



Department  
for Work &  
Pensions



# Work experience

A quantitative impact assessment

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March 2016

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# Summary

This report presents the results of analysis on the net impact of work experience participation on work and benefit outcomes, and a cost-benefit analysis based on these findings.

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# List of abbreviations

<b>DWP</b>	Department for Work and Pensions
<b>ESA</b>	Employment and Support Allowance
<b>HMRC</b>	HM Revenue & Customs
<b>IB</b>	Incapacity Benefit
<b>IS</b>	Income Support
<b>JSA</b>	Jobseeker's Allowance
<b>NIESR</b>	National Institute of Economic and Social Research
<b>PSM</b>	Propensity Score Matching
<b>SFA</b>	Skills Funding Agency
<b>TA</b>	Training Allowance
<b>WE</b>	Work Experience
<b>WRAG</b>	Work Related Activity Group
<b>WPLS</b>	Work and Pensions Longitudinal Study

# Executive summary

## Background

This report presents an impact assessment and accompanying cost-benefit analysis of the work experience programme, which was introduced in 2011 to help young unemployed people get valuable work-based skills through a 2–8 week placement with a local employer.

## Methodology

The impact assessment explores the effect of work experience on subsequent labour market outcomes for three cohorts of 19–24-year-old Jobseeker's Allowance (JSA) claimants who took part in the programme in 2011, 2012 and 2013 respectively. Outcomes for those who started a placement are compared with a matched comparison group of non-participants to provide an estimate of the impact of participation.

This study builds on the results presented in an 'Early Impacts' assessment published in 2012 (Ainsworth, Hillmore, Marlow and Prince, 2012), and uses a largely consistent but slightly refined methodology. The cost-benefit analysis follows the DWP (Department for Work and Pensions) Social Cost-Benefit Analysis Framework (Fujiwara, 2010) methodology, in line with the approach used in similar published analysis of the Future Jobs Fund (Marlow, Hillmore and Ainsworth, 2012).

The matching approach used in this analysis has been designed to account for self-selection bias introduced by the voluntary nature of many DWP labour market programmes. The methodology is well-established and is considered a plausible means of estimating the impact of interventions of this type. The limitations of the approach are discussed in detail in section 3.3.

## Key findings

The key findings from this analysis are as follows:

- This study provides additional evidence that taking part in work experience reduces the time 19–24-year-old JSA claimants spend on benefit and increases the time they spend in employment.
- In the two years following a work experience start, we estimate that participants spend on average 10 days less on benefit and 47 days longer in employment based on the 2012 cohort results.<sup>1</sup>

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<sup>1</sup> The 2012 cohort results are given here because these were used as the basis of the cost-benefit analysis presented in section 5. This cohort was selected because it represents a time period when the work experience programme was fully deployed giving a sufficient sample size for subgroup analysis, as well as allowing a two-year tracking period providing substantial information on how the impact is maintained over time.

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- The positive impact of work experience participation for the initial cohort covered in the 'Early Impacts' study was sustained for over 18 months. The impact on the likelihood of being in receipt of benefit showed signs of gradually diminishing after the 18-month point, although the impact on the likelihood of being in employment was sustained throughout the three-year tracking period.
- The increase in the time work experience participants subsequently spent in employment is much larger than the corresponding reduction in time spent on benefit for all cohorts. This reflects that JSA claimants in this age group frequently leave benefit without finding employment. Those who participate in work experience are less likely to make this transition, instead becoming more likely to move into work when they end their benefit claim.
- Subgroup analysis showed that work experience was more effective at both reducing subsequent time spent on benefit and increasing time spent in employment for participants aged 22–24 than for those aged 19–21, although the programme had a positive impact for both groups. However, participants who started a work experience placement during the first three months of their JSA claim spent slightly longer on benefit on average compared with the comparison group. All subgroups showed a substantial increase in time spent in employment following a work experience placement.
- The results from the cost-benefit analysis suggest that each work experience placement has a net benefit to the Exchequer of £150, and an estimated benefit to each participant of £1,950.

# 1 Introduction

The work experience scheme helps young unemployed people get valuable work-based skills through a placement with a local employer before they become eligible for the Work Programme.

The analysis presented in this report aims to provide a quantitative assessment of the impact of the work experience scheme on participants' subsequent benefit receipt and movement into employment. The analysis focuses on the impact on participants aged 18–24 who were claiming JSA at the point when they started a placement, since this group are the primary target group for the policy.

This work builds on a previous impact assessment published in 2012, which explored the effect of work experience on benefit and labour market outcomes for an initial cohort of participants who started a placement between January and May 2011 (Ainsworth, Hillmore, Marlow and Prince, 2012). The new analysis extends the tracking period for this initial cohort as well as presenting results for two additional, larger cohorts of participants who took part in the scheme in 2012 and 2013 respectively. The methodology used in this analysis also offers some slight refinements to the approach used in the earlier report.

Cost-benefit analysis to estimate the overall cost-effectiveness of the scheme is presented in section 5.

This report will be followed by a similar evaluation of the sector-based work academies (sbwa) scheme, which is due for publication in Spring 2016. Both reports are supplemented by a quantitative survey of the experiences of people who have received support from the Youth Contract, published in 2014 (Coleman, McGinigal and Hingley, 2014).

## 2 The work experience policy

### 2.1 Policy background

Work experience (WE) was launched in January 2011. The programme is designed to help young people on certain benefits gain an insight into the world of work and provide them with the practical experience they need to secure a job before they become eligible for the Work Programme.

The scheme is targeted primarily at claimants aged 18–24 years claiming:

- JSA;
- Employment and Support Allowance (ESA) in the work related activity group (WRAG); and
- lone parents in receipt of Income Support (IS) with a youngest child aged four years.

Claimants over the age of 25 can be referred but are funded separately as part of Jobcentre Plus District manager discretion. Claimants aged 16 and 17 are also eligible for work experience subject to host employers agreeing to additional employment rules for this group.

### 2.2 Policy design

Work experience placements cover a range of sectors including retail, construction, administration, hospitality industry and IT, and are available to claimants across Britain. Placements usually last for between two and eight weeks and involve between 25 and 30 hours of activity weekly. Placements can be extended by up to an additional four weeks if the employer chooses to offer an apprenticeship to the young person.

Referring claimants to work experience is discretionary on the part of Jobcentre Plus advisers. DWP guidance suggests that those eligible should have been claiming benefit for at least 13 weeks, however, advisers can refer claimants earlier than this if they feel that a work experience placement would be of particular benefit to an individual. Those referred should also be motivated and show willingness to work.

The decision as to whether or not to accept the offer of a work experience placement is voluntary on behalf of the claimant. Sanctions can only be applied in relation to work experience if the claimant is asked to leave the placement by an employer due to gross misconduct, e.g. stealing or violence.

Participants undertaking a work experience placement continue to receive their benefit and, therefore, are required to continue to sign for their benefit each fortnight and be available for and actively seeking employment during the period of their participation. Host employers are expected to provide time for job search and to release participants to attend interviews with employers or at the Jobcentre Plus office. Certain expenses, e.g. for childcare and travel, can be paid for during the placement by Jobcentre Plus.

Jobcentre Plus district managers have overall ownership and accountability for the delivery of work experience. Work experience opportunities are brokered by Jobcentre Plus, either through a national agreement via the National Employer Service Team, or through local agreements within the Jobcentre Plus District. All employers taking part in the work

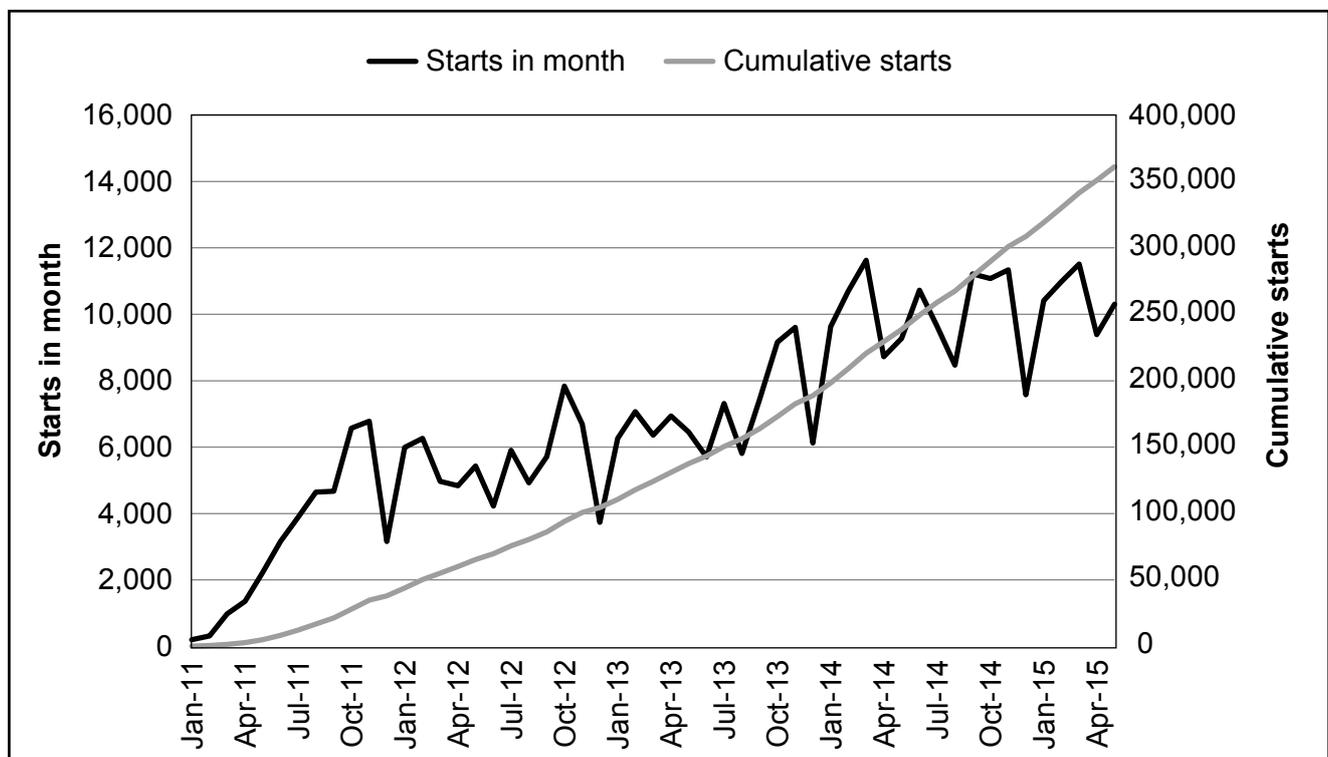
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experience programme must enter into an Agreement with Jobcentre Plus that confirms that the placement offered is not at the expense of otherwise paid employment and that the employer has the relevant insurances in place as required under Health and Safety legislation.

### 2.3 Take up of work experience

In the period between the initial roll-out of work experience in January 2011 and the end of May 2015, there were 361,210 work placement starts, of which 287,820 were for 18–24-year-olds. In April 2014, eligibility for work experience was extended to include 18–24-year-old ESA WRAG claimants and lone parents aged 18–24 in receipt of IS with a youngest child aged four years.

**Figure 2.1 Work experience starts for all age groups and benefit types from January 2011 up to May 2015**



The majority of work experience starts covered by the period of this report relate to JSA claimants. This report focuses on exploring the impact of work experience participation for JSA claimants, and does not include those who started a placement whilst claiming ESA or IS.

Table 2.1 gives a breakdown of those JSA claimants who started a work experience placement by age group and the length of time they had spent on JSA prior to their work experience start date. The figures show that the majority of those who started a placement were aged under 25, with only a very small percentage aged under 18. This is in line with the policy design for placements to be targeted primarily at young people, who are more likely to have a shortage of relevant work experience than older claimants.

**Table 2.1 Work experience placement starts between January 2011 and May 2015 made by JSA claimants, split by age group and time spent on JSA prior to work experience start date<sup>2</sup>**

Age group	Time on JSA prior to WE start				Row total	Row % of grand total
	Under 3 months		3 months or over			
	Frequency	% of total	Frequency	% of total		
Under 18	390	0.1%	230	0.1%	620	0.2%
18–24 years	116,750	39.5%	128,160	43.3%	244,910	82.8%
25 and over	12,490	4.2%	37,870	12.8%	50,360	17.0%
Grand total	129,630	43.8%	166,260	56.2%	295,890	100.0%

Figures are rounded to the nearest 10.

The figures in Table 2.1 also show that over 40 per cent of work experience participants had been claiming JSA for less than three months at the point when they started a placement. As discussed in the previous section, Jobcentre advisers have the discretion to refer claimants to work experience in the first three months of the claim if they consider that it would be beneficial, so this is potentially compatible with the policy design.

In February 2014, DWP published a quantitative survey exploring the experiences of claimants who took part in Youth Contract employment programmes (Coleman, McGinigal and Hingley, 2014). This research was based on interviews conducted with a sample of roughly 5,000 individuals aged under 25 who participated in work experience during February or March 2013.

This research provides information on the types of work experience placements undertaken by participants and their typical durations. Data on these aspects of the programme is not routinely collected by DWP. In addition, the research provides insight into what proportion of the participants sampled completed their placement, and how satisfied they were with the provision as a whole.

The main findings of the research in relation to work experience are as follows:

- The majority (69 per cent) of completed work experience placements lasted for at least four weeks.
- Placements most commonly took place in shops (45 per cent), offices (25 per cent) or warehouses (10 per cent).
- There is some evidence that participants who had spent more time out of work prior to starting a work experience placement were more likely to see a longer placement through to completion.
- A large majority (82 per cent) of work experience participants said they felt positive about their overall experience on the scheme, and nine in ten felt that the placement arranged for them was suitable.

<sup>2</sup> The information on the volumes of work experience starts given in this table will not exactly match DWP’s published official statistics, since the figures here only include work experience starts that match to a benefit spell which was live on the start date. This filter is not applied to the official statistics, which include all recorded starts.

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- Participants generally felt that they were treated like valued members of staff whilst they were on the placement, that they had learned new skills and that the placements were well-organised.
- However, a third of participants agreed that they did not like 'working for free'.

# 3 Analytical approach

## 3.1 Overview of the methodology used

This evaluation examines the impact of work experience participation on subsequent labour market outcomes for three cohorts of participants who started a work experience placement in January–May 2011, 2012 and 2013 respectively.

For each cohort we monitored the proportion of the participant group in employment and on benefit in each week over a period of between 18 months and three years following a work experience start. These proportions were compared with the same figures for a matched comparison group of non-participants selected using a statistical technique called propensity score matching (PSM), in order to determine the impact of the programme on these outcomes, i.e. its additionality.

Additionality is defined as '*the outcomes that occurred under the work experience programme*' minus '*the outcomes that would have occurred anyway*'. The first part of this equation is straightforward to calculate, as the outcomes of those who participated in the programme can be directly observed. However, the second figure, commonly referred to as the 'counterfactual', is more difficult to determine because it is impossible to know what the outcomes would have been for the participant group in the absence of the programme.

The purpose of PSM is to construct a comparison group from the wider group of claimants who did **not** participate in work experience but who are as similar to the participant group as possible in all other respects. The outcomes for this group are then used to estimate the counterfactual outcomes for the participant group. A full description of PSM and how it was implemented in this study can be found in Appendix A.

The difference between the actual observed outcomes and the estimated counterfactual outcomes gives the true impact of the programme if the only relevant difference between the participant and comparison groups is that the participant group took part in work experience. A relevant difference is one which affects outcomes. This impact is known as the average treatment effect on the treated (ATT).

Once the comparison group had been constructed and used to estimate the counterfactual outcomes, a 'difference-in-difference' approach was then applied to calculate the impact of the programme. This additional step controls for any remaining differences between the participant and comparison groups that are constant over time, regardless of whether these differences can be detected using the available data.

The end result of applying this methodology is a quantitative estimate of the impact of the intervention on each outcome of interest. These impact estimates can be expressed in terms of the average additional days each participant spent in work or on benefit as a result of undertaking work experience; or alternatively, as a change in the likelihood of participants being in work or on benefit at a specific point following the intervention.

This approach is broadly consistent with a number of previous DWP impact assessments of labour market initiatives, including the 'Early Impacts of Work Experience' study published in 2012 (Ainsworth, Hillmore, Marlow and Prince, 2012). These studies have been extensively peer-reviewed both within DWP and externally by the National Institute of Economic and

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Social Research (NIESR), with the conclusion that the methodology offers a robust means of estimating the impact of interventions of this type.

The current analysis introduces some minor refinements to the methodology used in the 'Early Impacts' study in terms of the variables employed to create the propensity score for each individual. The new variables have been added to the matching in response to NIESR feedback and as a result of new data becoming available, with the aim of improving the accuracy of the matching. A full list of the variables used in both studies is provided in Appendix A.

### 3.2 Cohort selection

The analysis in this report explores the impact of work experience on three cohorts of participants who were aged 19–24 and were claiming JSA at the point when they started a placement. Table 3.1 provides further detail on the cohorts used.

**Table 3.1 Details of the cohorts studied in this evaluation**

Cohort name	Period covered*	Number of participants in cohort
Cohort 1	January – May 2011	3,596
Cohort 2	January – May 2012	17,456
Cohort 3	January – May 2013	18,135

\*The time period refers to the date that participants started a work experience placement.

These cohort periods were selected both in order to be consistent with the previously published study, and to be as comparable with each other as possible given possible seasonal effects. January – May 2011 was chosen as the basis for the 'Early Impacts' study because it was the earliest period to contain a sufficient sample size of participants following the initial roll-out of the policy at the start of that year. Cohorts covering the same period in subsequent years were selected as the basis of the extension analysis so that there is no potential for the measured impact of the policy over time to be distorted by seasonal changes in the labour market. It should be noted that as a consequence, we have not explored whether the impact of work experience varies throughout the year as a result of these seasonal changes: it is possible that the impact of the programme for participants who begin a placement later in the year could differ from our estimates.

Although the aim of this analysis is to determine the impact of work experience on 18–24-year-olds, individuals who were 18 when they began a placement are not included in the participant cohorts. This is because for this group, we are unlikely to hold a full year of benefit and employment history since these individuals have only very recently entered the labour market. This means that the PSM for this group would be based on incomplete data. A sensitivity analysis including 18-year-old participants was produced in the 'Early Impacts' study, which found very similar impacts for this age-group to a 19–24-year-old group. The current analysis assumes this would still be the case for later participants and does not reproduce this work. In interpreting the results of this analysis we assume that the impact of the policy for 18-year-olds would be similar to that measured for 19–24-year-olds.

Appendix B provides details of how non-participant samples were constructed alongside each of these cohorts of work experience participants. These were combined with the participant samples to provide the input to the PSM process described in section 3.1 and in more detail in Appendix A.

It should be noted that the sample for the 2011 cohort is slightly larger than the cohort in the previously published 'Early Impacts' study (Ainsworth *et al.*, 2012), although the sample selection methodology was identical in both cases. This increase is the result of retrospective updating of the dataset used to record work experience placement starts, i.e. placement starts occurring during the cohort period which were not recorded until a later point. As a result of these changes, the 2011 cohort in this study contains three per cent more participants than the equivalent cohort in the 'Early Impacts' study.

### 3.3 Limitations of this methodology

As discussed in Appendix A, the success of the PSM is dependent on the 'conditional independence assumption' being met, i.e. the assumption that the matching has controlled for all relevant differences between the treatment and comparison populations. One limitation with the PSM approach is that there is no way of testing this assumption for unobserved characteristics of the two populations.

In this analysis we have made use of detailed information on benefit and employment history which has been shown to be an effective proxy for important but unobserved attributes such as motivation (Caliendo, Mahlstedt and Mitnik, 2014). However, it is impossible to prove that the available data is sufficient to account for all the relevant variation between the participant and comparison groups.

Education is a key area not covered by the available data, including both past participation/qualification levels and future intentions to undertake further study. This issue is particularly relevant for the age group covered in this study, for whom qualification levels might be expected to have a substantial impact on future outcomes.

The employment data used in this evaluation also has some known weaknesses. This data is taken from the Work and Pensions Longitudinal Study (WPLS), which captures details of employment start and end dates taken from P45 and P46 forms submitted by employers. The quality of the data is known to be limited, since historically HM Revenue & Customs (HMRC) did not require P45 and P46 forms to be completed for people whose earnings were below the Lower Earnings Limit, and employment start and end dates were often approximate or missing. In addition, the dataset does not capture any information on people who are self-employed.

Beginning in April 2013, the P45/P46 reporting system was phased out in favour of the Real Time Information (RTI) system, which requires employers to submit information to HMRC each time an employee is paid. This system has now reached full deployment. RTI offers substantial improvements to the P45/P46 system in terms of data coverage, since employers must now provide information on all their employees if even one employee of the company is paid above the Lower Earnings Limit. This improvement has filtered through into the WPLS dataset used in this study, which is now populated using information extracted from the RTI system.

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These changes only affect the tail end of the post-participation tracking period used in this study, however, this nonetheless provides a form of sensitivity analysis, giving an indication of how the improvement in data coverage influences the impact estimates for the programme. The issue with start and end dates remains however, and self-employment is still not captured.

The issues outlined above are common to evaluations of this type, including the previous DWP impact assessments of labour market programmes which have adopted a similar methodology. The approach we have adopted has been extensively peer-reviewed both internally and externally, and we consider it the best methodology available given constraints around data capture and policy design. We believe this method offers a plausible means of estimating the impact of interventions of this type; however, it is impossible to be absolutely confident that we have fully controlled for selection bias.

# 4 Impact assessment findings

## 4.1 Outcomes of propensity score matching

This section explores the results of the PSM to determine the success of this methodology in creating a suitable comparison group, i.e. one whose outcomes provide a valid estimate of the counterfactual outcomes for the relevant participant cohort.

The first aspect examined is the extent to which the non-participant sample provided common support for individuals in the participant cohort. For a participant to be ‘on support’, there must be at least one individual in the non-participant group with a propensity score within the matching bandwidth of the participant’s score (see Appendix A for more detail on the matching approach). For PSM to be successful, it is important that the vast majority of participants in the sample are on support following the matching, since the impact estimates generated by comparing the matched groups will only be valid for those participants for whom common support is available.

Table 4.1 shows the number of individuals in the participant and non-participant groups before and after matching, and the resulting proportion of the participant group for whom common support was found. These results show that for all three cohorts, the proportion of participants on support was greater than 99 per cent, indicating that this aspect of the matching has been successful.

**Table 4.1 Participant and comparison group sample sizes before and after matching, and the proportion of participants on support**

Cohort	Comparison group (pre-matching)	Participant group (pre-matching)	Participant group (post-matching)*	Participants not on support	% of participants on support
2011	349,509	3,596	3,574	22	99.4%
2012	398,761	17,456	17,330	126	99.3%
2013	330,554	18,135	17,957	178	99.0%

\*Note: The comparison group sample size is identical to the participant group sample size after matching by definition, since matched observations are weighted to ensure this is the case.

The second aspect of testing examines how successful the matching has been in creating a comparison group which looks similar to the participant group in terms of observed characteristics. A t-test was carried out on each of the variables that contributed to the determination of the propensity score in turn to identify any remaining statistically significant differences between the participant and comparison groups following matching. The results of this are shown in Appendix C.

A chi-squared test was then performed to determine whether there is a statistically significant difference between the participant and comparison groups for each cohort, taking into account the distribution of the groups across all matching variables. Table 4.2 gives specification statistics for the matching of the participant and non-participant groups. The chi-squared test shows that prior to the match, there was an approximately zero probability that the participant and non-participant samples had the same set of characteristics.

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After matching there is statistically no difference between the matched groups in terms of observed variables at the 5 per cent level.

**Table 4.2 Specification statistics for the group matching**

Cohort	Sample	Pseudo R <sup>2</sup>	LR chi <sup>2</sup>	P > chi <sup>2</sup>
2011	Unmatched	0.153	6,062	0.000
	Matched	0.002	23	1.000
2012	Unmatched	0.147	21,031	0.000
	Matched	0.001	37	1.000
2013	Unmatched	0.172	24,140	0.000
	Matched	0.001	46	1.000

Overall, we found the PSM approach to be highly effective in constructing matched treatment and comparison groups that have sufficient coverage of the original participant sample, and that are well balanced in terms of their observed characteristics.

## 4.2 Findings from full-cohort impact analysis

For each of the participant and comparison groups across the three cohorts, we examined the proportions of the group in four mutually exclusive outcome states in each week after the start/pseudo start date for the duration of the tracking period. The four outcome states, between them covering all possible destinations for individuals in each group, are as follows:

- 1 Claiming benefit and **not** in employment;
- 2 Claiming benefit **and** in employment;
- 3 In employment and **not** claiming benefit;
- 4 **Neither** claiming benefit **nor** in employment.

Here, 'claiming benefit' refers to being in receipt of JSA, IS or ESA/Incapacity Benefit (IB) at some point during the relevant week. 'In employment' refers to having an employment spell recorded in the cleaned P45 data during the week. These four states are exclusive in that each individual can only be in one of the four in any given week, although individuals can move between states from one week to the next.

This approach differs slightly to that used in the 'Early Impacts' study (Ainsworth *et al.*, 2012). The earlier study focused on two outcome states: 'in employment' and 'on benefit'. These states were not exclusive – it was possible for an individual to be in both states in a given week<sup>3</sup>. This format of results can be recreated from the impact results generated in this study by simply adding together the impact for the relevant mutually exclusive outcome states. For example, the impact of work experience participation on time spent on benefit, as presented in the 'Early Impacts' study, is the sum of the impact on time spent in outcome states **1** and **2** in the list above. The results tables in Appendices D and E have been designed so that the

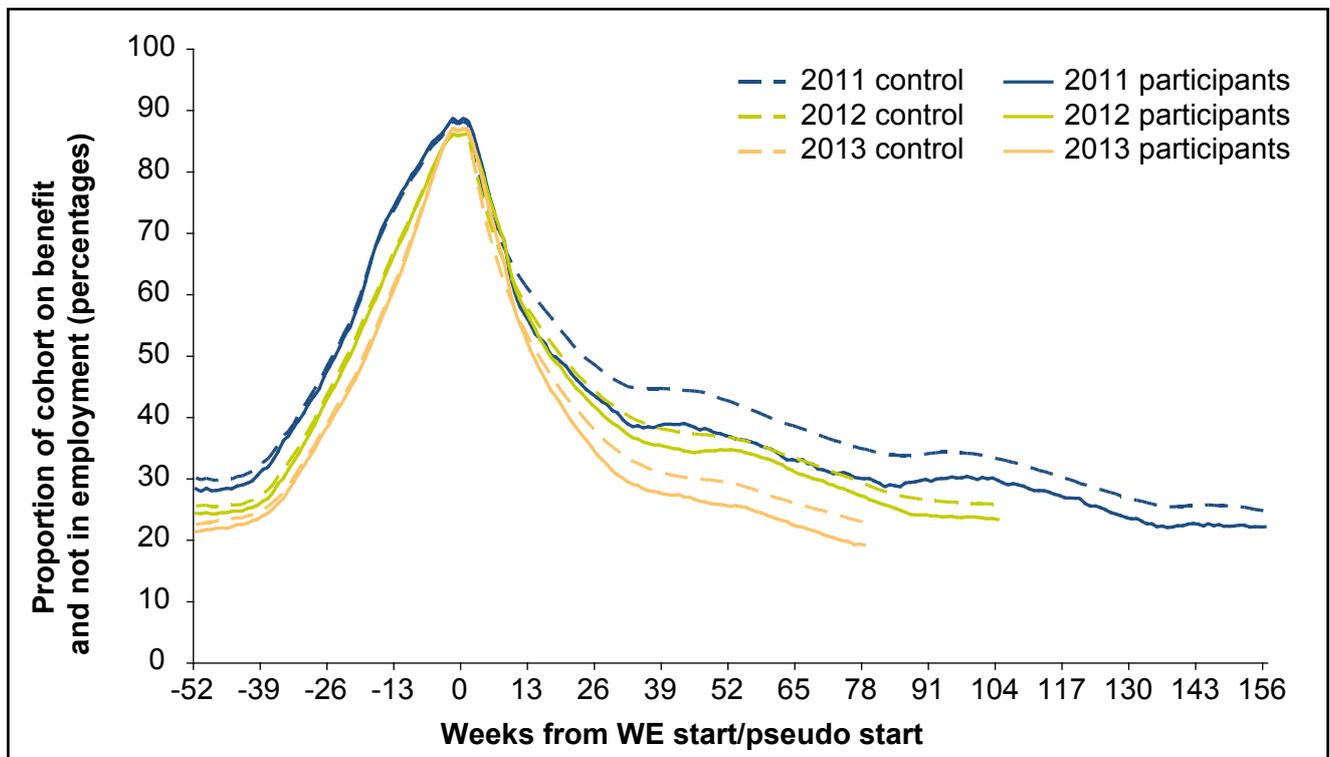
<sup>3</sup> Some of the overlap between these states will be due to quality issues with the employment data, specifically missing/incorrect start and end dates for employment spells. However, there are also situations in which the overlap between benefit and employment spells may be genuine. For example, a person claiming JSA is allowed to work up to 16 hours per week without affecting their entitlement to benefit.

'total' rows and columns in bold present the impact estimates in a format consistent with the previous study.

We believe that the approach we have adopted in this study provides maximum transparency regarding the impact of work experience on subsequent outcomes, whilst still allowing the new results to be compared with those from the earlier analysis. The inclusion of 'neither claiming benefit nor in employment' as an outcome measure is in line with recommendations made by NIESR following publication of the 'Early Impacts' study.

The proportions of the participant and comparison groups in each state were compared to determine the impact of work experience on the likelihood of being in a given state for each week in the tracking period. Figure 4.1 shows the proportion of each participant and comparison group who were in receipt of benefit and not in employment in each week for the 52 weeks prior to each individual's start/pseudo start date (shown as week zero), and in each week of the tracking period subsequent to this. The dotted lines show the comparison group proportions, while the solid lines represent the participant groups. For the weeks prior to the start/pseudo-start date, the difference between the participant and comparison group for each cohort should be small, since the PSM process should ensure that the benefit history of the two groups is similar. After the start date, the groups will diverge if the work experience intervention has had an impact on the outcome measure in question.

**Figure 4.1 Proportion of each group (post-matching) in receipt of benefit and not in employment in each week following a work experience start/pseudo start date**

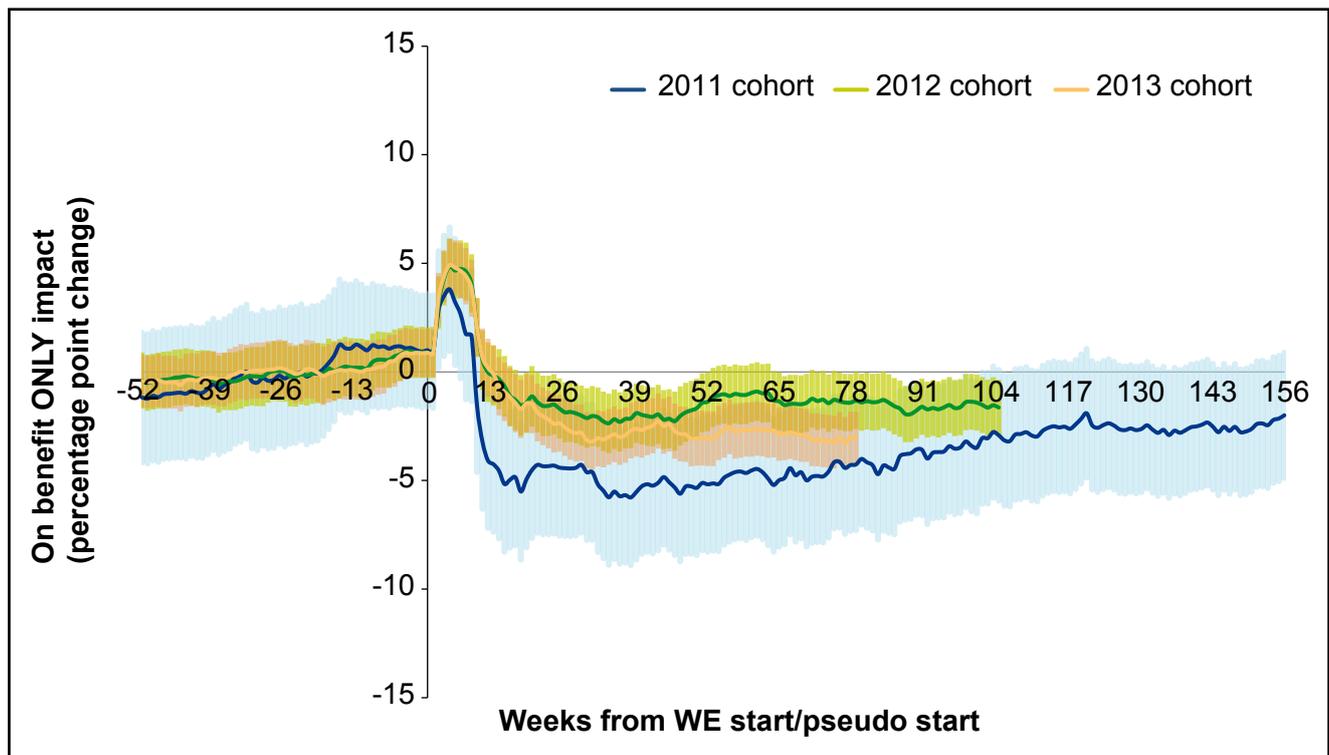


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Figure 4.2 shows the result of applying a difference-in-difference calculation to the participant and comparison group proportions shown in Figure 4.1, as discussed in section 3.1. The difference between the two groups' outcomes 52 weeks before the work experience start was subtracted from the difference in these outcomes in each week subsequent to the intervention. The result provides an estimate of the impact of work experience participation on the likelihood of being in receipt of benefit but not in employment in each week following a placement start.

Figure 4.2 includes confidence intervals to show the uncertainty around the impact estimate in each week. This uncertainty reflects the size of the samples used to produce the impact estimate for each cohort. The uncertainty estimates were constructed using a Linear Probability Model approach applied to the sample post-matching. This is the same methodology used in the 'Early Impacts' study (Ainsworth *et al.*, 2012).

**Figure 4.2** Impact of work experience participation on the likelihood of being in receipt of benefit and not in employment in each week following a work experience start/pseudo start



The data shown in Figure 4.2 provides point-in-time estimates of the impact of work experience on the likelihood of being in a given outcome state at a specific point following participation. For example, based on Figure 4.2 we can say that at 104 weeks after a work experience start, individuals in the 2012 cohort were two percentage points less likely to be on benefit and not in employment than the matched comparison group. A summary of the results for each cohort expressed in this format can be found in Table D.1 in Appendix D.

These results can also be aggregated to provide estimates of the impact of work experience on the overall time individuals spent in each outcome state following participation. The additional number of days that participants spent in a given outcome state in a given week is calculated simply by multiplying the point-in-time percentage point impact for that week by seven (i.e. the number of days in a week). Summing this across all weeks in the tracking period gives an estimate of the total additional number of days that participants spent in the outcome state under consideration. A summary of results expressed in the format ‘additional days in outcome state X by week Y’ can be found in Table D.2 in Appendix D.

We will now examine the effect of work experience participation on the subsequent likelihood of being in each of the four outcome states listed in section 4.2.

### **1 Effect of work experience participation on ‘claiming benefit and not in employment’ outcome state (see Figures 4.1 and 4.2 above):**

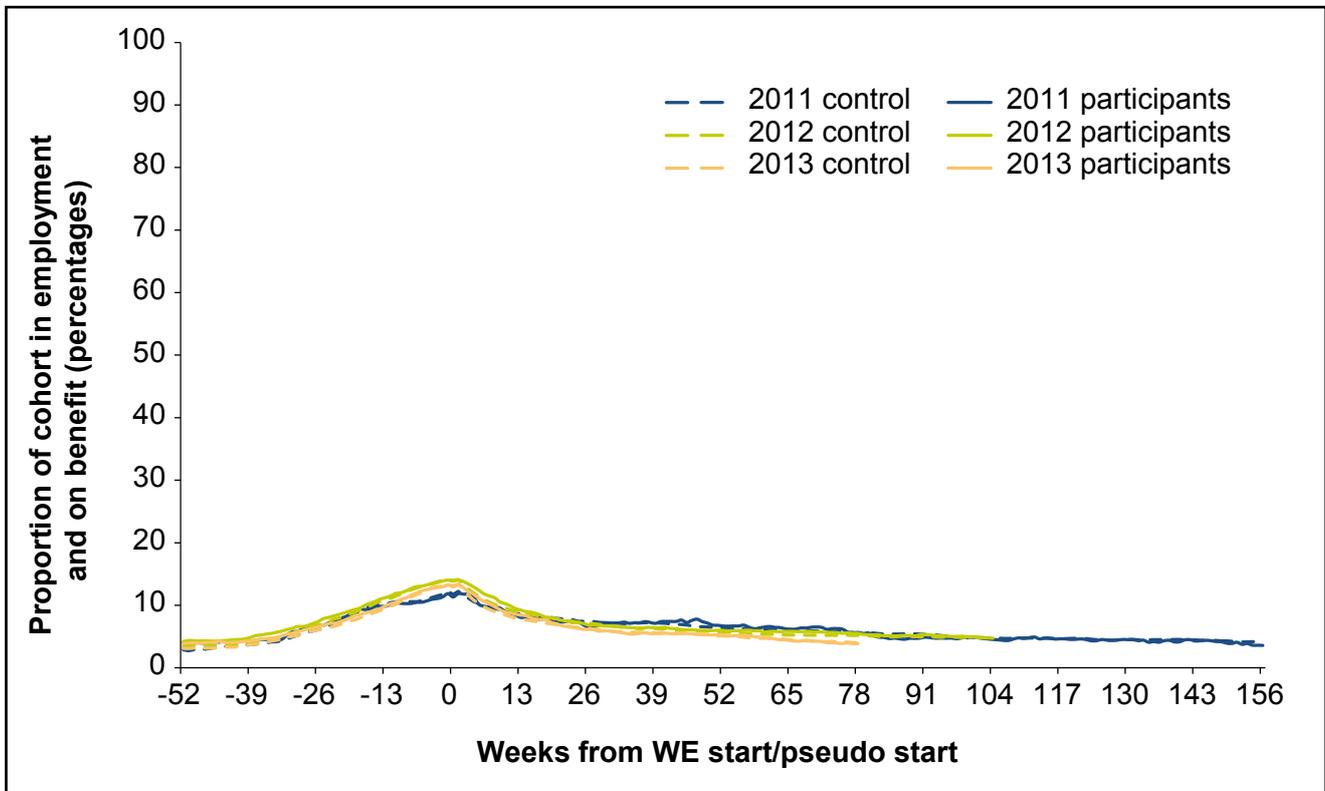
- Work experience participants in all cohorts were more likely to be in receipt of benefit and not in employment for a short, initial ‘lock-in’ period of around 10 weeks following a work experience start. This reflects that during the placement itself, participants have less time available for job search activity and so are less likely to leave benefit during this period (the work experience placement itself does not count as time spent in employment).
- Following the lock-in period, work experience participants in all cohorts were then less likely to be in receipt of benefit and not in work for the remainder of the tracking period.
- For all cohorts, there was an overall reduction in time spent in this outcome state during the tracking period. The reduction was greatest for the 2011 cohort, in which participants spent on average 43 days less in receipt of benefit and not in employment during the three years following a placement start. The 2012 cohort saw the smallest impact, with participants spending on average 10 days less in this outcome state in the two years after a start. Table D.2 in Appendix D allows the overall impact on time spent in this outcome state to be compared across cohorts for equivalent tracking periods.

### **2 Effect of work experience participation on ‘claiming benefit and in employment’ outcome state (see Figures 4.3 and 4.4):**

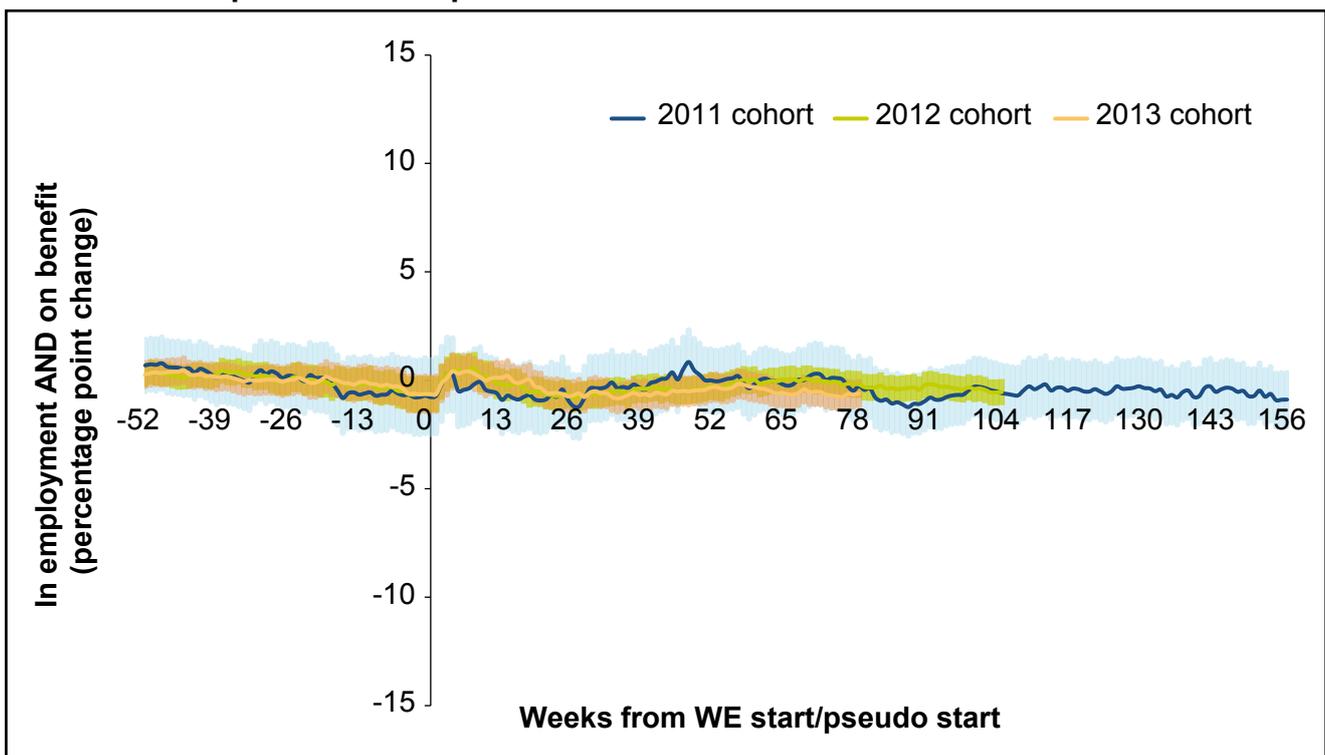
- Participation in work experience had no apparent effect on the likelihood of being both in receipt of benefit and in employment in subsequent weeks. For all cohorts, the impact of work experience participation was not significantly different from zero throughout the tracking period. This is reassuring, since some of the apparent overlap between individuals’ benefit and employment spells is likely to be due to start and end date errors in the employment data (see section 3.3 for more detail), so a detected impact here could indicate a difference in data quality between the participant and comparison groups.

## Work experience: A quantitative impact assessment

**Figure 4.3** Proportion of each group both (post-matching) in employment and in receipt of benefit in each week following a work experience start/pseudo start date



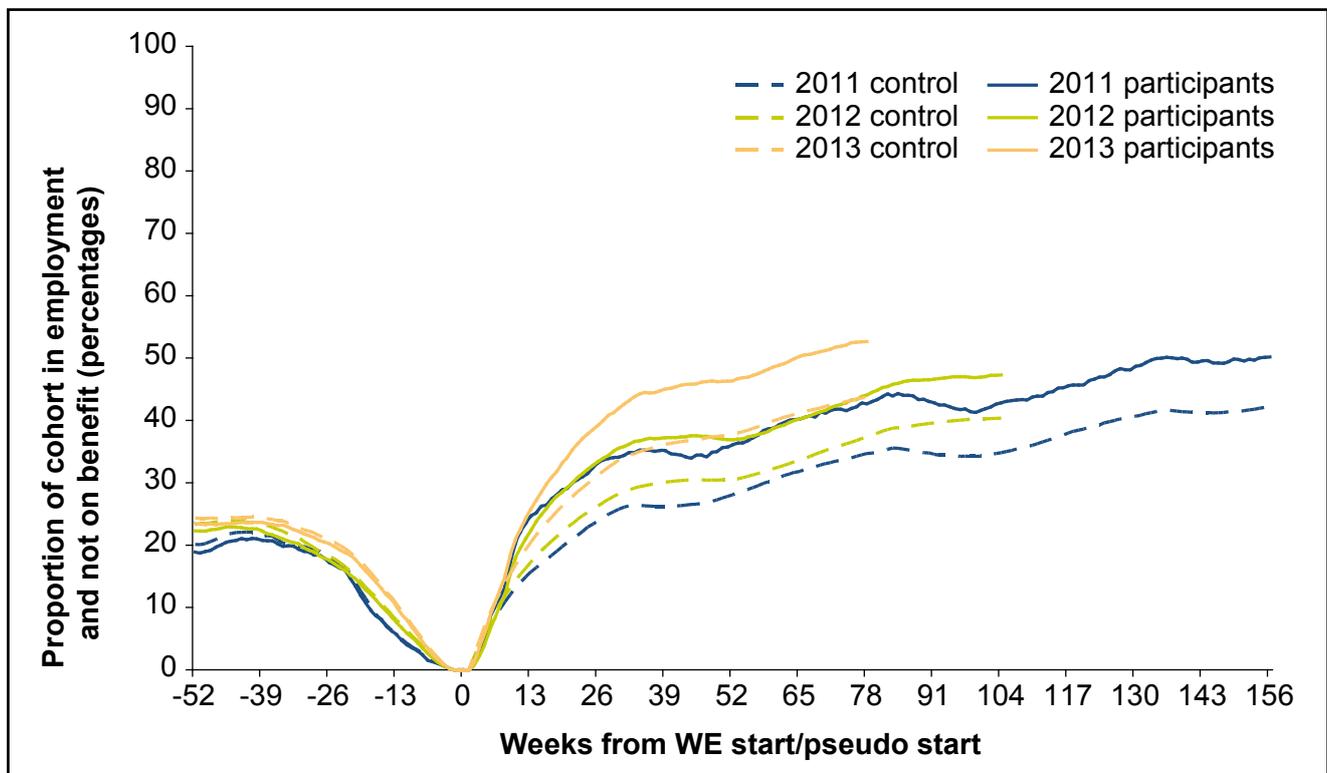
**Figure 4.4** Impact of work experience participation on the likelihood of being both in employment and in receipt of benefit in each week following a work experience start/pseudo start



**3 Effect of work experience participation on ‘in employment and not claiming benefit’ outcome state (see Figures 4.5 and 4.6):**

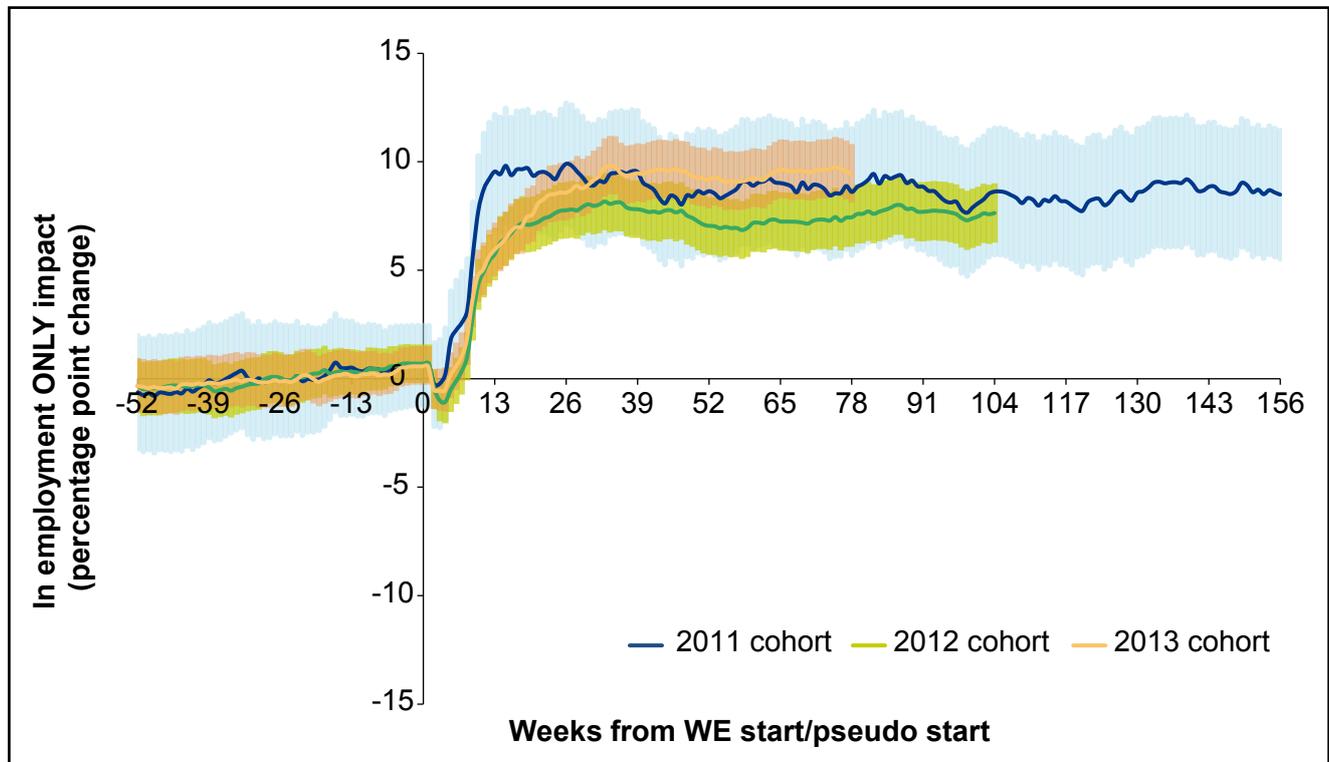
- Work experience participants in all cohorts were slightly less likely to be in employment and not claiming benefit during the initial lock-in period following a work experience start.
- Following this lock-in period, work experience participants were substantially more likely to be in employment and not claiming benefit than the matched comparison group.
- This impact was sustained throughout the tracking period for all cohorts, with work experience participants in all cohorts being 7–10 percentage points more likely to be in work and not on benefit 18 months after a work experience start.
- The greatest impact was seen for the 2011 cohort, in which participants spent an average of 91 days longer in employment and not on benefit compared with the comparison group over the three years following a placement. The impact was smallest for the 2012 cohort, with participants spending an additional 49 days in this outcome state over two years.

**Figure 4.5 Proportion of each group (post-matching) in employment and not in receipt of benefit in each week following a work experience start/pseudo start date**



## Work experience: A quantitative impact assessment

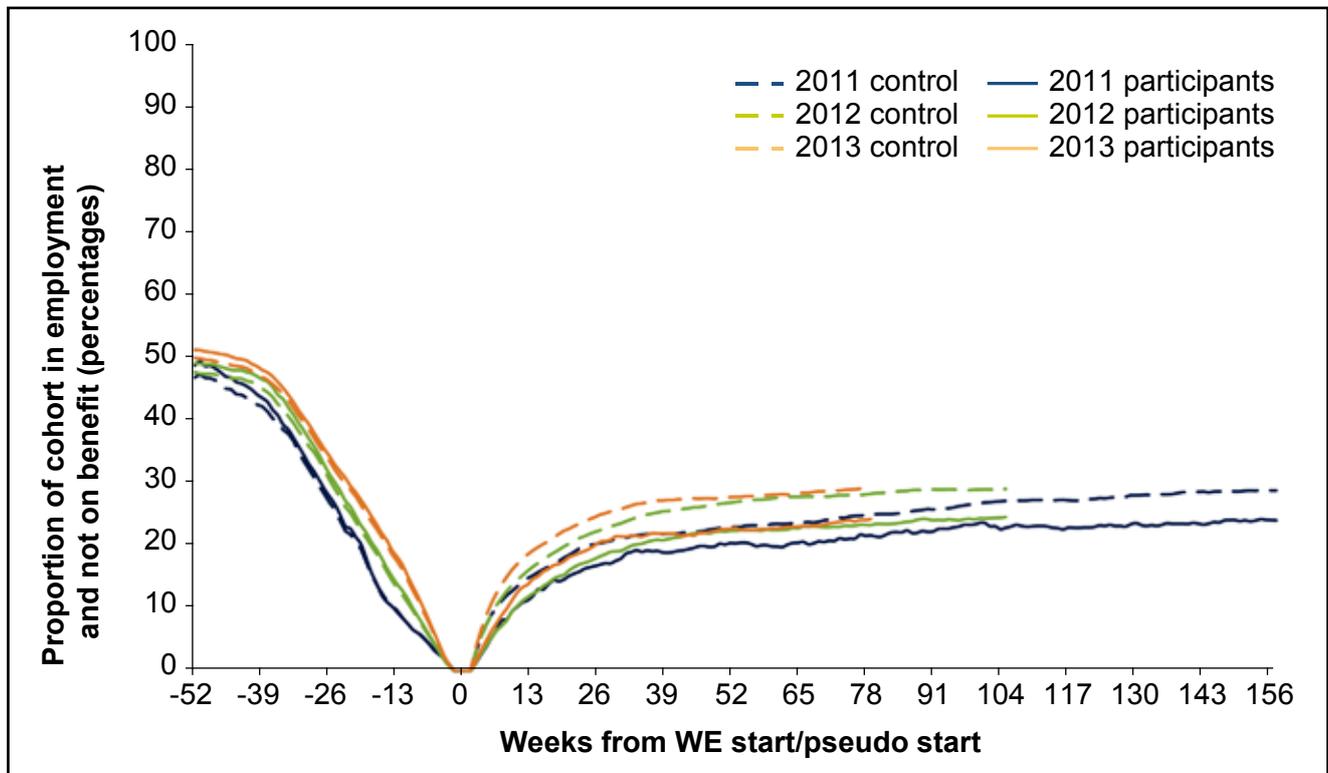
**Figure 4.6** Impact of work experience participation on the likelihood of being in employment and not in receipt of benefit in each week following a work experience start/pseudo start



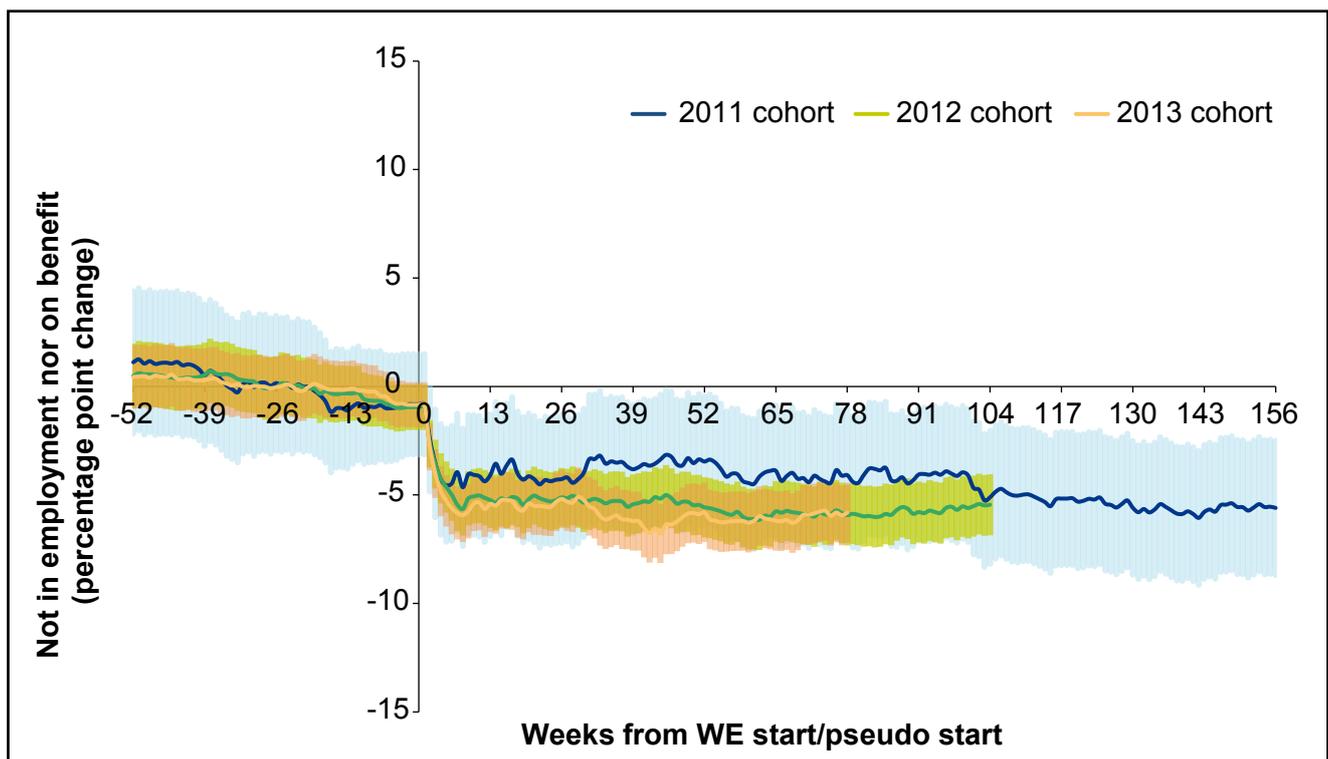
#### 4 Effect of work experience participation on 'neither claiming benefit nor in employment' outcome state (see Figures 4.7 and 4.8):

- Work experience participants in all cohorts were significantly less likely to be neither claiming benefit nor in employment from the start of their placement compared with the comparison group.
- This impact was maintained throughout the tracking period for each cohort: participants in all cohorts were 5–6 percentage points less likely to be in this outcome state at the end of the relevant tracking period.
- Taken in conjunction with the findings for the other three outcome states, these results suggest that a large proportion of those who moved into work as a result of participating in work experience would have left benefit anyway, but to a destination other than work. This accounts for the discrepancy between the impacts measured against outcome states (1) and (3).

**Figure 4.7** Proportion of each group (post-matching) neither in employment nor in receipt of benefit in each week following a work experience start/pseudo start date



**Figure 4.8** Impact of work experience participation on the likelihood of being neither in employment nor in receipt of benefit in each week following a work experience start/pseudo start



### 4.2.1 Building on the ‘Early Impacts’ study findings

Overall, the results of this extended impact assessment provide evidence that taking part in work experience reduces the time 19–24-year-old JSA claimants spend in receipt of DWP benefits and increases the time they spend in employment. This broadly supports the conclusions of the ‘Early Impacts of Work Experience’ report (Ainsworth *et al.*, 2012).

It should be noted that the results obtained for the 2011 cohort in this study differ slightly from those published in the ‘Early Impacts’ report when equivalent outcome measures<sup>4</sup> and tracking period are considered. The ‘Early Impacts’ study estimated that work experience participants in the 2011 cohort spent on average five days less on benefit during the 21-week tracking period, whilst this evaluation revises that estimate to three days less on benefit during the same period. The estimated employment impact remains unchanged. The adjustment to the benefit impact is the result of refinements to the matching methodology used to create the comparison group, specifically an increase in the range of variables used in the matching (see Appendix A for full details).

The results of extending the tracking period for the initial 2011 cohort up to three years suggest that the impact of work experience is maintained for at least two years after starting a placement. After this point, there are signs that the impact on the likelihood of being in receipt of benefit begins to taper off, although the employment impact remains strong. These findings are supported by the results from the later cohorts.

### 4.2.2 Findings from the later cohorts

Although the results for the new cohorts examined in this study support the findings of the ‘Early Impacts’ study in terms of the direction of the programme’s impact and its sustainment over a long period, there were also some clear differences between the cohorts. In particular, the impact on the likelihood of being on benefit and not in employment was significantly smaller for the 2012 and 2013 cohorts than for the 2011 cohort, even taking into account the adjustment in the 2011 impact estimate described above.

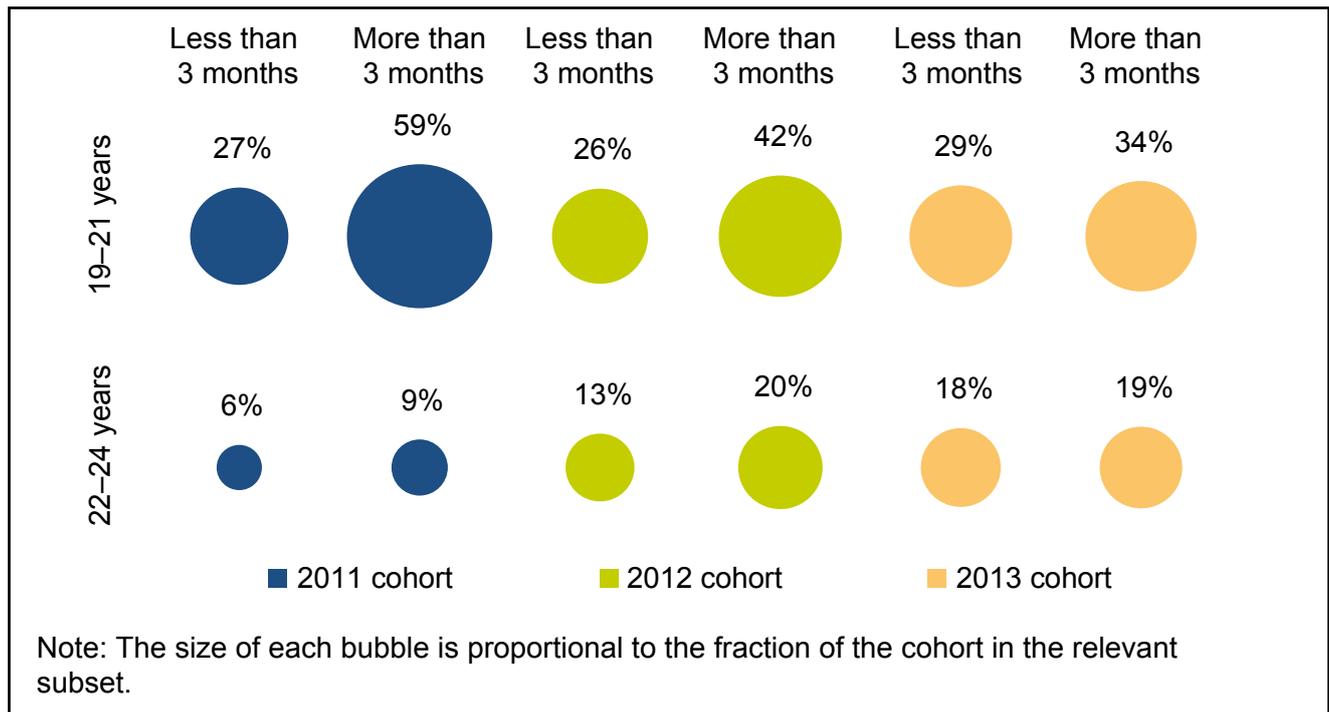
Changes in the targeting and composition of the cohorts may be contributing factors to this decrease in impact. The work experience programme underwent significant expansion between January 2011 and January 2012, as is demonstrated by the increase in the cohort sample size from under 4k in 2011 to over 17k in 2012. It is likely that placements would have been targeted very specifically at those who would benefit most in the initial cohort when numbers on the scheme were low; while in the later cohorts the selection criteria may have relaxed slightly as the programme rolled out more widely.

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<sup>4</sup> In the previous study, results were presented in terms of the overall time spent off benefit/in employment as a result of work experience participation, as opposed to the four outcome states considered here. Table D.2 in Appendix D shows results which are comparable with the previous publication in the row and column totals for the 2011 cohort at the 21 weeks point (the column totals give the overall employment impact, whilst the row totals give the benefit impact).

An examination of the characteristics of the participants in each group reveals differences in the composition for the cohorts, as is shown in Figure 4.9. Those in the 2011 cohort were more likely to be aged under 21 and to have been in receipt of JSA for over three months compared with the later cohorts. The latter factor may have helped to increase the impact measured for this cohort, since subgroup analysis shows that the impact of work experience is greater for the longer-term claimant group.

**Figure 4.9 A breakdown of the three cohorts by age group and time spent on JSA prior to a work experience start**



In the subgroup analysis in the following section and in the cost-benefit analysis presented in section 5 we have focused on results for the 2012 cohort. This cohort has been selected because the cohort represents a period when the work experience programme was fully deployed so the sample size is sufficiently large for subgroup analysis, and we have a two-year tracking period for this cohort which provides substantial information on how the impact is maintained over time. It should be noted that the measured impact of work experience is smallest for this cohort, so using these results as the basis for cost-benefit analysis means that these results represent a lower bound for the value for money from this programme.

Across all three cohorts, the impact of work experience on subsequent time spent in employment was greater than the impact on time spent on benefit. This pattern has been observed in previous evaluations of DWP labour market programmes, including the work experience 'Early Impacts' study, but is particularly pronounced in this case especially for the later cohorts. This aspect of the results is discussed in more detail in section 4.4.

## 4.3 Findings from subgroup impact analysis

The analysis described in the sections above was repeated for a number of subgroups in order to build an understanding of which groups work experience is most effective for. As discussed in the previous section, the findings presented here are for the 2012 cohort, since this provides the most suitable combination of sample size and tracking period.

The subgroups examined were as follows:

- Participants aged 19–21 years.
- Participants aged 22–24 years.
- Participants who had been claiming JSA for under three months prior to a work experience start.
- Participants who had been claiming JSA for three months or more prior to a work experience start.
- Male participants.
- Female participants.

The methodology used was identical to that used for the main cohorts, with the addition of a filter applied to both the participant and comparison groups prior to the PSM so that only the appropriate individuals were retained in both. Table 4.3 shows the sample size in each subgroup before and after matching was carried out. In all cases the proportion of participants on support following matching was over 98 per cent.

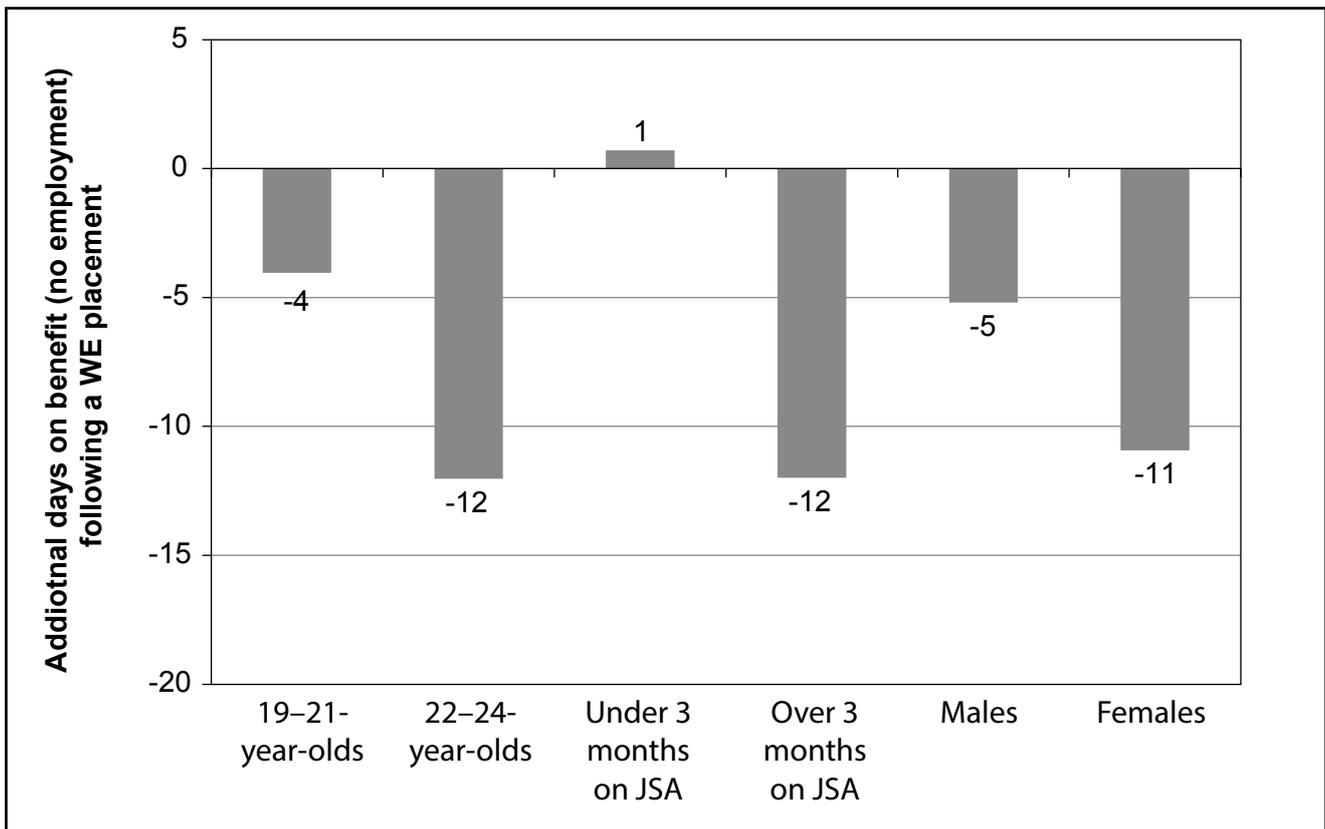
**Table 4.3 Subgroup participant and comparison group sample sizes before and after matching, and the proportion of participants on support**

	Full cohort	19–21-year-olds	22–24-year-olds	Claiming under 3 months	Claiming over 3 months	Males	Females
Comparison group (pre-matching)	398,761	213,422	185,339	187,741	211,020	272,391	126,370
Participant group (pre-matching)	17,456	11,748	5,708	6,735	10,721	10,748	6,708
Participant group (post-matching)*	17,330	11,619	5,616	6,638	10,590	10,619	6,613
Participants not on support	126	129	92	97	131	129	95
Percentage of participants on support	99.3%	98.9%	98.4%	98.6%	98.8%	98.8%	98.6%

\*Note: The comparison group sample size is identical to the participant group sample size after matching by definition, since matched observations are weighted to ensure this is the case.

Figures 4.10 and 4.11 provide a comparison of the subgroup results for the two main outcome states ('on benefit and not in employment', and 'in employment and not on benefit'), expressed in terms of the additional days spent in each state during the 104-week tracking period.

**Figure 4.10 Impact of work experience participation on time spent on benefit and not in employment by subgroup (2012 cohort, 104-weeks tracking)**



As Figure 4.10 shows, there was a wide variation across the subgroups in terms of the impact on time spent on benefit but not in employment. The largest impacts were found for 22-24-year-old participants, and for participants who had been on JSA for more than three months at the point when they started at placement. There were also differences between the genders, with a greater impact on time spent on benefit for females than males. This is discussed in greater detail below.

The smallest impact on time spent in receipt of benefit and not in employment was for participants who had been claiming JSA for less than three months: this group in fact spent slightly longer on benefit as a result of work experience participation. This is likely to be due to the presence of more participants in this group who would have left benefit even without the intervention.

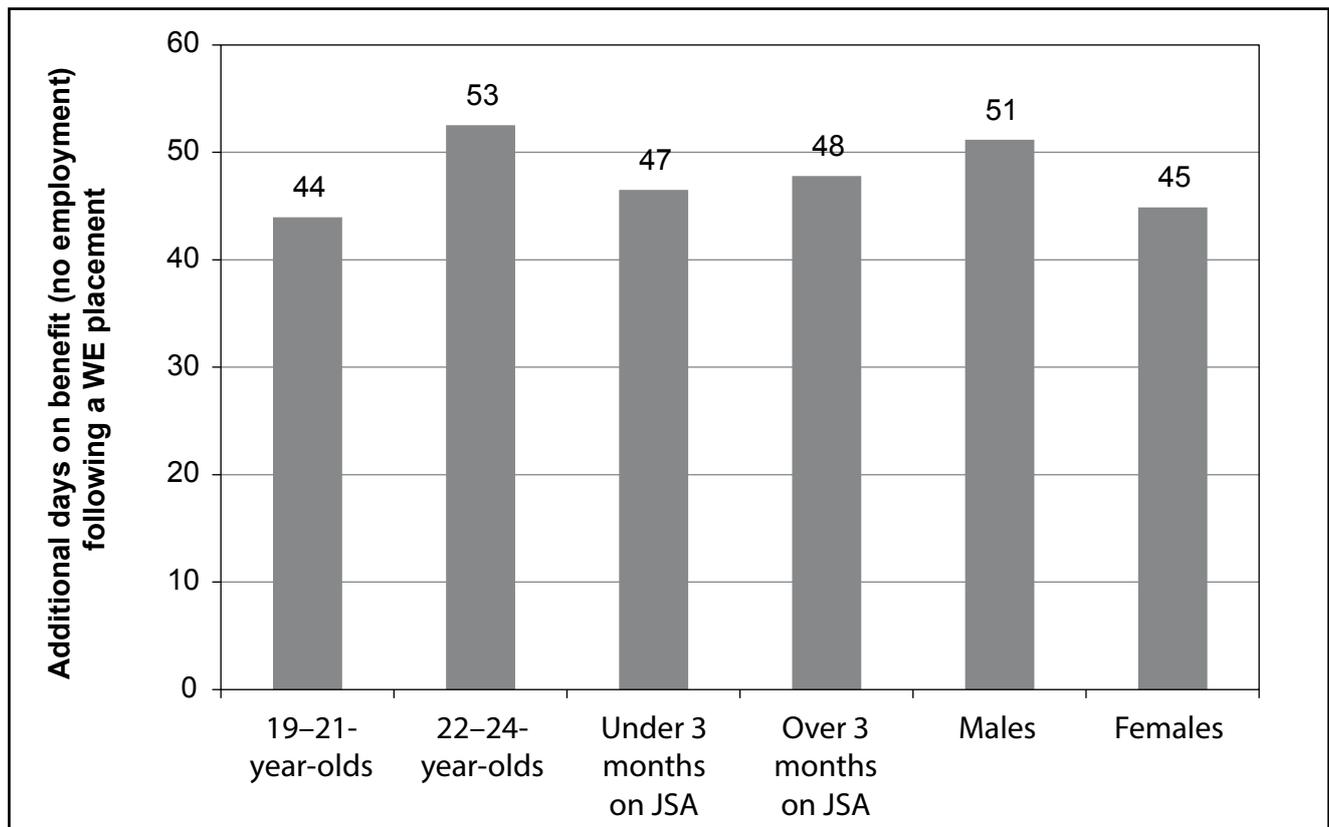
Interestingly, the reduced impact for this group in Figure 4.10 is not reflected in Figure 4.11, which shows the impact for each subgroup on time spent in employment but not on benefit. This means that short-term JSA claimants who participate in work experience are more likely to move into work than non-participants, but are no more likely to leave benefit. This could be explained if the comparison group here contains a higher proportion of individuals who are claiming benefit as a temporary measure in advance of a planned move to another non-

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work destination, for example education, a gap year, or self-employment (this is classified as a non-work destination here, since self-employment is not captured in the employment data used in this analysis).

Figure 4.11 shows the variation across subgroups in the impact on time spent in employment and not on benefit. This is far smaller than the variation shown in Figure 4.10. The largest impacts here were for 22–24-year-olds and for males; however, the impact was consistently large across all subgroups considered.

**Figure 4.11 Impact of work experience participation on time spent in employment and not on benefit by subgroup (2012 cohort, 104-weeks tracking)**



<sup>5</sup> This may also have had a small effect on the overall cohort results; however, we are confident that the effect is too small to significantly alter the findings of this study. In future evaluations of this type we will explore options for incorporating Child Benefit data into the matching variables as a proxy for pregnancy to remove the issue.

## 4.4 Understanding the differences between benefit and employment impacts

The findings for all cohorts covered in this report showed substantial differences between the benefit and employment impacts of work experience, with the increase in time spent in employment being greater than the reduction in time spent on benefit in all cases.

This combination of results is possible because of the large proportion of claimants in this age group who leave benefit without moving into employment. Work experience appears to have a substantial impact on reducing movement from benefit to non-work destinations for those who participate: following a placement start, some individuals who otherwise would have been in this group become more likely to move into work instead.

However, we are unable to examine what these ‘non-work destinations’ are for the specific individuals involved in the study. Possible options include education, training, self-employment and low-paid work (although towards the end of the tracking period this latter option should be reducing as a result of improved coverage of the employment data, as discussed in section 3.3).

For the age group under consideration, it is likely that a proportion of those who are neither in employment nor on benefits are in education. This could pose a problem for the findings presented here if the intention to return to education at a later point reduced the likelihood of participating in work experience for a significant number of individuals in each cohort, since these individuals would be less likely to be in work once their studies commenced. This scenario would introduce bias into the employment impact estimate, with the effect of inflating the apparent effect.

To further explore this possibility, we performed sensitivity analysis using data from the Individualised Learner Records dataset collected by the Skills Funding Agency (SFA). This data covers all SFA-funded further education and training in England, but excludes higher education and other parts of the UK. This data was used to introduce an additional outcome state to explore whether those who took part in work experience were less likely to subsequently take part in further education or training. This analysis suggested that if anything, work experience participants were **more** likely to participate in training activities.

It is also reassuring that the employment impact remains large for the 22–24-year-old subgroup. For this group, the likelihood of returning to education or training might be expected to be lower, so the presence of a large employment impact here supports the hypothesis that the impact is genuine.

In their feedback on the ‘Early Impacts’ study, NIESR raised a concern that there could be differences in the quality of employment data for participants compared with non-participants. It could occur in a scenario where work experience employers tended to be, on average, larger, and so would be more likely to submit complete records to HMRC. If this were the case, this could result in an inflated employment impact being measured for the programme.

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The introduction of RTI provides some evidence that this is not the case: following roll-out of RTI, the vast majority of employers should be submitting employment records, so any impact caused by this effect should disappear. By the tail end of the 2013 cohort tracking period included in this study, RTI deployment should be nearing completion. As Figures 4.5 and 4.6 show, the impact of work experience on the likelihood of being in employment remains consistent up to the end of the tracking period, despite the background level of coverage in the employment data increasing beyond the levels in the earlier cohorts. This is as you would expect if the employment impact were genuine.

# 5 Cost-benefit analysis

This section presents a cost-benefit analysis (CBA) of work experience. The methodology underpinning this CBA is outlined in section 5.1. The findings of the CBA are presented in section 5.2. Conclusions are drawn in section 5.3.

## 5.1 Cost-benefit analysis methodology

The methodology underpinning the CBA of work experience is based on the DWP Social Cost-Benefit Analysis Framework (Fujiwara, 2010). This framework aims to provide a thorough, consistent and evidence-based approach to the CBA of employment programmes. The application of this approach is outlined below in terms of:

- whose perspective is considered – section 5.1.1;
- which costs and benefits are estimated – section 5.1.2; and
- the estimated scale of the costs and benefits under consideration – section 5.1.3.

The limitations of the adopted methodology are discussed in section 5.1.4. The application of this methodology here is consistent with the approach used in the Future Jobs Fund impact evaluation (Marlow, Hillmore and Ainsworth, 2012).

### 5.1.1 The perspectives under consideration

The costs and benefits of the work experience programme are considered from the perspectives of:

- the work experience participants (henceforth “participants”);
- participants’ employers;
- the Exchequer (i.e. the government budget perspective); and
- society.

For the purposes of this analysis, ‘society’ represents an aggregate of all British citizens. Therefore, a cost or benefit to participants, their employers or the Exchequer can also represent a cost or benefit to society. However, it should be noted that many of the gross impacts are essentially ‘transfer payments’. Transfer payments represent a cost to one group of citizens but a benefit to another. For example, the wages earned during additional employment as a result of a work experience placement represent a benefit to participants but a cost to their employers. Such transfer payments cancel out when estimating the net benefits of a policy from society’s perspective. An example of a **net** benefit to society is the increase in output that occurs when a policy leads to resources being used more efficiently. In the case of work experience, this occurs when participants (who were previously producing no output) produce output during additional time spent in unsubsidised employment as a result of the policy. This additional output represents a net benefit to employers and society.

## 5.1.2 The costs and benefits under consideration

Table 5.1 summarises the work experience impacts which have been translated into monetised costs and benefits for inclusion in this CBA. These impacts and the associated costs and benefits are discussed separately below.

**Table 5.1 Monetised costs and benefits of the work experience programme**

Work experience Impact	Perspective			
	Participants	Employers	Exchequer	Society
Increase in output	0	+	0	+
Increase in wages	+	-	0	0
Programme costs	0	0	-	-
Reduction in operational costs	0	0	+	+
Reduction in benefit payments	-	0	+	0
Increase in taxes	-	-	+	0
Increases in travel and childcare costs	-	0	0	-
Reduction in healthcare costs	0	0	+	+
Redistributive costs and benefits	+	0	0	+
Social cost of Exchequer finance	0	0	0	-

Key: '+' denotes a net benefit; '-' denotes a net cost; '0' denotes neither cost nor a benefit.

### Increase in output

This refers to the economic output produced by participants as a result of additional time spent in unsubsidised employment. This output represents a benefit to employers (who sell it) and society (who consume it). DWP does not have information on the value of this output so it is necessary to make a number of simplifying assumptions, discussed below.

We assume that the labour market is perfectly competitive. This implies that employers will hire workers up to the point where the value of an additional unit of output is equal to the associated marginal cost of production<sup>6</sup>. The cost of production, and therefore, the value of the output produced during additional spells in unsubsidised employment, is assumed to equal the commensurate gross wage payments and employers' National Insurance contributions.

### Increase in wages

This refers to the gross wages received by participants during additional time spent in employment. Wages represent a benefit to participants but a cost to their employers. This means they do not represent a net cost or benefit to society as a whole (except via redistributive effects – see below). DWP does not have information on the wages received by participants. The weekly wage received by participants in unsubsidised employment is assumed to equal the average weekly wage received by employed former JSA claimants aged 18–24<sup>7</sup>.

<sup>6</sup> See, for example, Borjas (2009).

<sup>7</sup> Estimates of the average weekly wage received by employed former JSA claimants aged 18–24 are based on the findings of Adams *et al.* (2012).

### Programme costs

The costs of setting up and administering the work experience programme represent a cost to the Exchequer and society (as this diverts economic resources from alternative uses). Work experience administration costs include Flexible Support Fund funding for travel and childcare costs during work experience participation, in addition to the set-up and management costs of the placement by Jobcentre Plus work coaches. The average cost of setting up and administering each work experience placement is estimated to be £325.

### Reduction in operational costs

Individuals who have participated in work experience are less likely to receive support from Jobcentre Plus advisers because they are more likely to be working and less likely to be claiming benefit. This also makes participants less likely to participate in other DWP employment programmes. This translates into operational savings which represent a benefit to the Exchequer and society (as economic resources can be reallocated to alternative uses).

### Reduction in benefit payments

This refers to the **net** reduction in benefit entitlement and take-up that occurs when participants spend additional time in employment as a result of a work experience placement<sup>8</sup>. This represents a cost to participants but a benefit to the Exchequer, which means there is no net cost or benefit to society as a whole (except via redistributive effects – see below). Changes in benefit entitlement and take-up are estimated using the DWP Policy Simulation Model<sup>9</sup>.

### Increase in taxes

This refers to the increase in income tax, National Insurance and indirect tax revenue that occurs when participants spend additional time in unsubsidised employment as a result of a work experience placement. This represents a benefit to the Exchequer but a cost to participants and employers, which means there is no net cost or benefit to society as a whole (except via redistributive effects – see below).

Increases in tax revenue are estimated using the DWP Policy Simulation Model<sup>10</sup>. The costs and benefits associated with the remaining work experience impacts are described briefly below. For a detailed description of the methodologies used to estimate these costs and benefits, see Fujiwara (2010).

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<sup>8</sup> Increases in Tax Credit entitlement and take-up are more than offset by reductions in Jobseeker's Allowance, Housing Benefit and Council Tax Benefit.

<sup>9</sup> The DWP Policy Simulation Model is a microsimulation model which combines data from the Family Resources Survey with information on the UK tax and benefit systems. This allows users to estimate the changes in benefit payments and tax revenue that occur when unemployed individuals with a given set of characteristics move into work.

<sup>10</sup> In order to estimate increases in indirect tax revenue, the Office for National Statistics estimates of indirect tax burdens were applied to estimates of participants' disposable income obtained from the DWP Policy Simulation Model.

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### **Increase in travel and childcare costs**

This refers to the additional travel and childcare costs that are incurred by participants during additional employment as a result of a work experience placement. This also represents a cost to society as the provision of additional travel and childcare services diverts economic resources from alternative uses.

### **Reduction in healthcare costs**

This refers to the reduction in National Health Service (NHS) costs which is expected to occur when spending additional time in unsubsidised employment as a result of their work experience placement<sup>11</sup>. This represents a benefit to the Exchequer (via reductions in NHS expenditure) and society (as economic resources which had been allocated to healthcare provision can be reallocated to alternative uses).

### **Redistributive costs and benefits**

This refers to the redistributive costs and benefits associated with monetary transfers between participants, employers and the Exchequer. In line with the methodology prescribed in the HM Treasury Green Book (HM Treasury, 2003), participants (who have relatively low incomes) are assumed to value each additional pound more highly than employers and the average taxpayer (who both have a relatively high income compared to participants). This implies, for example, that monetary transfers from the Exchequer to participants represent a benefit to society as a whole. In line with the recommendations of Fujiwara (2010), redistributive costs and benefits are estimated by applying a 'welfare weight' of 2.5 to monetary transfers made to and from programme participants.

### **Social cost of Exchequer finance**

This refers to the cost of raising the tax revenue that was required to finance work experience. This 'deadweight loss' arises because taxation creates market distortions which have an adverse effect on economic efficiency. The distribution of the social cost of Exchequer finance amongst members of society depends on the specific details of taxation policy. For the purposes of this analysis, it is assumed to accrue to society as a whole. In line with the recommendations of Fujiwara (2010), the social cost of Exchequer finance is assumed to equate to 20 per cent of the net cost of the programme to the Exchequer. However, as this estimate is subject to considerable uncertainty, it is only considered as part of sensitivity analysis (see section 5.2.2).

## **5.1.3 Estimating the scale of the costs and benefits under consideration**

The scale of the costs and benefits of work experience depends on the magnitude and the duration of its impacts. Specifically, it depends on the programme's impacts on the amount of time that participants spend:

- in unsubsidised employment; and
- not in receipt of unemployment benefits (and not in unsubsidised employment).

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<sup>11</sup> Fujiwara (2010) presents evidence of a causal relationship between individuals' employment status and NHS usage.

These impacts have been derived from the impact measured against two of the four mutually exclusive outcome states presented in section 4.2 (i.e. the 'in employment and not claiming benefit' and 'neither claiming benefit nor in employment' outcome states) for the 2012 participant cohort<sup>12</sup>.

However, the costs and benefits of the programme will be underestimated if the impacts persist beyond the tracking period, i.e. two years after the placement start date. For this reason, the costs and benefits of work experience were estimated in relation to three possible scenarios:

- 1 the impacts of the programme do not persist beyond the tracking period (this forms the basis of a conservative 'lower bound' estimate);
- 2 the impacts of the programme persist for one year beyond the tracking period; and
- 3 the impacts of the programme persist for two years beyond the tracking period.

Under the latter two scenarios, it is assumed that the impacts of work experience continue at the same level as at the end of the tracking period, for one and two years respectively<sup>13</sup>. It should be borne in mind that the further the impacts are assumed to persist beyond the tracking period, the less reliable the resultant cost and benefit estimates become.

It is also necessary to account for the possibility that a proportion of the positive employment impacts experienced by work experience participants are obtained at the expense of non-participants. If this is the case then the overall benefits of the programme will be overstated. In order to account for this 'substitution effect', Fujiwara (2010) recommends that estimates of the additional time that participants spend in unsubsidised employment should be reduced by approximately 20 per cent for a programme of this type. However, as these estimates are subject to considerable uncertainty, substitution effects are only considered as part of sensitivity analysis (see section 5.2.2).

### 5.1.4 Limitations of this approach

The CBA estimates presented in section 5.2 are subject to two main caveats.

First, the accuracy of the estimates depends on the robustness of the impact estimates from which they are derived (see section 4) and the validity of the assumptions upon which they are based (see sections 5.1.2 and 5.1.3).

Uncertainty regarding these inputs has been partially mitigated by undertaking sensitivity analysis (see section 5.2.2).

Second, the CBA estimates exclude a number of potentially significant costs and benefits due to a lack of robust evidence<sup>14</sup>. For example, it has not been possible to obtain robust estimates relating to:

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<sup>12</sup> See section 4.2 for an explanation of why this cohort was selected as the basis of this analysis.

<sup>13</sup> This assumption was made because the estimated impacts of the programme exhibit little variation during the last six months of the tracking period (see Figures 4.6 and Figure 4.8 for relevant time series data).

<sup>14</sup> For a thorough discussion of the non-monetised costs and benefits of employment programmes, see Fujiwara (2010).

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- the additional leisure time which participants forego (this represents a potential cost to participants and therefore society);
- the non-pecuniary benefits associated with additional time in unsubsidised employment (these represent a potential benefit to participants and therefore society);
- the cost of hiring and training incurred by employers (this represents a potential cost to employers and therefore society);
- the reduction in crime<sup>15</sup> which may result from the programme (this represents a potential benefit to society); and
- the economic multiplier effect which may result from the programme (this represents a potential benefit to society).

These non-monetised costs and benefits should be borne in mind when interpreting the CBA estimates presented in section 5.2.

## 5.2 Findings of cost-benefit analysis

This section presents estimates of the costs and benefits of work experience. Estimates based on a set of baseline assumptions are presented in section 5.2.1. The effects of varying these assumptions are examined in section 5.2.2. The estimates presented in this section are expressed in 2014/15 prices and have been discounted in order to account for social time preference.<sup>16</sup>

### 5.2.1 Baseline estimates

Table 5.2 presents estimates of the costs and benefits of work experience which are based on the following baseline assumptions:

- the value of the output produced during additional unsubsidised employment is equal to the commensurate gross wage payments and employers' National Insurance contributions;
- the work experience programme results in redistributive costs and benefits but does not result in substitution effects or a social cost of Exchequer finance; and
- the employment impacts of experience do not persist beyond the two-year tracking period (see section 5.1.3).

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<sup>15</sup> Fujiwara (2010) presents evidence of a causal relationship between individuals' income levels and their propensities to commit acquisitive crime. However, the voluntary nature of work experience participation means that this relationship cannot be used to obtain robust estimates of the programme's effects on crime levels.

<sup>16</sup> Members of society generally prefer to receive goods and services sooner rather than later. In order to take account of this 'social time preference', costs and benefits which occurred in 'future' periods (i.e. from 2010/11 onwards) have been discounted in line with the methodology prescribed in the HM Treasury Green Book. For a detailed description of this methodology, see HM Treasury (2003).

**Table 5.2 The estimated costs and benefits of the work experience under baseline assumptions**

Programme impact	Cost/benefit (£)			
	Participants	Participants' employers	Exchequer	Society
Increase in output	0	+ 1,400	0	+ 1,400
Increase in wages	+ 1,300	- 1,300	0	0
Programme costs	0	0	- 350	- 350
Change in operational costs	0	0	0	0
Change in benefits	- 100	0	+ 100	0
Increase in taxes	- 200	- 50	+ 250	0
Increase in travel and childcare costs	- 50	0	0	- 50
Reduction in healthcare costs	0	0	+ 50	+ 50
Distributional costs and benefits	+ 1,000	0	0	+ 1,000
Social cost of Exchequer finance	0	0	0	0
<b>Net benefit</b>	<b>+ 1,950</b>	<b>0</b>	<b>+ 150</b>	<b>+ 2,050</b>

Note: The figures in this table have been rounded to the nearest £50. The columns may not sum due to rounding.

## Participants

Table 5.2 shows that, under the baseline assumptions, work experience is estimated to result in a net benefit to participants. This is because the additional wages received by participants are expected to outweigh the costs associated with a net reduction in benefit receipt and net increases in tax liabilities, travel and childcare costs. Table 5.2 suggests that, on average, participants are financially better-off by approximately £950 as a result of the programme. The assumption that participants value additional income more highly than the average taxpayer means that the programme is also estimated to result in a net redistributive benefit of £1,000, bringing the total net benefit to £1,950.

## Participants' employers

Table 5.2 shows that, under the baseline assumptions, work experience is estimated to be cost neutral. This is because the value of the output produced is assumed to equal the commensurate gross wage payments and employers' National Insurance contributions. However, it should be borne in mind that this analysis excludes the costs of hiring and training participants.

## The Exchequer

Table 5.2 shows that, under the baseline assumptions, the work experience programme is estimated to result in a net benefit to the Exchequer of approximately £150 per participant. This is because the programme costs are expected to be less than the benefits associated with a net increase in tax revenues and net reductions in benefit expenditure, operational costs and NHS expenditure.

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### Society

Table 5.2 shows that, under the baseline assumptions, the work experience programme is estimated to result in a net benefit to society of approximately £1,050 per participant. This is largely due to the additional economic output that is produced by participants during additional spells in unsubsidised employment as a result of participating in a placement. The assumption that participants value additional income more highly than the average taxpayer means that the programme is also estimated to result in a net redistributive benefit of £1,000. However, it should be borne in mind that the estimated net benefit to society excludes the cost of administering the programme and the cost of hiring and training participants.

Table 5.2 suggests that the work experience programme would still result in a net benefit to society provided that the sum total of these costs was less than £2,050 per participant.

### 5.2.2 Sensitivity analysis

As noted in section 5.1, there is considerable uncertainty regarding the accuracy of the baseline assumptions. For this reason, the net benefits of work experience were estimated on the basis of several potential scenarios (see Table 5.3).

**Table 5.3 The estimated costs and benefits of work experience under alternative scenario assumptions**

Scenario	Participants	Net benefit per participant (£)		
		Employers	Exchequer	Society
(1) Baseline assumption	+1,950	0	+150	+2,050
(1a) Redistributive costs and benefits excluded	+950	0	+150	+1,050
(1b) Partial substitution effects included	+1,950	0	-50	+1,550
(1c) Social cost of Exchequer Finance included	+1,950	0	+150	+2,100
(1d) Employment impacts persist for one year beyond the tracking period	+2,900	0	+650	+3,500
(2) Conservative assumptions	+950	0	-50	+750
(3) Optimistic assumptions	+2,900	0	+650	+3,650

Note: The figures in this table have been rounded to the nearest £50.

Scenarios (1a) to (1e) in Table 5.3 show the effects of varying each of the baseline assumptions individually, *whilst holding the other baseline assumptions constant*. These scenarios are discussed separately below.

Under scenario (1a) it is assumed that work experience did not result in redistributive costs or benefits. Under this scenario the estimated net benefits of the programme to participants and society are approximately £1,000 lower per participant than under the baseline assumptions, although both estimates remain positive. Excluding redistributive costs and benefits does not affect the estimated net benefits to the Exchequer or participants' employers.

Under scenario (1b) it is assumed that work experience results in substitution effects. This implies that a proportion of the positive employment impacts experienced by participants are obtained at the expense of non-participants. Due to the nature of work experience it should not cause job displacement.<sup>17</sup>

Including substitution effects reduces the estimate net benefit of the programme to the Exchequer by approximately £200, so that there is a small negative net impact of the programme of -£50 per placement. This is because the 'substituted' non-participants would be expected to pay less tax and receive more benefits than under the baseline assumptions. Including substitution effects also reduces the estimated net benefit to society by approximately £500 per participant. This is mainly because the 'substituted' non-participants would be expected to produce less output than under the baseline assumptions.

Under scenario (1c) it is assumed that work experience results in a social benefit of Exchequer finance, as the programme results in Exchequer savings and so reduces the tax burden. Including the social benefit of Exchequer finance increases the net benefit to society by approximately £50 per placement, but does not affect the estimated net benefits to participants, their employers or the Exchequer.

Under scenario (1d) it is assumed that the employment impact of work experience persists beyond the tracking period for an additional year at an impact level consistent with that at the end of the tracking period. This essentially 'scales up' the cost and benefit estimates associated with the baseline scenario. This means that the longer the programme's impacts are assumed to persist for, the greater the estimated net benefit to participants, the Exchequer and society.

Scenario (2) in Table 5.3 shows the estimated net benefits of work experience under the most conservative combination of assumptions considered in this analysis. Under this scenario it is assumed that:

- work experience does not result in redistributive costs and benefits but does result in substitution effects; and
- the positive employment impacts of work experience do not persist beyond the tracking period (see section 5.1.3).

Table 5.3 shows that, even under the particularly conservative assumptions of scenario (2), work experience placements are still estimated to result in a net benefit to participants and society, although there is a small net cost of the scheme to the Exchequer and no net cost on benefit to employers. However, it should be borne in mind that these estimates exclude the cost to employers of hiring and training participants.

Table 5.3 suggests that, under scenario (2), the sum total of these costs would have to exceed £750 per participant for the programme to result in an estimated net cost to society.

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<sup>17</sup> Section 10.3 of Coleman *et al.* (2013) provides evidence to support this assumption, based on a survey of work experience host employers. Only six per cent of respondents to this survey reported having fewer vacancies for paid work as a result of offering work experience placements.

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Scenario (3) in Table 5.3 shows the estimated net benefits of work experience under the most optimistic combination of assumptions considered in this analysis. Under this scenario it is assumed that:

- work experience results in redistributive costs and benefits as well as the social benefit of Exchequer finance but does not result in substitution effects; and
- the positive employment impacts of work experience persist for one year beyond the tracking period (see section 5.1.3).

## 5.3 Conclusions from cost-benefit analysis

There is considerable uncertainty regarding the costs and benefits of work experience. However, it is notable that under **all** of the scenarios considered in this analysis, the programme is estimated to result in a net gain to participants and society as a whole. In addition, none of the scenarios generate a net loss from any of the four perspectives considered.

Under the baseline assumptions the work experience programme is estimated to result in:

- a net benefit to participants of approximately £1,950 per participant;
- a neutral impact on employers;
- a net benefit to the Exchequer of approximately £150 per participant; and
- a net benefit to society of approximately £2,050 per participant.

These results assume that the benefit and employment impacts of participating in a work experience persist for two years after the placement start date.

Assuming that the cohort of young participants who started work experience placements between January and May 2012 is representative of all participants<sup>18</sup> then, under the baseline assumptions, the total net benefit of the programme to the Exchequer between January 2011 and May 2015 is estimated to be in the region of £54m. It should be noted that the longer the beneficial impacts of the programme persist beyond the tracking period, the greater the estimated net benefit to participants, the Exchequer and society.

It is important to reiterate that the cost and benefit estimates presented in this paper are subject to the caveats discussed in section 5.1.4. The accuracy of these estimates is dependent on the robustness of the impact estimates from which they are derived and the validity of the assumptions upon which they are based. It should also be borne in mind that a number of potentially significant costs and benefits have been excluded from this analysis due to a lack of robust evidence. These include the non-pecuniary benefits associated with participation (e.g. improvements in participants' confidence) and any additional training costs incurred by employers.

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<sup>18</sup> This is strong assumption considering that over 16 per cent of participants were aged over 25, and some were claiming benefits other than JSA.

# 6 Conclusions

In this report we have presented the results of an impact evaluation of DWP's work experience programme on three cohorts of young JSA claimants, alongside cost-benefit analysis based on the impacts measured. This builds on the findings of an 'Early Impacts' study of work experience published in 2012 (Ainsworth, Hillmore, Marlow and Prince, 2012).

## 6.1 Impact analysis

We examined the impact of participating in a work experience placement on the subsequent likelihood of being in each of four mutually exclusive outcome states for a period of up to three years following a placement start. The outcome states explored were as follows:

- 1 Claiming benefit and **not** in employment.
- 2 Claiming benefit **and** in employment.
- 3 In employment and **not** claiming benefit.
- 4 **Neither** claiming benefit **nor** in employment.

The methodology used was identical to that deployed in the 'Early Impacts' study, except for the addition of new variables to the matching process used to select a suitable comparison group.

The results showed the following:

- The positive impact of work experience participation for the initial cohort covered in the 'Early Impacts' study was sustained for over 18 months. The impact on the likelihood of being in receipt of benefit showed signs of gradually diminishing after the 18-month point, although the impact on the likelihood of being in employment was sustained throughout the three-year tracking period. However, refinements to the methodology used to select a suitable comparison group resulted in a reduction in the estimated off-benefit impact for this cohort from five days to three days over the tracking period covered in the initial study (21 weeks).
- The impact of work experience on subsequent time spent on benefit was smaller but still positive for the later cohorts: participants from the 2012 cohort spent on average eight days less on benefit and not in employment in the two years after a WE start, compared with 29 days for the 2011 cohort.
- Employment impacts were universally larger than benefit impacts, and were more consistent across cohorts. Participants in the 2012 cohort spent, on average, 49 days longer in unsubsidised employment (i.e. in employment but not on benefit) in the two years following a work experience start, compared with 60 days for the 2011 cohort.
- The apparent incongruity between the substantial increase in time spent in employment and the more modest decrease in time spent on benefit following a placement can be explained by the impact of work experience participation on the likelihood of subsequently being neither in employment nor in receipt of benefit. Those who participate in work

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experience are significantly **less** likely to leave benefit without finding employment: participants in the 2012 cohort spent on average 40 fewer days neither in receipt of benefit nor in employment following a placement. Given the age group of the cohorts studied in this evaluation, this may suggest that those who take part in work experience are less likely to return to education than those in the comparison group. We have explored this hypothesis as far as possible using the data available and have found no further evidence to support it, however, the data we have on further/higher education participation is limited.

- Subgroup analysis showed that work experience was more effective at both reducing subsequent time spent on benefit and increasing time spent in employment for participants aged 22–24 than for those aged 19–21, although the programme had a positive impact for both groups. However, participants who started a work experience placement during the first three months of their JSA claim spent slightly longer on benefit on average compared with the comparison group. This is due to the presence of more individuals in this subgroup who would have left benefit without the assistance of a work experience placement. All subgroups showed a substantial increase in time spent in employment following a work experience placement.

## 6.2 Cost-benefit analysis

Cost-benefit analysis was carried out on the basis of the 2012 cohort impact analysis results. This cohort was chosen because it offers the best compromise between sufficient sample size and tracking period duration. The methodology used was based on the DWP Social Cost-Benefit Analysis Framework (Fujiwara, 2010), which is consistent with the approach used in the Future Jobs Fund impact assessment (Marlow, Hillmore and Ainsworth, 2012).

The findings from the cost-benefit analysis suggest that each work experience placement has an average net benefit to the Exchequer of £150, and an average net benefit to each participant of £1,950. If we assume that the Exchequer benefit estimate is representative of all placements undertaken since the programme was introduced in 2011, this gives a total net benefit to the Exchequer in the region of £54m. This is a strong assumption given that the cohorts included in this study do not represent all participants.

## 6.3 Limitations of this analysis

Work experience is a voluntary programme and therefore, it is likely that those who choose to participate are different on average than those who do not. The matching methodology used in this analysis has been designed to account for these differences, and is considered to be a plausible means of estimating the impact of interventions of this type. However, it is extremely difficult to be confident of capturing all the effects of self-selection in a matching approach: although the matching on observed variables appears to be of good quality, a number of potentially relevant variables (perhaps most importantly for this study, educational attainment) were not available to be used for matching. Therefore, we acknowledge the possibility that some self-selection bias remains unaccounted for in these results.

## **Work experience: A quantitative impact assessment**

When considering the results of the cost-benefit analysis, it should be remembered accuracy of these estimates is dependent on the robustness of the impact estimates from which they are derived. It should also be borne in mind that a number of potentially significant costs and benefits have been excluded from this analysis due to a lack of robust evidence. These include the non-pecuniary benefits associated with participation (e.g. improvements in participants' confidence) and any additional training costs incurred by employers. These limitations are common to other cost-benefit analyses of labour market programmes carried out by DWP, including the Future Jobs Fund impact assessment (Marlow, Hillmore and Ainsworth, 2012).

# Appendix A

## Propensity score matching

### A.1 Why use propensity score matching?

PSM is often employed in evaluations of this type in order to more accurately estimate the counterfactual, i.e. the outcomes that would have occurred in the absence of work experience. It is impossible to measure the counterfactual directly, since we cannot know what outcomes work experience participants would have attained without the programme, so it is necessary to estimate this figure using outcomes for individuals who did not participate.

Work experience is a voluntary programme on the part of participants, and is discretionary from the point of view of the Jobcentre adviser who refers potential participants. Therefore, it is likely that the group who do not participate in work experience will be on average different from those who do. The ways in which the groups are different may well include factors which could influence the outcomes being measured. Differences that effect outcomes are known as **relevant** differences.

For example, the group that volunteers for work experience may be on average more motivated and willing to work than those who do not. This is a relevant difference as it is likely to affect this group's probability of finding work in the subsequent year even without completing a work experience placement.

Any relevant differences between the participant and non-participant groups would introduce bias into the impact estimate if this were calculated using the non-participant group as a whole to estimate the counterfactual. The aim of employing PSM is to eliminate this potential source of bias by creating a comparison group which is identical to the participant group in terms of all relevant characteristics.

The assumption that the matching has successfully controlled for all factors affecting both the likelihood of participation in the programme and the likelihood of attaining the outcomes under evaluation is referred to as the 'conditional independence assumption'. If this assumption is met, then the two groups should be indistinguishable from two groups selected at random from the same population.

### A.2 How propensity score matching is carried out

The starting point for PSM is to define an overall sample containing both participants and non-participants in the intervention under consideration. The methodology applied to select the samples used in this evaluation is described in Appendix B.

Once the sample has been defined, PSM is carried out as follows:

- 1 Data on the characteristics of individuals in the sample are used as the input to a logistic regression model (here using a binary Probit approach) to estimate the probability of each individual participating in the programme. This probability is also known as an individual's 'propensity score'.
- 2 The propensity scores determined in part (1) are then used to match participants to individuals in the comparison group with a similar likelihood of participating in the intervention. Here, the matching approach used was one-to-many kernel matching with a kernel bandwidth of 0.0001. Under this approach each participant is matched to all those non-participants in the sample who have propensity scores within the kernel bandwidth of their own. Matched non-participant records are weighted according to their proximity to the participant propensity score that they have been matched to, so that closer matches are given a higher weighting than more distant ones. This is repeated for all participants in the sample. Finally, the weightings are normalised so that the total weights applied to non-participants sum to the number of participants for whom a match was found.

At the end of this process, the desired outcome is for the large majority of participant records to have found at least one match in the non-participant group. The records where matching has been successful are described as 'on support'. The proportion of records which are on support is one of the main criteria used to assess the quality of the matching result. The other major success factor is the bias reduction achieved by the matching, i.e. how similar the matched comparison group is to the participant group compared with the unmatched comparison group based on their observed characteristics.

### A.3 Variables used in propensity score matching

The success of PSM depends on the quality and coverage of the data used in the matching and in particular, its ability to control for any factors which affect both selection onto the programme and the subsequent outcomes of interest.

PSM is considered to be a viable approach for evaluating DWP's labour market programmes because DWP holds a wide-range data on individuals on its benefit caseload which can be used as the basis of the matching. This includes detailed information on claimants' benefit and employment histories, which have been shown to be a valid proxy for unobserved but relevant characteristics such as personality traits and motivation (Caliendo, Mahlstedt and Mitnik, 2014).

Table A.1 lists the variables used as the basis for PSM in this evaluation. The rows in **bold** indicate variables which have been newly introduced into the matching approach since the 'Early Impacts' study was completed. Otherwise, the approach used in this analysis is identical to that employed in the previous study.

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**Table A.1 Variables used in propensity score matching**

Variable	Type	Values
Gender	Categorical	Male; female
Age	Numerical	19–24 years old
Disability <sup>19</sup>	Categorical	Not disabled; Disabled; Unknown
Ethnicity	Categorical	White; Black; Asian; Mixed; Chinese; Other; Unknown
Sought occupation	Categorical	26 broad categories: e.g. “Administrative”; “Health Professionals”; “Sales Occupations”
Lone parent <sup>20</sup>	Categorical	Lone parent; Not a lone parent (at any time within 2 years prior to start date/pseudo start date)
Jobcentre Plus District	Categorical	37 Jobcentre Plus districts in Great Britain and Unknown
Low qualified	Categorical	No; Yes; Unknown
Local authority labour market characteristics:	Numerical	Employment, unemployment and economic inactivity rate can range between 0 and 1.
• Employment rate		Average pay, job density and vacancy density can take any positive value.
• Unemployment rate		
• Economic inactivity rate		
• Average pay		
• Job density		
• Vacancy density		
Benefit <sup>21</sup> history	Categorical	52 binary variables for each of the main out of work benefits (JSA or TA/ESA or IB/IS) – representing each of the 52 weeks prior to work experience start date/pseudo start date. Values are: in receipt of specific benefit; not in receipt of specific benefit
<b>Number of benefit claims</b>	<b>Numerical – integer</b>	<b>Number of benefit claims made in the previous 52 weeks prior to work experience start date/pseudo start date</b>
<b>Time spent on benefit in past 3 months, 6 months and 12 months respectively</b>	<b>Numerical – integer</b>	<b>Number of days spent on benefit in relevant period</b>
Employment history	Categorical	52 binary variables – representing each of the 52 weeks prior to work experience start date/pseudo start date. Values are: in work; not in work
<b>Sanction and disallowance history</b>	<b>Numerical – integer</b>	<b>Number and type of sanction/ disentitlements in the year prior to work experience start date/pseudo start date. Three types; ‘High’, ‘Medium’, ‘Low’-level sanctions.</b>

Continued

**Table A.1 Continued**

Variable	Type	Values
Failure to attend	Numerical – integer	Number of recorded Jobcentre Plus appointments which individual has failed to attend in the 52 weeks prior to work experience start date/pseudo start date
Work experience start/pseudo start month	Categorical	Months from January to May for each cohort year are given distinct values
Benefit start month <sup>22</sup>	Categorical	All months up to the cohort end date are given distinct values for the benefit spell prior to work experience start/pseudo start
Other programme participation	Numerical	Number of days spent on other DWP programmes in year prior to work experience start date: Integers from 0 to 365

<sup>19</sup> Since disability is set by a Jobcentre Plus adviser based on claimant self-disclosure, this variable is not a systematic identification of disability as defined by the Equality Act (EA).

<sup>20</sup> ‘Lone parent’ defined by marital status information to infer partner status and HMRC Child Benefit data to infer parental status.

<sup>21</sup> ‘Benefit’ is defined as any of four out of work benefits (JSA, IB, ESA, IS) or Training Allowance (TA). Other benefits are not included in the benefit history variables or outcomes.

<sup>22</sup> Benefit start and end dates refer to the benefit spell leading up to the start of the work experience placement.

# Appendix B

## Defining the non-participant samples

In preparation for carrying out PSM to identify groups of non-participants with similar characteristics to the participant cohorts, it is first necessary to more broadly define the populations that these groups will be selected from.

The initial selection criteria used to do this should mirror as closely as possible the criteria applied in defining the participant cohorts. These cohorts were selected based on three characteristics:

- 1 The individual had a work experience start within the cohort time period.
- 2 The individual was claiming JSA in the week in which this start occurred.
- 3 The individual was aged 19–24 at this point.

Clearly the first criterion is not applicable to the non-participant group. Instead, the initial filter applied in selecting each comparison group was to retain only those individuals who had never had a work experience start. This approach was chosen over the softer option of retaining only individuals who did not have a start during the time period covered by the evaluation, because it was the simplest approach to implement and proved not to greatly reduce the remaining population of non-participants.

In order to re-create the latter two selection criteria, it is necessary to assign a date to each individual in the non-participant group which can be used in place of the work experience start date for participants. This date is known as a 'pseudo start date'. Assigning a pseudo start date is a pre-requisite for selecting individuals based on criteria such as age and claim status which change over time.

Pseudo start dates were generated using the methodology employed by Ainsworth and Marlow in their assessment of the European Social Fund (Ainsworth and Marlow, 2011). This method applies pseudo start dates to non-participants based on the point at which they began their current JSA claim. This is done in such a way that the 'prior length of claim' distribution for non-participants with pseudo start dates in a given month is identical to that for participants with a start date in that month.

Once assigned, pseudo start dates for non-participants were subsequently treated as equivalent to actual start dates for participants. For example, pseudo start dates were used to align the time periods over which outcomes were compared between the participant and non-participant groups in order to determine the impact of the programme.

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Following the assignment of pseudo start dates, the non-participant sample to be matched to each cohort could be selected based on the following criteria from everyone on the DWP administrative datasets who had never had a work experience start<sup>23</sup>:

- 1 The individual had a pseudo start date within the cohort time period.
- 2 The individual was claiming JSA in the week in which this start occurred.
- 3 The individual was aged 19–24 at this point.

The number of individuals retained in the pre-matched comparison group for each cohort following this filtering process is given in Table 4.1.

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<sup>23</sup> All available data was considered when making this exclusion, so individuals were removed from the comparison group if they had a work experience start at any point after the cohort period, as well as during or before.

# Appendix C

## Outcomes of matching

This section outlines the results of diagnostic tests to determine whether the PSM approach was successful in creating a comparison group that is similar to the participant group in terms of its observed characteristics.

The participant and comparison groups for each cohort were compared using each of the variables that contributed to the determination of the propensity score in turn. The bias between the two groups was calculated both before and after matching had taken place for each variable. These figures were then compared to determine the extent to which the bias had been reduced. A t-test was also carried out for each variable before and after matching to determine whether the means of the two groups were significantly different. The results of this testing for a range of key variables are shown in Tables C.1 to C.3.

These results show that the PSM approach was successful in creating a comparison group which is statistically identical to the participant group on the basis of all observed characteristics but one: i.e. the proportion of the group who had participated in the Work Programme in the 12 months prior to their start/pseudo start date (none of the variables not included in the tables showed a significant difference following matching). For this single variable there was still a statistically significant difference in the means of the two groups after matching for the 2012 and 2013 cohorts (this variable was not included in the matching for the 2011 cohort since the Work Programme had not yet rolled out at this point).

The variables used in the matching were skewed towards ensuring equivalent benefit and employment histories across the participant and comparison groups. Therefore, the remaining difference between the two groups is likely to indicate that for a subset of work experience participants, there was no one in the non-participant sample with a similar benefit and employment history who had not recently participated in the Work Programme. This may be a consequence of the linking rules used to decide who is referred to the Work Programme, which can mean that groups with similar benefit histories have very different probabilities of being referred.

The proportion of the post-matching sample affected by this issue is very small (less than one per cent of the participant or matched comparison group had previously participated in the Work Programme in either the 2012 or 2013 cohort). In addition, assuming that Work Programme participation has a positive impact (if any) on future benefit and employment outcomes, the presence of more recent Work Programme participants in the comparison group should only serve to reduce the apparent impact of work experience. Therefore, this remaining difference is not considered to be an issue for the findings presented in this report.

**Table C.1 Bias reduction following propensity score matching for 2011 cohort**

Variable	Sample	Mean		% bias	% reduction  bias	t-test	
		Treated	Control			t	p> t
% of group on benefit 12 months before WE start/pseudo start	Unmatched	32%	45%	-26.4		-15.31	0.00
	Matched	32%	33%	-1.5	94.4	-0.64	0.52
% of group on JSA 12 months before WE start/pseudo start	Unmatched	28%	40%	-25.3		-14.50	0.00
	Matched	29%	29%	-1.4	94.3	-0.63	0.53
% of group in work 12 months before WE start/pseudo start	Unmatched	23%	32%	-21.8		-12.36	0.00
	Matched	23%	23%	-0.4	98.2	-0.18	0.86
Average age (years)	Unmatched	20.2	21.3	-70		-37.62	0.00
	Matched	20.3	20.3	-0.3	99.6	-0.13	0.90
% of group who are male	Unmatched	62%	69%	-13.8		-8.41	0.00
	Matched	62%	62%	0.7	95.0	0.29	0.77
% of group who have a disability marker set	Unmatched	0.16	0.17	-0.9		-0.53	0.60
	Matched	0.16	0.17	-1.1	-22.5	-0.46	0.65
% of group with ethnicity = 'white'	Unmatched	0.81	0.80	1.4		0.84	0.40
	Matched	0.80	0.80	0.2	83.5	0.10	0.92
% of group who claimed benefit as a lone parent in the two years prior to WE start/pseudo start	Unmatched	0.3%	0.9%	-7.3		-3.61	0.00
	Matched	0.3%	0.3%	0.1	98.1	0.08	0.94
% of group who participated in the Work Programme in the 12 months prior to WE start/pseudo start	Unmatched	0.0%	0.0%	-	-	-	-
	Matched	0.0%	0.0%	-	-	-	-
Average days spent on benefit in 12 months prior to WE start/pseudo start	Unmatched	214	205	9.2		5.00	0.00
	Matched	214	215	-0.9	90.8	-0.39	0.69
Average number of spells on benefit in 12 months prior to WE start/pseudo start	Unmatched	1.8	2.0	-25.1		-14.16	0.00
	Matched	1.8	1.8	-0.4	98.5	-0.17	0.87

## Work experience: A quantitative impact assessment

**Table C.2 Bias reduction following propensity score matching for 2012 cohort**

Variable	Sample	Mean		%bias	% reduction  bias	t-test	
		Treated	Control			t	p> t
% of group on benefit 12 months before WE start/pseudo start	Unmatched	29%	43%	-29.7		-36.81	0.00
	Matched	29%	29%	-0.9	97.1	-0.85	0.40
% of group on JSA 12 months before WE start/pseudo start	Unmatched	24%	38%	-31.6		-38.53	0.00
	Matched	24%	24%	-0.9	97.3	-0.85	0.40
% of group in work 12 months before WE start/pseudo start	Unmatched	26%	32%	-12.3		-15.43	0.00
	Matched	26%	27%	-0.6	95.4	-0.53	0.59
Average age (years)	Unmatched	20.8	21.4	-33.7		-42.72	0.00
	Matched	20.8	20.8	-0.2	99.5	-0.15	0.88
% of group who are male	Unmatched	62%	68%	-14.4		-18.97	0.00
	Matched	62%	61%	0.6	95.7	0.56	0.58
% of group who have a disability marker set	Unmatched	0.15	0.16	-2.5		-3.22	0.00
	Matched	0.15	0.15	-0.5	79.5	-0.49	0.63
% of group with ethnicity = 'white'	Unmatched	0.83	0.80	6.6		8.32	0.00
	Matched	0.83	0.82	0.7	90.1	0.62	0.54
% of group who claimed benefit as a lone parent in the two years prior to WE start/pseudo start	Unmatched	0.7%	1.0%	-2.9		-3.49	0.00
	Matched	0.7%	0.8%	-0.5	81.8	-0.52	0.60
% of group who participated in the Work Programme in the 12 months prior to WE start/pseudo start	Unmatched	0.6%	20.1%	-67.7		-64.29	0.00
	Matched	0.6%	0.8%	-0.8	98.8	-2.57	0.01
Average days spent on benefit in 12 months prior to WE start/pseudo start	Unmatched	199	208	-8.5		-10.00	0.00
	Matched	199	200	-0.9	89.2	-0.97	0.33
Average number of spells on benefit in 12 months prior to WE start/pseudo start	Unmatched	1.7	1.8	-8.9		-11.11	0.00
	Matched	1.7	1.7	-0.2	98.2	-0.15	0.88

**Table C.3 Bias reduction following propensity score matching for 2013 cohort**

Variable	Sample	Mean		% bias	% reduction  bias	t-test	
		Treated	Control			t	p> t
% of group on benefit 12 months before WE start/pseudo start	Unmatched	25%	49%	-50.3		-62.08	0.00
	Matched	25%	26%	-0.8	98.4	-0.83	0.41
% of group on JSA 12 months before WE start/pseudo start	Unmatched	17%	43%	-58.3		-68.77	0.00
	Matched	18%	18%	-0.8	98.6	-0.87	0.38
% of group in work 12 months before WE start/pseudo start	Unmatched	27%	29%	-4.6		-6.02	0.00
	Matched	27%	27%	-0.3	93.5	-0.29	0.77
Average age (years)	Unmatched	20.9	21.4	-29.2		-37.81	0.00
	Matched	20.9	20.9	0.5	98.4	0.45	0.65
% of group who are male	Unmatched	59%	67%	-17.5		-23.34	0.00
	Matched	59%	59%	0.6	96.4	0.59	0.56
% of group who have a disability marker set	Unmatched	0.14	0.16	-7.1		-9.06	0.00
	Matched	0.14	0.14	-1.1	85.0	-1.05	0.30
% of group with ethnicity = 'white'	Unmatched	0.83	0.80	6.6		8.48	0.00
	Matched	0.83	0.82	0.4	93.6	0.41	0.68
% of group who claimed benefit as a lone parent in the two years prior to WE start/pseudo start	Unmatched	3.2%	2.7%	3.0		4.02	0.00
	Matched	3.2%	3.2%	0.1	96.1	0.11	0.92
% of group who participated in the Work Programme in the 12 months prior to WE start/pseudo start	Unmatched	0.4%	19.8%	-67.9		-65.45	0.00
	Matched	0.4%	0.6%	-0.8	98.8	-3.00	0.00
Average days spent on benefit in 12 months prior to WE start/pseudo start	Unmatched	184	212	-25.5		-30.26	0.00
	Matched	184	185	-0.8	96.9	-0.86	0.39
Average number of spells on benefit in 12 months prior to WE start/pseudo start	Unmatched	1.7	1.8	-5.7		-7.24	0.00
	Matched	1.7	1.7	0.1	98.0	0.11	0.91

# Appendix D

## Detailed results of impact analysis (full cohort)

**Table D.1 Summary of impact analysis findings for all full cohorts at 21, 78, 104 and 156 weeks following a work experience start**

Impact on the proportion of participants in given state at end of tracking period (%pts)		Impact at 21 weeks			Impact at 78 weeks			Impact at 104 weeks			Impact at 156 weeks		
		In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total
2011 cohort	In receipt of benefit	-1	-4	<b>-5</b>	0	-4	<b>-5</b>	-1	-3	<b>-4</b>	-1	-2	<b>-3</b>
	Not in receipt of benefit	9	-4	<b>5</b>	9	-4	<b>5</b>	9	-5	<b>4</b>	8	-6	<b>3</b>
	<b>Total</b>	<b>9</b>	<b>-9</b>		<b>8</b>	<b>-8</b>		<b>8</b>	<b>-8</b>		<b>8</b>	<b>-8</b>	
2012 cohort	In receipt of benefit	-1	-2	<b>-2</b>	0	-1	<b>-2</b>	-1	-2	<b>-2</b>			
	Not in receipt of benefit	7	-5	<b>2</b>	7	-6	<b>2</b>	8	-5	<b>2</b>			
	<b>Total</b>	<b>7</b>	<b>-7</b>		<b>7</b>	<b>-7</b>		<b>7</b>	<b>-7</b>				
2013 cohort	In receipt of benefit	-1	-2	<b>-3</b>	-1	-3	<b>-4</b>						
	Not in receipt of benefit	8	-6	<b>3</b>	8	-6	<b>2</b>						
	<b>Total</b>	<b>8</b>	<b>-8</b>		<b>8</b>	<b>-9</b>							

Results are expressed in terms of the change in the proportion of participants in each state at the end of the tracking period.

Note: The 'total' rows and columns in **bold** provide results in a format consistent with the 'Early Impacts' study (Ainsworth *et al.*, 2012), i.e. in terms of the overall impact on the proportion of participants on benefit (rows) and in employment (columns).

**Table D.2 Summary of impact analysis findings for all full cohorts at 21, 78, 104 and 156 weeks following a work experience start**

Change in average number of days participants spent in given state during tracking period		Impact at 21 weeks			Impact at 78 weeks			Impact at 104 weeks			Impact at 156 weeks		
		In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total
2011 cohort	In receipt of benefit	-1	-2	<b>-3</b>	-1	-22	<b>-23</b>	-3	-29	<b>-31</b>	-5	-38	<b>-43</b>
	Not in receipt of benefit	9	-6	<b>3</b>	45	-21	<b>23</b>	60	-29	<b>31</b>	91	-49	<b>43</b>
	<b>Total</b>	<b>8</b>	<b>-8</b>		<b>43</b>	<b>-43</b>		<b>58</b>	<b>-58</b>		<b>87</b>	<b>-87</b>	
2012 cohort	In receipt of benefit	0	2	<b>2</b>	-1	-5	<b>-6</b>	-2	-8	<b>-10</b>			
	Not in receipt of benefit	5	-7	<b>-2</b>	35	-29	<b>6</b>	49	-40	<b>10</b>			
	<b>Total</b>	<b>5</b>	<b>-5</b>		<b>34</b>	<b>-34</b>		<b>47</b>	<b>-47</b>				
2013 cohort	In receipt of benefit	0	2	<b>2</b>	-2	-10	<b>-12</b>						
	Not in receipt of benefit	6	-7	<b>-2</b>	43	-31	<b>12</b>						
	<b>Total</b>	<b>6</b>	<b>-6</b>		<b>41</b>	<b>-41</b>							

Results are expressed in terms of the change in the total number of days participants spent in each state during the tracking period.

Note: The 'total' rows and columns in **bold** provide results in a format consistent with the 'Early Impacts' study (Ainsworth *et al.*, 2012), i.e. in terms of the overall impact on the number of days participants spent on benefit (rows) and in employment (columns).

# Appendix E

## Detailed results of subgroup analysis

**Table E.1 Summary of subgroup impact analysis findings for all cohorts at the end of their respective tracking periods**

Change in average number of days participants spent in given state during tracking period	Impact for 19–21-year-olds			Impact for 22–24-year-olds			Impact for participants claiming less than 3 months at start			Impact for participants claiming more than 3 months at start			Impact for males			Impact for females			
	In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total	In employment	Not in employment	Total	
2011 cohort (156-weeks tracking)	In receipt of benefit	-6	-36	<b>-42</b>	-3	-54	<b>-57</b>	-6	-25	<b>-30</b>	-3	-47	<b>-51</b>	-5	-28	<b>-33</b>	-1	-53	<b>-54</b>
	Not in receipt of benefit	95	-53	<b>42</b>	86	-29	<b>57</b>	82	-52	<b>30</b>	97	-47	<b>51</b>	86	-53	<b>33</b>	98	-44	<b>54</b>
	<b>Total</b>	<b>89</b>	<b>-89</b>		<b>83</b>	<b>-83</b>		<b>77</b>	<b>-77</b>		<b>94</b>	<b>-94</b>		<b>81</b>	<b>-81</b>		<b>97</b>	<b>-97</b>	
2012 cohort (104-weeks tracking)	In receipt of benefit	-1	-4	<b>-5</b>	-3	-12	<b>-15</b>	-2	1	<b>-2</b>	0	-12	<b>-12</b>	-3	-5	<b>-8</b>	-1	-11	<b>-12</b>
	Not in receipt of benefit	44	-39	<b>5</b>	53	-37	<b>15</b>	47	-45	<b>2</b>	48	-36	<b>12</b>	51	-43	<b>8</b>	45	-33	<b>12</b>
	<b>Total</b>	<b>43</b>	<b>-43</b>		<b>49</b>	<b>-49</b>		<b>44</b>	<b>-44</b>		<b>48</b>	<b>-48</b>		<b>48</b>	<b>-48</b>		<b>44</b>	<b>-44</b>	
2013 cohort (78-weeks tracking)	In receipt of benefit	-1	-7	<b>-8</b>	-4	-15	<b>-19</b>	-2	-1	<b>-4</b>	-2	-17	<b>-19</b>	-2	-5	<b>-7</b>	-3	-15	<b>-17</b>
	Not in receipt of benefit	39	-31	<b>8</b>	50	-30	<b>19</b>	37	-33	<b>4</b>	47	-28	<b>19</b>	43	-36	<b>7</b>	40	-22	<b>17</b>
	<b>Total</b>	<b>38</b>	<b>-38</b>		<b>46</b>	<b>-46</b>		<b>35</b>	<b>-35</b>		<b>45</b>	<b>-45</b>		<b>41</b>	<b>-41</b>		<b>37</b>	<b>-37</b>	

Results are expressed in terms of the change in the total number of days participants spent in each state during the tracking period.

Note: The 'total' rows and columns in **bold** provide results in a format consistent with the 'Early Impacts' study (Ainsworth *et al.*, 2012), i.e. in terms of the overall impact on the number of days participants spent on benefit (rows) and in employment (columns).

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