0.8	0.7	0.1	-0.3	0.4
Any offence resulting in a community sentence 7-12 months following programme start	1.4	1.7	-0.3	-0.8	0.1
% off support	0.1				
Panel B. 18-month estimates					
Any offence resulting in a caution or conviction 7-18 months after programme start	8.7	7.8	1.0	-0.4	2.4
Any offence resulting in a	7.1	6.2	0.9	-0.4	2.1

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
conviction 7-18 months after programme start					
Any offence resulting in a caution 7-18 months after programme start	2.2	2.3	0.0	-0.8	0.8
Any offence resulting in a custodial sentence 7-18 months after programme start	1.7	1.5	0.2	-0.4	0.8
Any offence resulting in a community sentence 7-18 months after programme start	2.7	3.2	-0.5	-1.4	0.4
% off support	0.2				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 25,515 adults for whom outcomes observed for a minimum of 12 months following programme start and 15,373 adults for whom outcomes observed for a minimum of 18 months following programme start.

When the analysis was repeated using the expanded comparison group, the negative impact on cautions and convictions from the programme was not evident and adults were less likely to commit an offence which resulted in a community sentence 7-12 months following the start on the programme (a reduction of 0.4 ppts, from 1.9 per cent to 1.5 per cent). This may be explained by 'outcomes' for the expanded comparison group being observed closer to the point in time when they started on the programme. As previously noted, this could be expected to increase the likelihood of observing a positive impact from the programme.

There were no signs that the Troubled Families programme had any impact on adult offending within the subset of areas where families started on the programme as they were identified as eligible, rather than where they were treated in order of need. However, those who received a more intensive version of the programme appeared to experience the same negative impact on the likelihood of committing an offence that resulted in a caution or conviction as the wider sample of adults who could be observed over the 12-month period following their start on the programme. Again, this negative effect was not statistically significant when the offending rate was calculated over a 12-month period, rather than a six-month period. Table 55 reports impact estimates for the same set of offending outcomes for children. These are similar to those for adults, in that negative impacts from the programme, when offending was measured 7-12 months after starting on the programme, largely disappeared when outcomes were measured over a 12-month period (7-18 months after programme start). However, negative impacts were evident across a wider range of the six-month offending outcomes.

Table 55 PSM offending impact estimates for children, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Caution or conviction in year following programme start	3.5	2.6	0.9***	0.3	1.5
Conviction in year following programme start	2.4	1.7	0.7***	0.3	1.2
Caution in year following programme start	1.4	1.1	0.3	-0.2	0.7
Custodial sentence in year following programme start	0.2	0.1	0.1**	0.0	0.2
Community sentence in year following programme start	1.8	1.3	0.5**	0.1	0.9
% off support	0.1				
Panel B. 18-month estimates					
Caution or conviction in year following programme start	5.8	5.7	0.1	-1.0	1.2
Conviction in year following programme start	3.9	3.2	0.7	-0.2	1.5
Caution in year following programme start	2.5	3.0	-0.5	-1.3	0.3
Custodial sentence in year following programme start	0.4	0.4	-0.1	-0.3	0.2
Community sentence in year following programme start	3.0	2.2	0.8*	0.0	1.6
% off support	0.2				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 25,977 children for whom outcomes observed for a minimum of 12 months following programme start and 13,859 children for whom outcomes observed for a minimum of 18 months following programme start.

Whilst the finding of negative offending effects when looking at the six-month offending rate held regardless of the matching estimator used, there were also signs from the pre-programme tests that differences in offending prior to starting on the programme were not completely removed by the PSM.[41] Only the reduced bandwidth kernel matching estimator was able to take out the effect of these pre-programme differences, but as 40.2 per cent of

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[41] When the impact estimates produced using the kernel, radius and LLR matching estimators were adjusted to take account of the pre-programme differences between the treatment and comparison groups, the resulting impact estimates were no longer statistically significant.

the treatment group could not be matched using this estimator, the results were unlikely to be representative of the impact of the programme on the full sample of participants.

When the comparison group was drawn from the expanded sample of potential comparators, including those who started on the programme more than 12 months after screening, the negative association between programme participation and offending became less pronounced. Only the likelihood that children committed an offence 7-12 months after the programme start which resulted in a conviction remained higher in the treatment group than in the matched comparison group.

There was no evidence that the Troubled Families programme had any impact on child offending when the analysis was restricted to the subset of areas where families were thought to start on the programme in a fairly random order. Offending was greater amongst families that received more intensive support from the programme than in the matched comparison group, but in some cases this appeared to be due to difficulties adjusting for pre-programme differences between the two groups.[42]

Summary

This chapter assessed the impact of the Troubled Families programme on individual outcomes measured 12 and, where feasible, 18 months after families started on the programme. Results were only reported where the treatment and comparison groups were well matched on observable characteristics. Therefore, the impact estimates were likely to be reliable, provided individuals were also well matched on unobserved characteristics. There is no obvious reason to believe from the data that any such systematic differences exist (for details of the data cleaning process and additional data checks see Annex A), but given the data issues this possibility cannot be excluded. It is not possible to say with certainty how this might affect the reported results.

Families that received a more intensive version of the Troubled Families programme generally experienced similar impacts to the wider sample of families that received support. Table 56 provides a summary of findings for each of the outcomes considered in the PSM analysis.

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[42] Again, the negative impact estimates lost statistical significance once they were adjusted for observed pre-programme differences.

Table 56 Summary of findings

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Claiming out-of-work benefits 12 months after programme start	Kernel matching	46.3	46.5	-0.3	-2.1	1.5
	Radius matching	46.3	46.5	-0.2	-2.0	1.6
	LLR matching	46.3	46.9	-0.7	-2.6	1.3
	Reduced bandwidth kernel matching	44.9	46.2	-1.3	-3.3	0.8
	Intensive treatment	47.1	47.0	0.1	-2.1	2.3
	Expanded comparison group	44.7	45.2	-0.5	-1.8	0.8
	Areas where start order random	46.9	46.6	0.3	-1.3	2.0
Number of weeks on out-of-work benefits in year following programme start	Kernel matching	23.5	23.6	-0.1	-1.0	0.7
	Radius matching	23.5	23.6	-0.1	-1.0	0.7
	LLR matching	23.5	23.8	-0.3	-1.2	0.6
	Reduced bandwidth kernel matching	22.9	23.5	-0.6	-1.6	0.4
	Intensive treatment	23.9	23.8	0.0	-1.0	1.1
	Expanded comparison group	22.6	22.7	0.0	-0.6	0.6
	Areas where start order random	23.7	23.5	0.2	-0.6	1.0
Claiming JSA 12 months after programme start	Kernel matching	10.8	11.2	-0.3	-1.5	0.8
	Radius matching	10.8	11.2	-0.3	-1.4	0.8
	LLR matching	10.8	11.3	-0.4	-1.6	0.8
	Reduced bandwidth kernel matching	10.5	11.3	-0.8	-2.1	0.5
	Intensive treatment	11.0	11.1	-0.1	-1.5	1.3
	Expanded comparison group	10.6	11.0	-0.4	-1.2	0.4
	Areas where start order random	12.0	12.2	-0.2	-1.3	0.9
Number of weeks on JSA in year following programme start	Kernel matching	5.6	5.7	-0.1	-0.6	0.4
	Radius matching	5.6	5.7	-0.1	-0.6	0.4
	LLR matching	5.6	5.8	-0.2	-0.7	0.3
	Reduced bandwidth kernel matching	5.5	5.8	-0.3	-0.8	0.3
	Intensive treatment	5.6	5.7	0.0	-0.6	0.6
	Expanded comparison group	5.5	5.5	0.0	-0.4	0.3
	Areas where start order random	6.1	6.2	-0.1	-0.6	0.4

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Claiming incapacity benefits 12 months after programme start	Kernel matching	18.2	18.7	-0.5	-1.8	0.7
	Radius matching	18.2	18.7	-0.5	-1.7	0.8
	LLR matching	18.2	19.1	-0.9	-2.2	0.4
	Reduced bandwidth kernel matching	17.7	18.5	-0.8	-2.3	0.7
	Intensive treatment	18.3	19.6	-1.3	-2.9	0.3
	Expanded comparison group	17.5	17.6	-0.1	-1.0	0.8
	Areas where start order random	17.9	17.7	0.1	-1.1	1.4
Number of weeks on sickness benefits in year following programme start	Kernel matching	8.7	9.0	-0.3	-0.9	0.3
	Radius matching	8.7	9.0	-0.3	-0.9	0.3
	LLR matching	8.7	9.1	-0.4	-1.1	0.2
	Reduced bandwidth kernel matching	8.5	8.9	-0.4	-1.1	0.3
	Intensive treatment	8.7	9.3	-0.6	-1.3	0.2
	Expanded comparison group	8.3	8.4	-0.1	-0.5	0.4
	Areas where start order random	8.5	8.4	0.1	-0.5	0.7
Claiming out-of-work benefits 18 months after programme start	Kernel matching	45.3	45.3	0.0	-2.5	2.5
	Radius matching	45.3	45.3	0.0	-2.5	2.5
	LLR matching	45.3	45.6	-0.3	-3.0	2.4
	Intensive treatment	46.8	47.0	-0.2	-3.3	2.9
Number of weeks on out-of-work benefits in 18 months following programme start	Kernel matching	33.8	34.6	-0.8	-2.6	0.9
	Radius matching	33.8	34.6	-0.8	-2.5	1.0
	LLR matching	33.8	34.9	-1.1	-2.9	0.7
	Intensive treatment	35.2	36.1	-0.9	-3.1	1.2
Claiming JSA 18 months after programme start	Kernel matching	10.9	11.6	-0.6	-2.2	1.0
	Radius matching	10.9	11.5	-0.6	-2.2	1.0
	LLR matching	10.9	11.8	-0.8	-2.5	0.9
	Intensive treatment	10.6	11.9	-1.3	-3.3	0.7
Number of weeks on JSA in 18 months following programme start	Kernel matching	8.6	9.0	-0.5	-1.4	0.5
	Radius matching	8.6	9.0	-0.4	-1.4	0.5
	LLR matching	8.6	9.3	-0.7	-1.7	0.3
	Intensive treatment	8.7	9.2	-0.5	-1.7	0.7

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Claiming incapacity benefits 18 months after programme start	Kernel matching	18.6	19.3	-0.7	-2.5	1.1
	Radius matching	18.6	19.3	-0.7	-2.5	1.1
	LLR matching	18.6	19.5	-0.9	-2.8	1.0
	Intensive treatment	19.5	20.1	-0.6	-2.9	1.6
Number of weeks on incapacity benefits in 18 months following programme start	Kernel matching	12.8	13.8	-1.1*	-2.3	0.1
	Radius matching	12.8	13.8	-1.1*	-2.3	0.2
	LLR matching	12.8	13.9	-1.1*	-2.4	0.1
	Intensive treatment	13.2	14.5	-1.4*	-2.9	0.2
Employed 12 months after programme start	Kernel matching	38.0	39.5	-1.5	-3.7	0.7
	Radius matching	38.0	39.5	-1.5	-3.7	0.7
	LLR matching	38.0	39.9	-1.9	-4.3	0.4
	Reduced bandwidth kernel matching	38.2	38.8	-0.6	-3.1	1.9
	Intensive treatment	36.6	39.3	-2.7**	-5.3	0.0
	Expanded comparison group	36.4	36.8	-0.4	-1.8	1.0
	Areas where start order random	37.9	38.7	-0.8	-2.5	1.0
Number of weeks employed in year following programme start	Kernel matching	17.5	18.0	-0.6	-1.6	0.5
	Radius matching	17.5	18.0	-0.6	-1.6	0.5
	LLR matching	17.5	18.2	-0.7	-1.8	0.4
	Reduced bandwidth kernel matching	17.7	17.6	0.0	-1.2	1.2
	Intensive treatment	16.9	17.9	-1.0	-2.2	0.3
	Expanded comparison group	16.7	16.6	0.1	-0.5	0.8
	Areas where start order random	17.4	17.4	0.0	-0.8	0.8
Employed 18 months after programme start	Kernel matching	40.7	43.6	-2.9*	-5.9	0.1
	Radius matching	40.7	43.5	-2.8*	-5.8	0.1
	LLR matching	40.7	44.0	-3.3**	-6.5	-0.2
	Intensive treatment	38.6	42.0	-3.4*	-7.1	0.3
Number of weeks employed in 18 months following programme start	Kernel matching	26.3	27.8	-1.5	-3.5	0.5
	Radius matching	26.3	27.8	-1.5	-3.5	0.5
	LLR matching	26.3	27.8	-1.5	-3.7	0.6
	Intensive treatment	24.7	26.6	-1.9	-4.4	0.6

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Percentage of time absent from school three terms after programme start	Kernel matching	9.6	9.9	-0.3	-1.2	0.7
	Radius matching	9.6	9.9	-0.3	-1.2	0.7
	LLR matching	9.6	9.6	0.0	-1.1	1.0
	Reduced bandwidth kernel matching	9.7	10.1	-0.4	-1.5	0.7
	Intensive treatment	8.8	8.6	0.3	-0.9	1.4
	Expanded comparison group	9.5	10.4	-0.9***	-1.4	-0.3
	Areas where start order random	9.3	10.1	-0.8**	-1.5	-0.1
Absent for 15% or more of time three terms after programme start	Kernel matching	20.3	21.2	-0.9	-3.2	1.3
	Radius matching	20.3	21.2	-1.0	-3.2	1.3
	LLR matching	20.3	20.6	-0.3	-2.7	2.1
	Reduced bandwidth kernel matching	20.4	22.0	-1.6	-4.3	1.0
	Intensive treatment	18.4	17.9	0.5	-2.1	3.2
	Expanded comparison group	20.0	22.5	-2.5***	-3.9	-1.1
	Areas where start order random	19.3	22.3	-3.0***	-4.7	-1.3
CIN status 12 months after programme start	Kernel matching	40.1	36.7	(3.3**)	0.7	5.9
	Radius matching	40.1	36.7	(3.4***)	0.8	6.0
	LLR matching	40.1	37.4	2.6*	-0.1	5.4
	Reduced bandwidth kernel matching	37.8	36.5	1.3	-2.0	4.5
	Intensive treatment	46.0	38.8	(7.3***)	4.1	10.4
	Expanded comparison group	39.8	38.0	(1.8**)	0.2	3.4
	Areas where start order random	38.5	37.2	1.2	-0.6	3.1
In care 12 months after programme start	Kernel matching	3.1	4.8	-1.7***	-2.6	-0.7
	Radius matching	3.1	4.7	-1.7***	-2.6	-0.7
	LLR matching	3.1	5.0	-1.9***	-2.9	-0.8
	Reduced bandwidth kernel matching	2.8	4.6	-1.8***	-3.0	-0.6
	Intensive treatment	4.3	5.4	-1.1*	-2.3	0.1
	Expanded comparison group	2.9	2.8	0.2	-0.4	0.7
	Areas where start order random	2.8	3.1	-0.2	-0.9	0.4

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Any offence resulting in a caution or conviction 7-12 months after programme start - adults	Kernel matching	4.8	4.0	0.8**	0.0	1.6
	Radius matching	4.8	4.0	0.8**	0.0	1.6
	LLR matching	4.8	4.1	0.7	-0.1	1.5
	Reduced bandwidth kernel matching	4.4	4.2	0.2	-0.7	1.1
	Intensive treatment	5.7	4.4	1.3***	0.3	2.3
	Expanded comparison group	4.8	4.7	0.0	-0.5	0.6
	Areas where start order random	5.1	4.9	0.2	-0.5	0.9
Any offence resulting in a conviction 7-12 months following programme start - adults	Kernel matching	4.0	3.3	0.7*	0.0	1.4
	Radius matching	4.0	3.3	0.7*	0.0	1.4
	LLR matching	4.0	3.4	0.6	-0.2	1.4
	Reduced bandwidth kernel matching	3.7	3.5	0.2	-0.6	1.0
	Intensive treatment	4.7	3.7	1.0**	0.1	1.9
	Expanded comparison group	3.9	3.9	0.0	-0.5	0.5
	Areas where start order random	4.3	4.2	0.1	-0.5	0.8
Any offence resulting in a caution 7-12 months after programme start - adults	Kernel matching	1.0	0.9	0.1	-0.3	0.5
	Radius matching	1.0	0.9	0.1	-0.3	0.5
	LLR matching	1.0	0.9	0.1	-0.3	0.5
	Reduced bandwidth kernel matching	0.9	1.0	-0.1	-0.5	0.3
	Intensive treatment	1.2	0.9	0.2	-0.2	0.7
	Expanded comparison group	1.0	1.1	-0.1	-0.3	0.2
	Areas where start order random	1.0	1.0	0.0	-0.3	0.3
Any offence resulting in a custodial sentence 7-12 months after programme start - adults	Kernel matching	0.8	0.7	0.1	-0.3	0.4
	Radius matching	0.8	0.7	0.1	-0.2	0.4
	LLR matching	0.8	0.8	0.0	-0.3	0.4
	Reduced bandwidth kernel matching	0.8	0.6	0.2	-0.2	0.5
	Intensive treatment	1.0	0.9	0.2	-0.3	0.6
	Expanded comparison group	0.8	0.8	0.0	-0.3	0.2
	Areas where start order random	0.9	1.0	-0.1	-0.4	0.3

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Any offence resulting in a community sentence 7-12 months after programme start - adults	Kernel matching	1.4	1.7	-0.3	-0.8	0.1
	Radius matching	1.4	1.7	-0.3	-0.8	0.2
	LLR matching	1.4	1.8	-0.4	-0.9	0.1
	Reduced bandwidth kernel matching	1.3	1.8	-0.5**	-1.1	0.0
	Intensive treatment	1.6	2.1	-0.4	-1.0	0.2
	Expanded comparison group	1.5	1.9	-0.4**	-0.7	-0.1
	Areas where start order random	1.5	1.9	-0.3	-0.8	0.1
Any offence resulting in a caution or conviction 7-18 months after programme start - adults	Kernel matching	8.7	7.8	1.0	-0.4	2.4
	Radius matching	8.7	7.7	1.0	-0.4	2.4
	LLR matching	8.7	8.2	0.5	-1.0	2.0
	Intensive treatment	10.2	8.5	1.8*	0.0	3.5
Any offence resulting in a conviction 7-18 months after programme start - adults	Kernel matching	7.1	6.2	0.9	-0.4	2.1
	Radius matching	7.1	6.2	0.9	-0.4	2.2
	LLR matching	7.1	6.5	0.5	-0.8	1.9
	Intensive treatment	8.3	7.0	1.3	-0.3	2.9
Any offence resulting in a caution 7-18 months after programme start - adults	Kernel matching	2.2	2.3	0.0	-0.8	0.8
	Radius matching	2.2	2.3	0.0	-0.8	0.8
	LLR matching	2.2	2.5	-0.2	-1.1	0.6
	Intensive treatment	2.6	2.5	0.2	-0.8	1.1
Any offence resulting in a custodial sentence 7-18 months after programme start - adults	Kernel matching	1.7	1.5	0.2	-0.4	0.8
	Radius matching	1.7	1.5	0.2	-0.4	0.8
	LLR matching	1.7	1.8	-0.1	-0.8	0.5
	Intensive treatment	2.1	2.2	0.0	-0.8	0.8
Any offence resulting in a community sentence 7-18 months after programme start - adults	Kernel matching	2.7	3.2	-0.5	-1.4	0.4
	Radius matching	2.7	3.2	-0.5	-1.3	0.4
	LLR matching	2.7	3.5	-0.8*	-1.7	0.1
	Intensive treatment	3.1	3.7	-0.6	-1.7	0.5

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Caution or conviction 7-12 months after programme start - children	Kernel matching	3.5	2.6	(0.9***)	0.3	1.5
	Radius matching	3.5	2.6	(0.9***)	0.3	1.5
	LLR matching	3.5	2.8	(0.7**)	0.1	1.4
	Reduced bandwidth kernel matching	3.2	2.8	0.5	-0.2	1.1
	Intensive treatment	4.4	2.7	(1.6***)	0.9	2.4
	Expanded comparison group	3.6	3.2	(0.4*)	0.0	0.9
	Areas where start order random	3.5	3.3	0.2	-0.3	0.8
Conviction 7-12 months after programme start - children	Kernel matching	2.4	1.7	0.7***	0.3	1.2
	Radius matching	2.4	1.7	0.7***	0.3	1.2
	LLR matching	2.4	1.8	0.6**	0.1	1.1
	Reduced bandwidth kernel matching	2.1	1.7	0.5*	0.0	1.0
	Intensive treatment	3.2	1.7	1.5***	0.9	2.1
	Expanded comparison group	2.4	2.0	0.4**	0.0	0.7
	Areas where start order random	2.5	2.2	0.3	-0.2	0.7
Caution 7-12 months after programme start - children	Kernel matching	1.4	1.1	0.3	-0.2	0.7
	Radius matching	1.4	1.1	0.2	-0.2	0.7
	LLR matching	1.4	1.2	0.2	-0.2	0.7
	Reduced bandwidth kernel matching	1.3	1.2	0.1	-0.3	0.5
	Intensive treatment	1.4	1.1	0.3	-0.2	0.8
	Expanded comparison group	1.4	1.3	0.1	-0.2	0.4
	Areas where start order random	1.3	1.3	0.0	-0.3	0.4
Custodial sentence 7-12 months after programme start - children	Kernel matching	0.2	0.1	(0.1**)	0.0	0.2
	Radius matching	0.2	0.1	0.1**	0.0	0.2
	LLR matching	0.2	0.1	0.1**	0.0	0.2
	Reduced bandwidth kernel matching	0.2	0.1	0.1	-0.1	0.2
	Intensive treatment	0.3	0.1	(0.2***)	0.1	0.4
	Expanded comparison group	0.2	0.3	-0.1	-0.2	0.0
	Areas where start order random	0.3	0.4	-0.1	-0.3	0.0

Outcome	Method	Treatment group %	Matched comparison group %	Impact (ppts)	Lower bound (ppts)	Upper bound (ppts)
Community sentence 7-12 months after programme start - children	Kernel matching	1.8	1.3	0.5**	0.1	0.9
	Radius matching	1.8	1.3	0.5**	0.1	0.9
	LLR matching	1.8	1.3	0.5**	0.0	0.9
	Reduced bandwidth kernel matching	1.6	1.2	0.4	-0.1	0.9
	Intensive treatment	2.4	1.2	1.1***	0.6	1.7
	Expanded comparison group	1.8	1.5	0.3*	0.0	0.6
	Areas where start order random	1.8	1.6	0.2	-0.3	0.6
Caution or conviction 7-18 months after programme start - children	Kernel matching	5.8	5.7	0.1	-1.0	1.2
	Radius matching	5.8	5.7	0.1	-1.0	1.2
	LLR matching	5.8	6.2	-0.5	-1.7	0.7
	Intensive treatment	6.7	5.5	(1.2*)	-0.2	2.5
Conviction 7-18 months after programme start - children	Kernel matching	3.9	3.2	0.7	-0.2	1.5
	Radius matching	3.9	3.2	0.7	-0.2	1.5
	LLR matching	3.9	3.6	0.3	-0.6	1.2
	Intensive treatment	4.8	3.1	1.7***	0.6	2.8
Caution 7-18 months after programme start - children	Kernel matching	2.5	3.0	-0.5	-1.3	0.3
	Radius matching	2.5	3.0	-0.5	-1.3	0.3
	LLR matching	2.5	3.3	(-0.7*)	-1.6	0.1
	Intensive treatment	2.5	2.9	-0.4	-1.3	0.6
Custodial sentence 7-18 months after programme start - children	Kernel matching	0.4	0.4	-0.1	-0.3	0.2
	Radius matching	0.4	0.4	-0.1	-0.3	0.2
	LLR matching	0.4	0.4	-0.1	-0.4	0.2
	Intensive treatment	0.5	0.4	0.1	-0.2	0.5
Community sentence 7-18 months after programme start - children	Kernel matching	3.0	2.2	0.8*	0.0	1.6
	Radius matching	3.0	2.2	0.8*	0.0	1.6
	LLR matching	3.0	2.3	0.7	-0.2	1.5
	Intensive treatment	3.9	1.9	2.0***	1.0	3.0

Notes: Bases and percentage off support appear in tables elsewhere in this report and the appendices. Brackets around impact estimates which were statistically significant at the 5 per cent level or better indicate that the pre-programme tests was failed and therefore the estimate of impact is likely to be

biased. : ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

There was no evidence from our analysis that the Troubled Families programme had any effect on benefit receipt or employment for adults who participated in the programme in the period over which outcomes could be observed (12 months, or 18 months for a smaller subset of families). Any clear signs that the programme reduced absence from school were limited to the analysis where the comparison group included those who waited at least 12 months between being identified as eligible for the programme and actually starting to receive treatment. As outcomes for this comparison group may well be observed at a point in time when they are actually close to starting on the programme, it is uncertain whether the apparent reduction in absenteeism was due to the programme, or the choice of a comparison group, which might be expected to inflate the estimated impact of the programme.

The likelihood that a child was in care one year after their family started on the programme was reduced by around 1.7 ppts as a result of contact with the programme. As less than five per cent of children within the sample of families eligible for the programme were in care, this appeared to indicate a sizeable positive effect from the programme in terms of reducing costs. However, further analysis suggested that this finding was partly due to areas prioritizing support for familes with children in care over other families, as it was not evident when the treatment and comparison groups started on the programme in random order. Taking the analysis of the impact of the programme on CIN status as a whole, the likelihood that a child was classified as in need did not appear to be strongly related to whether the family participated in the programme.

The Troubled Families programme did not appear to affect adult offending when the outcome measures were observed over a period of time which sought to remove the impact of any offending before programme participation had fully taken effect. For children, there was some evidence that programme participation was associated with an increased risk of offending, but this also reduced as the time-period over which offending was considered increased. It is important to note that as only a very small proportion of children receive cautions or convictions, it is more challenging to obtain a well-matched comparison group when estimating the impact of the programme on child offending. This may partly explain why impact estimates were counterintuitive for this group.

Overall, across a wide range of outcomes, we were unable to find consistent evidence that the Troubled Families programme had any systematic significant impact, positive or negative. The vast majority of impact estimates were statistically insignificant, with a very small number of positive or negative results. However, given the quite major limitations imposed by data quality, our results cannot be taken as conclusive evidence that the programme had no impact at all, and it is important to consider this result in conjunction with the other evidence contained in the evaluation as a whole.

Results from waiting list analysis

Introduction

This chapter presents the results from the waiting list analysis in relation to the effect of the Troubled Families programme on benefit receipt, employment, child welfare and offending. It begins by describing how the method influences the outcomes that can be examined. It then explains the presentation of results and discusses the findings. The chapter concludes with a summary of the main findings.

The waiting list analysis estimates the impact of the Troubled Families programme on participants' exit from, or entry to, a particular state. This limits the analysis to outcomes where it is possible to identify the amount of time spent on a spell of a certain type and the timing of exit. This means that a more limited range of outcomes are considered in this chapter compared with the chapter which reported the findings from the PSM.

The number of cases on which the analyses were based were generally smaller than those available for the PSM as only individuals who were in the state of interest at April 2012 were included in the waiting list analysis. For example, the analysis of the impact of the Troubled Families programme on the receipt of out-of-work benefits only included those who were claiming these benefits when the programme started. For each outcome, results are presented separately for the subset of individuals for whom the measure could be observed for at least 12 months and at least 18 months after 1 April 2012. The exception to this is CIN status where it was only possible to produce 12-month impact estimates, due to limited data availability.

Where outcomes could be observed for at least 12 months, estimated impacts are shown for three, six and nine months from the date when the family member started on the programme. For example, when looking at those who started on the programme within three months of its introduction, i.e. in or before June 2012, estimated impacts are available for each of the three time points. For the comparison group which started between July and September 2012, estimates are available for three and six months after programme start. Correspondingly, for those who started between October and December 2012, estimates are available for three months after programme start.

For those outcomes that can be observed for at least 18 months, impact estimates are shown at three, six, nine, 12 and 15 months after programme start. Again the time period covered by the results varies depending on when family members started on the programme.

The estimated effect of the Trouble Families programme is calculated as the difference between the predicted survival rate if the family member had not started on the programme and the actual survival rate for an individual who started on the programme at a particular point in time. For example, in Table 57, 76.6 per cent of those who were on out-of-work benefits in April 2012 and who started on the programme between April and June 2012 were expected to still be on benefits three months later had they not received any assistance from the programme. However, in practice, 80.4 per cent of those who started on the programme within the first three months of roll-out were actually still on out-of-work benefits three months after they started to receive support. As a result, the estimated impact of the programme was to actually increase the percentage of family members who were claiming out-of-work benefits by 3.8 percentage points.

Though this result suggests that a greater proportion of family members who participated in the Troubled Families programme remained on out-of-work benefits than those in the comparison group, none of the impact estimates from the waiting list analysis were statistically significant and so the magnitude of the effects relative to the sample sizes and the variation within the treatment and comparison groups was too small for the effects of the programme to be clear. Whilst it is useful to explore the extent to which alternative estimation techniques produce similar findings, the waiting list analysis is more limited in the extent to which it takes account of differences in characteristics between the treatment and comparison groups.

Effects of programme on benefit receipt

Table 57 to Table 62 show the estimated impact of the programme on claims for out-of-work benefits, JSA and incapacity benefits. In this section the focus is on whether contact with the programme reduced benefit receipt amongst those who were claiming benefits initially. Whilst reducing the receipt of out-of-work benefits as a whole might be considered a positive outcome, in that it would reduce costs, if the programme reduced JSA receipt but increased receipt of incapacity benefits, this would imply that families were moving further away from work, rather than closer to it, and would therefore suggest that the impact of the programme was negative.

The estimates indicate that the treatment group were less likely to leave benefits than the comparison group, particularly when considering JSA. However, the fact that there are sizeable differences in the percentage of the treatment and comparison groups on each of the benefits even at an early stage in programme participation suggests that there are differences between the two groups in the exit rate from benefits that are not adequately controlled for in the analysis. Furthermore, none of the impact estimates were statistically significant for the benefits examined and so the programme did not have a discernible effect on the likelihood that those claiming benefits at 1 April 2012 left benefits over the period of time considered in the analysis. Similar findings emerged when the analysis was restricted to the subset of areas where families were thought to join the programme in a random order.

Table 57 Waiting list analysis adults - 12-month impact estimates for out-of-work benefits

| | Percentage still on out-of-work benefits after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	80.4	76.6	3.8	74.3	70.7	3.6	68.3	64.8	3.5
Sep-12	74.3	70.8	3.5	69.5	66.1	3.3			
Dec-12	67.6	64.0	3.6						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,949 adults who were observed for at least 12 months.

Table 58 Waiting list analysis adults - 18-month impact estimates for out-of-work benefits

| | | | | | | | | | | | | | Percentage still on out-of-work benefits after: | | |
| | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	80.1	76.3	3.8	74.0	70.5	3.6	68.1	64.6	3.5	63.6	60.2	3.4	59.5	56.2	3.3
Sep-12	74.1	70.6	3.6	69.4	66.0	3.3	64.8	61.6	3.2	61.1	58.1	3.1			
Dec-12	67.8	64.3	3.5	62.7	59.3	3.5	59.2	55.9	3.3						
Apr-13	66.7	63.7	3.0	63.9	61.2	2.7									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 7,342 adults who were observed for at least 18 months.

Table 59 Waiting list analysis adults - 12-month impact estimates for JSA

| | Percentage still on JSA after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	64.8	56.7	8.1	53.4	45.3	8.1	42.7	34.3	8.4
Sep-12	53.4	45.3	8.0	42.4	34.3	8.1			
Dec-12	46.9	39.5	7.4						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 3,176 adults who were observed for at least 12 months.

Table 60 Waiting list analysis adults - 18-month impact estimates for JSA

													Percentage still on JSA after:		
	3 months			6 months			9 months			12 months			15 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	65.5	57.4	8.1	54.2	46.2	8.0	43.5	35.0	8.4	35.3	26.6	8.6	28.8	20.1	8.6
Sep-12	54.5	46.6	7.9	44.9	37.1	7.8	35.4	27.1	8.3	28.1	19.5	8.7			
Dec-12	49.6	42.7	7.0	41.3	34.2	7.1	34.4	27.0	7.3						
Apr-13	46.2	39.9	6.3	41.6	35.7	5.9									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 1,847 adults who were observed for at least 18 months.

Table 61 Waiting list analysis adults - 12-month impact estimates for incapacity benefits

				Percentage still on incapacity benefits after:					
	3 months			6 months			9 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	83.7	80.7	3.1	76.5	73.4	3.1	69.9	66.7	3.2
Sep-12	78.0	75.0	2.9	72.2	69.3	2.9			
Dec-12	68.0	64.6	3.4						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 4,121 adults who were observed for at least 12 months.

Table 62 Waiting list analysis adults - 18-month impact estimates for incapacity benefits

Start on		3 months			6 months			9 months			12 months			15 months	
programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	82.7	79.5	3.2	75.5	72.3	3.2	69.1	66.0	3.2	63.8	60.7	3.1	58.6	55.6	3.1
Sep-12	77.0	74.0	2.9	71.4	68.5	2.9	66.4	63.6	2.8	61.3	58.5	2.8			
Dec-12	68.4	65.3	3.2	62.4	59.2	3.2	57.5	54.4	3.1						
Apr-13	66.9	64.2	2.7	62.5	59.8	2.7									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 2,421 adults who were observed for at least 18 months.

Effects of programme on employment

The estimated impact of the Troubled Families programme on the likelihood of entering employment for those who were unemployed on 1 April 2012 are reported in Table 63 and Table 64. Since one of the aims of the programme is to move adults into employment, for this analysis, evidence that a smaller proportion of the treatment group than the comparison group remained unemployed at any given point in time would indicate that the programme was having a positive effect. The analysis suggests that the programme had no impact on the likelihood that participants entered employment over each of the time periods considered. The findings were similar when the analysis was repeated for the subset of areas where families were thought to start on the programme in an order which was not related to the severity of the problems that they faced.

Table 63 Waiting list analysis adults - 12-month impact estimates for employment

| | | | | Percentage still not employed after: | | | | | |
| | | 3 months | | | 6 months | | | 9 months | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	82.5	79.3	3.3	77.4	74.4	3.0	72.6	69.7	2.9
Sep-12	77.2	74.2	3.0	73.0	70.1	2.8			
Dec-12	73.1	70.3	2.8						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 10,237 adults who were observed for at least 12 months.

Table 64 Waiting list analysis adults - 18-month impact estimates for employment

| | | | | | | | | | Percentage still not employed after: | | | | | |
| | | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	82.1	78.8	3.3	77.0	74.0	3.0	72.2	69.4	2.8	68.3	65.5	2.7	64.7	62.1	2.6
Sep-12	76.7	73.7	3.0	72.4	69.6	2.8	68.3	65.6	2.7	64.8	62.2	2.6			
Dec-12	72.6	69.8	2.8	69.3	66.7	2.6	66.4	64.0	2.4						
Apr-13	69.1	66.5	2.6	66.7	64.3	2.4									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 5,682 adults who were observed for at least 18 months.

Effects of programme on child welfare

As the waiting list analysis focuses on the subset of children who were classified as in need initially, a reduction in the proportion of children who required this status after contact with the programme would be consistent with the programme having a positive impact on both costs and child welfare, since it is unlikely that children would lose this status unless there was a material change in family circumstance.[43] Table 65 suggests that the Troubled Families programme had no impact on the likelihood of a child having CIN status over the first nine months after starting on the programme. Again, none of the impact estimates were statistically significant and similar findings were evident for the subset of areas where families started on the programme in a random order.

Table 65 Waiting list analysis children - 12-month impact estimates for child welfare

| | Percentage still child 'in need' after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	72.8	68.4	4.4	65.7	61.9	3.8	60.5	57.0	3.5
Sep-12	60.6	56.1	4.6	54.7	50.5	4.1			
Dec-12	52.0	47.5	4.5						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 2,714 children who were observed for at least 12 months.

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[43] The waiting list analysis differs from the PSM analysis in this respect because with the PSM analysis it is possible that local authorities were less likely to classify children as in need if they were participating in the Troubled Families programme, whereas the waiting list analysis is restricted to children who were classified as in need prior to contact with the programme.

Effect of programme on offending

Finally, the effects of the Troubled Families programme on adult offending are shown in Table 66 to Table 71, whilst results for children are shown in Table 72 to Table 77. The analysis considered the impact of the programme on the percentage of the treatment group who had received a caution or conviction by each of the points in time following their start on the programme. The impact of the programme on the percentage of individuals who had received a custodial or community sentence by a given time point was also estimated. All adults, or all children, were included in the analysis, regardless of their previous offending history. Evidence that a greater proportion of the treatment group had not offended by each point in time compared to the comparison group would indicate that the programme had a positive impact in reducing offending.

The tables show that the programme did not appear to have a statistically significant impact on the probability that family members who participated in the programme offended within the first 15 months of participation. However, as the proportion of adults and children who offend is very small, it may be difficult to observe any impacts from the programme when averaged over all adults or children. Once again, when the analysis was repeated excluding areas where families with more problems were selected to start on the programme earlier than those with a lower level of need, the findings were very similar.

Table 66 Waiting list analysis adults - 12-month impact estimates for offending

| Start on programme: | Percentage still not offended after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	96.4	95.8	0.6	95.5	94.9	0.6	94.7	94.2	0.5
Sep-12	95.4	94.8	0.6	94.5	94.0	0.5			
Dec-12	94.6	94.2	0.5						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 31,436 adults who were observed for at least 12 months.

Table 67 Waiting list analysis adults - 18-month impact estimates for offending

| Start on programme: | Percentage still not offended after: | | | | | | | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | | |
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	95.9	95.2	0.7	94.9	94.3	0.6	94.1	93.6	0.5	93.4	92.9	0.5	92.8	92.3	0.4
Sep-12	94.8	94.2	0.6	93.9	93.4	0.5	93.1	92.7	0.4	92.5	92.1	0.4			
Dec-12	94.1	93.6	0.4	93.1	92.7	0.4	92.3	91.9	0.4						
Apr-13	93.6	93.3	0.4	92.8	92.5	0.4									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 18,486 adults who were observed for at least 18 months.

Table 68 Waiting list analysis adults - 12-month impact estimates for community sentences

| Start on programme: | Percentage still not received community sentence after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.5	98.3	0.2	98.1	97.9	0.2	97.8	97.6	0.2
Sep-12	98.1	97.9	0.2	97.7	97.5	0.2			
Dec-12	97.8	97.6	0.2						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 31,436 adults who were observed for at least 12 months.

Table 69 Waiting list analysis adults - 18-month impact estimates for community sentences

Start on programme:	3 months			6 months			Percentage still not received community sentence after: 9 months			12 months			15 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.2	98.0	0.3	97.8	97.6	0.2	97.4	97.3	0.2	97.1	96.9	0.2	96.8	96.7	0.2
Sep-12	97.7	97.5	0.2	97.3	97.1	0.2	97.0	96.8	0.2	96.7	96.6	0.2			
Dec-12	97.4	97.2	0.2	97.1	96.9	0.2	96.8	96.7	0.2						
Apr-13	97.6	97.5	0.1	97.3	97.2	0.1									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 18,486 adults who were observed for at least 18 months.

Table 70 Waiting list analysis adults - 12-month impact estimates for custodial sentence

Start on programme:	3 months			Percentage still not received custodial sentence after: 6 months			9 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.5	99.4	0.1	99.3	99.2	0.1	99.2	99.1	0.1
Sep-12	99.2	99.1	0.1	99.0	98.9	0.1			
Dec-12	98.9	98.8	0.1						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 31,436 adults who were observed for at least 12 months.

Table 71 Waiting list analysis adults - 18-month impact estimates for custodial sentence

Start on programme:	3 months			6 months			9 months			12 months			15 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.5	99.4	0.1	99.3	99.2	0.1	99.2	99.1	0.1	99.0	99.0	0.1	98.9	98.9	0.1
Sep-12	99.2	99.1	0.1	99.0	98.9	0.1	98.8	98.7	0.1	98.6	98.6	0.1			
Dec-12	98.8	98.7	0.1	98.6	98.5	0.1	98.4	98.3	0.1						
Apr-13	99.1	99.1	0.1	99.0	99.0	0.1									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 18,486 adults who were observed for at least 12 months.

Table 72 Waiting list analysis children - 12-month impact estimates for offending

Start on programme:	3 months			6 months			9 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.0	97.6	0.4	97.3	96.9	0.4	96.6	96.2	0.4
Sep-12	96.9	96.5	0.4	96.1	95.7	0.4			
Dec-12	95.9	95.5	0.4						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 32,891 children who were observed for at least 12 months.

Table 73 Waiting list analysis children - 18-month impact estimates for offending

		3 months			6 months			9 months		Percentage still not offended after: 12 months			15 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	97.4	97.0	0.5	96.7	96.3	0.4	96.0	95.7	0.4	95.4	95.0	0.4	95.0	94.7	0.3
Sep-12	96.3	95.9	0.4	95.6	95.2	0.4	94.9	94.6	0.4	94.4	94.1	0.3			
Dec-12	95.3	94.9	0.4	94.5	94.1	0.4	93.7	93.4	0.4						
Apr-13	96.5	96.3	0.2	96.0	95.8	0.2									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 17,491 children who were observed for at least 18 months.

Table 74 Waiting list analysis children - 12-month impact estimates for community sentences

	Percentage still not received community sentence after: 3 months			6 months			9 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.0	98.8	0.2	98.5	98.3	0.2	98.1	97.9	0.2
Sep-12	98.4	98.1	0.2	98.0	97.8	0.2			
Dec-12	98.0	97.8	0.2						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 32,891 children who were observed for at least 12 months.

Table 75 Waiting list analysis children - 18-month impact estimates for community sentences

		3 months			6 months		Percentage still not received community sentence after: 9 months			12 months			15 months	
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.7	98.5	0.2	98.3	98.1	0.2	97.8	97.6	0.2	97.4	97.2	0.2	97.2	97.0	0.2
Sep-12	98.1	97.9	0.2	97.7	97.5	0.2	97.2	97.0	0.2	96.9	96.7	0.2			
Dec-12	97.8	97.5	0.2	97.3	97.1	0.2	96.9	96.7	0.2						
Apr-13	98.4	98.3	0.1	98.2	98.1	0.1									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 17,491 children who were observed for at least 18 months.

Table 76 Waiting list analysis children - 12-month impact estimates for custodial sentences

		3 months		Percentage still not received custodial sentence after: 6 months			9 months	
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.9	99.8	0.0	99.8	99.8	0.0	99.7	99.7	0.0
Sep-12	99.7	99.7	0.0	99.7	99.7	0.0			
Dec-12	99.7	99.7	0.0						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 32,891 children who were observed for at least 12 months.

Table 77 Waiting list analysis children - 18-month impact estimates for custodial sentences

													Percentage still not received custodial sentence after:		
	3 months			6 months			9 months			12 months			15 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.8	99.8	0.0	99.8	99.8	0.0	99.7	99.7	0.0	99.7	99.7	0.0	99.6	99.6	0.0
Sep-12	99.7	99.7	0.0	99.7	99.6	0.0	99.6	99.6	0.0	99.6	99.5	0.0			
Dec-12	99.7	99.6	0.0	99.6	99.6	0.0	99.6	99.5	0.0						
Apr-13	99.7	99.7	0.0	99.7	99.7	0.0									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 17,491 children who were observed for at least 18 months.

Summary

The results from the waiting list analysis were consistent with the PSM analysis; that is they provide no consistent evidence that the programme had any significant impact. They suggested that the Troubled Families programme did not have a statistically significant impact on benefit receipt, employment, child welfare, or offending by adults or children, although in some cases this may have been partly due to the smaller sample sizes that were available when using this method. The fact that those who participated in the programme appeared to remain on benefits for longer, were less likely to enter employment, were less likely to leave CIN status and were more likely to offend than those in the comparison group was probably explained by the method of analysis inadequately controlling for differences between the two groups which were apparent even when the treatment group had only just started on the programme. However, in most cases these differences were fairly small and remained when the analysis was repeated for the subset of local authorities which reported that families started on the programme as they were identified as eligible to participate, rather than those in the greatest need being put forward for the programme first. Nevertheless, it seems likely that the waiting list analysis was inferior to the PSM analysis in terms of providing a robust estimate of the impact of the programme, as with the PSM it was possible to match the treatment and comparison groups much more closely on observable characteristics. As previously noted, given the quite major limitations imposed by data quality (see Annex A for details of data cleaning and data checks), these results cannot be taken as conclusive evidence that the programme had no impact at all, and it is important to consider this result in conjunction with the other evidence contained in the evaluation as a whole.

Conclusions

Introduction

This chapter provides a summary of the main findings from this study, taking into account any differences which arose when the analysis was repeated for particular samples of families and when using alternative methods. It therefore highlights areas where the findings were sensitive to sample selection or varying the method of analysis. This provides an insight into the likely robustness of the findings. The approach to assessing robustness and interpreting the findings is described in the following section.

Where possible, the impact of the programme was considered both 12 and 18 months after a family started on it, but outcomes could only be observed for a smaller sample of families at the 18-month point, and in some cases the short run of available post-intervention data meant that it was only feasible to assess impacts 12 months after programme start.

As well as the main analysis, the impact of the programme on a subset of families that received a more intensive version of the treatment was estimated. Also, an expanded comparison group, which included families that started on the programme at least 12 months after they were screened, but observed in the period prior to programme start, was used to explore the sensitivity of the findings to using a potentially more favourable comparison group. Areas where families with a higher level of need were deliberately selected to start on the programme before those with lesser problems were excluded from the sample in one version of the analysis. Again, the late starters were included in the comparison group for this part of the analysis, so the impact of the programme was considered 12 months after the family started on the programme, rather than over an 18-month period.

The chapter concludes with a brief summary of further work which might be desirable in assessing the full impact of the Troubled Families programme. It also assesses the likely feasibility of any further analysis.

Interpreting the findings

The key finding is that, across a wide range of outcomes, we were unable to find consistent evidence that the Troubled Families programme had any systematic or significant impact. The vast majority of impact estimates were statistically insignificant, with a very small number of positive or negative results.

However, given the quite major limitations imposed by data quality (see Annex A for details of data cleaning and additional data checks), our results cannot be taken as conclusive evidence that the programme had no impact at all, and it is important to consider this result in conjunction with the other evidence contained in the evaluation as a whole. Although our conclusions are robust to a variety of checks detailed below, they are subject to caveats and the results below should be read in this light.

To some extent, it is a matter of judgement whether particular findings are considered robust. However, a number of guiding principles have been used in this report to reach this

judgement. Firstly, only impact estimates which are statistically significant at the five per cent level or better were considered, to reduce the likelihood that the results are due to sampling error, rather than the true impact of the programme. Secondly, where the pre-programme tests indicated that there were remaining differences between the treatment and comparison groups after matching, this suggested that estimates of the impact of the programme would be biased. Findings from these models were therefore not considered further since they are likely to be inaccurate.

Thirdly, the consistency between the findings when using different comparison groups was considered in some detail to evaluate the sensitivity of the results to the choice of comparators. It is clear that, whilst drawing the comparison group from families that did not start on the programme over the period observed in the programme data might bias the impact estimates downwards (as these families may have experienced improved outcomes without the need for assistance from the programme), the expanded comparison group may have biased impact estimates upwards. This is because 'outcomes' for some of the comparators would be observed closer to the point when they actually started on the programme and when their circumstances were deteriorating. As a result, one would expect to see evidence of a stronger positive impact from the programme when using the expanded comparison group compared to using the main comparison group. The general tendency for the choice of comparison group to inflate or deflate the impact estimates is therefore an important factor for consideration in deciding how to interpret the results.

Fourthly, the robustness of the findings to the choice of areas included in the analysis is explored, to determine whether the impact estimates are affected by excluding areas where the composition of the treatment or comparison group might be biased towards more, or less, troubled families. Focusing the analysis on a subset of families where there was not thought to be a strong association between the problems that the family had and when they started on the programme gives an insight into whether the programme was effective when the treatment and comparison groups are more likely to be similar prior to matching.

Finally, by matching the treatment and comparison groups using different techniques, it is possible to see how robust the estimates of impact are to the choice of matching estimator. Where findings are insensitive to the type of matching used, this increases confidence in the findings. Requiring a closer match between the treatment and comparison groups reduces the generalisability of the impact estimates to all those who participated in the programme, so the results from the reduced bandwidth kernel matching are less representative of the impact of the programme on all families that it seeks to help. This is also the case when focusing the analysis on the subset of families that were said to have received more intensive support. In this case, the purpose of the analysis was to estimate the impact of a particular version of the programme, rather than to assess the robustness of the findings more generally. It was not possible within the time frame or resources available to conduct further sensititivity testing.

Overview of main findings

Effects of programme on benefit receipt and employment

The clearest and most reliable estimates, bearing in mind the limitations of the data, were for impacts on benefit receipt and employment. Our analysis found no significant impact of the Troubled Families programme on any of the key outcome variables.

The analysis did not find that the the Troubled Families programme had any impact on the likelihood that individuals who were subject to the programme claimed JSA or incapacity benefits 12 months or 18 months after starting on the programme. It also had no discernible impact on the likelihood that adult family members claimed any out-of-work benefits (including IS and Carer's Allowance) either 12 or 18 months after starting on the programme. Similarly, the number of weeks that adult family members spent on JSA, incapacity benefit, or out-of-work benefits in general in the year following their start on the Troubled Families programme was not affected by programme participation.

It is particularly surprising that the programme had no effect on these measures, as even if it was some months before the programme started to take effect, over a period of either 52 or 72 weeks, a modest reduction in benefit receipt might have started to become evident. Even if the number of weeks on out-of-work benefits was unaffected, some signs that adults were moving between different types of benefits might have been expected. For example, shifting to JSA from other types of out-of-work benefit might have indicated that families were becoming more work-ready.

The finding that the Troubled Families programme did not appear to increase the likelihood of adults leaving out-of-work benefits, or reduce the time spent on these benefits, was consistent across each of the different matching estimators used in the PSM, and also held when the expanded comparison group was used. Even when areas which deliberately treated families that had the most entrenched problems first were excluded, the programme did not appear to affect the likelihood of adults leaving benefits. Those subject to a more intensive version of the programme also saw no effect on their likelihood of receiving out-of-work benefits as a result of the programme.

When using a survival analysis to explore whether any impact from the programme was apparent with an alternative estimation technique, it was necessary to consider a different set of outcome measures. The percentage of individuals on JSA, incapacity benefits and out-of-work benefits in general at different points in time following the start on the Troubled Families programme was considered. This analysis suggested that the programme had no impact on the rate of exits from benefits, although with this method of analysis it was difficult to fully-correct for observed differences in the likelihood of claiming benefits amongst the two groups in the period before starting on the programme.

Adult members of families that were subject to the Troubled Families programme were no more likely to be employed one year, or 18 months, after starting on the Troubled Families programme than if they had not been offered support. They also spent a similar number of weeks in employment in the year following the programme start, regardless of whether they were subject to the intervention.

Again, this finding was largely robust to the use of different matching estimators and was unchanged when those who started on the programme at a later point in time were

included in the comparison group. The programme continued to have no detectable impact on employment 12 months after starting on the programme even when the areas where the hardest to help were treated first were excluded. Receiving a more intensive version of the programme also made little difference to the observed impact of the intervention on employment. Signs of a negative employment effect 12 months after starting on the programme for those who received intensive support were not evident at the 18-month point, although this may have been partly due to the smaller number of adults for whom outcomes could be observed over an 18-month period.

Effects of programme on educational participation

It proved difficult to obtain a robust estimate of the impact of the Troubled Families programme on the likelihood that children were absent from school for at least 15 per cent or more of the time three terms after the family started on the Troubled Families programme, as there were differences between the treatment group and the matched comparison group on this measure in a period before either received support from the programme. This problem also affected families that received a more intensive version of the programme.

These pre-programme differences were not apparent when focusing on the absence rate three terms after starting on the programme, although, even in this case, the programme did not appear to affect absence rates. The pre-programme differences for the binary indicator also disappeared when late starters were included in the comparison group. There were also no pre-programme differences when areas where the late starters were likely to have less severe problems than those in the treatment group were excluded. However, it is uncertain whether the positive programme effects which emerged when the expanded comparison group was used were due to the programme reducing absence when the specification better controlled for pre-programme differences in this particular outcome measure, or because impacts were being estimated using a more favourable comparison group.

Effects of programme on child welfare

Some estimates suggest that the programme reduced the likelihood of children being in care 12 months after starting on the programme, but this impact disappeared when the analysis was restricted to the subset of areas where the order in which families started on the programme was not related to the level of problems that they faced. This suggests that the finding that the programme reduced the likelihood of children being in care may have been driven by some areas offering support to families with children in care before assisting other families. Consequently, it is possible there were unresolved differences between the treatment and comparison groups in the main analysis, which were lessened when more similar treatment and comparison groups were matched.

As with the findings on absenteeism, the impact of the Troubled Families programme on the percentage of children classified as 'in need' 12 months after programme start was harder to discern. The pre-programme tests suggested that children in the treatment group were more likely to be classified as 'in need' than those in the matched comparison group when using two of the four matching estimators in the period before families started on the programme, i.e. at a point in time when no differences should have been apparent. Pre-programme differences remained when the expanded comparison group was used and for families that received a more intensive version of the treatment. However, for the two

matching estimators where no pre-programme differences were apparent, the Troubled Families programme did not appear to affect the likelihood that children were classified as 'in need' following participation. This was also the case when areas where families with the greatest level of need were thought to have started on the programme first were excluded. This suggests that the programme did not affect the likelihood of children being classified as 'in need', once the analysis was restricted to methods which were more successful at controlling for pre-programme differences in outcomes, and when the analysis was repeated for areas where there was less reason to believe that there were systematic differences in the outcomes that families which started on the programme at different points in time might attain. The waiting list analysis also found that the programme had no impact on the percentage of children classified as 'in need' at fixed intervals over a nine-month period after programme start.

Effect of programme on adult offending

The analysis of the impact of the progamme on offending is sensitive to different approaches. While some impact estimates are statistically significant, with some indicating that the programme had a positive impact in reducing offending and others the opposite, overall there is no consistent evidence that the programme had any significant impact.

The Troubled Families programme did not have any discernible impact on adult offending when outcomes were considered over a year-long period commencing seven months after the family started on the programme. This finding held across the analysis which used different matching estimators, when excluding areas where more troubled families were thought to start on the programme at an earlier point in time than less troubled families, and when estimating the impact of the programme on those who received an intensive version of the treatment.

When the comparison group was expanded to include those who started on the programme at a later point in time, there was a reduction in the percentage of adults who committed an offence which resulted in a community sentence between seven and 12 months after starting on the programme, but this may have been due to 'outcomes' for the comparison group being observed closer to the date when they actually started on the programme and therefore at a point when their circumstances were deteriorating. This contrasted with the programme being associated with an increase in cautions or convictions between seven and 12 months after programme start with two of the four matching estimators and for families that received an intensive version of the programme. However, the fact that this apparent negative impact from the programme disappeared when outcomes were considered over a longer period of time suggests that it was due to outcomes being observed when the intervention was still taking effect, rather than because the programme increased adult offending. The waiting list analysis also found that the programme had no impact on adult offending. Overall, the analysis provided no consistent evidence of an impact, positive or negative.

Effect of programme on child offending

The negative association between programme participation and offending that was seen for adults in the period seven to 12 months after starting on the programme was more pronounced for children. However, the pre-programme tests indicated that there were differences in offending between the treatment and matched comparison groups which the PSM was unable to adequately address and so this was likely to partly explain the

negative effects for children between seven and 12 months after programme start. These unadjusted pre-programme differences were also apparent when assessing the impact of the programme on families that received a more intensive version of the treatment.

As with adults, there was very little evidence of any association between the Troubled Families programme and child offending in the period seven to 18 months after starting on the programme. This highlights the need to allow sufficient time for the programme to take effect when assessing its impact on offending. The analysis which used the expanded comparison group also found less evidence that the programme was negatively associated with child offending, with only the likelihood that children committed an offence seven to 12 months after the programme start which resulted in a conviction being higher in the treatment group than in the matched comparison group. There was no evidence that the Troubled Families programme had any impact on child offending when areas where families that were thought to have greater problems were treated at an earlier point in time were excluded from the analysis. Again, the finding that the programme had little discernible impact on child offending was also supported by the waiting list analysis.

Overall, as with adult offending, the analysis provided no consistent evidence of an impact, positive or negative.

Limitations of the analysis and suggestions for future analyses

Data supplied by local authorities was of variable quality and required extensive cleaning before it could be used in the analysis (see Annex A). As a result it was necessary to make many assumptions about the information provided. This included assuming that individuals who were not matched to each of the administrative datasets were not actually in a given state, e.g. those who were not matched to employment records were not employed. It is possible that in some cases these assumptions do not reflect the true circumstances of particular families and so the findings may be subject to measurement error. It is not possible to say with certainty how this might affect the reported results.

For PSM to produce a robust estimate of impact, it is necessary for treatment and comparison groups to be well-matched on all observed and unobserved characteristics likely to determine treatment and outcomes. Whilst the two groups did appear to differ on mean characteristics prior to matching, there was sufficient overlap between them to ensure that the impact estimates were representative of the impact of the programme on most individuals in the sample who participated in the programme. Treatment and comparison groups were similar on most characteristics following matching, but it is important to note that the small number of outstanding differences that remained may have potentially affected the accuracy of the impact estimates.

As this study was carried out at a relatively early stage following the roll-out of the Troubled Families programme, and because there is a time lag in the availability of some of the national administrative datasets used in the evaluation, it was not feasible to explore the impact of the programme on all the outcomes of interest. For example, data on exclusions was only available for 15 months following the introduction of the programme. This meant that the impact of the programme on exclusions could only be observed for families that started on the programme within the first three months of its roll-out. This affected both the generalisability of the impact estimates to those who started on the

programme later and the viability of obtaining a well-matched comparison group for the relatively small number of families that started on the programme in the first three months. This problem could potentially be addressed by obtaining exclusions data for the full 2013/14 academic year.

A similar problem limited the ability to assess the impact of the programme on educational attainment, as few children went through each of the Key Stage assessments following their family's participation in the programme. Even where they did go through a Key Stage milestone, the programme may not have had sufficient time to take effect at the point when the assessment was carried out.

Where outcomes were observed 12 or 18 months after the family started on the programme, there was still a possibility that the family was receiving ongoing support, particularly in the case of outcomes measured 12 months after programme start for families that were the hardest to help. It is likely that these families were the target of more intensive support and, given the fact that their problems may have been more entrenched, it is unsurprising that no effects emerged for this group within the time period considered in the analysis. Whilst these families may have received a higher level of support than others, the challenges that they presented to local authorities were likely to be greater. Although it was possible to explore the impact of the programme on benefit receipt, employment and offending 18 months after starting on the programme for a subset of families, these families would then have started on the programme within the first ten months of its introduction. The fact that this analysis could only be carried out for families that started on the programme fairly shortly after its introduction means that the findings of this analysis may not be representative of the impact of the programme on the wider population of families subject to the programme.

Related to this point, whilst all local authorities were asked to participate in the study, only around two-fifths supplied useable data. It is therefore theoretically possible that the impact estimates are biased in some way related to this. For example, participating areas may have been betterresourced, or have devoted more resources to systematic information collection and data recording than those that did not. They may have been more committed to the implementation of the Troubled Families programme or more confident that the programme was effective in their area than the areas that chose not to participate. All of these factors could have had an impact on the overall effectiveness of the programme within the sample of local authorities which participated in the study and mean that the estimated impact of the programme may have been different if the participating areas had been chosen at random, rather than self-selecting into the study.

This potentially affects the generalisability of the findings. However, we have no evidence (see Annex A), nor have we been provided with any such evidence, that any such bias was in fact present. Moreover, given the likely nature of any such bias as set out above, the probable impact would be to bias our analysis in favour of finding positive impacts of the programme. In fact, as set out above, our analysis found no consistent evidence of any positive impact.

If feasible, requiring local authorities to complete a standard programme database for all families screened for the programme as part of the process of obtaining PbR payments would greatly enhance the ability to evaluate the impact of the expanded programme. Incentivising local authorities to carry out systematic screening to identify potentially eligible families would also improve the quality of the data available for any future

evaluation. This is important because a number of factors used to determine eligibility cannot be independently observed in the administrative data. In the current study it was therefore necessary to rely on local authority reports that the family were indeed eligible for the programme at a particular point in time. A programme database and eligibility criteria that could be observed in the national datasets available to evaluators would reduce uncertainty about which criteria the family met, and when, and strengthen the robustness of any future analyses.

Whilst it was not possible to assess the impact of the Troubled Families programme on all the outcomes that it seeks to affect, a large number of measures were used, with similar outcomes defined in different ways, and the analysis was based on sample sizes which would tend to make it possible to detect impacts which were small in magnitude. Despite this, our analysis provided no consistent evidence of any systematic or significant impact from the programme of any of the key outcomes considered. The vast majority of impact estimates were statistically insignificant, with a very small number of positive or negative results. The analysis suggests the programme had no clear impact on Troubled Families in their first year after participating in the programme, compared with what could have been expected to happen to them without the programme.

However, given the quite major limitations imposed by data quality, our results cannot be taken as conclusive evidence that the programme had no impact at all, and it is important to consider this result in conjunction with the other evidence contained in the evaluation as a whole. Although our conclusions are robust to a variety of checks detailed throughout this report, they are subject to caveats and the results should be read in this light.

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Appendix A: Data questionnaire

TROUBLED FAMILIES DATA QUESTIONNAIRE

1. Does the data extract include information on **all families** who have ever been worked with as part of the Troubled Families programme?

   ☐ Yes ☐ No

2. Does the data include information on **all individuals who are members of these families**?

   ☐ Yes ☐ No

3. Please indicate the nature of any types of families that you know have been excluded from the data extract supplied:

   ☐ All/some receiving lower level of support excluded

   ☐ All/some receiving higher level of support excluded

   ☐ All/some who started receiving support before a certain date excluded

   ☐ All/some who started receiving support after a certain date excluded

   ☐ Other. Please provide brief description of other known exclusions below:

   Click here to enter text.

4. Which of the following best describes the way that the Troubled Families programme has been rolled out in this local authority area?

   ☐ Support offered to families with the greatest need/problems first

   ☐ Support offered to families with the lowest need/problems first

   ☐ Support offered as families referred to service by agencies

   ☐ Support offered as families identified through data analysis

   ☐ Support offered in no particular order

   ☐ Order in which families offered support determined in some other way. Please provide details below:

   Click here to enter text.

5. Is there anything else you would like to tell us about the data extract or your answers above?

   Click here to enter text.

Area name: **Click here to enter text.** Your name: **Click here to enter text.**

Contact e-mail: **Click here to enter text.**

Contact telephone number: **Click here to enter text.**

Many thanks for your help.

Appendix B: Impact estimates for families that received the intensive version of the programme

Table 78 PSM impact estimates for benefits, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Claiming out-of-work benefits 12 months after programme start	47.1	47.0	0.1	-2.1	2.3
Number of weeks on out-of-work benefits in year following programme start	23.9	23.8	0.0	-1.0	1.1
Claiming JSA 12 months after programme start	11.0	11.1	-0.1	-1.5	1.3
Number of weeks on JSA in year following programme start	5.6	5.7	0.0	-0.6	0.6
Claiming incapacity benefits 12 months after programme start	18.3	19.6	-1.3	-2.9	0.3
Number of weeks on sickness benefits in year following programme start	8.7	9.3	-0.6	-1.3	0.2
% off support	0.1				
Base	9,073	5,921			
Panel B. 18-month estimates					
Claiming out-of-work benefits 18 months after programme start	46.8	47.0	-0.2	-3.3	2.9
Number of weeks on out-of-work benefits in 18 months following programme start	35.2	36.1	-0.9	-3.1	1.2
Claiming JSA 18 months after programme start	10.6	11.9	-1.3	-3.3	0.7
Number of weeks on JSA in	8.7	9.2	-0.5	-1.7	0.7

18 months following programme start

Claiming incapacity benefits 18 months after programme start	19.5	20.1	-0.6	-2.9	1.6
Number of weeks on incapacity benefits in 18 months following programme start	13.2	14.5	-1.4*	-2.9	0.2
% off support	0.0				
Base	5,320	3,113			

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

Table 79 PSM impact estimates for employment, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Employed 12 months after programme start	36.6	39.3	-2.7**	-5.3	0.0
Number of weeks employed in year following programme start	16.9	17.9	-1.0	-2.2	0.3
% off support	0.0				
Base	7,463	4,360			
Panel B. 18-month impact					
Employed 18 months after programme start	38.6	42.0	-3.4*	-7.1	0.3
Number of weeks employed in 18 months following programme start	24.7	26.6	-1.9	-4.4	0.6
% off support	0.0				
Base	3,923	2,253			

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

Table 80 PSM 12-month impact estimates on absence for children, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school three terms after programme start	8.8	8.6	0.3	-0.9	1.4
Absent for 15% or more of time three terms after programme start	18.4	17.9	0.5	-2.1	3.2
% off support	0.2				
Base	5,326	3,483			

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

Table 81 PSM 12-month impact estimates for child welfare, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status 12 months after programme start	46.0	38.8	7.3***	4.1	10.4
In care 12 months after programme start	4.3	5.4	-1.1*	-2.3	0.1
% off support	0.1				
Base	4,826	3,158			

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

Table 82 PSM offending impact estimates for adults, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Caution or conviction in year following programme start	5.7	4.4	1.3***	0.3	2.3
Conviction in year following programme start	4.7	3.7	1.0**	0.1	1.9
Caution in year following programme start	1.2	0.9	0.2	-0.2	0.7
Custodial sentence in year following programme start	1.0	0.9	0.2	-0.3	0.6
Community sentence in year following programme start	1.6	2.1	-0.4	-1.0	0.2
% off support	0.1				
Base	9,073	5,921			
Panel B. 18-month estimates					
Caution or conviction in year following programme start	10.2	8.5	1.8*	0.0	3.5
Conviction in year following programme start	8.3	7.0	1.3	-0.3	2.9
Caution in year following programme start	2.6	2.5	0.2	-0.8	1.1
Custodial sentence in year following programme start	2.1	2.2	0.0	-0.8	0.8
Community sentence in year following programme start	3.1	3.7	-0.6	-1.7	0.5
% off support	0.0				
Base	5,320	3,113			

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

Table 83 PSM offending impact estimates for children, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Caution or conviction in year following programme start	4.4	2.7	1.6***	0.9	2.4
Conviction in year following programme start	3.2	1.7	1.5***	0.9	2.1
Caution in year following programme start	1.4	1.1	0.3	-0.2	0.8
Custodial sentence in year following programme start	0.3	0.1	0.2***	0.1	0.4
Community sentence in year following programme start	2.4	1.2	1.1***	0.6	1.7
% off support	0.0				
Base	10,168	6,925			
Panel B. 18-month estimates					
Caution or conviction in year following programme start	6.7	5.5	1.2*	-0.2	2.5
Conviction in year following programme start	4.8	3.1	1.7***	0.6	2.8
Caution in year following programme start	2.5	2.9	-0.4	-1.3	0.6
Custodial sentence in year following programme start	0.5	0.4	0.1	-0.2	0.5
Community sentence in year following programme start	3.9	1.9	2.0***	1.0	3.0
% off support	0.2				
Base	5,601	3,632			

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

Appendix C: Impact estimates using the expanded comparison group

Table 84 PSM benefits impact estimates, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Claiming out-of-work benefits 12 months after programme start	44.7	45.2	-0.5	-1.8	0.8
Number of weeks on out-of-work benefits in year following programme start	22.6	22.7	0.0	-0.6	0.6
Claiming JSA 12 months after programme start	10.6	11.0	-0.4	-1.2	0.4
Number of weeks on JSA in year following programme start	5.5	5.5	0.0	-0.4	0.3
Claiming incapacity benefits 12 months after programme start	17.5	17.6	-0.1	-1.0	0.8
Number of weeks on sickness benefits in year following programme start	8.3	8.4	-0.1	-0.5	0.4
% off support	0.1				
Base	25,381	9,446			

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

Table 85 PSM employment impact estimates, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Employed 12 months after programme start	36.4	36.8	-0.4	-1.8	1.0
Number of weeks employed in year following programme start	16.7	16.6	0.1	-0.5	0.8
% off support	0.1				
Base	19,956	7,861			

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

Table 86 PSM 12-month impact estimates for absence, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school three terms after programme start	9.5	10.4	-0.9***	-1.4	-0.3
Absent for 15% or more of time three terms after programme start	20.0	22.5	-2.5***	-3.9	-1.1
% off support	0.1				
Base	13,193	6,543			

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

Table 87 PSM 12-month impact estimates for child welfare, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status 12 months after programme start	39.8	38.0	1.8**	0.2	3.4
In care 12 months after programme start	2.9	2.8	0.2	-0.4	0.7
% off support	0.1				
Base	12,491	6,172			

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

Table 88 PSM offending impact estimates for adults, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year following programme start	4.8	4.7	0.0	-0.5	0.6
Conviction in year following programme start	3.9	3.9	0.0	-0.5	0.5
Caution in year following programme start	1.0	1.1	-0.1	-0.3	0.2
Custodial sentence in year following programme start	0.8	0.8	0.0	-0.3	0.2
Community sentence in year following programme start	1.5	1.9	-0.4**	-0.7	-0.1
% off support	0.1				
Base	25,381	9,446			

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

Table 89 PSM offending impact estimates for children, kernel matching

	TF group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)		
				Lower bound	Upper bound
Caution or conviction in year following programme start	3.6	3.2	0.4*	0.0	0.9
Conviction in year following programme start	2.4	2.0	0.4**	0.0	0.7
Caution in year following programme start	1.4	1.3	0.1	-0.2	0.4
Custodial sentence in year following programme start	0.2	0.3	-0.1	-0.2	0.0
Community sentence in year following programme start	1.8	1.5	0.3*	0.0	0.6
% off support	0.0				
Base	25,757	10,380			

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

Appendix D: Propensity score estimation

Table 90 Propensity score estimation for adults where benefit and offending outcomes are observed for 12 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Claiming out-of-work benefits one month before programme start	0.033	0.060	0.548	0.584
Claiming out-of-work benefits 12 months before programme start	-0.005	0.042	0.108	0.914
Number of weeks on out-of-work benefits in year before programme start	0.001	0.001	1.197	0.231
Employed one month before programme start	-0.036	0.042	0.838	0.402
Employed 12 months before programme start	0.059	0.030	1.985	0.047
Number of weeks employed in year before programme start	-0.003	0.001	3.444	0.001
Claiming JSA one month before programme start	-0.064	0.063	1.014	0.311
Claiming JSA 12 months before programme start	0.075	0.046	1.631	0.103
Number of weeks on JSA in year before programme start	0.001	0.001	1.232	0.218
Claiming incapacity benefits one month before programme start	-0.183	0.073	2.502	0.012
Claiming incapacity benefits 12 months before programme start	0.059	0.052	1.141	0.254
Number of weeks on sickness benefits in year before programme start	0.006	0.001	4.547	0.000
Conviction in year prior to programme start	0.109	0.054	2.019	0.043
Caution in year prior to programme start	0.019	0.045	0.409	0.683
Custodial sentence in year prior to programme start	-0.007	0.084	0.081	0.935
Community sentence in year prior to programme start	0.157	0.065	2.412	0.016
Start month	-0.007	0.002	4.534	0.000
Age at 19 Oct 2014 (years)	0.014	0.004	3.471	0.001
Age squared	0.000	0.000	2.739	0.006
Female	0.033	0.020	1.652	0.099

	Coefficient	Standard error	Z-statistic	P-value
Non-white	-0.535	0.028	19.005	0.000
Ethnicity missing	-0.117	0.025	4.686	0.000
Number of adults in family	0.209	0.008	25.918	0.000
Number of children in family	0.143	0.008	16.941	0.000
Ratio of claimant count to vacancies in LA	-0.009	0.003	2.968	0.003
Maximum absence rate for any child in family in the term prior to programme start	0.005	0.001	10.032	0.000
Maximum absence rate for any child in family 3 terms prior to programme start	0.002	0.000	3.597	0.000
Number of months at least one child in family in need prior measurement date	0.018	0.002	10.218	0.000
Family member on free school meals in academic year prior to start of programme	0.243	0.021	11.738	0.000
Family member with Special Educational Needs in academic year prior to start of programme	0.110	0.020	5.440	0.000
At least one child in care one month before programme start	-0.094	0.057	1.641	0.101
Constant	4.145	0.984	4.211	0.000
Mean propensity score	0.811			
Median propensity score	0.845			
Prob>chi-squared	0.000			
Pseudo R-squared	0.128			
Base	31,436			

Table 91 Propensity score estimation for adults where employment outcomes are observed for 12 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Claiming out-of-work benefits one month before programme start	0.095	0.071	1.333	0.182
Claiming out-of-work benefits 12 months before programme start	0.008	0.050	0.171	0.864
Number of weeks on out-of-work benefits in year before programme start	0.000	0.001	0.355	0.722

	Coefficient	Standard error	Z-statistic	P-value
Employed one month before programme start	-0.055	0.050	1.107	0.268
Employed 12 months before programme start	0.090	0.035	2.540	0.011
Number of weeks employed in year before programme start	-0.003	0.001	3.447	0.001
Claiming JSA one month before programme start	-0.152	0.075	2.029	0.042
Claiming JSA 12 months before programme start	0.030	0.055	0.555	0.579
Number of weeks on JSA in year before programme start	0.003	0.001	2.640	0.008
Claiming incapacity benefits one month before programme start	-0.232	0.087	2.658	0.008
Claiming incapacity benefits 12 months before programme start	-0.002	0.061	0.036	0.971
Number of weeks on sickness benefits in year before programme start	0.007	0.002	4.576	0.000
Conviction in year prior to programme start	0.160	0.063	2.517	0.012
Caution in year prior to programme start	0.024	0.051	0.478	0.633
Custodial sentence in year prior to programme start	0.077	0.099	0.782	0.434
Community sentence in year prior to programme start	0.184	0.076	2.428	0.015
Start month	-0.011	0.002	5.283	0.000
Age at 19 Oct 2014 (years)	0.005	0.005	0.958	0.338
Age squared	0.000	0.000	0.167	0.867
Female	0.023	0.023	1.000	0.317
Non-white	-0.670	0.034	19.895	0.000
Ethnicity missing	-0.153	0.029	5.251	0.000
Number of adults in family	0.253	0.009	26.643	0.000
Number of children in family	0.139	0.010	14.168	0.000
Ratio of claimant count to vacancies in LA	-0.020	0.003	5.731	0.000
Maximum absence rate for any child in family in the term prior to programme start	0.005	0.001	8.243	0.000
Maximum absence rate for any child in family 3 terms prior to programme start	0.003	0.001	4.593	0.000

	Coefficient	Standard error	Z-statistic	P-value
Number of months at least one child in family in need prior measurement date	0.018	0.002	8.926	0.000
Family member on free school meals in academic year prior to start of programme	0.233	0.024	9.683	0.000
Family member with Special Educational Needs in academic year prior to start of programme	0.109	0.023	4.650	0.000
At least one child in care one month before programme start	-0.216	0.065	3.313	0.001
Constant	6.939	1.350	5.141	0.000
Mean propensity score	0.816			
Median propensity score	0.855			
Prob>chi-squared	0.000			
Pseudo R-squared	0.147			
Base	23,819			

Table 92 Propensity score estimation for adults where benefits and offending outcomes are observed for 18 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Claiming out-of-work benefits one month before programme start	0.097	0.083	1.173	0.241
Claiming out-of-work benefits 12 months before programme start	-0.026	0.058	0.446	0.656
Number of weeks on out-of-work benefits in year before programme start	-0.001	0.002	0.525	0.599
Employed one month before programme start	-0.058	0.059	0.988	0.323
Employed 12 months before programme start	0.047	0.041	1.143	0.253
Number of weeks employed in year before programme start	-0.003	0.001	2.589	0.010
Claiming JSA one month before programme start	-0.169	0.087	1.948	0.051
Claiming JSA 12 months before programme start	0.015	0.064	0.241	0.810
Number of weeks on JSA in year before programme start	0.005	0.002	3.028	0.002

	Coefficient	Standard error	Z-statistic	P-value
Claiming incapacity benefits one month before programme start	-0.134	0.101	1.323	0.186
Claiming incapacity benefits 12 months before programme start	-0.040	0.071	0.565	0.572
Number of weeks on sickness benefits in year before programme start	0.006	0.002	3.380	0.001
Conviction in year prior to programme start	0.237	0.074	3.197	0.001
Caution in year prior to programme start	-0.062	0.056	1.102	0.271
Custodial sentence in year prior to programme start	0.026	0.112	0.231	0.818
Community sentence in year prior to programme start	0.099	0.087	1.139	0.255
Start month	0.001	0.003	0.435	0.664
Age at 19 Oct 2014 (years)	-0.003	0.006	0.513	0.608
Age squared	0.000	0.000	1.331	0.183
Female	0.023	0.027	0.858	0.391
Non-white	-0.617	0.039	15.869	0.000
Ethnicity missing	-0.182	0.034	5.439	0.000
Number of adults in family	0.232	0.011	21.624	0.000
Number of children in family	0.131	0.011	11.397	0.000
Ratio of claimant count to vacancies in LA	-0.031	0.004	7.342	0.000
Maximum absence rate for any child in family in the term prior to programme start	0.005	0.001	6.488	0.000
Maximum absence rate for any child in family 3 terms prior to programme start	0.003	0.001	4.873	0.000
Number of months at least one child in family in need prior measurement date	0.014	0.002	5.938	0.000
Family member on free school meals in academic year prior to start of programme	0.271	0.028	9.786	0.000
Family member with Special Educational Needs in academic year prior to start of programme	0.097	0.027	3.612	0.000
At least one child in care one month before programme start	-0.162	0.074	2.186	0.029
Constant	-0.654	1.781	0.367	0.713

	Coefficient	Standard error	Z-statistic	P-value
Mean propensity score	0.831			
Median propensity score	0.866			
Prob>chi-squared	0			
Pseudo R-squared	0.134			
Base	18,486			

Table 93 Propensity score estimation for adults where employment outcomes are observed for 18 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Claiming out-of-work benefits one month before programme start	0.038	0.096	0.392	0.695
Claiming out-of-work benefits 12 months before programme start	-0.013	0.069	0.184	0.854
Number of weeks on out-of-work benefits in year before programme start	-0.001	0.002	0.634	0.526
Employed one month before programme start	-0.026	0.069	0.382	0.702
Employed 12 months before programme start	0.085	0.049	1.739	0.082
Number of weeks employed in year before programme start	-0.004	0.001	2.643	0.008
Claiming JSA one month before programme start	-0.137	0.100	1.369	0.171
Claiming JSA 12 months before programme start	-0.055	0.076	0.726	0.468
Number of weeks on JSA in year before programme start	0.005	0.002	2.914	0.004
Claiming incapacity benefits one month before programme start	-0.091	0.119	0.765	0.444
Claiming incapacity benefits 12 months before programme start	0.025	0.085	0.298	0.765
Number of weeks on sickness benefits in year before programme start	0.005	0.002	2.584	0.010
Conviction in year prior to programme start	0.191	0.084	2.269	0.023
Caution in year prior to programme start	-0.055	0.064	0.853	0.394
Custodial sentence in year prior to programme start	0.060	0.133	0.451	0.652

	Coefficient	Standard error	Z-statistic	P-value
Community sentence in year prior to programme start	0.139	0.099	1.397	0.162
Start month	0.011	0.004	2.754	0.006
Age at 19 Oct 2014 (years)	-0.004	0.007	0.668	0.504
Age squared	0.000	0.000	1.417	0.156
Female	0.006	0.031	0.209	0.834
Non-white	-0.681	0.048	14.321	0.000
Ethnicity missing	-0.198	0.039	5.070	0.000
Number of adults in family	0.234	0.012	19.110	0.000
Number of children in family	0.119	0.013	8.865	0.000
Ratio of claimant count to vacancies in LA	-0.042	0.005	8.245	0.000
Maximum absence rate for any child in family in the term prior to programme start	0.005	0.001	5.907	0.000
Maximum absence rate for any child in family 3 terms prior to programme start	0.003	0.001	4.166	0.000
Number of months at least one child in family in need prior measurement date	0.018	0.003	6.596	0.000
Family member on free school meals in academic year prior to start of programme	0.267	0.032	8.288	0.000
Family member with Special Educational Needs in academic year prior to start of programme	0.105	0.031	3.386	0.001
At least one child in care one month before programme start	-0.163	0.087	1.877	0.060
Constant	-6.541	2.462	2.657	0.008
Mean propensity score	0.839			
Median propensity score	0.875			
Prob>chi-squared	0.000			
Pseudo R-squared	0.141			
Base	14,060			

Table 94 Propensity score estimation for children where offending outcomes are observed for 12 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Family member claiming out-of-	0.120	0.052	2.302	0.021

	Coefficient	Standard error	Z-statistic	P-value
work benefits one month before programme start				
Family member claiming out-of-work benefits 12 months before programme start	0.159	0.038	4.201	0.000
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	0.001	0.001	1.454	0.146
Any adult in family employed one month prior to programme start	-0.146	0.048	3.029	0.002
Any adult in family employed 12 months prior to programme start	-0.027	0.032	0.853	0.394
Max number of weeks any family member employed in year prior to programme start	0.003	0.001	2.695	0.007
Family member claiming JSA one month before programme start	-0.142	0.051	2.774	0.006
Family member claiming JSA 12 months before programme start	-0.119	0.038	3.096	0.002
Maximum number of weeks any family member on JSA in year prior to programme start	0.003	0.001	3.443	0.001
Family member claiming sickness benefits one month before programme start	-0.205	0.066	3.095	0.002
Family member claiming sickness benefits 12 months before programme start	0.013	0.046	0.281	0.779
Maximum number of weeks any family member on sickness benefits in year prior to programme start	0.006	0.001	4.761	0.000
Conviction in year prior to programme start	0.368	0.062	5.910	0.000
Caution in year prior to programme start	0.353	0.053	6.702	0.000
Start month	0.002	0.001	1.588	0.112
Age at 19 Oct 2014 (years)	-0.046	0.011	4.196	0.000
Age squared	0.003	0.001	5.461	0.000
Female	-0.019	0.017	1.093	0.274
Non-white	-0.594	0.023	25.484	0.000
Ethnicity missing	0.150	0.029	5.202	0.000
Number of adults in family	0.300	0.011	26.121	0.000

	Coefficient	Standard error	Z-statistic	P-value
Number of children in family	0.141	0.006	22.020	0.000
Ratio of claimant count to vacancies in LA	0.009	0.002	3.684	0.000
Percentage of time absent from school 1 term prior to programme start	0.001	0.001	2.342	0.019
Percentage of time absent from school 3 terms prior to programme start	0.000	0.001	0.417	0.677
Total number of months child in need prior measurement date	0.028	0.002	14.985	0.000
Free school meals in academic year prior to start of programme	0.193	0.020	9.503	0.000
Statement of Special Educational Needs in academic year prior to start of programme	0.017	0.020	0.830	0.407
In care one month before programme start	-0.298	0.066	4.501	0.000
Constant	-1.686	0.959	1.758	0.079
Mean propensity score	0.789			
Median propensity score	0.836			
Prob>chi-squared	0			
Pseudo R-squared	0.164			
Base	32,891			

Table 95 Propensity score estimation for children where absence outcomes are observed for 12 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Family member claiming out-of-work benefits one month before programme start	0.061	0.078	0.781	0.435
Family member claiming out-of-work benefits 12 months before programme start	0.243	0.056	4.326	0.000
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	0.000	0.001	0.034	0.973
Any adult in family employed one month prior to programme start	-0.184	0.071	2.587	0.010

	Coefficient	Standard error	Z-statistic	P-value
Any adult in family employed 12 months prior to programme start	-0.090	0.047	1.912	0.056
Max number of weeks any family member employed in year prior to programme start	0.003	0.001	2.056	0.040
Family member claiming JSA one month before programme start	-0.052	0.073	0.706	0.480
Family member claiming JSA 12 months before programme start	-0.249	0.055	4.490	0.000
Maximum number of weeks any family member on JSA in year prior to programme start	0.003	0.001	2.636	0.008
Family member claiming sickness benefits one month before programme start	-0.091	0.096	0.949	0.343
Family member claiming sickness benefits 12 months before programme start	-0.215	0.067	3.227	0.001
Maximum number of weeks any family member on sickness benefits in year prior to programme start	0.006	0.002	3.470	0.001
Conviction in year prior to programme start	0.371	0.091	4.078	0.000
Caution in year prior to programme start	0.339	0.073	4.644	0.000
Start month	0.004	0.003	1.327	0.185
Age at 19 Oct 2014 (years)	-0.055	0.016	3.491	0.000
Age squared	0.003	0.001	4.813	0.000
Female	-0.026	0.025	1.030	0.303
Non-white	-0.609	0.033	18.214	0.000
Ethnicity missing	0.116	0.042	2.793	0.005
Number of adults in family	0.357	0.016	22.085	0.000
Number of children in family	0.187	0.009	19.805	0.000
Ratio of claimant count to vacancies in LA	-0.009	0.004	2.468	0.014
Percentage of time absent from school 1 term prior to programme start	0.002	0.001	2.580	0.010
Percentage of time absent from school 3 terms prior to programme start	0.002	0.001	1.965	0.049
Total number of months child in	0.029	0.003	10.507	0.000

	Coefficient	Standard error	Z-statistic	P-value
need prior measurement date				
Free school meals in academic year prior to start of programme	0.203	0.029	7.006	0.000
Statement of Special Educational Needs in academic year prior to start of programme	0.077	0.029	2.688	0.007
In care one month before programme start	-0.366	0.092	3.975	0.000
Constant	-2.678	1.834	1.460	0.144
Mean propensity score	0.791			
Median propensity score	0.845			
Prob>chi-squared	0			
Pseudo R-squared	0.192			
Base	16,738			

Table 96 Propensity score estimation for children where exclusion outcomes are observed for 12 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Family member claiming out-of-work benefits one month before programme start	0.041	0.160	0.256	0.798
Family member claiming out-of-work benefits 12 months before programme start	0.014	0.112	0.128	0.898
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	0.002	0.003	0.584	0.559
Any adult in family employed one month prior to programme start	-0.339	0.139	2.433	0.015
Any adult in family employed 12 months prior to programme start	-0.126	0.098	1.289	0.197
Max number of weeks any family member employed in year prior to programme start	0.007	0.003	2.416	0.016
Family member claiming JSA one month before programme start	-0.255	0.150	1.696	0.090
Family member claiming JSA 12 months before programme start	-0.155	0.118	1.309	0.190
Maximum number of weeks any	0.002	0.003	0.917	0.359

	Coefficient	Standard error	Z-statistic	P-value
family member on JSA in year prior to programme start				
Family member claiming sickness benefits one month before programme start	-0.417	0.204	2.041	0.041
Family member claiming sickness benefits 12 months before programme start	-0.133	0.136	0.979	0.328
Maximum number of weeks any family member on sickness benefits in year prior to programme start	0.007	0.004	1.736	0.083
Conviction in year prior to programme start	0.453	0.210	2.157	0.031
Caution in year prior to programme start	0.263	0.132	1.988	0.047
Start month	-0.100	0.033	3.045	0.002
Age at 19 Oct 2014 (years)	-0.032	0.031	1.031	0.302
Age squared	0.003	0.001	1.992	0.046
Female	-0.107	0.048	2.237	0.025
Non-white	-0.177	0.072	2.465	0.014
Ethnicity missing	0.491	0.081	6.079	0.000
Number of adults in family	0.425	0.032	13.260	0.000
Number of children in family	0.214	0.019	11.156	0.000
Ratio of claimant count to vacancies in LA	-0.160	0.011	14.132	0.000
Percentage of time absent from school 1 term prior to programme start	-0.001	0.002	0.607	0.544
Percentage of time absent from school 3 terms prior to programme start	0.003	0.002	1.566	0.117
Total number of months child in need prior measurement date	0.035	0.005	6.467	0.000
Free school meals in academic year prior to start of programme	0.280	0.056	5.018	0.000
Statement of Special Educational Needs in academic year prior to start of programme	0.110	0.056	1.956	0.050
In care one month before programme start	-0.326	0.198	1.646	0.100
Constant	63.036	20.688	3.047	0.002

	Coefficient	Standard error	Z-statistic	P-value
Mean propensity score	0.777			
Median propensity score	0.837			
Prob>chi-squared	0.00			
Pseudo R-squared	0.220			
Base	4,534			

Table 97 Propensity score estimation for children where child welfare outcomes are observed for 12 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Family member claiming out-of-work benefits one month before programme start	0.093	0.081	1.160	0.246
Family member claiming out-of-work benefits 12 months before programme start	0.230	0.058	3.944	0.000
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	0.000	0.001	0.038	0.970
Any adult in family employed one month prior to programme start	-0.149	0.074	2.007	0.045
Any adult in family employed 12 months prior to programme start	-0.088	0.049	1.783	0.075
Max number of weeks any family member employed in year prior to programme start	0.002	0.002	1.502	0.133
Family member claiming JSA one month before programme start	-0.070	0.076	0.924	0.356
Family member claiming JSA 12 months before programme start	-0.251	0.057	4.358	0.000
Maximum number of weeks any family member on JSA in year prior to programme start	0.004	0.001	2.928	0.003
Family member claiming sickness benefits one month before programme start	-0.106	0.100	1.056	0.291
Family member claiming sickness benefits 12 months before programme start	-0.146	0.070	2.088	0.037
Maximum number of weeks any family member on sickness benefits in year prior to	0.006	0.002	3.115	0.002

	Coefficient	Standard error	Z-statistic	P-value
programme start				
Conviction in year prior to programme start	0.352	0.095	3.714	0.000
Caution in year prior to programme start	0.340	0.076	4.459	0.000
Start month	0.000	0.003	0.024	0.981
Age at 19 Oct 2014 (years)	-0.051	0.017	3.073	0.002
Age squared	0.003	0.001	4.294	0.000
Female	-0.035	0.026	1.341	0.180
Non-white	-0.663	0.036	18.480	0.000
Ethnicity missing	0.087	0.044	2.000	0.045
Number of adults in family	0.350	0.017	20.569	0.000
Number of children in family	0.174	0.010	17.810	0.000
Ratio of claimant count to vacancies in LA	-0.021	0.004	5.490	0.000
Percentage of time absent from school 1 term prior to programme start	0.002	0.001	2.398	0.016
Percentage of time absent from school 3 terms prior to programme start	0.002	0.001	2.230	0.026
Total number of months child in need prior measurement date	0.029	0.003	10.161	0.000
Free school meals in academic year prior to start of programme	0.185	0.031	6.039	0.000
Statement of Special Educational Needs in academic year prior to start of programme	0.060	0.030	2.004	0.045
In care one month before programme start	-0.358	0.097	3.712	0.000
Constant	-0.119	2.044	0.058	0.954
Mean propensity score	0.791			
Median propensity score	0.848			
Prob>chi-squared	0.00			
Pseudo R-squared	0.196			
Base	15,166			

Table 98 Propensity score estimation for children where offending outcomes are observed for 18 months following programme start

	Coefficient	Standard error	Z-statistic	P-value
Family member claiming out-of-work benefits one month before programme start	0.041	0.076	0.544	0.586
Family member claiming out-of-work benefits 12 months before programme start	0.227	0.055	4.135	0.000
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	0.001	0.001	0.472	0.637
Any adult in family employed one month prior to programme start	-0.170	0.069	2.468	0.014
Any adult in family employed 12 months prior to programme start	-0.093	0.046	2.024	0.043
Max number of weeks any family member employed in year prior to programme start	0.002	0.001	1.577	0.115
Family member claiming JSA one month before programme start	-0.087	0.071	1.214	0.225
Family member claiming JSA 12 months before programme start	-0.279	0.054	5.190	0.000
Maximum number of weeks any family member on JSA in year prior to programme start	0.004	0.001	3.003	0.003
Family member claiming sickness benefits one month before programme start	-0.079	0.094	0.847	0.397
Family member claiming sickness benefits 12 months before programme start	-0.185	0.065	2.847	0.004
Maximum number of weeks any family member on sickness benefits in year prior to programme start	0.006	0.002	3.437	0.001
Conviction in year prior to programme start	0.381	0.088	4.321	0.000
Caution in year prior to programme start	0.366	0.072	5.090	0.000
Start month	0.004	0.003	1.355	0.175
Age at 19 Oct 2014 (years)	-0.054	0.015	3.499	0.000
Age squared	0.003	0.001	4.829	0.000
Female	-0.022	0.024	0.911	0.362

	Coefficient	Standard error	Z-statistic	P-value
Non-white	-0.599	0.033	18.318	0.000
Ethnicity missing	0.125	0.041	3.080	0.002
Number of adults in family	0.361	0.016	22.850	0.000
Number of children in family	0.180	0.009	19.753	0.000
Ratio of claimant count to vacancies in LA	-0.010	0.004	2.798	0.005
Percentage of time absent from school 1 term prior to programme start	0.002	0.001	2.450	0.014
Percentage of time absent from school 3 terms prior to programme start	0.002	0.001	2.060	0.039
Total number of months child in need prior measurement date	0.031	0.003	11.482	0.000
Free school meals in academic year prior to start of programme	0.188	0.028	6.658	0.000
Statement of Special Educational Needs in academic year prior to start of programme	0.073	0.028	2.602	0.009
In care one month before programme start	-0.406	0.089	4.565	0.000
Constant	-2.610	1.766	1.478	0.139
Mean propensity score	0.791			
Median propensity score	0.843			
Prob>chi-squared	0.00			
Pseudo R-squared	0.189			
Base	17,491			

Appendix E: Impact estimates using radius matching

Table 99 PSM benefit impact estimates, radius matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Claiming out-of-work benefits 12 months after programme start	46.3	46.5	-0.2	-2.0	1.6
Number of weeks on out-of-work benefits in year following programme start	23.5	23.6	-0.1	-1.0	0.7
Claiming JSA 12 months after programme start	10.8	11.2	-0.3	-1.4	0.8
Number of weeks on JSA in year following programme start	5.6	5.7	-0.1	-0.6	0.4
Claiming incapacity benefits 12 months after programme start	18.2	18.7	-0.5	-1.7	0.8
Number of weeks on sickness benefits in year following programme start	8.7	9.0	-0.3	-0.9	0.3
% off support	0.1				
Base	25,515	5,921			
Panel B. 18-month estimates					
Claiming out-of-work benefits 18 months after programme start	45.3	45.3	0.0	-2.5	2.5
Number of weeks on out-of-work benefits in 18 months following programme start	33.8	34.6	-0.8	-2.5	1.0
Claiming JSA 18 months	10.9	11.5	-0.6	-2.2	1.0

	Treatment group	Matched comparison group	Impact	Lower bound	Upper bound
after programme start					
Number of weeks on JSA in 18 months following programme start	8.6	9.0	-0.4	-1.4	0.5
Claiming incapacity benefits 18 months after programme start	18.6	19.3	-0.7	-2.5	1.1
Number of weeks on incapacity benefits in 18 months following programme start	12.8	13.8	-1.1	-2.3	0.2
% off support	0.2				
Base	15,373	3,113			

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

Table 100 PSM employment impact estimates, radius matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Employed 12 months after programme start	38.0	39.5	-1.5	-3.7	0.7
Number of weeks employed in year following programme start	17.5	18.0	-0.6	-1.6	0.5
% off support	0.1				
Base	19,459	4,360			
Panel B. 18-month impact					
Employed 18 months after programme start	40.7	43.5	-2.8*	-5.8	0.1
Number of weeks employed in 18 months following programme start	26.3	27.8	-1.5	-3.5	0.5
% off support	0.2				
Base	11,807	2,253			

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

Table 101 PSM 12-month absence impact estimates, radius matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school 3 terms after programme start	9.6	9.9	-0.3	-1.2	0.7
Absent for 15% or more of time 3 terms after programme start	20.3	21.2	-1.0	-3.2	1.3
% off support	0.2				
Base	13,255	3,483			

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

Table 102 PSM 12-month impact estimates for child welfare, radius matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Child welfare: CIN status 12 months after programme start	40.1	36.7	3.4***	0.8	6.0
In care 12 months after programme start	3.1	4.7	-1.7***	-2.6	-0.7
% off support	0.2				
Base	12,008	3,158			

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

Table 103 PSM 12-month impact estimates for adult offending, radius matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Caution or conviction in year following programme start	4.8	4.0	0.8**	0.0	1.6
Conviction in year following programme start	4.0	3.3	0.7*	0.0	1.4
Caution in year following programme start	1.0	0.9	0.1	-0.3	0.5
Custodial sentence in year following programme start	0.8	0.7	0.1	-0.2	0.4
Community sentence in year following programme start	1.4	1.7	-0.3	-0.8	0.2
% off support	0.1				
Base	25,515	5,921			
Panel B. 18-month impact					
Caution or conviction in year following programme start	8.7	7.7	1.0	-0.4	2.4
Conviction in year following programme start	7.1	6.2	0.9	-0.4	2.2
Caution in year following programme start	2.2	2.3	0.0	-0.8	0.8
Custodial sentence in year following programme start	1.7	1.5	0.2	-0.4	0.8
Community sentence in year following programme start	2.7	3.2	-0.5	-1.3	0.4
% off support	0.2				
Base	15,373	3,113			

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

Table 104 PSM 12-month impact estimates for child offending, radius matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Caution or conviction in year following programme start	3.5	2.6	0.9***	0.3	1.5
Conviction in year following programme start	2.4	1.7	0.7***	0.3	1.2
Caution in year following programme start	1.4	1.1	0.2	-0.2	0.7
Custodial sentence in year following programme start	0.2	0.1	0.1**	0.0	0.2
Community sentence in year following programme start	1.8	1.3	0.5**	0.1	0.9
% off support	0.1				
Base	25,966	6,925			
Panel B. 18-month impact					
Caution or conviction in year following programme start	5.8	5.7	0.1	-1.0	1.2
Conviction in year following programme start	3.9	3.2	0.7	-0.2	1.5
Caution in year following programme start	2.5	3.0	-0.5	-1.3	0.3
Custodial sentence in year following programme start	0.4	0.4	-0.1	-0.3	0.2
Community sentence in year following programme start	3.0	2.2	0.8*	0.0	1.6
% off support	0.2				
Base	13,859	3,632			

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

Appendix F: Impact estimates using Local Linear Regression matching

Table 105 PSM benefit impact estimates for adults, LLR matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month estimates					
Claiming out-of-work benefits 12 months after programme start	46.3	46.9	-0.7	-2.6	1.3
Number of weeks on out-of-work benefits in year following programme start	23.5	23.8	-0.3	-1.2	0.6
Claiming JSA 12 months after programme start	10.8	11.3	-0.4	-1.6	0.8
Number of weeks on JSA in year following programme start	5.6	5.8	-0.2	-0.7	0.3
Claiming incapacity benefits 12 months after programme start	18.2	19.1	-0.9	-2.2	0.4
Number of weeks on sickness benefits in year following programme start	8.7	9.1	-0.4	-1.1	0.2
% off support	0.1				
Base	25,515	5,921			
Panel B. 18-month estimates					
Claiming out-of-work benefits 18 months after programme start	45.3	45.6	-0.3	-3.0	2.4
Number of weeks on out-of-work benefits in 18 months following programme start	33.8	34.9	-1.1	-2.9	0.7
Claiming JSA 18 months	10.9	11.8	-0.8	-2.5	0.9

after programme start					
Number of weeks on JSA in 18 months following programme start	8.6	9.3	-0.7	-1.7	0.3
Claiming incapacity benefits 18 months after programme start	18.6	19.5	-0.9	-2.8	1.0
Number of weeks on incapacity benefits in 18 months following programme start	12.8	13.9	-1.1*	-2.4	0.1
% off support	0.2				
Base	15,373	3,113			

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

Table 106 PSM employment impact estimates, LLR matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Employed 12 months after programme start	38.0	39.9	-1.9	-4.3	0.4
Number of weeks employed in year following programme start	17.5	18.2	-0.7	-1.8	0.4
% off support	0.1				
Base	19,459	4,360			
Panel B. 18-month impact					
Employed 18 months after programme start	40.7	44.0	-3.3**	-6.5	-0.2
Number of weeks employed in 18 months following programme start	26.3	27.8	-1.5	-3.7	0.6
% off support	0.2				
Base	11,807	2,253			

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

Table 107 PSM 12-month impact estimates for absence, LLR matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school 3 terms after programme start	9.6	9.6	0.0	-1.1	1.0
Absent for 15% or more of time 3 terms after programme start	20.3	20.6	-0.3	-2.7	2.1
% off support	0.2				
Base	13,255	3,483			

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

Table 108 PSM 12-month impact estimates for child welfare, LLR matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status 12 months after programme start	40.1	37.4	2.6*	-0.1	5.4
In care 12 months after programme start	3.1	5.0	-1.9***	-2.9	-0.8
% off support	0.2				
Base	12,008	3,158			

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

Table 109 PSM 12-month impact estimates for adult offending, LLR matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Caution or conviction in year following programme start	4.8	4.1	0.7	-0.1	1.5
Conviction in year following programme start	4.0	3.4	0.6	-0.2	1.4
Caution in year following programme start	1.0	0.9	0.1	-0.3	0.5
Custodial sentence in year following programme start	0.8	0.8	0.0	-0.3	0.4
Community sentence in year following programme start	1.4	1.8	-0.4	-0.9	0.1
% off support	0.1				
Base	25,515	5,921			
Panel B. 18-month impact					
Caution or conviction in year following programme start	8.7	8.2	0.5	-1.0	2.0
Conviction in year following programme start	7.1	6.5	0.5	-0.8	1.9
Caution in year following programme start	2.2	2.5	-0.2	-1.1	0.6
Custodial sentence in year following programme start	1.7	1.8	-0.1	-0.8	0.5
Community sentence in year following programme start	2.7	3.5	-0.8*	-1.7	0.1
% off support	0.2				
Base	15,373				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level

Table 110 PSM 12-month impact estimates for child offending LLR

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Panel A. 12-month impact					
Caution or conviction in year following programme start	3.5	2.8	0.7**	0.1	1.4
Conviction in year following programme start	2.4	1.8	0.6**	0.1	1.1
Caution in year following programme start	1.4	1.2	0.2	-0.2	0.7
Custodial sentence in year following programme start	0.2	0.1	0.1**	0.0	0.2
Community sentence in year following programme start	1.8	1.3	0.5**	0.0	0.9
% off support	0.1				
Base	25,966	6,925			
Panel B. 18-month impact					
Caution or conviction in year following programme start	5.8	6.2	-0.5	-1.7	0.7
Conviction in year following programme start	3.9	3.6	0.3	-0.6	1.2
Caution in year following programme start	2.5	3.3	-0.7*	-1.6	0.1
Custodial sentence in year following programme start	0.4	0.4	-0.1	-0.4	0.2
Community sentence in year following programme start	3.0	2.3	0.7	-0.2	1.5
% off support	0.2				
Base	13,859	3,632			

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

Appendix G: Impact estimates using reduced bandwidth kernel matching

Table 111 PSM 12-month benefit impact estimates for adults, reduced bandwidth kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Claiming out-of-work benefits 12 months after programme start	44.9	46.2	-1.3	-3.3	0.8
Number of weeks on out-of-work benefits in year following programme start	22.9	23.5	-0.6	-1.6	0.4
Claiming JSA 12 months after programme start	10.5	11.3	-0.8	-2.1	0.5
Number of weeks on JSA in year following programme start	5.5	5.8	-0.3	-0.8	0.3
Claiming incapacity benefits 12 months after programme start	17.7	18.5	-0.8	-2.3	0.7
Number of weeks on sickness benefits in year following programme start	8.5	8.9	-0.4	-1.1	0.3
% off support	38.1				
Base	25,515	5,921			

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

Table 112 PSM 12-month employment impact estimates for adults, reduced bandwidth kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Employed 12 months after programme start	38.2	38.8	-0.6	-3.1	1.9
Number of weeks employed in year following programme start	17.7	17.6	0.0	-1.2	1.2
% off support	49.9				
Base	19,459	4,360			

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

Table 113 PSM 12-month impact estimates for absence, reduced bandwidth kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school 3 terms after programme start	9.7	10.1	-0.4	-1.5	0.7
Absent for 15% or more of time 3 terms after programme start	20.4	22.0	-1.6	-4.3	1.0
% off support	65.6				
Base	13,255	3,483			

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

Table 114 PSM 12-month impact estimates for children, child welfare reduced bandwidth kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status 12 months after programme start	37.8	36.5	1.3	-2.0	4.5
In care 12 months after programme start	2.8	4.6	-1.8***	-3.0	-0.6
% off support	68.6				
Base	12,008	3,158			

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

Table 115 PSM 12-month impact estimates for adult offending, reduced bandwidth kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year following programme start	4.4	4.2	0.2	-0.7	1.1
Conviction in year following programme start	3.7	3.5	0.2	-0.6	1.0
Caution in year following programme start	0.9	1.0	-0.1	-0.5	0.3
Custodial sentence in year following programme start	0.8	0.6	0.2	-0.2	0.5
Community sentence in year following programme start	1.3	1.8	-0.5**	-1.1	0.0
% off support	38.1				
Base	25,515	5,921			

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

Table 116 PSM 12-month impact estimates for child offending, reduced bandwidth kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year following programme start	3.2	2.8	0.5	-0.2	1.1
Conviction in year following programme start	2.1	1.7	0.5*	0.0	1.0
Caution in year following programme start	1.3	1.2	0.1	-0.3	0.5
Custodial sentence in year following programme start	0.2	0.1	0.1	-0.1	0.2
Community sentence in year following programme start	1.6	1.2	0.4	-0.1	0.9
% off support	40.2				
Base	25,966	6,925			

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

Appendix H: Impact estimates for the sample of areas where start order random

Table 117 PSM benefit impact estimates, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Claiming out-of-work benefits 12 months after programme start	46.9	46.6	0.3	-1.3	2.0
Number of weeks on out-of-work benefits in year following programme start	23.7	23.5	0.2	-0.6	1.0
Claiming JSA 12 months after programme start	12.0	12.2	-0.2	-1.3	0.9
Number of weeks on JSA in year following programme start	6.1	6.2	-0.1	-0.6	0.4
Claiming incapacity benefits 12 months after programme start	17.9	17.7	0.1	-1.1	1.4
Number of weeks on sickness benefits in year following programme start	8.5	8.4	0.1	-0.5	0.7
% off support	0.3				
Base	17,226	5,433			

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

Table 118 PSM employment impact estimates, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Employed 12 months after programme start	37.9	38.7	-0.8	-2.5	1.0
Number of weeks employed in year following programme start	17.4	17.4	0.0	-0.8	0.8
% off support	0.1				
Base	14,430	4,765			

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

Table 119 PSM 12-month impact estimates for absence, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school 3 terms after programme start	9.3	10.1	-0.8**	-1.5	-0.1
Absent for 15% or more of time 3 terms after programme start	19.3	22.3	-3.0***	-4.7	-1.3
% off support	0.0				
Base	10,085	4,558			

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

Table 120 PSM 12-month impact estimates for child welfare, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status 12 months after programme start	38.5	37.2	1.2	-0.6	3.1
In care 12 months after programme start	2.8	3.1	-0.2	-0.9	0.4
% off support	0.0				
Base	9,519	4,352			

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

Table 121 PSM impact estimates for adult offending, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year following programme start	5.1	4.9	0.2	-0.5	0.9
Conviction in year following programme start	4.3	4.2	0.1	-0.5	0.8
Caution in year following programme start	1.0	1.0	0.0	-0.3	0.3
Custodial sentence in year following programme start	0.9	1.0	-0.1	-0.4	0.3
Community sentence in year following programme start	1.5	1.9	-0.3	-0.8	0.1
% off support	0.3				
Base	17,266	5,433			

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

Table 122 PSM impact estimates for child offending, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year following programme start	3.5	3.3	0.2	-0.3	0.8
Conviction in year following programme start	2.5	2.2	0.3	-0.2	0.7
Caution in year following programme start	1.3	1.3	0.0	-0.3	0.4
Custodial sentence in year following programme start	0.3	0.4	-0.1	-0.3	0.0
Community sentence in year following programme start	1.8	1.6	0.2	-0.3	0.6
% off support	0.1				
Base	17,062	6,714			

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

Appendix I: Pre-programme tests using kernel matching

Table 123 PSM pre-programme tests for benefits, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Claiming out-of-work benefits one month before programme start	46.2	46.4	-0.3	-2.0	1.5
Claiming out-of-work benefits 12 months before programme start	43.8	44.6	-0.8	-2.6	1.0
Number of weeks on out-of-work benefits in year before programme start	28.2	28.4	-0.2	-1.1	0.7
Claiming JSA one month before programme start	12.7	13.0	-0.3	-1.5	0.9
Claiming JSA 12 months before programme start	11.5	12.0	-0.5	-1.6	0.6
Number of weeks on JSA in year before programme start	11.0	11.1	-0.1	-0.8	0.6
Claiming incapacity benefits one month before programme start	15.9	16.8	-0.9	-2.0	0.3
Claiming incapacity benefits 12 months before programme start	14.5	15.1	-0.6	-1.8	0.5
Number of weeks on sickness benefits in year before programme start	10.7	11.0	-0.4	-1.0	0.3
% off support	0.1				
Base	25,515	5,921			

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

Table 124 PSM pre-programme tests for employment, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Employed one month before programme start	30.3	31.5	-1.2	-3.3	0.9
Employed 12 months before programme start	24.8	25.6	-0.8	-2.8	1.1
Number of weeks employed in year prior to programme start	20.2	20.6	-0.4	-1.5	0.7
% off support	0.1				
Base	19,459	4,360			

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

Table 125 PSM pre-programme tests for absence, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Percentage of time absent from school 1 term prior to programme start	10.6	10.6	0.0	-0.9	0.9
Percentage of time absent from school 3 terms prior to programme start	11.2	11.4	-0.2	-1.1	0.7
Absent for 15% or more of time 1 term before programme start	24.6	22.1	2.5**	0.3	4.7
Absent for 15% or more of time 3 terms before programme start	26.3	24.7	1.6	-0.6	3.9
% off support	0.2				
Base	13,255	3,483			

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

Table 126 PSM pre-programme tests for child welfare, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
CIN status one month before programme start	36.1	33.4	2.7**	0.3	5.1
In care one month before programme start	1.8	1.9	0.0	-0.9	0.8
% off support	0.2				
Base	12,008	3,158			

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

Table 127 PSM pre-programme tests for adult offending, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year prior to programme start	11.5	10.8	0.7	-0.4	1.9
Conviction in year prior to programme start	8.6	8.1	0.5	-0.5	1.5
Caution in year prior to programme start	3.6	3.4	0.2	-0.6	0.9
Custodial sentence in year prior to programme start	1.5	1.4	0.1	-0.4	0.5
Community sentence in year prior to programme start	4.6	4.4	0.1	-0.6	0.9
% off support	0.1				
Base	25,515	5,921			

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

Table 128 PSM 12-month impact estimates for child offending, kernel matching

	Treatment group (% unless otherwise stated)	Matched comparison group (% unless otherwise stated)	Impact (pp difference)	95% confidence interval	
				Lower bound	Upper bound
Caution or conviction in year following programme start	6.3	5.2	1.1***	0.4	1.8
Conviction in year following programme start	2.9	2.7	0.1	-0.3	0.6
Caution in year following programme start	4.0	3.0	1.0***	0.4	1.5
Custodial sentence in year following programme start	0.2	0.1	0.1*	0.0	0.2
Community sentence in year following programme start	2.4	2.5	-0.1	-0.5	0.4
% off support	0.1				
Base	25,966	6,925			

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

Appendix J: Waiting list analysis for the sample of areas where start order random

Table 129 Waiting list analysis adults – 12-month impact for out-of-work benefits

| Start on programme: | Percentage still on out-of-work benefits after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	80.6	76.9	3.8	74.4	70.8	3.6	68.9	65.5	3.5
Sep-12	74.4	70.9	3.6	69.9	66.5	3.5			
Dec-12	67.6	63.9	3.6						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 8,723 adults who were observed for at least 12 months.

Table 130 Waiting list analysis adults – 18-month impact estimates for out-of-work benefits

| Start on programme: | Percentage still on out-of-work benefits after: | | | | | | | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | | |
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	80.6	76.9	3.8	74.4	70.8	3.6	69.0	65.5	3.5	64.6	61.2	3.4	60.8	57.5	3.2
Sep-12	74.5	70.9	3.6	69.9	66.6	3.3	65.5	62.2	3.2	61.8	58.7	3.1			
Dec-12	68.0	64.4	3.6	62.9	59.3	3.6	59.6	56.2	3.4						
Apr-13	67.4	64.4	3.0	64.8	62.1	2.7									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 5,306 adults who were observed for at least 18 months

Table 131 Waiting list analysis adults - 12-month impact estimates for JSA

| | Percentage still on JSA after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	59.3	49.6	9.7	45.6	35.6	10.0	34.6	24.2	10.4
Sep-12	53.2	45.2	8.0	43.5	35.4	8.1			
Dec-12	46.0	38.4	7.6						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 2,263 adults who were observed for at least 12 months.

Table 132 Waiting list analysis adults - 18-month impact estimates for JSA

| | Percentage still on JSA after: | | | | | | | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	60.8	51.1	9.7	46.9	36.7	10.2	35.4	24.7	10.8	26.1	14.5	11.6	22.1	11.1	11.0
Sep-12	55.0	47.0	8.0	45.5	37.5	8.0	36.0	27.5	8.5	28.2	19.2	9.0			
Dec-12	49.1	41.8	7.3	40.7	33.2	7.5	33.5	25.7	7.8						
Apr-13	45.8	39.2	6.6	41.3	35.1	6.2									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 1,413 adults who were observed for at least 18 months.

Table 133 Waiting list analysis adults - 12-month impact estimates for incapacity benefits

| | Percentage still on incapacity benefits after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	85.6	82.8	2.7	79.3	76.6	2.7	73.3	70.6	2.8
Sep-12	77.9	74.9	2.9	72.1	69.3	2.9			
Dec-12	69.2	66.0	3.2						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 2,737 adults who were observed for at least 12 months.

Table 134 Waiting list analysis adults - 18-month impact estimates for incapacity benefits

Start on programme:	3 months			6 months			9 months			Percentage still on incapacity benefits after: 12 months			15 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	84.8	82.0	2.8	78.6	75.9	2.7	72.7	70.0	2.7	67.7	65.0	2.7	62.9	60.2	2.7
Sep-12	77.1	74.1	3.0	71.5	68.7	2.9	66.5	63.7	2.8	61.5	58.7	2.8			
Dec-12	69.8	66.7	3.1	63.8	60.8	3.1	59.0	56.0	3.0						
Apr-13	67.8	65.1	2.7	63.4	60.9	2.6									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 1,695 adults who were observed for at least 18 months.

Table 135 Waiting list analysis adults - 12-month impact estimates for employment

Start on programme:	3 months			Percentage still on not employed after: 6 months			9 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	81.1	77.5	3.5	75.9	72.8	3.2	70.8	67.7	3.1
Sep-12	76.5	73.4	3.1	71.9	68.9	2.9			
Dec-12	72.0	69.2	2.8						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 6,527 adults who were observed for at least 12 months.

Table 136 Waiting list analysis adults - 18-month impact estimates for employment

| | | | | | | | | | | Percentage still not employed after: | | | | | |
| Start on | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | | |
programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	81.3	77.8	3.5	76.0	72.9	3.2	70.7	67.6	3.1	66.5	63.5	3.0	63.2	60.3	2.9
Sep-12	76.6	73.5	3.1	71.8	68.8	3.0	67.5	64.6	2.9	64.0	61.2	2.8			
Dec-12	72.0	69.1	2.9	68.1	65.3	2.8	64.6	61.9	2.7						
Apr-13	68.5	65.8	2.7	65.5	62.9	2.6									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 3,936 adults who were observed for at least 18 months.

Table 137 Waiting list analysis children - 12-month impact estimates for child welfare

| | | | | Percentage still had a child 'in need' status after: | | | | | |
| Start on | 3 months | | | 6 months | | | 9 months | | |
programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	70.8	65.8	5.0	63.3	59.0	4.4	57.9	53.9	4.0
Sep-12	64.5	60.3	4.1	58.2	54.4	3.8			
Dec-12	54.1	49.5	4.5						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 2,305 children who were observed for at least 12 months.

Table 138 Waiting list analysis adults - 12-month impact estimates for offending

| | | | | Percentage still not offended after: | | | | | |
| Start on | 3 months | | | 6 months | | | 9 months | | |
programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	96.3	95.6	0.7	95.3	94.7	0.6	94.6	94.0	0.6
Sep-12	95.3	94.8	0.6	94.5	94.0	0.5			
Dec-12	94.4	93.9	0.5						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on 20,521 adults who were observed for at least 12 months.

T able 139 Waiting list analysis adults - 18-month impact estimates for offending

	3 months			6 months			9 months			Percentage still not offended after: 12 months			15 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	95.8	95.1	0.7	94.8	94.2	0.6	94.0	93.5	0.5	93.4	92.9	0.5	92.8	92.3	0.5
Sep-12	94.8	94.2	0.6	94.0	93.4	0.5	93.3	92.8	0.5	92.6	92.2	0.4			
Dec-12	93.9	93.4	0.5	92.8	92.4	0.5	92.1	91.6	0.4						
Apr-13	93.7	93.3	0.4	92.9	92.5	0.4									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,933 adults who were observed for at least 18 months

Table 140 Waiting list analysis adults - 12-month impact estimates for community sentence

	Percentage still not received a community sentence after:								
	3 months			6 months			9 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.3	98.0	0.3	97.8	97.6	0.2	97.4	97.2	0.2
Sep-12	98.0	97.8	0.2	97.7	97.5	0.2			
Dec-12	97.7	97.5	0.2						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 20,521 adults who were observed for at least 12 months.

Table 141 Waiting list analysis adults - 18-month impact estimates for community sentence

Start on programme:	Percentage still not received a community sentence after:														
	3 months			6 months			9 months			12 months			15 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.0	97.7	0.3	97.6	97.3	0.2	97.1	96.9	0.2	96.7	96.5	0.2	96.4	96.2	0.2
Sep-12	97.8	97.5	0.2	97.4	97.2	0.2	97.0	96.8	0.2	96.8	96.6	0.2			
Dec-12	97.4	97.2	0.2	97.1	96.9	0.2	96.8	96.7	0.2						
Apr-13	97.6	97.5	0.1	97.3	97.2	0.1									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,933 adults who were observed for at least 18 months.

Table 142 Waiting list analysis adults - 12-month impact estimates for custodial sentence

Start on programme:	Percentage still not received a custodial sentence after:								
	3 months			6 months			9 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.3	99.2	0.1	99.0	98.9	0.1	98.9	98.8	0.1
Sep-12	99.2	99.1	0.1	99.0	98.9	0.1			
Dec-12	98.9	98.8	0.1						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 20,521 adults who were observed for at least 12 months.

Table 143 Waiting list analysis adults - 18-month impact estimates for custodial sentence

	3 months			6 months			9 months			12 months			15 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.3	99.1	0.1	99.0	98.8	0.1	98.8	98.7	0.1	98.7	98.6	0.1	98.5	98.4	0.1
Sep-12	99.1	99.0	0.1	98.9	98.8	0.1	98.7	98.6	0.1	98.6	98.5	0.1			
Dec-12	98.8	98.7	0.1	98.6	98.4	0.1	98.4	98.2	0.1						
Apr-13	99.1	99.0	0.1	99.0	98.9	0.1									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,933 adults who were observed for at least 18 months.

Table 144 Waiting list analysis children - 12-month impact estimates for offending

	3 months			6 months			9 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	97.8	97.4	0.5	97.2	96.7	0.4	96.4	96.0	0.4
Sep-12	96.9	96.5	0.4	96.2	95.8	0.4			
Dec-12	95.9	95.5	0.4						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 21,683 children who were observed for at least 12 months.

Table 145 Waiting list analysis children - 18-month impact estimates for offending

| | Percentage still not offended after: | | | | | | | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | | 12 months | | | 15 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	97.4	96.9	0.5	96.7	96.3	0.4	95.9	95.5	0.4	95.3	94.9	0.4	94.9	94.6	0.3
Sep-12	96.5	96.1	0.4	95.8	95.4	0.4	95.1	94.8	0.4	94.6	94.3	0.3			
Dec-12	95.5	95.1	0.4	94.7	94.4	0.4	93.9	93.6	0.4						
Apr-13	96.7	96.4	0.2	96.2	96.0	0.2									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,620 children who were observed for at least 18 months

Table 146 Waiting list analysis children - 12-month impact estimates for community sentences

| | Percentage still not received a community sentence after: | | | | | | | | |
| | 3 months | | | 6 months | | | 9 months | | |
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.8	98.5	0.3	98.3	98.0	0.3	97.8	97.5	0.3
Sep-12	98.3	98.1	0.2	97.9	97.7	0.2			
Dec-12	98.0	97.7	0.2						

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 21,683 children who were observed for at least 12 months.

Table 147 Waiting list analysis children - 18-month impact estimates for community sentences

Start on programme:	3 months			6 months			9 months			12 months			15 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	98.6	98.3	0.3	98.0	97.8	0.3	97.5	97.3	0.3	97.0	96.8	0.3	96.7	96.5	0.2
Sep-12	98.1	97.9	0.2	97.7	97.5	0.2	97.2	97.0	0.2	96.9	96.7	0.2			
Dec-12	97.7	97.5	0.2	97.3	97.1	0.2	96.8	96.6	0.2						
Apr-13	98.4	98.3	0.1	98.2	98.1	0.1									

Percentage still not received a community sentence after:

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,620 children who were observed for at least 18 months.

Table 148 Waiting list analysis children - 12-month impact estimates for custodial sentences

Start on programme:	3 months			6 months			9 months		
	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.8	99.8	0.0	99.7	99.7	0.0	99.6	99.6	0.0
Sep-12	99.8	99.7	0.0	99.7	99.7	0.0			
Dec-12	99.7	99.7	0.0						

Percentage still not received a custodial sentence after:

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 21,683 children who were observed for at least 12 months.

Table 149 Waiting list analysis children - 18-month impact estimates for custodial sentences

									Percentage still not received a custodial sentence after:					
	3 months			6 months			9 months			12 months			15 months		
Start on programme:	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact	TF	C	Impact
Jun-12	99.8	99.8	0.0	99.7	99.7	0.0	99.6	99.6	0.0	99.6	99.5	0.0	99.5	99.5	0.0
Sep-12	99.8	99.7	0.0	99.7	99.7	0.0	99.6	99.6	0.0	99.6	99.6	0.0			
Dec-12	99.7	99.6	0.0	99.6	99.6	0.0	99.6	99.5	0.0						
Apr-13	99.7	99.7	0.0	99.6	99.6	0.0									

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for 12,620 children who were observed for at least 18 months.

Annex A: Local authority data cleaning and checking

Overview

This Annex presents an account of the data checking and cleaning undertaken by NIESR for the National Impact Study.

The Annex is structured as follows:

- Part 1 gives a detailed account of all the checks that were applied to the programme data, and the impact of the cleaning process on the number of treatment and comparison group cases in two areas where the DCLG queried the coding of participants' treatment status.

  Additionally, it presents the impact of the cleaning process on the number of treatment and comparison group cases in three areas (LA40, LA51 and LA54) where data were not correctly matched to the NPD and the WPLS. The final data used in the impact analysis and detailed in the main report exclude these three areas.

- Part 2 presents the results from additional data checks which compare:

  - Results from the final data to those from revised data which exclude LA5. This was carried out as LA5 did not provide the necessary information to match its data extract to the NPD.

  - Results from the final data to those from revised data which exclude all cases where treatment status was recoded. This was carried out in response to DCLG queries on the recoding of participants' treatment and comparison status in a number of data extracts from local authorities.

The checks presented in Part 2 did not result in changes being made to the final dataset.

Data checking and cleaning

It was necessary to check and clean data supplied by local authorities in stages to meet the reporting timetable. The initial priority was to prepare the personal data for supply to Departments. Once the extracts of personal data had been prepared, programme data was checked and cleaned, with a particular focus on cleaning the treatment identifier. Having removed duplicates, the final stage of checking and cleaning focused on date consistency and the recording of treatment intensity.

Table 150 provides a detailed breakdown of all the checks that were applied to the data, the steps that were taken to clean the information supplied by local authorities, and the impact of the cleaning process on the number of treatment and comparison group cases in two areas, LA28 and LA50, where DCLG had queries regarding the coding of participants' treatment status.

Table 150 Data checking and cleaning steps

Check	Impact on number of cases for analysis					
	LA28			LA50		
	T	C	Blank	T	C	Blank
Excel file supplied	0	0	3,046[44]	1,764	694	13
After conversion to Stata format	0	0	3,046	1,764	694	13

Preparing personal data prior to sending to Departments

Data checking and cleaning to:
1) Record date of birth where stored in the wrong field.
2) Fix obvious typos in date of birth e.g. year recorded as 1694.
3) Set date of birth to missing where year was 1900 or earlier or after 14 Nov 2014.
4) Convert postcodes to upper case and left and right trim.
5) Separate inward and outward portions of postcode.
6) Remove extraneous text and spaces on postcode.
7) Generate cleaned version of postcode (putting inward and outward portions back together).
8) Check for obvious area/postcode inconsistencies.
9) Set missing values on postcodes (where typos that could not be corrected, incomplete etc).
10) Set forenames to lower case and left and right trim.
11) Set surnames to lower case and left and right trim.
12) Remove extraneous information from forename field e.g. full stops after initials, surnames etc.
13) Set missing values on forename field.
14) Remove extraneous information from surname field e.g. forenames etc.
15) Set missing values on surname field.
16) Split multiple forenames into separate fields.
17) Convert alias forenames to lower case and trim.
18) Deal with obvious typos on alias forenames.
19) Remove alias forenames which match forenames.
20) Convert alias surnames to lower case and trim.
21) Deal with obvious typos on alias surnames.
22) Remove alias surnames which duplicate surnames.
23) Match on gender from look-up table in cases where not recorded (using all recorded forenames).
24) Recode gender where hyphenated forenames etc.
25) Trim alternative postcodes.
26) Remove extraneous information from alternative postcode field e.g. where full address supplied.
27) Set missing codes for alternative postcodes.
28) Convert NHS number to lower case and trim.
29) Set missing codes for NHS number.

[44] In all cases a start date was recorded.

30) Convert NI number to upper case and trim.
31) Remove extraneous information from NI number.
32) Set missing codes for NI number.
33) Convert unique pupil number to upper case and trim.
34) Remove extraneous information from NI number and set missing codes.
35) Convert school unique reference number to lower case and trim.
36) Match on six-digit URN for three areas which supplied 7-digit number.
37) Set missing codes for URN.
38) Convert PNC number to upper case and trim.
39) Fix format issues with PNC number.
40) Drop cases where family identifier missing for a small number of cases in area and cannot be derived from other information supplied e.g. postcode and surname matches another individual on file; local authority identifier which identifies families etc.
41) Derive new, more complete family identifier.
42) Drop duplicates on all fields.
43) Check for any duplicates on the unique identifiers.

	LA28			LA50		
	T	C	Blank	T	C	Blank
After data checking and cleaning described above	0	0	3,046	1,764	694	11
Included in PNC extract request[45] (born on or before 21 Nov 2004), or date of birth missing)	2,583			2,179		
Included in WPLS extract request (born on or before 21 Nov 1998 or date of birth missing).	1,923			1,659		
Included in NPD extract request (born on or after 1 Sep 1989, or date of birth missing).	2,040			2,445		
Included in any of the data extracts requested from Departments	3,046			2,471		

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[45] Note that start dates were checked and cleaned following the supply of personal data to Departments. Therefore the samples sent to Departments included families which were recorded as having started on the programme before 1 Apr 2012 and where start dates were missing and could not be imputed. As DCLG instructed that the evaluation should focus on those who started the programme after 1 Apr 2012, these cases were subsequently excluded from the sample for analysis. Therefore, a proportion of the individuals that Departments were asked to supply data on were excluded from the analysis when the date of starting on the programme was taken into account. This explains why the number of individuals included in the extracts sent to Departments exceeds the number of individuals in the final dataset.

Preparing programme data, after sending personal data to Departments

Preparing programme data, after sending personal data to Departments

Data checking and cleaning to:

1) Correct obvious typos on screening date, and set to missing where uncertain.
2) Correct obvious typos on start date, or set to missing where uncertain.
3) Correct obvious typos on end date, or set to missing where uncertain.
4) Set start and screening dates to earliest observed for other family members where missing.
5) Set end date to that observed for other family members where missing.
6) Check screening date on or before start date.
7) Check end date on or after screening date
8) Check end date after start date.
9) Trim eligibility criteria variables.
10) Record criteria met against all family members.
11) Recode treatment identifier to 'yes' where no cases in area identified as part of the comparison group.
12) Recode treatment identifier to 'yes' where vast majority of cases recorded as treated and small number not recorded.
13) Recode treatment identifier to 'yes' where identifier was missing but questionnaire responses indicated that only treated families were included in the sample.
14) Delete records where multiple items of personal data are missing.
15) Recode all family members to treatment group where at least one person in the same family is treated.
16) Recode to comparison group where only two criteria are met and the treatment group identifier is blank.
17) Recode to comparison group where treatment group identifier is blank and no criteria met.
18) Recode to comparison group where treatment group identifier is blank and no start date.
19) Recode to treatment group if met 3 or more criteria and some family members treated.
20) Recoded to treatment group if met 3 or more criteria and start date recorded.
21) Recode cases where whether met local criteria not recorded, but met two national criteria and recorded as treated.

Of the data checking and cleaning steps described above, the main changes that affected these areas were:

	LA28			LA50		
	T	C	Blank	T	C	Blank
(11, 12, 13) Recoding treatment identifier to 'yes' where no cases in area identified as part of the comparison group; where vast majority of cases recorded as treated; where questionnaire responses indicated that	3,046	0	0	1,764	694	11

only treated families included in sample						
(15) Recoding treatment identifier to 'yes' if other family members recorded as treated	3,046	0	0	1,775	694	0
(19) Recoding treatment identifier to 'yes' if 3 or more criteria recorded as being met and some family members recorded as treated.	3,046	0	0	1,790	679	0
(20) Recoding treatment identifier to 'yes' if recorded as meeting 3 or more criteria and start date recorded	3,046	0	0	2,248	221	0
After all data checking and cleaning described above	3,046	0	0	2,248	221	0
From full dataset (all individuals included in programme data, prior to drawing extracts to send to departments):						
After removing duplicates	3,044			2,243	221	0

Final clean of programme data prior to merging datasets

Data checking and cleaning to:
1) Propagate start dates to all family members;
2) Set family start date to the earliest start date recorded for any family member;
3) Set screening date to the earliest screening date for any family member;
4) Set end date to the earliest end date for any family member;
5) Replace start date with screening date for those in treatment group without a start date.
6) Set start date to 12 months before end date where received intensive treatment but start date missing.
7) Set start date to 8 months before end date where received less intensive treatment and start date is missing.[46]
8) Set end date to missing where end date is before start date.
9) Set end date to missing where end date is the same as the screening date.
10) Check whether start dates prior to 1 Apr 2012 were in a limited subset of areas.

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[46] These recodes were based on data on the average length of treatment for families receiving different intensities of support, supplied by DCLG on 20 Oct 2014.

11) Check number of cases where the screening date was after the start date, by area.
12) Recode intensity of treatment to missing for untreated.
13) Recode those who have received intensive treatment as treated.
14) Exclude cases from LA5 where family membership uncertain.

	LA28			LA50		
	T	C	Blank	T	C	Blank
After removing start dates before 1 Apr 2012	3,044	0	0	2,243	221	0
After removing those recorded as in Expansion phase of programme	3,044	0	0	2,231	221	0
After removing treated with missing start dates	3,044	0	0	2,231	221	0
After recoding comparison group cases with a start date	3,044	0	0	2,452	0	0
After excluding cases which were included in the data extracts sent to Departments, but subsequently found to have start dates out of range	3,044	0	0	2,452	0	0
Adults analysis sample (observed on benefits or in employment for at least 12 months after start on programme)	765	0	0	126	0	0
Those in adults sample matched to WPLS records	690	0	0	89	0	0
Children sample - absence observed for 12 months following start date	456	0	0	230	0	0
Those in child sample matched to NPD records	437	0	0	209	0	0
Children sample – welfare observed for 12 months following start date	373	0	0	169	0	0
Those in child welfare sample matched to NPD records	360	0	0	152	0	0

Table 151 shows the number of individuals in the treatment and comparison groups in the raw data supplied by local authorities and in the cleaned dataset. As is apparent from the previous table, the exclusion of families who were recorded as

starting on the programme before 1 April 2012, those who participated in the programme who did not have a recorded start date, families that participated in the expansion phase and the removal of duplicates explain why many individuals in the data extracts supplied by local authorities were dropped from the cleaned dataset. Changes in the number of treatment and comparison group cases are, as a result of these exclusions as well as the data cleaning steps, set out in Table 150.

Table 151 Impact of data cleaning on the treatment and comparison group samples, by area

Area	Raw data			Cleaned data		
	T	C	Blank	T	C	Blank
LA1	0	0	3,600	399	0	0
LA2	183	4	2	0	4	0
LA3	7,767	3,564	0	6,173	3,541	0
LA4	100	57	0	100	57	0
LA5	1,025	95	53	891	0	0
LA6	433	713	0	433	712	0
LA7	47	0	0	37	0	0
LA8	2,010	293	0	1,983	293	0
LA9	1,377	0	0	338	0	0
LA10	4,413	126	0	4,414	123	0
LA11	0	0	2,365	2,357	0	0
LA12	4,466	1,290	0	3,283	1,284	0
LA13	1,511	0	0	1,510	0	0
LA14	2,577	115	0	2,643	45	0
LA15	1,381	165	0	1,303	165	0
LA16	794	0	0	788	0	0
LA17	2,403	0	0	2,401	0	0
LA18	758	0	216	756	213	0
LA19	810	0	0	788	0	0
LA20	1,497	316	0	1,481	316	0
LA21	454	576	0	485	539	0
LA22	3,136	168	0	3,119	167	0
LA23	1,434	459	0	1,892	0	0
LA24	3,500	3,695	0	3,471	3,695	0
LA25	761	14	0	752	14	0
LA26	1,465	491	0	1,289	482	0
LA27	7,618	526	0	6,334	303	0
LA28	0	0	3,046	3,044	0	0
LA29	998	201	0	106	157	0
LA30	1,815	0	0	1,782	0	0
LA31	3,509	0	0	2,303	0	0
LA32	1,766	191	1	1,766	191	0
LA33	367	0	0	358	0	0
LA34	807	47	0	795	47	0
LA35	714	0	0	437	0	0
LA36	3,071	137	0	3,177	0	0
LA37	2,614	842	0	1,420	842	0
LA38	231	48	0	138	48	0
LA39	517	0	0	517	0	0
LA40	32	4	0	32	4	0
LA41	4,120	5,104	0	797	5,045	0
LA42	82	40	0	82	40	0
LA43	4,452	217	0	4,452	217	0

LA44	242	0	108	342	0	0
LA45	3,011	2,795	90	907	2,812	0
LA46	2,807	0	0	2,180	0	0
LA47	827	613	0	806	606	0
LA48	0	0	291	283	0	0
LA49	585	0	888	356	0	0
LA50	1,764	694	13	2,452	0	0
LA51	3,616	0	19	2,334	0	0
LA52	1,772	0	0	1,764	0	0
LA53	268	48	0	268	46	0
LA54	44	44	0	25	31	0
LA55	3,476	133	3	2,002	133	0
LA56	2,495	888	0	1,640	888	0
LA57	1,292	0	0	902	0	0
LA58	1,778	0	0	307	0	0
LA59	2,672	0	0	2,458	0	0

Unmatched NPD and WPLS data

When selecting the NPD and WPLS data extracts, some cases were dropped because famid was missing (or more precisely, where famid==".”). Table 152 shows the total number of cases excluded in each area.

Table 152 Cases excluded from WPLS and NPD data extracts

Area	Number of cases excluded from WPLS and NPD data extracts because famid==”.”	Percentage of all cases from area included in WPLS or NPD data extracts (or both)
LA18	3/969	99.7
LA23	2/1892	99.9
LA32	3/1957	99.8
LA40	36/36	0.0
LA47	2/1412	99.9
LA51	2,334/2,334	0.0
LA54	56/56	0.0

Individuals were excluded from the matched dataset if they were not included in any of the three data extracts, but because a proportion of adults and children in the areas listed above were included in the PNC extract requested, they were retained in the matched data. In four areas (LA18, LA23, LA32 and LA47), the absolute number of cases excluded from NPD and WPLS extracts was very small, and so unlikely to affect results.

In the three areas where no adults or children were included in the WPLS and NPD data extracts requested (LA40, LA51 and LA54), the actual number of cases included in the matched version of the dataset is shown in Table 153.

Table 153 Number of cases matched to each dataset

	LA40	LA51	LA54
Matched to:			
PNC	36	480	10
WPLS	0	0	0
NPD	0	0	0
Any			
Total cases on file	36	2,334	56
Adults:			
In analysis sample	6	878	1
With WPLS records	0	0	0
Children:			
In absence sample	8	86	15
In welfare sample	5	34	15
With NPD records	0	0	0

Notes: The total size of each of the analysis samples (at the point 12 months after starting on the programme) was as follows: Adults (benefits or employment) 26,398; Children – absence 13,362; Children – welfare 12,060.

The absolute number of cases that LA54 contributed to the final sample for analysis was a very small proportion of the total (less than 0.01 per cent of the adult and child samples). Similarly, LA40 contributed less than 0.02 per cent of the adult sample and less than 0.06 per cent of child sample. However, the missing WPLS and NPD records for LA51 were more significant, given that this area contributed 0.6 per cent of the child sample and 3.3 per cent of the adult sample. As a result, the final dataset used in the analysis excludes LA40, LA51 and LA54.

Summary

The consultation exercise with local authorities indicated that only a subset were likely to provide any information on a comparison group. Therefore, where participation status was not recorded for any individuals, it was assumed that the sample did not include comparison group cases. For the sake of consistency, this assumption was applied across all areas where participation in the programme was not recorded. As participation status was not recorded for any of the cases included in the data extract supplied by LA28, all cases were assumed to be part of the treatment group. Furthermore, a date of starting on the programme was recorded for all individuals included in the data extract, which further suggested that the data extract only included treated families.

Again, a date of starting on the programme was recorded for all individuals from the LA50 extract recorded as 'not having been worked with'. In two-thirds of these cases the family was also recorded as meeting three or more eligibility criteria. The data recorded against these fields suggested that these cases were wrongly identified as part of the comparison group and they were therefore recoded.

The exclusion of LA40, LA51 and LA54 from the WPLS and NPD data extracts was an error arising from the fact that data checking and cleaning had to proceed in parallel with making the requests for data extracts, due to the short timeframe for the analysis. This was rectified by re-running the analysis to exclude these areas. The final report presents results from the remaining 56 areas.

Additional data checks

Missing NPD data in LA5

LA5 was included in the NPD data extract request but did not provide postcodes for any individuals; therefore, no cases were matched to the NPD. As individuals within this area were matched to the WPLS and PNC, the area was included in the final dataset. This was decided as excluding unmatched individuals from the sample could potentially result in an unrepresentative sample if there is a correlation between the quality of provision for Troubled Families and the quality of record keeping.

However, given the absence of any NPD records and the reasonably large number of cases in the final sample from this area, further checks and analysis were carried out using data which excluded LA5. The balance between treatment and comparison groups in the final data and the data where LA5 is excluded is shown in Table 154 to Table 158.

Table 159 to

Table 164 compare the main impact analysis findings using the final dataset and data which exclude LA5. The results remain statistically insignificant when LA5 is excluded from the analysis.

Table 154 Balance between treatment and comparison groups after PSM kernel matching for benefits and offending sample - adults observed for 12 months following programme start

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	46.2	46.4	-0.5	46.3	46.6	-0.7
Claiming out-of-work benefits 12 months before programme start	43.8	44.6	-1.6	43.9	44.8	-1.8**
Number of weeks on out-of-work benefits in year before programme start	28.2	28.4	-0.8	28.2	28.5	-1.1
Employed one month before programme start	32.1	32.9	-1.6	32.2	33.1	-1.8**
Employed 12 months before programme start	26.4	27.0	-1.2	26.5	27.1	-1.4
Number of weeks employed in year before programme start	21.2	21.3	-0.7	21.2	21.4	-0.9
Claiming JSA one month before programme start	12.7	13.0	-1.0	12.7	13.0	-1.0
Claiming JSA 12 months before programme start	11.5	12.0	-1.6	11.6	12.1	-1.7*
Number of weeks on JSA in year before programme start	11.0	11.1	-0.6	11.0	11.2	-0.8
Claiming incapacity benefits one month before programme start	15.9	16.8	-2.5***	16.0	16.9	-2.6***
Claiming incapacity benefits 12 months before programme start	14.5	15.1	-2.0**	14.5	15.2	-2.1**
Number of weeks on sickness benefits in year before programme start	10.7	11.0	-1.9**	10.7	11.0	-2.0**

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Conviction in year prior to programme start	8.6	8.1	1.7	8.6	8.1	1.6*
Caution in year prior to programme start	3.6	3.4	0.9	3.6	3.4	0.8
Custodial sentence in year prior to programme start	1.5	1.4	0.7	1.5	1.4	0.7
Community sentence in year prior to programme start	4.6	4.4	0.7	4.6	4.4	0.6
Start month	637.1	637.3	-4.2***	637.1	637.3	-4.3***
Age at 19 Oct 2014 (years)	33.4	34.4	**-8.1*****	33.4	34.4	**-8.1*****
Age squared	1275.9	1343.1	**-7.1*****	1276.3	1344.3	**-7.2*****
Female	58.7	59.3	-1.3	58.7	59.3	-1.3
Non-white	7.5	8.6	-3.5***	7.5	8.7	-3.6***
Ethnicity missing	18.7	21.5	**-7.1*****	18.6	21.2	**-6.7*****
Number of adults in family	2.4	2.4	-3.4***	2.4	2.4	-3.5***
Number of children in family	1.6	1.5	**5.8*****	1.6	1.5	**5.8*****
Ratio of claimant count to vacancies in LA	4.5	4.8	**-8.6*****	4.5	4.8	**-8.6*****
Maximum absence rate for any child in family in the term prior to programme start	17.0	15.3	**8.8*****	17.1	15.3	**8.8*****
Maximum absence rate for any child in family 3 terms prior to programme start	17.9	16.7	**6.2*****	18.0	16.7	**6.2*****
Number of months at least one child in family in need prior measurement date	5.1	4.9	3.3***	5.1	4.9	3.2***

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member on free school meals in academic year prior to start of programme	59.2	57.4	3.8***	59.4	57.6	3.7***
Family member with Special Educational Needs in academic year prior to start of programme	60.9	58.7	4.6***	61.1	58.9	4.5***
At least one child in care one month before programme start	3.1	2.6	3.1***	3.1	2.6	3.1***
Comparison group	5,921			5,921		
Treatment group:						
Off support	31			30		
On support	25,484			25,424		
% off support	0.1			0.1		
Rubin's B	18.4			18.4		
Rubin's R	1.0			1.0		

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

Table 155 Balance between treatment and comparison groups after PSM kernel matching for employment sample - adults observed for 12 months following programme start

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	44.5	45.2	-1.6	44.6	45.5	-1.8*
Claiming out-of-work benefits 12 months before programme start	41.5	42.5	-2.0	41.6	42.7	-2.2**
Number of weeks on out-of-work benefits in year before programme start	27.2	27.5	-1.5	27.2	27.7	-1.9*
Employed one month before programme start	30.3	31.5	-2.6**	30.4	31.7	-2.8***
Employed 12 months before programme start	24.8	25.6	-1.9	24.9	25.8	-2.1**
Number of weeks employed in year before programme start	20.2	20.6	-1.7	20.3	20.7	-2.0*
Claiming JSA one month before programme start	12.7	13.5	-2.4**	12.7	13.5	-2.5**
Claiming JSA 12 months before programme start	10.9	11.2	-1.3	10.9	11.3	-1.4
Number of weeks on JSA in year before programme start	11.0	11.2	-1.0	11.0	11.2	-1.2
Claiming incapacity benefits one month before programme start	15.1	16.8	-4.8***	15.2	16.8	-5.0***
Claiming incapacity benefits 12 months before programme start	13.7	15.1	-4.3***	13.8	15.2	-4.4***
Number of weeks on sickness benefits in year before programme start	10.1	10.9	-3.9***	10.2	10.9	-4.0***

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Conviction in year prior to programme start	9.5	8.9	2.2**	9.5	8.9	2.1**
Caution in year prior to programme start	3.9	3.7	1.0	3.9	3.7	1.0
Custodial sentence in year prior to programme start	1.7	1.4	2.2**	1.7	1.4	2.1**
Community sentence in year prior to programme start	5.3	5.3	0.0	5.3	5.3	0.0
Start month	634.8	634.8	0.9	634.8	634.8	1.0
Age at 19 Oct 2014 (years)	33.0	34.1	**-8.1***_	33.0	34.1	**-8.2***_
Age squared	1257.8	1327.2	**-7.3***_	1258.2	1328.1	**-7.4***_
Female	57.4	57.8	-0.7	57.4	57.8	-0.7
Non-white	6.1	6.0	0.3	6.2	6.1	0.2
Ethnicity missing	18.2	20.5	**-5.9***_	18.0	20.1	**-5.3***_
Number of adults in family	2.5	2.5	-1.0	2.5	2.5	-1.1
Number of children in family	1.5	1.4	**7.0***_	1.5	1.4	**7.0***_
Ratio of claimant count to vacancies in LA	4.4	4.5	-2.4**	4.4	4.5	-2.4**
Maximum absence rate for any child in family in the term prior to programme start	17.9	16.3	**8.1***_	18.0	16.4	**8.1***_
Maximum absence rate for any child in family 3 terms prior to programme start	19.4	18.2	**5.3***_	19.4	18.3	**5.2***_
Number of months at least one child in family in need prior measurement date	5.1	4.9	3.5***	5.1	4.9	3.5**

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member on free school meals in academic year prior to start of programme	59.4	57.1	4.7***	59.6	57.3	4.6***
Family member with Special Educational Needs in academic year prior to start of programme	62.9	61.5	2.8***	63.1	61.8	2.7***
At least one child in care one month before programme start	3.1	2.5	3.2***	3.1	2.6	3.1***
Comparison group	4.360			4,360		
Treatment group:						
Off support	24			24		
On support	19,435			19,381		
% off support	0.1			0.1		
Rubin's B	16.6			16.5		
Rubin's R	1.1			1.1		

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

Table 156 Balance between treatment and comparison groups after PSM for offending sample - children observed for 12 months following programme start

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.3	63.9	0.7	65.5	65.3	0.4
Family member claiming out-of-work benefits 12 months before programme start	63.6	63.2	0.8	64.8	64.6	0.4
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.3	31.8	2.2**	32.9	32.4	1.9**
Any adult in family employed one month prior to programme start	39.6	41.8	-4.7***	40.3	43.0	**<u>-5.8***</u>**
Any adult in family employed 12 months prior to programme start	33.6	35.6	-4.7***	34.2	36.6	**<u>-5.6***</u>**
Max number of weeks any family member employed in year prior to programme start	24.9	26.0	-4.7***	25.3	26.7	**<u>-5.8***</u>**
Family member claiming JSA one month before programme start	17.3	17.7	-1.2	17.6	18.1	-1.5
Family member claiming JSA 12 months before programme start	16.0	16.6	-1.9*	16.3	17.0	-2.3**
Maximum number of weeks any family member on JSA in year prior to programme start	14.2	14.1	0.6	14.5	14.5	0.2
Family member claiming sickness benefits one month before programme start	21.7	21.2	1.5	22.1	21.7	1.3

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming sickness benefits 12 months before programme start	19.4	18.0	4.1***	19.8	18.5	3.9***
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.4	13.8	3.1***	14.7	14.1	3.0***
Conviction in year prior to programme start	2.9	2.7	0.9	2.9	2.7	1.1
Caution in year prior to programme start	4.0	3.0	**_5.5***_**	4.0	3.0	**_5.6***_**
Start month	638.0	638.1	-2.4***	638.0	638.2	-2.7***
Age at 19 Oct 2014 (years)	11.8	11.6	3.3***	11.7	11.6	3.0***
Age squared	157.5	155.2	2.5***	156.8	154.5	2.5***
Female	44.9	45.8	-1.8**	44.9	45.9	-2.1**
Non-white	11.2	14.2	**_-8.0***_**	11.4	15.4	**_-10.4***_**
Ethnicity missing	13.8	17.6	**_-11.3***_**	12.5	14.9	**_-7.3***_**
Number of adults in family	1.6	1.5	1.1	1.6	1.6	-0.3
Number of children in family	2.7	2.7	1.3	2.7	2.7	-0.2
Ratio of claimant count to vacancies in LA	4.8	5.1	**_-9.8***_**	4.8	5.1	**_-9.5***_**
Percentage of time absent from school 1 term prior to programme start	10.6	9.8	4.8***	10.8	10.1	3.9***
Percentage of time absent from school 3 terms prior to programme start	9.9	9.4	3.3***	10.1	9.8	2.2**
Total number of months child in need prior measurement date	4.0	3.8	4.4***	4.1	3.9	3.6***
Free school meals in academic year prior to start of programme	54.9	54.4	1.0	55.9	56.3	-0.7

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Statement of Special Educational Needs in academic year prior to start of programme	43.0	41.2	3.7***	43.8	42.7	2.2**
In care one month before programme start	1.7	1.6	0.9	1.7	1.6	0.7
Comparison group	6,925			6,925		
Treatment group:						
Off support	20			18		
On support	25,946			25,483		
% off support	0.1			0.1		
Rubin's B	20.3			20.1		
Rubin's R	0.9			0.9		

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

Table 157 Balance between treatment and comparison groups after PSM with kernel matching estimator for absence sample - children observed for 12 months following programme start

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.1	62.8	2.6**	64.6	63.3	2.6**
Family member claiming out-of-work benefits 12 months before programme start	62.6	60.5	4.4***	63.1	61.0	4.4***
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.3	31.4	3.7***	32.5	31.7	3.7***
Any adult in family employed one month prior to programme start	36.6	38.0	-3.2**	36.8	38.5	-3.8***
Any adult in family employed 12 months prior to programme start	30.7	32.3	-3.8***	30.9	32.8	-4.4***
Max number of weeks any family member employed in year prior to programme start	23.4	24.3	-3.8***	23.6	24.6	-4.4***
Family member claiming JSA one month before programme start	17.9	18.6	-1.8	18.1	18.7	-1.8
Family member claiming JSA 12 months before programme start	15.1	16.2	-3.4**	15.2	16.3	-3.5**
Maximum number of weeks any family member on JSA in year prior to programme start	14.8	14.6	1.0	14.9	14.7	1.0
Family member claiming sickness benefits one month before programme	21.2	21.8	-1.7	21.4	22.0	-1.7

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
start						
Family member claiming sickness benefits 12 months before programme start	18.6	18.9	-1.1	18.7	19.1	-1.3
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.1	14.1	0.0	14.2	14.2	0.0
Conviction in year prior to programme start	2.8	3.1	-1.9	2.8	3.1	-1.9
Caution in year prior to programme start	4.2	3.4	4.3***	4.2	3.4	4.2***
Start month	633.4	633.3	3.0**	633.5	633.4	1.9
Age at 19 Oct 2014 (years)	12.0	12.0	1.0	12.0	12.0	0.6
Age squared	163.4	163.0	0.5	163.2	163.1	0.1
Female	45.3	45.8	-1.1	45.3	45.8	-1.1
Non-white	10.6	11.5	-2.6**	10.6	12.0	-3.5***
Ethnicity missing	13.1	15.4	**-6.9*****	12.5	14.0	-4.5***
Number of adults in family	1.6	1.6	2.8**	1.6	1.6	2.4*
Number of children in family	2.7	2.7	2.6*	2.7	2.7	2.3
Ratio of claimant count to vacancies in LA	4.5	4.7	**-5.7*****	4.5	4.7	**-5.2*****
Percentage of time absent from school 1 term prior to programme start	10.6	10.6	0.1	10.7	10.8	-0.8
Percentage of time absent from school 3 terms prior to programme start	11.2	11.4	-1.4	11.3	11.6	-2.3*
Total number of months child in need prior measurement date	4.0	3.8	4.0***	4.0	3.8	3.5***
Free school meals in academic year prior to	55.5	55.8	-0.6	55.9	56.7	-1.7

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
start of programme						
Statement of Special Educational Needs in academic year prior to start of programme	44.8	44.4	0.9	45.2	45.3	-0.2
In care one month before programme start	1.8	1.8	-0.1	1.8	1.9	-0.3
Comparison group	3,483			3,483		
Treatment group:						
Off support	27			24		
On support	13,228			13,124		
% off support	0.2			0.2		
Rubin's B	17.4			16.9		
Rubin's R	1.1			1.2		

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

Table 158 Balance between treatment and comparison groups after PSM with kernel matching estimator for child welfare sample - children observed for 12 months following programme start

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.8	63.2	3.4***	65.4	63.7	3.5***
Family member claiming out-of-work benefits 12 months before programme start	63.2	60.6	**<u>5.5</u>*****	63.8	61.1	**<u>5.6</u>*****
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.7	31.6	4.6***	33.0	31.9	4.6***
Any adult in family employed one month prior to programme start	36.8	37.5	-1.5	37.1	38.0	-1.9
Any adult in family employed 12 months prior to programme start	30.8	31.8	-2.3*	31.1	32.3	-2.7*
Max number of weeks any family member employed in year prior to programme start	23.5	23.9	-1.9	23.7	24.2	-2.3*
Family member claiming JSA one month before programme start	18.4	19.4	-3.0**	18.5	19.5	-3.0**
Family member claiming JSA 12 months before programme start	15.3	16.5	-3.5**	15.5	16.6	-3.6**
Maximum number of weeks any family member on JSA in year prior to programme start	15.1	14.9	0.7	15.2	15.1	0.8
Family member claiming sickness benefits one month before programme	21.0	21.0	0.0	21.1	21.1	0.1

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
start						
Family member claiming sickness benefits 12 months before programme start	18.5	18.0	1.5	18.7	18.1	1.5
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.1	13.8	1.6	14.2	13.9	1.7
Conviction in year prior to programme start	2.9	3.4	-3.4**	2.9	3.4	-3.5**
Caution in year prior to programme start	4.2	3.7	3.2**	4.3	3.7	3.0**
Start month	632.9	632.7	3.9***	632.9	632.8	3.0**
Age at 19 Oct 2014 (years)	12.1	12.0	0.7	12.1	12.0	0.3
Age squared	164.0	163.9	0.2	163.8	164.0	-0.2
Female	45.2	45.7	-1.0	45.2	45.7	-1.0
Non-white	9.3	9.6	-1.0	9.4	10.1	-1.9*
Ethnicity missing	12.9	15.1	**-6.6*****	12.2	13.6	-4.1***
Number of adults in family	1.6	1.6	3.8***	1.6	1.6	3.5**
Number of children in family	2.7	2.7	0.9	2.7	2.7	0.4
Ratio of claimant count to vacancies in LA	4.4	4.5	-5.0***	4.4	4.5	-4.3***
Percentage of time absent from school 1 term prior to programme start	10.8	10.7	0.2	10.8	10.9	-0.6
Percentage of time absent from school 3 terms prior to programme start	11.3	11.4	-0.6	11.4	11.6	-1.4
Total number of months child in need prior measurement date	4.0	3.8	4.6***	4.0	3.9	4.0***
Free school meals in academic year prior to	55.1	55.1	-0.1	55.6	56.2	-1.3

	Final			Excluding LA5		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
start of programme						
Statement of Special Educational Needs in academic year prior to start of programme	45.0	45.0	0.0	45.4	46.0	-1.2
In care one month before programme start	1.8	1.9	-0.3	1.9	1.9	-0.5
Comparison group	3,158			3,158		
Treatment group:						
Off support	23			24		
On support	11,985			11,879		
% off support	0.2			0.2		
Rubin's B	16.9			16.3		
Rubin's R	1.2			1.2		

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

Table 159 PSM Benefit impact estimates for adults, kernel matching

	Final					Excluding LA5				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI		T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
Claiming out-of-work benefits 12 months after programme start	46.3	46.5	-0.3	-2.1	1.5	46.4	46.7	-0.3	-2.1	1.5
Number of weeks on out-of-work benefits in year following programme start	23.5	23.6	-0.1	-1.0	0.7	23.5	23.7	-0.2	-1.0	0.7
Claiming JSA 12 months after programme start	10.8	11.2	-0.3	-1.5	0.8	10.9	11.2	-0.3	-1.5	0.8
Number of weeks on JSA in year following programme start	5.6	5.7	-0.1	-0.6	0.4	5.6	5.8	-0.1	-0.6	0.3
Claiming incapacity benefits 12 months after programme start	18.2	18.7	-0.5	-1.8	0.7	18.2	18.8	-0.6	-1.8	0.7
Number of weeks on sickness benefits in year following programme start	8.7	9.0	-0.3	-0.9	0.3	8.7	9.0	-0.3	-0.9	0.3
% off support	0.1					0.1				
Base (T)	25,484					25,424				

Table 160 PSM Employment impact estimates for adults, kernel matching

	Final			95% CI		Excluding LA5			95% CI	
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)			T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)		
				Lower bound	Upper bound				Lower bound	Upper bound
Employed 12 months after programme start	38.0	39.5	-1.5	-3.7	0.7	38.1	39.7	-1.6	-3.8	0.6
Number of weeks employed in year following programme start	17.5	18.0	-0.6	-1.6	0.5	17.5	18.1	-0.6	-1.7	0.4
% off support	0.1					0.1				
Base (T)	19,435					19,381				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for adults for whom outcomes observed for a minimum of 12 months following programme start.

Table 161 PSM Offending impact estimates for adults, kernel matching

	Final					Excluding LA5				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI		T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
Any offence resulting in a caution or conviction 7-12 months after programme start	4.8	4.0	0.8**	0.0	1.6	4.8	4.0	0.8*	0.0	1.6
Any offence resulting in a conviction 7-12 months following programme start	4.0	3.3	0.7*	0.0	1.4	4.0	3.3	0.7	-0.1	1.4
Any offence resulting in a caution 7-12 months after programme start	1.0	0.9	0.1	-0.3	0.5	1.0	0.9	0.1	-0.3	0.5
Any offence resulting in a custodial sentence 7-12 months after programme start	0.8	0.7	0.1	-0.3	0.4	0.8	0.7	0.1	-0.3	0.4
Any offence resulting in a community sentence 7-12 months following programme start	1.4	1.7	-0.3	-0.8	0.1	1.4	1.8	-0.3	-0.8	0.1
% off support	0.1					0.1				

	Final				Excluding LA5			
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI
Base (T)	25,484				25,424			

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for adults for whom outcomes observed for a minimum of 12 months following programme start.

Table 162 PSM offending impact estimates for children, kernel matching

	Final T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI Lower bound	Upper bound	Excluding LA5 T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI Lower bound	Upper bound
Caution or conviction in year following programme start	3.5	2.6	0.9***	0.3	1.5	3.5	2.7	0.9***	0.3	1.5
Conviction in year following programme start	2.4	1.7	0.7***	0.3	1.2	2.4	1.7	0.7***	0.2	1.2
Caution in year following programme start	1.4	1.1	0.3	-0.2	0.7	1.4	1.1	0.3	-0.2	0.7
Custodial sentence in year following programme start	0.2	0.1	0.1**	0.0	0.2	0.2	0.1	0.1**	0.0	0.2
Community sentence in year following programme start	1.8	1.3	0.5**	0.1	0.9	1.7	1.3	0.5**	0.0	0.9
% off support	0.1					0.1				
Base (T)	25,946					25,483				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for children for whom outcomes observed for a minimum of 12 months following programme start.

Table 163 PSM Absence impact estimates for children, kernel matching

	Final					Excluding LA5				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)		95% CI	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
Percentage of time absent from school 3 terms after programme start	9.6	9.9	-0.3	-1.2	0.7	9.7	10.0	-0.3	-1.3	0.7
Absent for 15% or more of time 3 terms after programme start	20.3	21.2	-0.9	-3.2	1.3	20.4	21.4	-1.0	-3.2	1.3
% off support	0.2					0.2				
Base (T)	13,228					13,124				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for children for whom outcomes observed for a minimum of 12 months following programme start.

Table 164 PSM 12-month impact estimates for children, child welfare kernel matching

| | Final | | | 95% CI | | Excluding LA5 | | | 95% CI | |
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)			T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)		
				Lower bound	Upper bound				Lower bound	Upper bound
CIN status 12 months after programme start	40.1	36.7	3.3**	0.7	5.9	40.4	37.3	3.1**	0.5	5.7
In care 12 months after programme start	3.1	4.8	-1.7***	-2.6	-0.7	3.1	4.9	-1.8***	-2.7	-0.8
% off support	0.2					0.2				
Base (T)	11,985					11,879				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for children for whom outcomes observed for a minimum of 12 months following programme start.

Recoding of treatment and comparison groups

In response to DCLG queries on the recoding of treatment and comparison status, additional data checks (Table 165 to Table 169) were conducted to compare the final dataset with data which excludes all cases where treatment status was recoded. The results from re-running the analysis with the amended data can be seen in Table 170 to

Table 175. Re-running the analysis had very little impact on the main findings and did not result in a change in the conclusions of the report.

Table 165 Balance between treatment and comparison groups after PSM kernel matching for benefits and offending sample - adults observed for 12 months following programme start

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	46.2	46.4	-0.5	46.5	46.6	-0.2
Claiming out-of-work benefits 12 months before programme start	43.8	44.6	-1.6	44.1	44.8	-1.3
Number of weeks on out-of-work benefits in year before programme start	28.2	28.4	-0.8	28.3	28.5	-0.6
Employed one month before programme start	32.1	32.9	-1.6	32.4	33.1	-1.5
Employed 12 months before programme start	26.4	27.0	-1.2	26.6	27.1	-1.1
Number of weeks employed in year before programme start	21.2	21.3	-0.7	21.4	21.4	-0.4
Claiming JSA one month before programme start	12.7	13.0	-1.0	12.6	12.9	-1.0
Claiming JSA 12 months before programme start	11.5	12.0	-1.6	11.4	11.9	-1.8*
Number of weeks on JSA in year before programme start	11.0	11.1	-0.6	11.0	11.1	-0.9
Claiming incapacity benefits one month before programme start	15.9	16.8	-2.5***	16.2	16.9	-2.1**
Claiming incapacity benefits 12 months before programme start	14.5	15.1	-2.0**	14.7	15.2	-1.5
Number of weeks on sickness benefits in year	10.7	11.0	-1.9**	10.8	11.1	-1.3

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
before programme start						
Conviction in year prior to programme start	8.6	8.1	1.7	8.5	8.1	1.4
Caution in year prior to programme start	3.6	3.4	0.9	3.6	3.4	0.8
Custodial sentence in year prior to programme start	1.5	1.4	0.7	1.4	1.3	0.7
Community sentence in year prior to programme start	4.6	4.4	0.7	4.5	4.4	0.5
Start month	637.1	637.3	-4.2***	637.2	637.5	-4.2***
Age at 19 Oct 2014 (years)	33.4	34.4	**-8.1*****	33.4	34.4	**-7.8*****
Age squared	1275.9	1343.1	**-7.1*****	1276.0	1340.8	**-6.9*****
Female	58.7	59.3	-1.3	58.9	59.4	-1.1
Non-white	7.5	8.6	-3.5***	7.7	8.7	-2.9***
Ethnicity missing	18.7	21.5	**-7.1*****	18.6	21.4	**-7.2*****
Number of adults in family	2.4	2.4	-3.4***	2.3	2.4	-4.8***
Number of children in family	1.6	1.5	**5.8*****	1.6	1.5	5.0***
Ratio of claimant count to vacancies in LA	4.5	4.8	**-8.6*****	4.4	4.7	**-10.9*****
Maximum absence rate for any child in family in the term prior to programme start	17.0	15.3	**8.8*****	17.0	15.2	**8.8*****
Maximum absence rate for any child in family 3 terms prior to programme start	17.9	16.7	**6.2*****	18.0	16.6	**6.4*****
Number of months at	5.1	4.9	3.3***	5.1	4.9	3.3***

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
least one child in family in need prior measurement date						
Family member on free school meals in academic year prior to start of programme	59.2	57.4	3.8***	58.7	57.0	3.6***
Family member with Special Educational Needs in academic year prior to start of programme	60.9	58.7	4.6***	60.3	58.3	4.2***
At least one child in care one month before programme start	3.1	2.6	3.1***	3.0	2.6	2.7***
Comparison group	5,921			5,874		
Treatment group:						
Off support	31			25		
On support	25,484			23,454		
% off support	0.1			0.1		
Rubin's B	18.4			19.2		
Rubin's R	1.0			0.9		

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

Table 166 Balance between treatment and comparison groups after PSM kernel matching for employment sample - adults observed for 12 months following programme start

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Claiming out-of-work benefits one month before programme start	44.5	45.2	-1.6	44.7	45.4	-1.5
Claiming out-of-work benefits 12 months before programme start	41.5	42.5	-2.0	41.6	42.5	-1.9*
Number of weeks on out-of-work benefits in year before programme start	27.2	27.5	-1.5	27.3	27.6	-1.3
Employed one month before programme start	30.3	31.5	-2.6**	30.5	31.6	-2.5**
Employed 12 months before programme start	24.8	25.6	-1.9	24.9	25.6	-1.7
Number of weeks employed in year before programme start	20.2	20.6	-1.7	20.4	20.7	-1.4
Claiming JSA one month before programme start	12.7	13.5	-2.4**	12.6	13.4	-2.5**
Claiming JSA 12 months before programme start	10.9	11.2	-1.3	10.6	11.1	-1.5
Number of weeks on JSA in year before programme start	11.0	11.2	-1.0	10.9	11.1	-1.2
Claiming incapacity benefits one month before programme start	15.1	16.8	-4.8***	15.4	17.0	-4.7***
Claiming incapacity benefits 12 months before programme start	13.7	15.1	-4.3***	14.0	15.3	-4.0***
Number of weeks on sickness benefits in year	10.1	10.9	-3.9***	10.3	11.0	-3.4***

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
before programme start						
Conviction in year prior to programme start	9.5	8.9	2.2**	9.4	8.9	1.9*
Caution in year prior to programme start	3.9	3.7	1.0	3.9	3.7	1.1
Custodial sentence in year prior to programme start	1.7	1.4	2.2**	1.6	1.3	2.2**
Community sentence in year prior to programme start	5.3	5.3	0.0	5.3	5.3	-0.1
Start month	634.8	634.8	0.9	634.9	634.9	0.0
Age at 19 Oct 2014 (years)	33.0	34.1	**-8.1***	33.0	34.0	**-7.9***
Age squared	1257.8	1327.2	**-7.3***	1256.6	1323.1	**-7.1***
Female	57.4	57.8	-0.7	57.6	57.9	-0.5
Non-white	6.1	6.0	0.3	6.3	6.0	0.9
Ethnicity missing	18.2	20.5	**-5.9***	18.1	20.4	**-5.9***
Number of adults in family	2.5	2.5	-1.0	2.4	2.5	-2.5**
Number of children in family	1.5	1.4	**7.0***	1.5	1.4	**6.0***
Ratio of claimant count to vacancies in LA	4.4	4.5	-2.4**	4.2	4.4	**-5.5***
Maximum absence rate for any child in family in the term prior to programme start	17.9	16.3	**8.1***	18.0	16.3	**8.1***
Maximum absence rate for any child in family 3 terms prior to programme start	19.4	18.2	**5.3***	19.5	18.3	**5.7***
Number of months at	5.1	4.9	3.5***	5.1	4.9	3.6***

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
least one child in family in need prior measurement date						
Family member on free school meals in academic year prior to start of programme	59.4	57.1	4.7***	58.9	56.7	4.4***
Family member with Special Educational Needs in academic year prior to start of programme	62.9	61.5	2.8***	62.4	61.3	2.3**
At least one child in care one month before programme start	3.1	2.5	3.2***	3.0	2.6	2.6**
Comparison group	4.360			4,323		
Treatment group:						
Off support	24			13		
On support	19,435			17,553		
% off support	0.1			0.1		
Rubin's B	16.6			17.2		
Rubin's R	1.1			1.1		

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

Table 167 Balance between treatment and comparison groups after PSM for offending sample - children observed for 12 months following programme start

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.3	63.9	0.7	64.0	63.8	0.4
Family member claiming out-of-work benefits 12 months before programme start	63.6	63.2	0.8	63.3	63.0	0.6
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.3	31.8	2.2**	32.2	31.8	1.8**
Any adult in family employed one month prior to programme start	39.6	41.8	-4.7***	39.4	41.8	**<u>-5.3***</u>**
Any adult in family employed 12 months prior to programme start	33.6	35.6	-4.7***	33.5	35.6	-4.9***
Max number of weeks any family member employed in year prior to programme start	24.9	26.0	-4.7***	24.8	26.1	**<u>-5.4***</u>**
Family member claiming JSA one month before programme start	17.3	17.7	-1.2	16.9	17.5	-1.7*
Family member claiming JSA 12 months before programme start	16.0	16.6	-1.9*	15.5	16.3	-2.5**
Maximum number of weeks any family member on JSA in year prior to programme start	14.2	14.1	0.6	13.9	14.0	-0.3
Family member claiming sickness benefits one month before programme	21.7	21.2	1.5	21.8	21.2	1.6

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
start						
Family member claiming sickness benefits 12 months before programme start	19.4	18.0	4.1***	19.6	18.1	4.4***
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.4	13.8	3.1***	14.5	13.8	3.2***
Conviction in year prior to programme start	2.9	2.7	0.9	2.8	2.7	0.8
Caution in year prior to programme start	4.0	3.0	**5.5*****	3.9	3.0	**5.1*****
Start month	638.0	638.1	-2.4***	638.1	638.3	-2.8***
Age at 19 Oct 2014 (years)	11.8	11.6	3.3***	11.7	11.6	2.7***
Age squared	157.5	155.2	2.5***	156.8	155.1	1.9**
Female	44.9	45.8	-1.8**	45.1	46.0	-1.7*
Non-white	11.2	14.2	**-8.0*****	11.6	14.3	**-7.2*****
Ethnicity missing	13.8	17.6	**-11.3*****	13.9	17.6	**-10.8*****
Number of adults in family	1.6	1.5	1.1	1.5	1.5	-0.6
Number of children in family	2.7	2.7	1.3	2.7	2.6	3.4***
Ratio of claimant count to vacancies in LA	4.8	5.1	**-9.8*****	4.7	5.1	**-12.7*****
Percentage of time absent from school 1 term prior to programme start	10.6	9.8	4.8***	10.6	9.8	4.6***
Percentage of time absent from school 3 terms prior to programme start	9.9	9.4	3.3***	10.0	9.5	3.0***
Total number of months child in need prior measurement date	4.0	3.8	4.4***	4.0	3.8	4.0***

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Free school meals in academic year prior to start of programme	54.9	54.4	1.0	54.9	54.7	0.4
Statement of Special Educational Needs in academic year prior to start of programme	43.0	41.2	3.7***	42.9	41.5	3.0***
In care one month before programme start	1.7	1.6	0.9	1.7	1.6	0.5
Comparison group				6,785		
Treatment group:						
Off support	20			12		
On support	25,946			23,853		
% off support	0.1			0.1		
Rubin's B	20.3			21.4		
Rubin's R	0.9			1.0		

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

Table 168 Balance between treatment and comparison groups after PSM with kernel matching estimator for absence sample - children observed for 12 months following programme start

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.1	62.8	2.6**	63.4	63.1	0.6
Family member claiming out-of-work benefits 12 months before programme start	62.6	60.5	4.4***	62.0	60.5	3.1**
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.3	31.4	3.7***	32.1	31.7	1.7
Any adult in family employed one month prior to programme start	36.6	38.0	-3.2**	36.0	38.1	-4.8***
Any adult in family employed 12 months prior to programme start	30.7	32.3	-3.8***	30.3	32.4	**-5.1***
Max number of weeks any family member employed in year prior to programme start	23.4	24.3	-3.8***	23.1	24.4	**-5.5***
Family member claiming JSA one month before programme start	17.9	18.6	-1.8	17.4	18.5	-3.4**
Family member claiming JSA 12 months before programme start	15.1	16.2	-3.4**	14.5	15.9	-4.5***
Maximum number of weeks any family member on JSA in year prior to programme start	14.8	14.6	1.0	14.3	14.5	-1.0
Family member claiming sickness benefits one	21.2	21.8	-1.7	21.2	22.1	-2.6*

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
month before programme start						
Family member claiming sickness benefits 12 months before programme start	18.6	18.9	-1.1	18.7	19.2	-1.5
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.1	14.1	0.0	14.1	14.3	-1.1
Conviction in year prior to programme start	2.8	3.1	-1.9	2.7	3.1	-2.8*
Caution in year prior to programme start	4.2	3.4	4.3***	4.0	3.5	3.1**
Start month	633.4	633.3	3.0**	633.4	633.3	1.8
Age at 19 Oct 2014 (years)	12.0	12.0	1.0	12.0	12.0	-0.4
Age squared	163.4	163.0	0.5	162.7	163.6	-1.0
Female	45.3	45.8	-1.1	45.6	45.9	-0.5
Non-white	10.6	11.5	-2.6**	11.1	11.9	-2.2**
Ethnicity missing	13.1	15.4	**-6.9*****	13.2	15.4	**-6.4*****
Number of adults in family	1.6	1.6	2.8**	1.6	1.6	-0.6
Number of children in family	2.7	2.7	2.6*	2.7	2.5	**9.1*****
Ratio of claimant count to vacancies in LA	4.5	4.7	**-5.7*****	4.4	4.7	**-10.5*****
Percentage of time absent from school 1 term prior to programme start	10.6	10.6	0.1	10.6	10.8	-0.9
Percentage of time absent from school 3 terms prior to programme start	11.2	11.4	-1.4	11.3	11.7	-2.3
Total number of months child in need prior	4.0	3.8	4.0***	4.0	3.8	3.5**

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
measurement date						
Free school meals in academic year prior to start of programme	55.5	55.8	-0.6	55.6	56.6	-2.1
Statement of Special Educational Needs in academic year prior to start of programme	44.8	44.4	0.9	44.8	45.2	-0.8
In care one month before programme start	1.8	1.8	-0.1	1.8	1.9	-0.6
Comparison group	3,483			3,406		
Treatment group:						
Off support	27			18		
On support	13,228			11,782		
% off support	0.2			0.2		
Rubin's B	17.4			20.5		
Rubin's R	1.1			1.2		

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

Table 169 Balance between treatment and comparison groups after PSM with kernel matching estimator for child welfare sample - children observed for 12 months following programme start

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
Family member claiming out-of-work benefits one month before programme start	64.8	63.2	3.4***	64.3	64.0	0.5
Family member claiming out-of-work benefits 12 months before programme start	63.2	60.6	**5.5*****	62.7	61.0	3.5**
Maximum number of weeks any family member on out-of-work benefits in year prior to programme start	32.7	31.6	4.6***	32.5	32.1	1.7
Any adult in family employed one month prior to programme start	36.8	37.5	-1.5	36.3	37.8	-3.4**
Any adult in family employed 12 months prior to programme start	30.8	31.8	-2.3*	30.5	32.0	-3.5**
Max number of weeks any family member employed in year prior to programme start	23.5	23.9	-1.9	23.2	24.2	-4.2***
Family member claiming JSA one month before programme start	18.4	19.4	-3.0**	17.8	19.7	**-5.3*****
Family member claiming JSA 12 months before programme start	15.3	16.5	-3.5**	14.8	16.5	**-5.3*****
Maximum number of weeks any family member on JSA in year prior to programme start	15.1	14.9	0.7	14.7	15.1	-1.9
Family member claiming sickness benefits one	21.0	21.0	0.0	20.9	21.5	-1.7

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
month before programme start						
Family member claiming sickness benefits 12 months before programme start	18.5	18.0	1.5	18.6	18.4	0.5
Maximum number of weeks any family member on sickness benefits in year prior to programme start	14.1	13.8	1.6	14.0	14.1	-0.3
Conviction in year prior to programme start	2.9	3.4	-3.4**	2.7	3.4	-4.6***
Caution in year prior to programme start	4.2	3.7	3.2**	4.1	3.8	1.9
Start month	632.9	632.7	3.9***	632.8	632.7	3.1**
Age at 19 Oct 2014 (years)	12.1	12.0	0.7	12.0	12.1	-0.9
Age squared	164.0	163.9	0.2	163.2	164.7	-1.5
Female	45.2	45.7	-1.0	45.6	45.8	-0.3
Non-white	9.3	9.6	-1.0	9.6	9.8	-0.6
Ethnicity missing	12.9	15.1	**-6.6*****	13.0	15.0	**-6.0*****
Number of adults in family	1.6	1.6	3.8***	1.6	1.6	-0.4
Number of children in family	2.7	2.7	0.9	2.7	2.5	**9.3*****
Ratio of claimant count to vacancies in LA	4.4	4.5	-5.0***	4.2	4.5	**-10.1*****
Percentage of time absent from school 1 term prior to programme start	10.8	10.7	0.2	10.8	11.0	-1.1
Percentage of time absent from school 3 terms prior to programme start	11.3	11.4	-0.6	11.4	11.7	-1.8
Total number of months child in need prior	4.0	3.8	4.6***	4.0	3.8	3.7**

	Final			Excluding all cases where treatment status was recoded		
	Treatment group	Matched comparison group	Mean standardised bias (%)	Treatment group	Matched comparison group	Mean standardised bias (%)
measurement date						
Free school meals in academic year prior to start of programme	55.1	55.1	-0.1	55.3	56.3	-2.1
Statement of Special Educational Needs in academic year prior to start of programme	45.0	45.0	0.0	45.1	46.0	-2.0
In care one month before programme start	1.8	1.9	-0.3	1.8	1.9	-0.8
Comparison group	3,158			3,094		
Treatment group:						
Off support	23			14		
On support	11,985			10,630		
% off support	0.2			0.1		
Rubin's B	16.9			20.6		
Rubin's R	1.2			1.2		

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

Table 170 PSM Benefit impact estimates for adults, kernel matching

	Final			95% CI		Excluding all cases where treatment status was recoded			95% CI	
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)			T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)		
				Lower bound	Upper bound				Lower bound	Upper bound
Claiming out-of-work benefits 12 months after programme start	46.3	46.5	-0.3	-2.1	1.5	46.6	46.6	0.0	-1.8	1.8
Number of weeks on out-of-work benefits in year following programme start	23.5	23.6	-0.1	-1.0	0.7	23.7	23.7	0.0	-0.9	0.8
Claiming JSA 12 months after programme start	10.8	11.2	-0.3	-1.5	0.8	10.7	11.1	-0.4	-1.6	0.7
Number of weeks on JSA in year following programme start	5.6	5.7	-0.1	-0.6	0.4	5.6	5.7	-0.1	-0.6	0.3
Claiming incapacity benefits 12 months after programme start	18.2	18.7	-0.5	-1.8	0.7	18.6	18.9	-0.3	-1.5	1.0
Number of weeks on sickness benefits in year following programme start	8.7	9.0	-0.3	-0.9	0.3	8.9	9.1	-0.2	-0.8	0.4

	Final					Excluding all cases where treatment status was recoded				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI		T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
% off support	0.1					0.1				
Base (T)	25,484					23,454				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for adults for whom outcomes observed for a minimum of 12 months following programme start.

Table 171 PSM Employment impact estimates for adults, kernel matching

	Final					Excluding all cases where treatment status was recoded				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI		T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
Employed 12 months after programme start	38.0	39.5	-1.5	-3.7	0.7	38.1	39.8	-1.7	-3.9	0.5
Number of weeks employed in year following programme start	17.5	18.0	-0.6	-1.6	0.5	17.6	18.1	-0.6	-1.6	0.5
% off support	0.1					0.1				
Base (T)	19,435					17,553				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for adults for whom outcomes observed for a minimum of 12 months following programme start.

Table 172 PSM Offending impact estimates for adults, kernel matching

	Final			95% CI		Excluding all cases where treatment status was recoded			95% CI	
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	Lower bound	Upper bound	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	Lower bound	Upper bound
Any offence resulting in a caution or conviction 7-12 months after programme start	4.8	4.0	0.8**	0.0	1.6	4.7	4.0	0.7*	-0.1	1.5
Any offence resulting in a conviction 7-12 months following programme start	4.0	3.3	0.7*	0.0	1.4	3.8	3.3	0.5	-0.2	1.3
Any offence resulting in a caution 7-12 months after programme start	1.0	0.9	0.1	-0.3	0.5	1.0	0.9	0.1	-0.3	0.5
Any offence resulting in a custodial sentence 7-12 months after programme start	0.8	0.7	0.1	-0.3	0.4	0.7	0.7	0.1	-0.3	0.4
Any offence resulting in a community sentence 7-12 months following programme	1.4	1.7	-0.3	-0.8	0.1	1.4	1.8	-0.4	-0.9	0.1

	Final				Excluding all cases where treatment status was recoded			
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI
start								
% off support	0.1				0.1			
Base (T)	25,484				23,454			

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for adults for whom outcomes observed for a minimum of 12 months following programme start.

Table 173 PSM offending impact estimates for children, kernel matching

	Final					Excluding all cases where treatment status was recoded				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI		T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
Caution or conviction in year following programme start	3.5	2.6	0.9***	0.3	1.5	3.5	2.6	0.8***	0.2	1.4
Conviction in year following programme start	2.4	1.7	0.7***	0.3	1.2	2.3	1.6	0.7***	0.2	1.2
Caution in year following programme start	1.4	1.1	0.3	-0.2	0.7	1.4	1.1	0.2	-0.2	0.6
Custodial sentence in year following programme start	0.2	0.1	0.1**	0.0	0.2	0.2	0.1	0.1*	0.0	0.2
Community sentence in year following programme start	1.8	1.3	0.5**	0.1	0.9	1.7	1.2	0.5**	0.1	0.9
% off support	0.1					0.1				
Base (T)	25,946					23,853				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for children for whom outcomes observed for a minimum of 12 months following programme start.

Table 174 PSM Absence impact estimates for children, kernel matching

	Final					Excluding all cases where treatment status was recoded				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)		95% CI	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
Percentage of time absent from school 3 terms after programme start	9.6	9.9	-0.3	-1.2	0.7	9.6	9.9	-0.2	-1.2	0.7
Absent for 15% or more of time 3 terms after programme start	20.3	21.2	-0.9	-3.2	1.3	20.3	21.2	-0.9	-3.2	1.4
% off support	0.2					0.2				
Base (T)	13,228					11,782				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for children for whom outcomes observed for a minimum of 12 months following programme start.

Table 175 PSM 12-month impact estimates for children, child welfare kernel matching

	Final					Excluding all cases where treatment status was recoded				
	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)		95% CI	T group (% unless otherwise stated)	Matched C group (% unless otherwise stated)	Impact (pp diff)	95% CI	
				Lower bound	Upper bound				Lower bound	Upper bound
CIN status 12 months after programme start	40.1	36.7	3.3**	0.7	5.9	40.3	37.5	2.8**	0.2	5.5
In care 12 months after programme start	3.1	4.8	-1.7***	-2.6	-0.7	3.2	5.0	-1.9***	-2.8	-0.9
% off support	0.2					0.1				
Base (T)	11,985					10,630				

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Based on analysis for children for whom outcomes observed for a minimum of 12 months following programme start.

Summary

The additional data checking does not indicate any specific concerns with regard to the original coding of the treatment and comparison families in the datasets supplied by local authorities. The results indicate that it was more usual for cases to be excluded than it was for them to be recoded from treatment to comparison (or vice versa).

Furthermore, where recoding was needed this can largely be accounted for. As we have shown, there were a number of areas where a significant proportion of cases were excluded from the final dataset because the start dates supplied were out of range, or the family was recorded as participating in the expansion phase. This did not affect the comparison group, because they did not have start dates. For these cases, the recode which had a biggest impact was if a valid date of starting on the programme was recorded, in which case it was assumed that they had actually participated in the programme.

In conclusion, the additional checking and analysis clearly shows that:

- The findings from the areas providing good quality data and those providing poor quality data do not differ significantly (after any necessary recoding).