Department for Work & Pensions

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In-Work Progression Trial: Further Impact Assessment and Cost Benefit Analysis

October 2019

Ad hoc Report 75

A report of research carried out by the Department for Work and Pensions

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Executive summary

This is a follow-up publication to the "Universal Credit: In-Work Progression Randomised Controlled Trial Impact Assessment", published on 12th September 2018. The trial, which ran between April 2015 and March 2018, is the first major piece of evidence-building work to support the development of effective in-work services under Universal Credit.

The September 2018 report tracked trial participants' earnings for 52 weeks. It recommended a follow-up analysis that tracked outcomes beyond 52 weeks to assess whether there was further impact of the intervention. This publication is the response to that recommendation.

Furthermore, this publication also presents the findings of the In-Work Progression (IWP) trial Cost Benefit Analysis (CBA) that assesses value-for-money of the trial.

The IWP trial was a large scale randomised control trial that tested the effectiveness of applying conditionality and more intensive work coach support to the Universal Credit in-work Light Touch group. Within the trial, there were 3 groups to which in-work claimants were randomly allocated:

- The Frequent support group had 1 meeting at the start of the trial and meetings every 2 weeks from week 8 onwards;
- The Moderate support group had 1 meeting at the start of the trial and meetings every 8 weeks from week 8 onwards; and
- The Minimal support group had 1 phone call at the start of the trial and a second phone call after 8 weeks.

The impact assessment looked to see if the treatment groups (Frequent and Moderate support) showed more earnings progression than the Minimal support group, which was the comparison group.

Impact analysis at 78 weeks

The impact at 78 weeks shows continued upward earnings progression for all 3 trial groups. The Frequent support group continues to benefit from higher earnings relative to the Minimal group at a rate of £4.16 per week at 78 weeks. This suggests that the impact for the Frequent support group relative to Minimal is sustained at 78 weeks.

The earnings impact for the Moderate support group relative to the Minimal support group at 78 weeks suggests that the impact is not sustained. The size of the impact is £1.71 per week at 78 weeks.

Cost Benefit Analysis

The Cost Benefit Analysis (CBA) calculates the value-for-money of the Frequent and Moderate support groups at 52 and 78 weeks. There is evidence that the earnings impacts exceed the cost of delivering the policy intervention for Frequent support (Benefit Cost Ratio of 2.3) and Moderate support (Benefit Cost Ratio of 7.8) after 52 weeks. Benefit Cost Ratios (BCRs) larger than 1 imply that the benefits exceed the costs and therefore that the policy is good value-for-money.

The BCRs for Moderate support are higher than for Frequent at both 52 and 78 weeks. This is because the higher costs associated with seeing the Frequent group more often outweighs the higher earnings impact they obtain. The 78 week results produce higher BCRs than the 52 week results. This is driven by sustained earnings gains that aren't matched by sustained costs.

The BCRs we present are valid for the trial, but we would not expect to obtain the same BCRs if the policy were implemented today. This is because the policy intervention in place today for the Universal Credit in-work Light Touch group is different from the one that was in place during the trial. It is likely that the BCRs would be lower in the new policy environment.

All BCRs are subject to high uncertainty, as detailed in the report. In particular, the statistical uncertainty described in the impact analysis carries over to the Cost Benefit Analysis results.

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1 Introduction

1.1 Background

This is a follow-up publication to the "Universal Credit: In-Work Progression Randomised Controlled Trial Impact Assessment", published on 12th September 2018, (Ref. 1). The trial, which ran between April 2015 and March 2018, is the first major piece of evidence-building work to support the development of effective in-work services under Universal Credit.

The September 2018 report tracked trial participants' earnings for 52 weeks. It recommended a follow-up analysis that tracked outcomes beyond 52 weeks to assess whether there was further impact of the intervention. This publication is the response to that recommendation.

Furthermore, this publication also presents the findings of the In-Work Progression (IWP) trial Cost Benefit Analysis (CBA) that assesses value-for-money of the trial.

The IWP trial was a large scale randomised control trial that tested the effectiveness of applying conditionality and more intensive work coach support to the Universal Credit in-work Light Touch group. Within the trial, there were 3 groups to which in-work claimants were randomly allocated:

- The Frequent support group had 1 meeting at the start of the trial and meetings every 2 weeks from week 8 onwards;
- The Moderate support group had 1 meeting at the start of the trial and meetings every 8 weeks from week 8 onwards; and
- The Minimal support group had 1 phone call at the start of the trial and a second phone call after 8 weeks.

The impact assessment looked to see if the treatment groups (Frequent and Moderate support) showed more earnings progression than the Minimal support group, which was the comparison group.

1.2 About this report

Section 2 presents the impact analysis at 78 weeks after the start of the trial. It begins with a recap of the 52 week earnings progression findings from the initial IWP impact assessment publication. New findings that extend the progression impact to 78 weeks are then presented. A new progression measure that is used in the Cost Benefit Analysis is also introduced in Section 2. Section 3 presents the method and the results of Cost Benefit Analysis. Overall conclusions are presented in Section 4.

2 Impact analysis at 78 weeks

2.1 Methodology

The results of the impact analysis at 78 weeks presented in Section 2.2 below are derived using the same methodology which was applied to the initial impact assessment (Ref. 1). Thus, the results of the impact analysis at 78 weeks below can be compared directly with the impact analysis at 52 weeks in Ref. 1. The reader is referred to Annex C (pages 47-49) of Ref. 1 for details of the methodology.

This measure presented in Section 2.2 (and originally in Ref. 1) can be seen as a growth measure. For each participant, it is the difference between their earnings at the start of the trial and their earnings at some later time (notably at 52 or at 78 weeks) and then averaged across all participants. We have named this measure as the *point-in-time* progression measure in this report.

In Section 2.3 we present a further progression measure, namely the *overall* progression measure. This is necessary for the Cost Benefit Analysis that follows in Section 3. The *overall* progression measure is defined as the average of all *point-in-time* progression values over a time period (in this case over 52 or 78 weeks). As the name of the measure suggests, it allows us to see the effect of the trial groups in *overall* terms, in addition to the *point-in-time* measure already presented.

2.1.1 Sample sizes

The sample size used in the 78 week impact assessment was 31,514 participants. The Frequent support group contained 9,996 (31.7%) participants, the Moderate support group had 10,398 (33.0%) participants and the Minimal group contained 11,120 (35.3%) participants.

The sample size used in the 78 week analysis is 805 participants (2.6%) greater than the sample size of 30,709 used in the 52 week analysis in Ref. 1. This is because all cases have aged since that time and an additional 805 cases have reached at least 78 weeks since they began the trial.

2.2 Results using the *point-in-time* progression measure

This section begins with a recap of the 52 week earnings progression findings from the initial IWP impact assessment publication (Ref. 1). It then presents new findings that extend the progression impact to 78 weeks.

2.2.1 Recap of *point-in-time* progression at 52 weeks

The September 2018 publication showed the *point-in-time* average earnings progression at 52 weeks, reproduced in Table 2.1 below. The progression was an *additional* £5.25 per week (£10.44 minus £5.20) and £4.43 per week (£9.63 minus £5.20) for the Frequent and Moderate support groups respectively relative to the Minimal support (comparison) group's progression of £5.20 per week. At the start of the trial, the baseline average earnings across all 3 groups was £164 per week (not shown).

IWP support group (Full sample)	*Point-in-time* earnings progression p/w (£)	Impact p/w versus Minimal (£)	95% confidence interval for the impact (£)	P-value for the impact
Frequent	10.44	5.25	(1.29 , 9.17)	0.009
Moderate	9.63	4.43	(0.55 , 8.28)	0.029
Minimal	5.20	-	-	-

Table 2.1: The *point-in-time* progression measure for the 52 week period

Source: Findings were based on Real Time Information (RTI) earnings data

Figure 2.1 below shows the *point-in-time* earnings progression for each of the 3 trial groups over time, beginning when each participant started the trial to a point 52 weeks later.

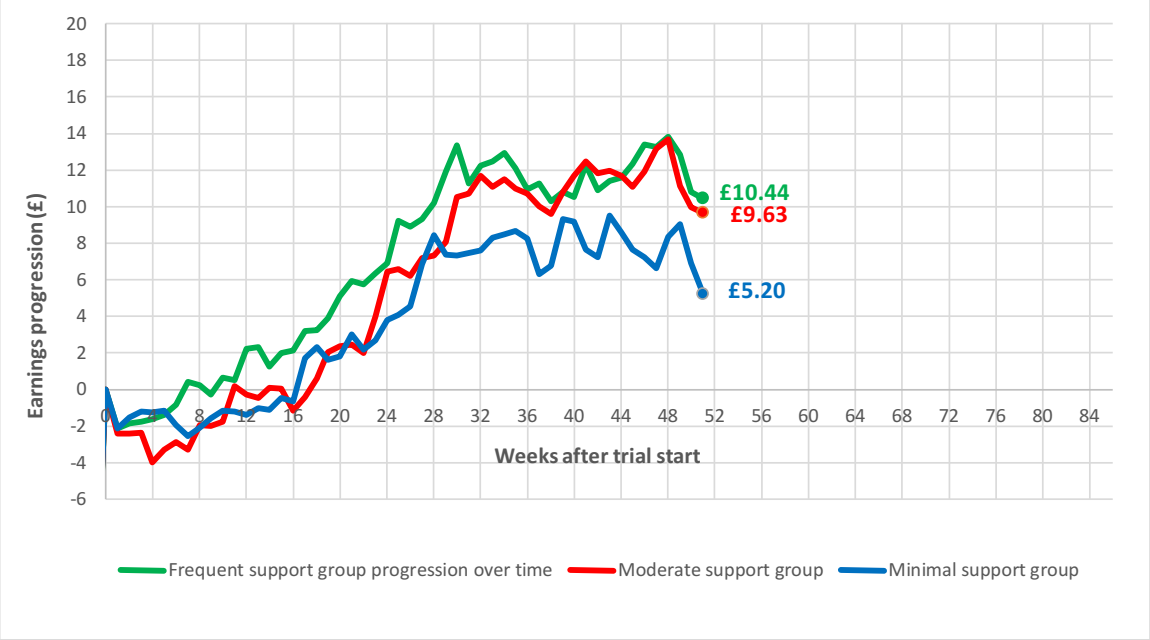

Figure 2.1: *Point-in-time* progression (£) after 52 weeks with respect to trial start (week 0)

2.2.2 *Point-in-time* progression at 78 weeks

The impact at 78 weeks shows upward progression for all 3 trial arms, see Table 2.2 and Figure 2.2 below. The *point-in-time* average earnings progression at 78 weeks is an *additional* £4.16 per week for the Frequent support group relative to the

Minimum support (comparison) group's progression of £13.36 per week. This result suggests that the impact of the Frequent support group is sustained beyond 52 weeks.

For the Moderate support group relative to the Minimum support (comparison) group, the *point-in-time* average earnings progression at 78 weeks is an *additional* £1.71 per week. This result suggests that the impact of the Moderate support group relative to Minimal support is not sustained.

IWP support group (Full sample)	*Point-in-time* earnings progression p/w (£)	Impact p/w versus Minimal (£)	95% confidence interval for the impact (£)	P-value for the impact
Frequent	17.52	4.16	(-0.02 , 8.46)	0.051
Moderate	15.07	1.71	(-2.50 , 5.88)	0.412
Minimal	13.36	-	-	-

Table 2.2: The *point-in-time* progression measure for the 78 week period

Source: Findings were based on Real Time Information (RTI) earnings data

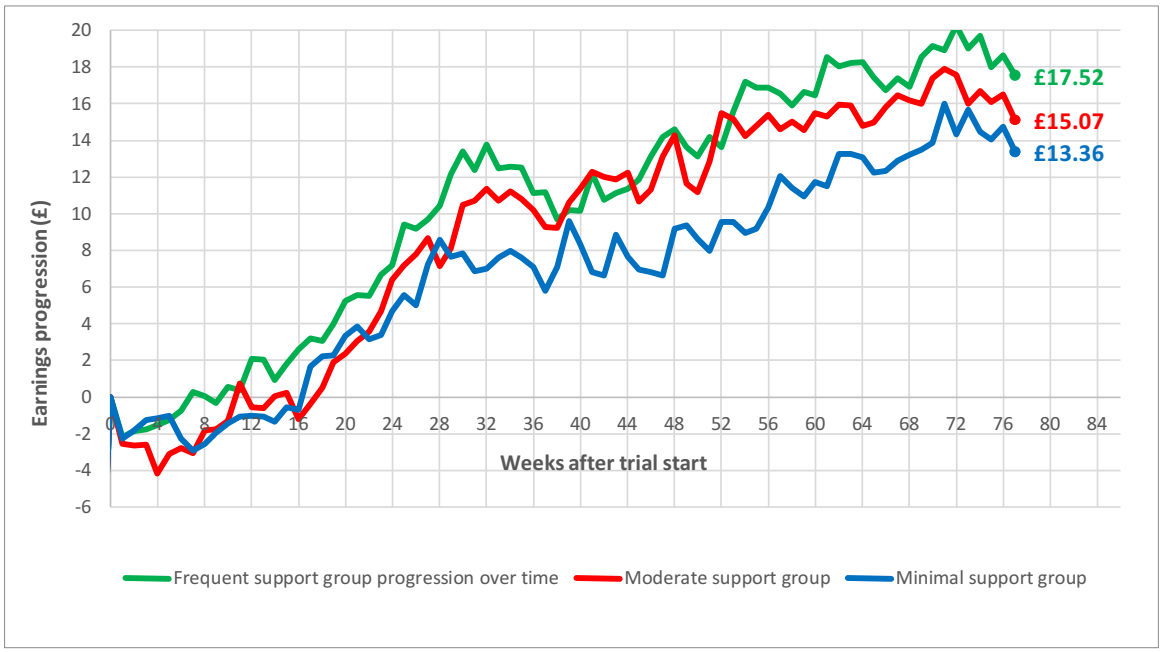

Figure 2.2: *Point-in-time* progression (£) after 78 weeks with respect to trial start (week 0)

In summary, the Frequent support group continues to benefit from higher earnings relative to Minimal, but at a rate of £4.16 per week at 78 weeks (Table 2.2), compared to £5.25 per week at 52 weeks (Table 2.1). The earnings impact for the Moderate support group relative to the Minimal support group is not sustained at 78 weeks.

Additional work shows that the proportion of participants in each of the groups who have increased their earnings by at least 10% relative to Minimal support since starting the trial is sustained from 52 weeks to 78 weeks. See Annex A for further details.

2.3 Results using the *overall* progression measure

The *overall* progression measure was introduced in Section 2.1 and results are presented below for the 52 and the 78 week periods. The *overall* progression values correspond to benefits which are used in the Cost Benefit Analysis described in Section 3 to derive the numerator for the Benefit Cost Ratios.

2.3.1 *Overall* progression over 52 weeks

The information for the *overall* progression measure for the 52 week period is shown in Table 2.3 below.

IWP support group (Full sample)	*Overall* earnings progression p/w (£)	Impact p/w versus Minimal (£)	Impact p/a versus Minimal (£)	95% confidence interval for the impact p/a (£)	P-value
Frequent	6.79	2.95	153.40	(14.79 , 292.01)	0.030
Moderate	5.28	1.45	75.40	(-61.17 , 211.97)	0.282
Minimal	3.84	-	-	-	-

Table 2.3: The *overall* progression measure for the 52 week period

Table 2.3 shows the *overall* value of progression for the Frequent support group was £6.79 per week, which is £2.95 more per week more than the Minimal support group's *overall* value of £3.84. This amounts to about £155 more in total per year than the Minimal support group.

The *overall* value of progression for the Moderate support group is £5.28 per week, which is £1.45 per week more than the Minimal support group's *overall* value of £3.84.

Figure 2.3 below reproduces the point-in-time average earnings progression at 52 weeks (as Figure 2.1 earlier with the solid lines) and it also shows the *overall* progression measure for the 3 trial groups shown with dashed lines. This makes clear the relationship between the *point-in-time* and *overall* measures over 52 weeks.

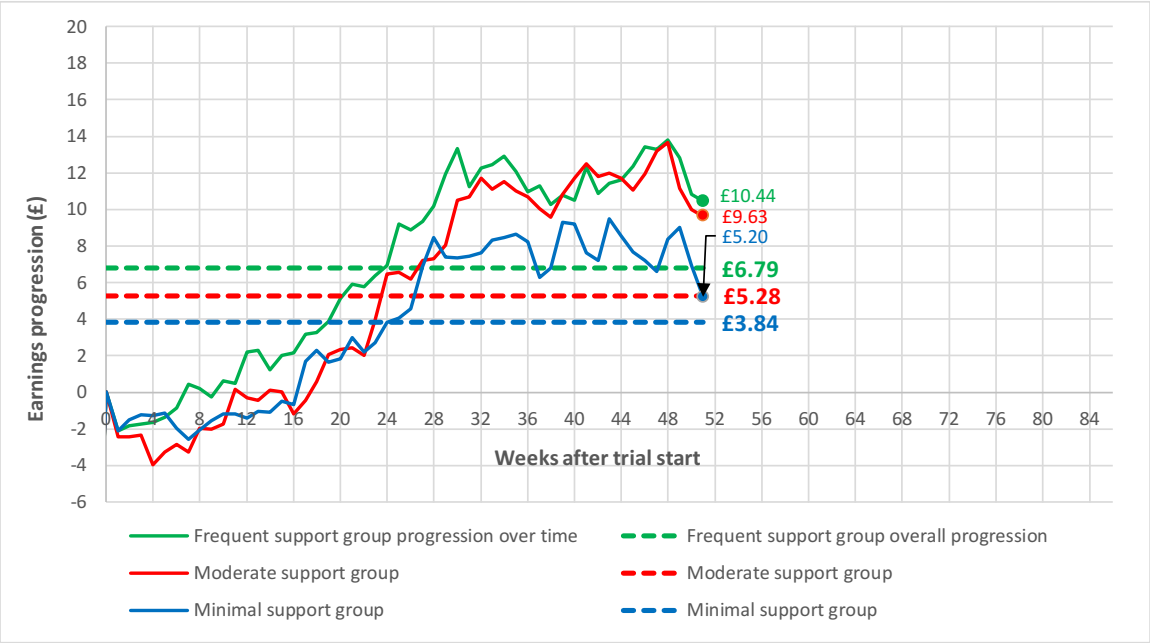

Figure 2.3: *Point-in-time* and *overall* earnings progression (£) after 52 weeks with respect to trial start (week 0)

2.3.2 *Overall* progression over 78 weeks

The information for the *overall* progression measure for the 78 week period is shown in Table 2.4 below.

IWP support group (Full sample)	*Overall* earnings progression p/w (£)	Impact p/w versus Minimal (£)	Impact p/a versus Minimal (£)	95% confidence interval for the impact p/a (£)	P-value
Frequent	10.50	3.73	193.96	(48.21 , 339.71)	0.009
Moderate	8.88	2.11	109.72	(-35.01 , 254.45)	0.137
Minimal	6.77	-	-	-	-

Table 2.4: The *overall* progression measure for the 78 week period

Table 2.4 shows that the *overall* value of progression for the Frequent support group was £10.50 per week, which is £3.73 per week more than the Minimal support group's *overall* value of £6.77. This amounts to about £195 more in total per year than Minimal support. Furthermore, the *overall* progression for the Frequent support group relative to the Minimal support group has sustained and increased from £2.95 per week during the 52 week period (Table 2.3) to £3.73 for the 78 week period.

The *overall* value of progression for the Moderate support group was £8.88 per week, which is £2.11 per week more than the Minimal support group's *overall* value of £6.77. The *overall* progression for the Moderate support group relative to the Minimal support group has increased from £1.45 per week during the 52 week period (Table 2.3) to £2.11 for the 78 week period.

Figure 2.4 below shows the *point-in-time* earnings progression at 78 weeks (solid lines, shown in Figure 2.2 earlier) and the *overall* value of progression (dashed lines)

for the 3 trial groups. This makes clear the relationship between the *point-in-time* and *overall* measures over 78 weeks.

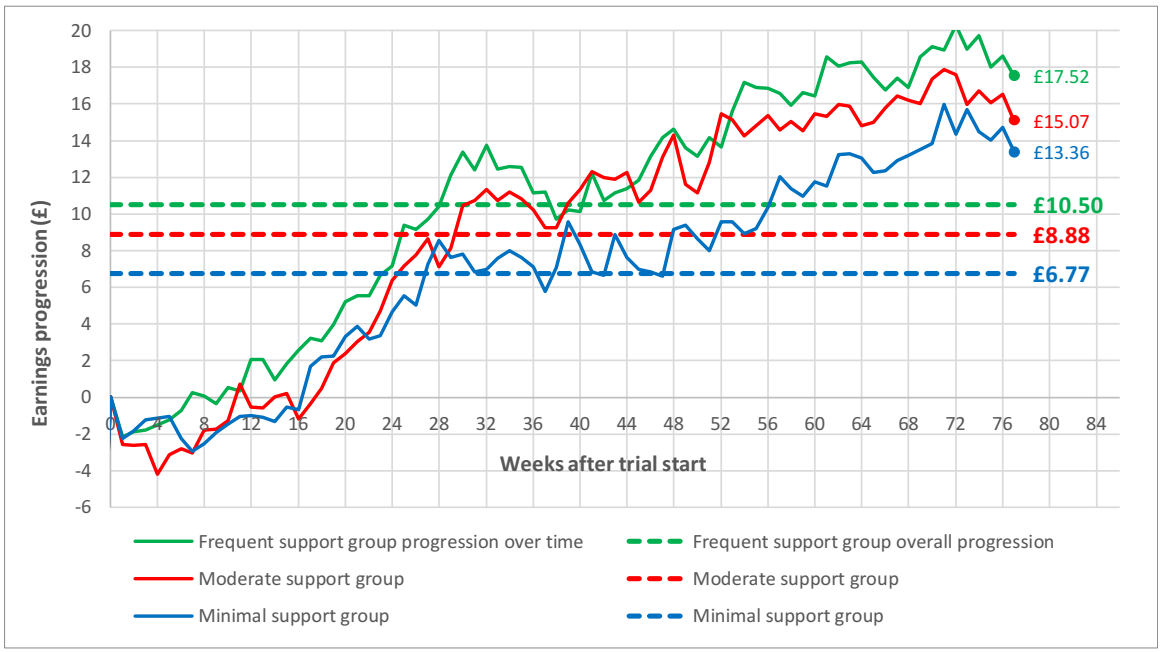

Figure 2.4: *Point-in-time* and *overall* earnings progression (£) after 78 weeks with respect to trial start (week 0)

3 Cost Benefit Analysis

3.1 Method

In this section we present the results of the Cost Benefit Analysis (CBA) of the *overall* trial impact results presented in Section 2.3.

3.1.1 Cost Benefit Analysis

Cost Benefit Analysis is a method of evaluating whether a policy intervention is value-for-money. It involves an aggregation of the costs and benefits that result from a policy intervention. Typically, this is represented as a Benefits Cost Ratio (BCR). All costs and benefits are measured relative to the comparison group in the trial. If the aggregated benefits exceed the aggregated costs, this is evidence that the policy is good value for money. This corresponds to a BCR in excess of 1.

In this report, we consider BCRs for society and the exchequer. If the society BCR exceeds 1, this is evidence that expenditure on the policy is outweighed by the benefits for society as a whole. If the exchequer BCR exceeds 1, this is evidence that expenditure on the policy is outweighed by the benefits to government finances and therefore taxpayers.

3.1.2 Benefits and cost inputs

Benefits

The benefits input to the BCR calculation are listed in Table 3.1. A positive in the table means the item enters the numerator of the BCR positively for a given group, and a negative sign means that it enters negatively. An entry of 0 means this item does not contribute to the numerator for the group in question. Detailed descriptions of the different items are available in Annex B.

Society benefits are made up of the increase in economic output and the spill-over effects of this increase. The increase in output is driven by the increased labour market supply of participants receiving the policy intervention (either Frequent or Moderate support). There are two spill-over effects. A positive spill-over effect, due to the improved health outcomes associated with an earnings increase, and a negative spill-over effect due to the increased use of transport associated with increased earnings and hours of work.

Exchequer benefits consist of an increase in direct and indirect tax revenues, a decrease in benefit expenditure and a decrease in healthcare expenditure. Increased tax revenues are driven by the increased earnings and expenditure of participants receiving the policy intervention (either Frequent or Moderate support). Decreased benefits expenditure is also driven by the increased earnings of participants receiving the intervention, which reduces receipt of means-tested benefits. The two means-

tested benefits considered here are Council Tax Support payments and Universal Credit. Reduced healthcare expenditure is driven by the improved societal health outcomes, which reduces spending on healthcare provision.

Summing the benefits in Table 3.1 produces total individual benefits for society and the exchequer. Benefits will be higher for Frequent support than for Moderate. This is because Frequent experience a higher *overall* earnings increase than Moderate.

	Society	Exchequer
Benefit type		
Increase in economic output	+	0
Reduction in Universal Credit payment	0	+
Reduction in Council Tax Support payments	0	+
Increase in income tax	0	+
Increase in employees' NIC	0	+
Increase in employers' NIC	0	+
Increase in indirect tax	0	+
Reduction in healthcare costs	+	+
Increase in social travel costs	-	0

Table 3.1: Lists of benefits for society and the exchequer

Costs

The cost input to the BCR calculation is the Full Time Employee cost of Jobcentre Plus work coaches delivering the policy intervention. This is calculated for the Frequent and Moderate groups relative to Minimal. The cost will only apply as long as trial participants are in the Light Touch group. Once they have left, there is no longer a difference in the intervention offered to treatment and control groups, so the relative cost is 0.

The cost input takes the form of the average individual cost relative to the Minimal group over the period of interest. This takes into account the fact that the average individual does not spend the duration of the period in the Light Touch group and therefore is not always subject to the policy intervention. Costs are substantially higher for Frequent than Moderate, as from week 8 onwards they receive the policy intervention 4 times more often than the Moderate group.

3.1.3 Limited applicability of the CBA results

The BCRs we present are valid for the trial, but we would expect them to be lower if the policy were implemented today. The trial ran from April 2015 to March 2018. In April 2017, the policy intervention for the Universal Credit in-work Light Touch group changed. Trial participants in the Minimal support group continued to receive the old intervention but non-trial participants were no longer required to come for interview. This constitutes a change in the baseline against which the benefits of Frequent and Moderate support are measured.

- **Trial baseline** – participants in Light Touch receive 1 interview at trial start and 1 after 8 weeks. This is the Minimal support comparison group.

- **New baseline** – claimants in Light Touch receive 0 interviews.

Since the cost of the new baseline is lower than that of the trial regime, the relative costs of implementing Frequent and Moderate support will go up. The policy is therefore likely to be lower value-for-money if it were implemented in today's world than when it was implemented as part of the trial. This is particularly the case if there are no benefits associated with the trial baseline of Minimal support.

3.2 Results

Benefit Cost Ratios are presented for 52 weeks and 78 weeks. These are based on the *overall* earnings impacts described in Sections 2.3.1 and 2.3.2 respectively.

3.2.1 52 week results

52 weeks		
	Society	**Exchequer**
Moderate	7.8	6.4
Frequent	2.3	1.9

Table 3.2: 52 week Benefit Cost Ratios

Society
The results show BCRs in excess of 1 for society. This is because the increased output produced by the trial participants exceeds the operational cost of delivering the policy intervention.

Exchequer
The results show BCRs in excess of 1 for exchequer. This is because the increased taxation and reduced benefits payments due to the earnings increase exceed the operational cost of delivering the policy intervention.

The BCRs for the Moderate group are in all cases higher than the Frequent group. This is because the higher costs associated with seeing the Frequent group more often outweighs the higher earnings impact that they obtain.

3.2.2 78 week results

78 weeks		
	Society	**Exchequer**
Moderate	10.4	8.5
Frequent	3.0	2.5

Table 3.3: 78 week Benefit Cost Ratios

Society
The results again show BCRs in excess of 1 for society. This is because the increased output produced by the trial participants exceeds the operational cost of delivering the policy intervention.

Exchequer
The results again show BCRs in excess of 1 for exchequer. This is because the increased taxation and reduced benefits payments as a result of the earnings increase exceed the operational cost of delivering the policy intervention.

The 78 week results are qualitatively similar to the 52 week results, but of higher magnitude. At 52 weeks the majority of trial participants are no longer in Light Touch, so costs associated with the period beyond 52 weeks are small. As documented in Section 2.3.2, the benefits of higher earnings continue to accrue beyond 52 weeks. The combined effect is to raise the BCRs.

3.2.3 Statistical uncertainty

The results of the Cost Benefit Analysis have higher statistical uncertainty than the impact estimates in Section 2.3. This is because the Cost Benefit Analysis requires statistical significance relative to a BCR of 1. This is a stricter condition than significance relative to 0, the condition for the earnings impact results.

52 weeks		
	Moderate	**Frequent**
Earnings impact (£)	75.40	153.40
Break-even impact (£)	10.92	65.52
95% confidence interval (£)	(-61.17, 211.97)	(14.79, 292.01)

Table 3.4 Earnings impacts, break-even impacts and confidence intervals for the society BCR for 52 weeks

Table 3.4 shows the trial earnings impacts and confidence intervals from Section 2.3, together with the break-even earnings impacts which correspond to a BCR of 1 for society. Break-even impacts fall inside the 95% confidence interval for both groups. Specifically, the 52 week break-even impact for the Moderate group is £10.92, higher than the lower end of the confidence interval of -£61.17. The 52 week break-even earnings impact for the Frequent group is £65.52, higher than the lower end of the confidence interval of £14.79.

This implies that the BCRs are not statistically different from break-even at the 95% confidence interval. The 78 week break-even earnings impacts are also not significant relative to break-even at the 95% confidence interval (not shown). The high statistical uncertainty of the BCRs is an important limitation of the CBA results presented in Sections 3.2.1 and 3.2.2.

3.2.4 Assumptions

The findings in Sections 3.2.1 and 3.2.2 are subject to 3 main assumptions.

Society BCR assumption

A key assumption for the society BCR is that the observed increase in earnings corresponds to an increase in economic output. This would be the case if the earnings increase is due to an increase in hours or productivity. Hours and productivity are not observed in our data so this assumption cannot be tested. If the earnings increase consists of a redistribution of economic output from the employer to the worker, this would not equate to gains for society without additional assumptions.

Exchequer BCR assumption

The exchequer BCR assumes that trial participants are subject to the Universal Credit taper for the duration of the trial. This implies that the exchequer benefits from 63 pence in every £1 increase in participant earnings. This would not be the case if participants are no longer on Universal Credit or if they are eligible for a Universal Credit work allowance and have earnings below this threshold. This means the exchequer BCR is an upper bound and that the true BCR is likely to be lower than this.

Limited scope of costs and benefits

The Cost Benefit Analysis estimates exclude costs and benefits for which we do not have robust evidence. These could make a substantial contribution to costs and benefits. For example, it has not been possible to obtain robust estimates of

- The time cost to the worker of working additional hours (this would have an additional negative impact on the society BCR)
- The time cost of attending the Job Centre to attend the interview (this would have an additional negative impact on the society BCR)
- Non-monetary benefits associated with higher earnings and hours worked (this would have an additional positive impact on the society BCR)

These caveats should be borne in mind when interpreting the Cost Benefit Analysis estimates calculated in Sections 3.1.1 and 3.1.2

4 Conclusion

The IWP trial has shown that there is a small positive earnings impact of more intensive work coach support for the Universal Credit in-work Light Touch group. Cost Benefit Analysis has shown this corresponds to positive value-for-money, with Benefit Cost Ratios in excess of 1. However, there is high statistical uncertainty around all estimates.

In addition, since the policy intervention for Light Touch has changed since the trial, we would not expect to see the same value-for-money if the policy interventions were introduced today.

Annexes

Annex A: Proportion of participants increasing earnings by at least 10%

Recap of the 52 week analysis

The September 2018 published results showed the proportion of trial participants who had increased their earnings by at least 10% at 52 weeks, see Figure A.1 below. The proportion of participants increasing their earnings by at least 10% at week 52 was an *additional* 2.90 percentage points (45.37% minus 42.47%) and 2.42 percentage points (44.89% minus 42.47%) for the Frequent and Moderate support groups respectively, relative to the Minimal support (comparison) group's value of 42.47%.

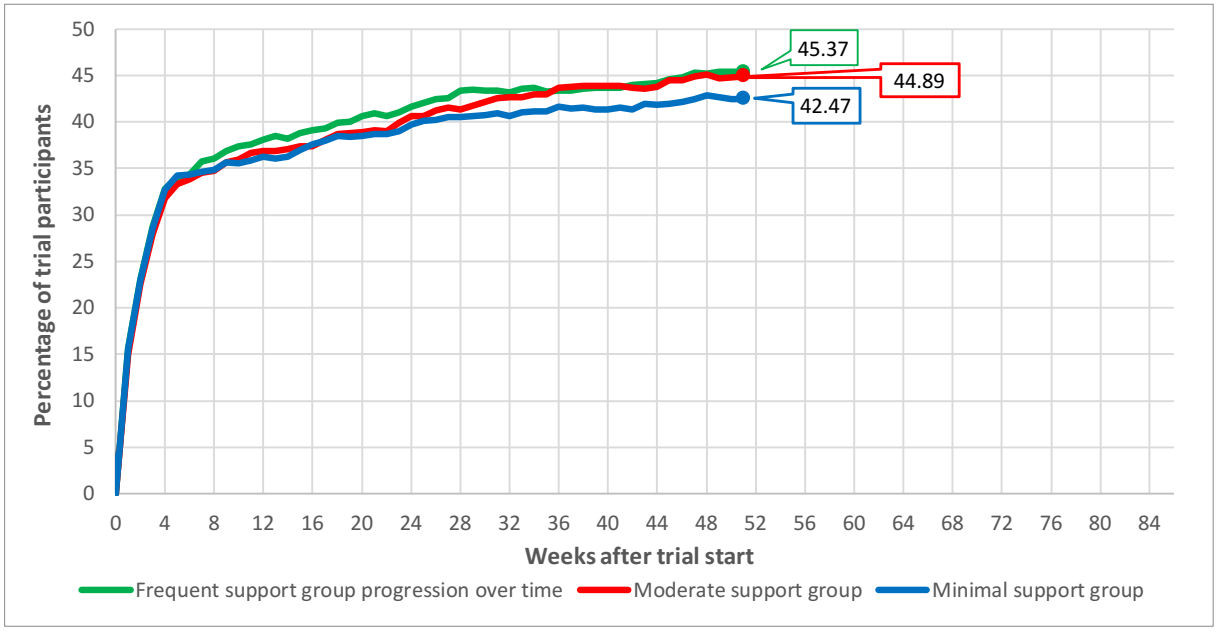

Figure A.1: Proportion of trial participants who have increased their earnings by at least 10% at 52 weeks after trial start

The 78 week analysis

The following table shows the full sample earnings progression for participants who had increased their earnings by at least 10% for the 3 IWP groups 78 weeks after random assignment and the resulting impacts.

IWP support group (Full sample)	*Point-in-time* earnings progression (%)	Impact versus Minimal (percentage points)	95% confidence interval for the impact (%)	P-value for the impact
Frequent	47.71	1.94	(0.65 , 3.31)	0.005
Moderate	47.41	1.64	(0.34 , 2.97)	0.014
Minimal	45.77	-	-	-

Table A.1: Proportion of trial participants who have increased their earnings by at least 10% at 78 weeks after trial start

Source: Findings were based on Real Time Information (RTI) earnings data

The impact to 78 weeks shows a continued upward progression for all 3 trial arms from 52 weeks, see Figure A.2 below. The proportion of participants increasing their earnings by at least 10% at week 78 was an *additional* 1.94 percentage points and 1.64 percentage points for the Frequent and Moderate support groups respectively relative to the Minimal support (comparison) group's value of 45.77%.

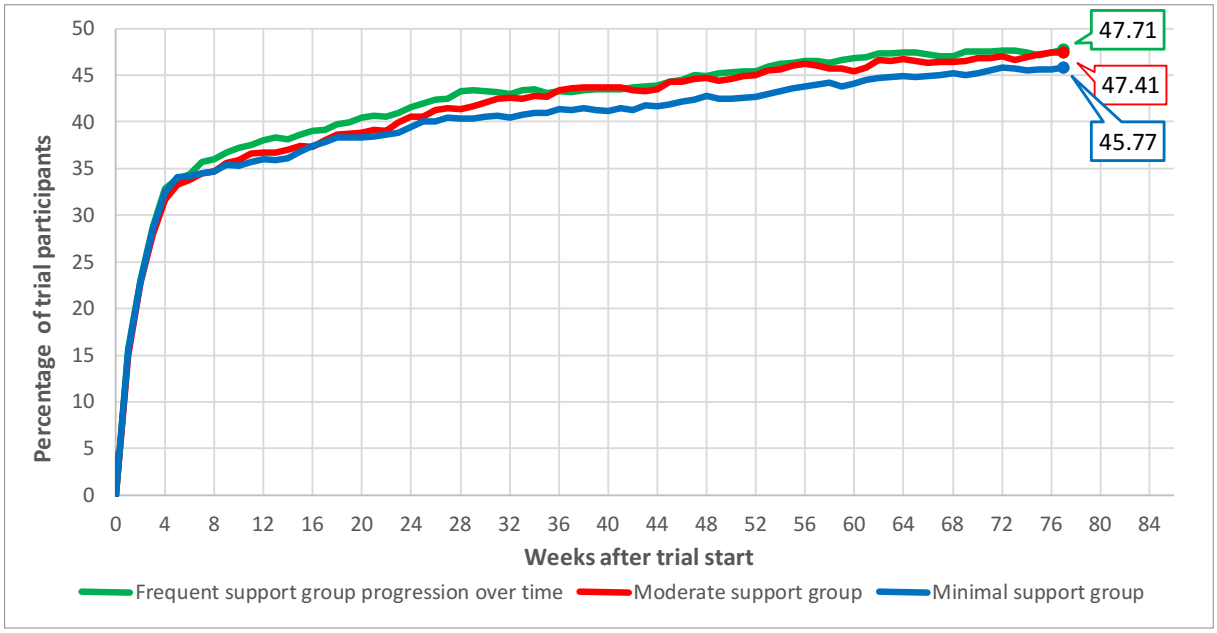

Figure A.2: Proportion of trial participants who have increased their earnings by at least 10% at 78 weeks after trial start

In conclusion, the results suggest that the impacts for the Frequent and Moderate support groups relative to the Minimal support group are sustained at 78 weeks.

Annex B: Full description of contributions to costs and benefits

The benefits and costs listed below are derived using the 2017 DWP Social Cost Benefit Analysis version 2.3 methodology which is based on the framework outlined in Fujiwara, 2010 (Ref. 2).

Increase in output
An increase in output is a benefit for society as more economic value is being produced. The increase in earnings is assumed to correspond to an increase in output. This is based on the assumption that a worker is compensated based on their productivity. So an increase in earnings implies that more economic output is being produced. The earnings increase for the Cost Benefit Analysis is taken from the *overall* impacts presented in Section 2.3.

Reduction in Universal Credit
An increase in earnings implies a decrease in Universal Credit payments for trial participants in the case where they are subject to the Universal Credit taper rate. The taper rate implies that for every £1 increase in earnings, participants' Universal Credit payments reduce by £0.63. This corresponds to net saving for the exchequer, but 0 net saving for society, as this is a transfer payment from trial participants to the exchequer. In this Cost Benefit Analysis, we assume that all participants are subject to the taper.

Reduction in Council Tax Support payments
An earnings increase implies a decrease in Council Tax Support, which is means-tested. This corresponds to a net saving for the exchequer, due to decreased benefits payments. There is no net saving for society, as this is a transfer payment from trial participants to the exchequer. The exact reduction is calculated based on average eligibility derived from the 2015/16 *Family Resource Survey*.

Increase in income tax
An increase in earnings implies an increase in income tax for trial participants in the case where they are earning above their personal allowance. This corresponds to a net saving for the exchequer due to increased tax revenues. There is no net saving for society, as this is a transfer payment from trial participants to the exchequer. The exact increase is calculated based on average eligibility derived from the 2015/16 *Family Resource Survey*.

Increase in employees' National Insurance Contributions
An increase in earnings implies an increase in National Insurance Contributions (NIC) for trial participants, in the case where they are earning above the primary threshold. This corresponds to a net saving for the exchequer due to increased tax revenues. There is no net saving for society, as this is a transfer payment from trial participants to the exchequer. The exact increase is calculated based on average tax incidences derived from the 2015/16 *Family Resource Survey*.

Increase in employers' National Insurance Contributions

An increase in earnings paid out by employers implies an increase in their National Insurance Contributions, in the case where employees are earning above the secondary threshold. This corresponds to a net saving for the exchequer due to increased tax revenues. There is no net saving for society, as this is a transfer payment from employers to the exchequer. The exact increase is calculated based on average tax incidences derived from the 2015/16 *Family Resource Survey*.

Increase in indirect tax

Increased earnings is assumed to imply increased consumption and production of goods. Where these are subject to indirect taxes such as Value Added Tax, this will correspond to saving for the exchequer due to increased tax revenues. There is no net saving for society, as this is a transfer payment from consumers and firms to the exchequer. The exact increase is calculated based on average tax incidences derived from 2015/16 ONS *Effects of taxes and benefits on household income* dataset.

Increase in healthcare costs

Increased earnings is assumed to imply a reduction in demand for NHS services. We assume a causal relationship between the two, based on evidence documented in Fujiwara, 2010 (Ref. 2) of a causal relationship between employment status and NHS usage. This corresponds to a saving for exchequer due to decreased expenditure on NHS resources, and for society, as the resources allocated to provision of NHS services can be reallocated to alternative productive uses.

Increase in social travel costs

Increased time in work and increased earnings implies increased travel at the margin. Travel is associated with negative externalities such as pollution and carbon dioxide emissions from extra car journeys. This corresponds to a cost for society, as these emissions have negative impacts on health and well-being. The exact increase is calculated based on data from the Department for Transport's *National Travel Survey and Green Book Supplementary Guidance on Air Quality* (Ref. 3).

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