# An economic evaluation of the Career Ready programme

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PRO BONO ECONOMICS

Pro Bono Economics uses economics to empower the social sector and to increase wellbeing across the UK. We combine project work for individual charities and social enterprises with policy research that can drive systemic change. Working with 400 volunteer economists, we have supported over 500 charities since our inception in 2009.

Career Ready has a mission to boost social mobility by empowering young people, helping them to develop new skills, boost their confidence and gain valuable workplace experiences.

This is done by connecting young people aged 15-18 with employers and volunteers from the world of work.

# Summary

A socially mobile society provides equal opportunities for everyone. However, with lower social mobility than countries such as France, Germany, Netherlands, Ireland, Canada and Australia, the UK lags behind.

Research in the UK has also identified a patchwork of social mobility 'hot spots' and 'cold spots' across the country. Where a young person grows up, their family circumstances and other factors such as the quality of local education influence social mobility. For example, recent work by the Social Mobility Commission has identified that in areas with the highest social mobility, even disadvantaged individuals earn twice as much as their counterparts in the areas of lowest mobility.

Career Ready was established in 2002 with a mission to boost social mobility by empowering young people, helping them to develop new skills, improve their confidence and gain valuable workplace experiences. Their Career Ready programme provides a 14-18 month programme of support for young people aged 15-18 from diverse and under-represented backgrounds. Young people experience a programme of mentoring, a paid internship, skills masterclasses, and workplace visits.

This report analyses the economic benefits of the Career Ready programme based on its impact on A-level attainment in England, Wales and Northern Ireland. The work builds on a survey dataset that was developed previously by the charity, drawn from survey responses from young people who have been supported through Career Ready as well as a comparison group of individuals that have not been supported.

We find that:

- Career Ready alumni were 13.9 percentage points more likely to achieve A-levels than a matched comparison group with similar

background characteristics. That is, for every 100 young people who go through the Career Ready programme, we would expect nearly 14 more to achieve A-levels than a similar group of students who do not participate.

- The average long-term economic benefits of this improved academic attainment could be as much as £12,800 per alumnus in our central case. This is driven by increased productivity, as measured by increased wages and reduced unemployment.

- For a typical annual cohort of 1,800 young people participating in the Career Ready programme, this would be the equivalent of around £23.1 million in long-term economic benefits.

This analysis relies on important assumptions about the similarity of the comparison group to Career Ready alumni and the likely long-term impacts of improved academic attainment. However, we have tested our analysis with a range of alternative assumptions and the broad conclusion that the programme is likely to generate substantial economic benefits remains robust (with an estimated range of total benefits of between £9.1m and £37.1m).

In addition, there is a wider set of benefits generated by the Career Ready programme such as increased wellbeing for the participants, potential progress into higher education and immediate improvements in employment outcomes (even for those who didn't obtain A-levels). We have some evidence of Career Ready's impact on these outcomes; for example, Career Ready alumni are nearly 7ppt. less likely to be unemployed in the years after participation in the programme compared to the comparison group. However, we lack sufficient evidence to robustly value the benefits from these outcomes at this time.

Overall, this analysis provides evidence that the Career Ready programme has a discernible impact on improving the opportunities available to those young people supported through the programme. Given that the main means by which these benefits develop is

through improved lifetime earnings, this is likely to directly contribute towards improving social mobility in the communities in which the charity operates.

Career Ready alumni are

# 14pp

more likely to obtain A-levels than a comparison group of similar students

The average long-term economic benefits for Career Ready alumni as a result of better A-level results could be up to

# £12,800

Career Ready alumni are

# 7pp

less likely to be unemployed than a comparison group of similar students

The total potential benefits of improved lifetime productivity per annual Career Ready cohort could be

# £23 million

# Introduction

A socially mobile society provides equal opportunities for everyone. However, a myriad of research and evidence points towards the UK being unequal in terms of the opportunities that are available to young people. Analysis from the OECD suggested that a young person's earnings were more closely related to their father's earnings in the UK than in any other country they assessed.[1] More recent evidence from the World Economic Forum ranked the UK 21st for social mobility, behind many other economically developed countries including: France, Germany, Netherlands, Ireland, Canada and Australia.[2]

## Chart 1: The strength of the link between individual and parental earnings varies across OECD countries

Intergenerational earnings elasticity: estimates from various studies
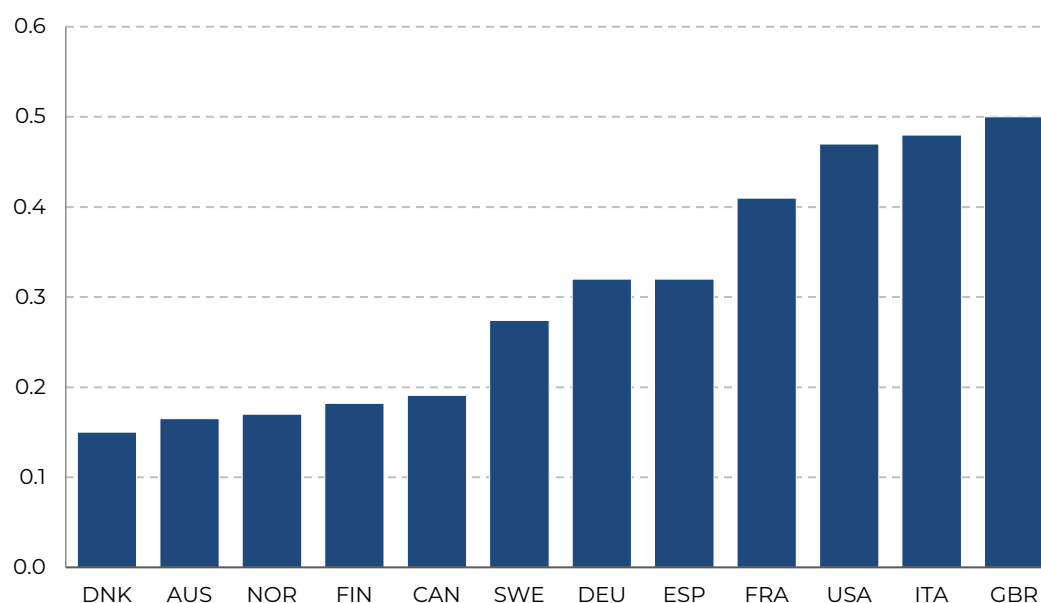


Even within the UK there are huge differences across different parts of the country. Research has identified a patchwork of 'hot spots' and 'cold spots' across the country.[3] Where a young person grows up, their family circumstances and other factors such as the quality of local education

[1] OECD (2010): *Economic policy reforms, going for growth*, OECD, Part 2, Chapter 5.
[2] World Economic Forum (2020): *The Global Social Mobility Report*
[3] Social Mobility Commission (2020): *The Long Shadow of Deprivation – differences in opportunities across England*, Social Mobility Commission

influence social mobility. These differences form a core part of the UK Government's Levelling Up agenda.

For example, recent work by the Social Mobility Commission has identified that in areas with the highest social mobility, even disadvantaged individuals earn twice as much as their counterparts in the areas of lowest mobility. Put simply, two individuals with similar backgrounds are likely to have very different prospects as adults, based on where they grew up.

Education remains a key driver of social mobility. Individuals from disadvantaged backgrounds perform less well at school and are less likely to attend university than those from wealthier backgrounds – even when they grow up in the same area. In the most disadvantaged areas, this difference in academic performance explains two thirds of the gap in adult earnings between disadvantaged pupils and their classmates. [4] The remaining third of the gap is driven by other factors including differences in aspirations, health and social connections giving access to opportunities.

Evidence suggests mentoring plays an important role. A review of 44 studies by the Education Endowment Foundation concludes that mentoring interventions may be more beneficial for pupils from disadvantaged backgrounds, as the development of trusting relationships with an adult or older peer can provide a different source of support[5].

## Background to Career Ready

Career Ready was established in 2002 with a mission to boost social mobility by empowering young people, helping them to develop new skills, improve their confidence and gain valuable workplace experiences. This is done by connecting young people aged 11-18 with employers and volunteers from the world of work.

In 2020 a report published by Career Ready[6] found that alumni of the Career Ready programme were more likely to be in full-time education or employment when compared to a comparison group. Significantly, they
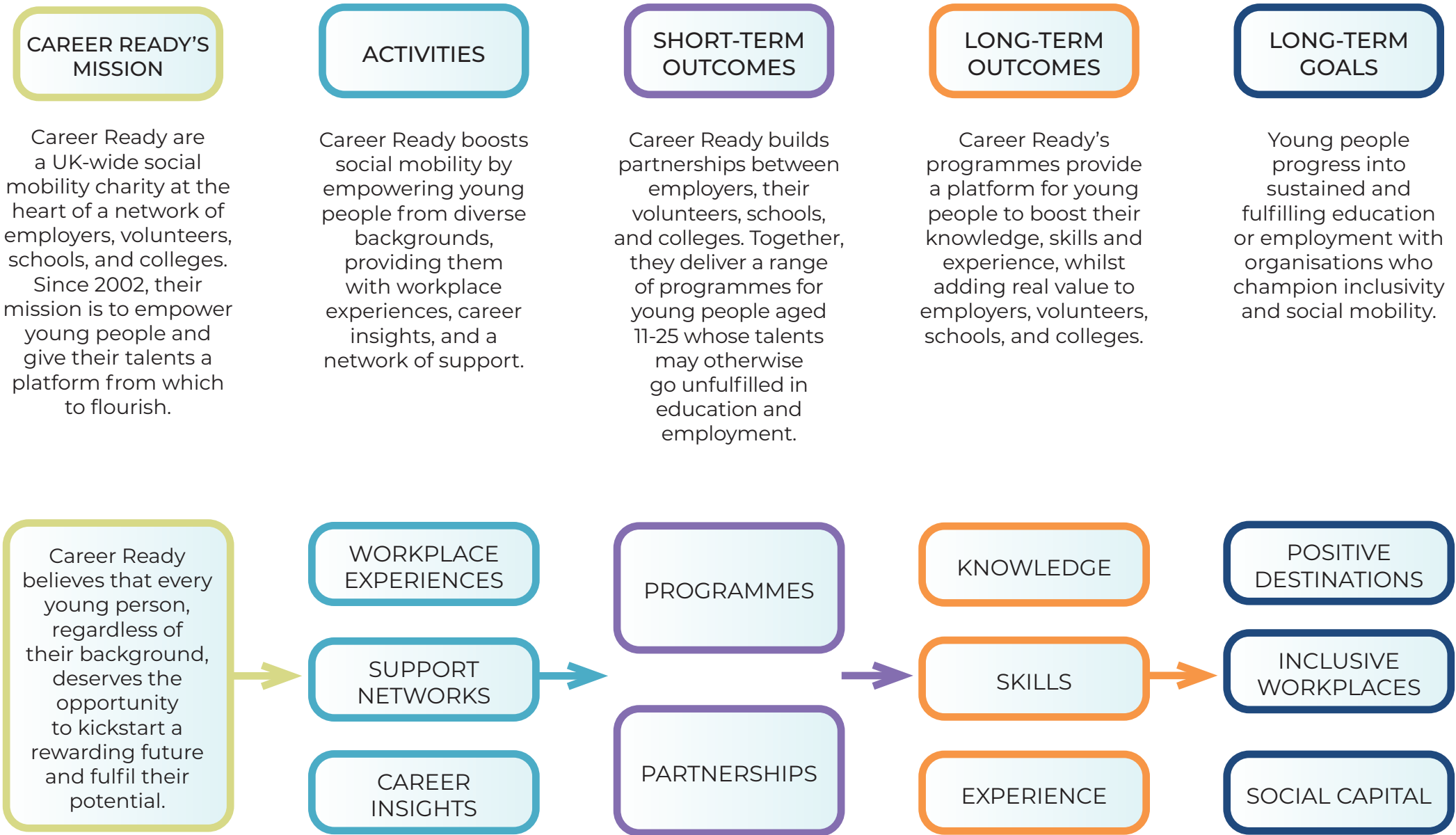
[4] Op cit
[5] https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit/mentoring
[6] https://careerready.org.uk/wp-content/uploads/2020/11/Career-Ready-at-18-Full-Report.pdf

were less likely to be unemployed. The research was underpinned by a survey of 411 alumni undertaken on behalf of the charity by Opinium Research.

# Figure 1. Career Ready Programme Logic Model

| CAREER READY'S MISSION | ACTIVITIES | SHORT-TERM OUTCOMES | LONG-TERM OUTCOMES | LONG-TERM GOALS |
|---|---|---|---|---|
| Career Ready are a UK-wide social mobility charity at the heart of a network of employers, volunteers, schools, and colleges. Since 2002, their mission is to empower young people and give their talents a platform from which to flourish. | Career Ready boosts social mobility by empowering young people from diverse backgrounds, providing them with workplace experiences, career insights, and a network of support. | Career Ready builds partnerships between employers, their volunteers, schools, and colleges. Together, they deliver a range of programmes for young people aged 11-25 whose talents may otherwise go unfulfilled in education and employment. | Career Ready's programmes provide a platform for young people to boost their knowledge, skills and experience, whilst adding real value to employers, volunteers, schools, and colleges. | Young people progress into sustained and fulfilling education or employment with organisations who champion inclusivity and social mobility. |
| Career Ready believes that every young person, regardless of their background, deserves the opportunity to kickstart a rewarding future and fulfil their potential. | WORKPLACE EXPERIENCES<br>SUPPORT NETWORKS<br>CAREER INSIGHTS | PROGRAMMES<br>PARTNERSHIPS | KNOWLEDGE<br>SKILLS<br>EXPERIENCE | POSITIVE DESTINATIONS<br>INCLUSIVE WORKPLACES<br>SOCIAL CAPITAL |

# Scope of this report

This report provides an assessment of the economic benefits delivered by the Career Ready programme. This programme provides 14-18 months of support for young people aged 15-18, targeted at those from diverse and under-represented backgrounds. Each young person is allocated a mentor with additional support including work experience in the form of internships with business partners. The logic model for the Career Ready programme is set out in Figure 1.

Our analysis focuses on benefits through one principal channel where there is sufficient evidence for us to quantify monetary impacts – the additional economic benefits achieved through higher educational attainment.

To do this, we have built on the sample of data collected by Opinium Research for Career Ready's 2020 report. We matched participants in the Career Ready programme to individuals with similar background characteristics from that survey to assess the differences in A-level attainment. The differences in A-level outcomes were then given a monetary value based on a Department for Education study of the lifetime productivity benefits from improved A-level outcomes.[7]

There is also a wider set of benefits generated by the Career Ready programme such as increased wellbeing, the progression of young people into positive destinations and reductions in unemployment (even for those that didn't obtain A-levels). However, these factors sit outside the scope of this project.

# Our approach

We take a three-step approach to assessing the economic benefits of the Career Ready programme:

## Step 1: Assess the difference in A-level outcomes for Career Ready participants

We match a sample of 248 Career Ready participants to young people with similar backgrounds from the Opinium survey previously carried out for Career Ready. This allows us to identify a comparison group with very similar observable characteristics to the Career Ready sample, including prior academic attainment,

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[7] Hayward H, Hunt E, Lord A (2014): *The economic value of key intermediate qualifications; estimating the returns and lifetime productivity gains to GCSEs, A levels and apprenticeships,* Department for Education

ethnicity, gender and eligibility for Free School Meals. Further details of this process are available in Annex A.

We use the outcome of whether the highest academic qualification achieved was A-Levels or equivalent or not.  It is important to note that Career Ready participants study across a wide range of different qualifications (e.g. BTECs, NVQs and Scottish Highers) and therefore these results do not represent all Career Ready students. However, the evidence from the Department for Education on the economic impact of A-Levels is more robust so we have chosen to focus on these specific qualifications. We assume that the effects for other equivalent qualifications are likely to be similar.

We find that Career Ready participants were 13.9ppt. more likely to obtain A-level qualifications or equivalent compared to the comparison group.

Table 1: Career Ready outcome differentials – reweighted (ages 18-26)

| Outcome measure | Comparison Group | Alumni Group | ppt difference (alumni versus comparison group) |
|---|---|---|---|
| A Level attainment | 43.36% | 57.21% | +13.9 |

## Chart 2: Outcome difference for the alumni group relative to comparison group
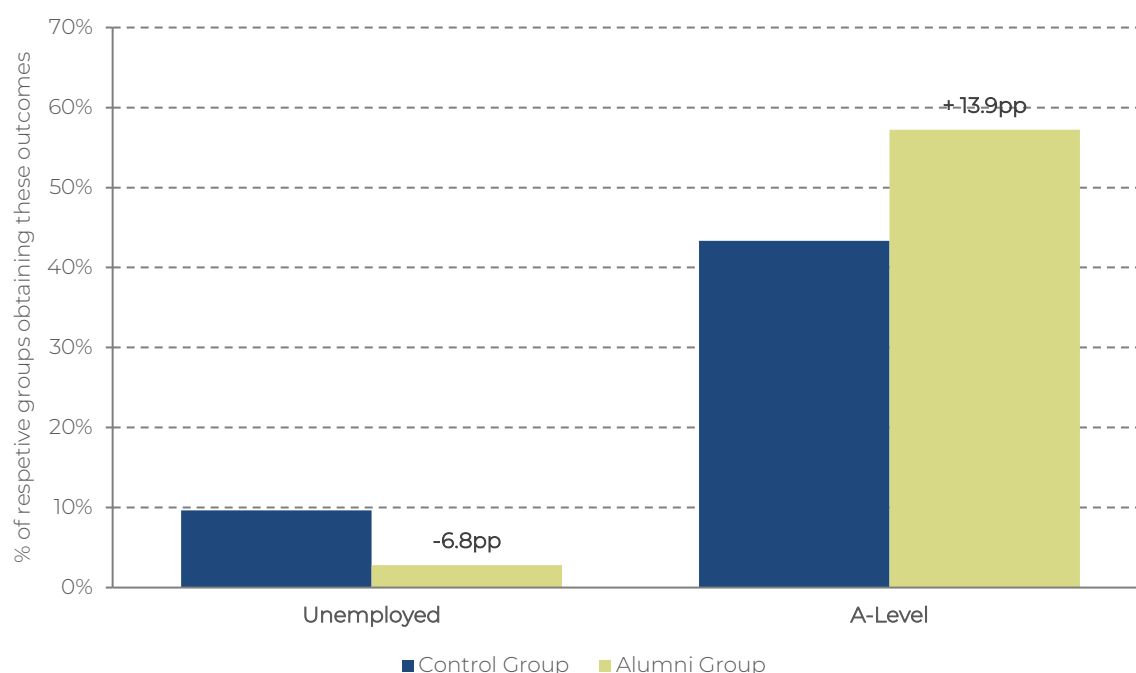


Step 2: Value the average lifetime productivity benefits from improved A-level attainment

The Department for Education (DfE) has undertaken robust analysis on the marginal lifetime productivity benefits of achieving qualifications at different levels. [8] These DfE estimates relate to the productivity returns (namely wage and employment) for specific qualifications by comparing the productivity outcomes of individuals who hold those qualifications to similar individuals qualified to the level below. In this instance, we use the valuation of marginal returns that relate to the lifetime productivity gains for those individuals who hold 2+ A levels versus the lifetime productivity gains for those who hold 5-7 good GCSEs.

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[8] DfE published updated research in 2021 on educational attainment and lifetime earnings. However, the main contributions of this new piece of lifetime earnings analysis were focused on measurement at granular levels (e.g. how an additional grade in a specific subject impacts lifetime earnings), which we would not be able to use without reducing our sample size too much. Additionally, we would have needed further clarification over the educational attainment responses in the alumni and comparison surveys to detail specific subject and associated grades attained (rather than some responses answering only grades). Furthermore, the focus of new DfE research was on GCSE attainment. Given GCSEs were attained before young people participated in the Career Ready programme, we could therefore not attribute GCSE impacts to the programme for our analysis.

The measurement of marginal productivity returns within the DfE estimates incorporates:

- The impact of higher average wages for those in work over their lifetime.
- The increased likelihood of being in employment throughout an individual's lifetime.
- A 30% non-wage uplift representing the full costs of employment, incorporating national insurance, pension contributions, fixed administrative costs, and costs accounting for absence owing to illness.[9]

The marginal productivity return in this report acts as a proxy for wider social benefit. These values are used to quantify the lifetime productivity returns for the alumni group when compared to outcomes for the comparison group. The marginal lifetime benefit is published separately for males and females within the DfE report – shown in Table 2. We assume that those Career Ready alumni who's highest qualification was recorded as A-level achieved a minimum of two A-levels. Therefore, we estimate that the weighted average benefit for a Career Ready alumni obtaining A-levels as £92,647 (in 2021 prices). However, this benefit will not accrue to all Career Ready alumni, and subsequent analysis estimates the average benefit across the whole alumni group – including those that did not achieve higher A-level achievement.

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[9] It is assumed that the productivity of an individual must be as least as much as it costs the firm to employ them, otherwise the firm would not make any extra profit from the individual and would have no incentive to hire them. The full definition and justification is detailed within the DfE 2014 report.

Table 2: Values and sources for valuing impact of higher educational attainment[10]

| Impact type | Value type | Details | Benefit – marginal productivity return | Benefit (updated – 2021 prices[11]) | Benefit – marginal lifetime earnings return (2021 prices)[12] |
|---|---|---|---|---|---|
| Earnings | Lifetime | Marginal Lifetime Benefit of Achieving 2+ A Levels for males | £90,020 | £101,309 | £70,916 |
| Earnings | Lifetime | Marginal Lifetime Benefit Achieving 2+ A Levels for females | £76,099 | £85,63 | £59,950 |
| Weighted average | Lifetime | Weighted average accounting for gender split in alumni sample | | £92,647 | £64,853 |

## Step 3: Apply this estimated average benefit per participant to a full cohort of Career Ready participants

Career Ready typically has around 1,800 new participants in its programme each year. We multiply the average economic benefits from improved academic attainment by the typical cohort size to estimate the potential benefits from the average cohort of individuals.[13]

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[10] Hayward et al. (2014)

[11] These DfE values used were published in 2014 in 2013 prices - so we have adjusted these to 2021 prices using the standard GDP deflator (from the HMT Green Book appraisal guidance)

[12] Based on the underlying assumption within the DfE work that marginal lifetime earnings represents 70% of the estimated marginal productivity returns

[13] This effectively assumes that the economic benefits from equivalent Level 3 qualifications are broadly similar.

## Key assumptions

Our analysis relies on a number of important assumptions:

- We assume that the matched comparison group are representative of what would have happened to Career Ready beneficiaries in the absence of the intervention. Whilst we have attempted to match closely based on observable characteristics there remain some differences that should be noted:

    o Support through other programmes: at least some of the comparison group could be in other social mobility programmes. This suggests the starting point (the counterfactual) for young people in the comparison group is not necessarily 'nothing'.

    o Activities at school: both groups show different engagement in activities at school. This could reflect different motivational characteristics of the young people but could also be related to building social skills and confidence that could drive some of the observed difference in later unemployment outcomes [14].

In addition to these known differences, we are only able to match based on characteristics captured in the data available. There may be unobservable characteristics related to motivation and aspiration that could be related to the likelihood of a young person participating in the Career Ready programme. If this is the case then it is possible that Career Ready alumni have a higher unobserved level of 'motivation' that could partly explain their higher academic outcomes than the comparison group. As a result our estimated impact will be biased upwards. We consider the impact that incorrectly assessing the impact on A-level attainment may have in our sensitivity analysis.

In order to use the Department for Education's assessment of economic benefits we effectively assume that each alumni that achieved A-level as their highest qualification obtained two passes at A-levels. This is in line with the average number of A-levels obtained by students across England but may be higher or lower than the alumni from the Career Ready programme.

There is a wider set of benefits generated by the Career Ready programme such as increased wellbeing, the progression of young people into higher education and immediate improvements in employment outcomes (even for those who did not

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[14] See, for example, Carniero P, Crawford C, Goodman A (2007): *The impact of early cognitive and non-cognitive skills o later outcomes,* Centre for the Economics of Education

obtain A-levels). Although Career Ready collects data on these measures it has not yet been compared against a comparison group so we are unable to quantify the economic value of these impacts. We have explored the potential impact of reduced unemployment as part of our sensitivity analysis, although there is insufficient information on the likely length of spells of unemployment for us to include this in our core analysis.

## Results of our analysis

To estimate the marginal lifetime benefit of obtaining A-levels for the average Career Ready alumnus relative to the comparison group, we multiply the marginal lifetime benefit of achieving 2+ A-levels by the observed 13.9ppt. difference in likelihood of achieving this outcome.

We estimate that Career Ready alumni would experience an average £12,835 increase in their productivity over their working life due to the intervention. 70% of this is represented by higher wages for the individuals, with the remainder reflecting additional costs incurred by employers.

Based on a typical Career Ready programme cohort of 1,800 per year, we estimate an overall social benefit of £23.1m is delivered per annual cohort. We undertake some sensitivity analysis on these estimates later in this report.

| A typical Career Ready programme cohort of 1,800 per year | → | Estimated social benefits of **£23.1m** |
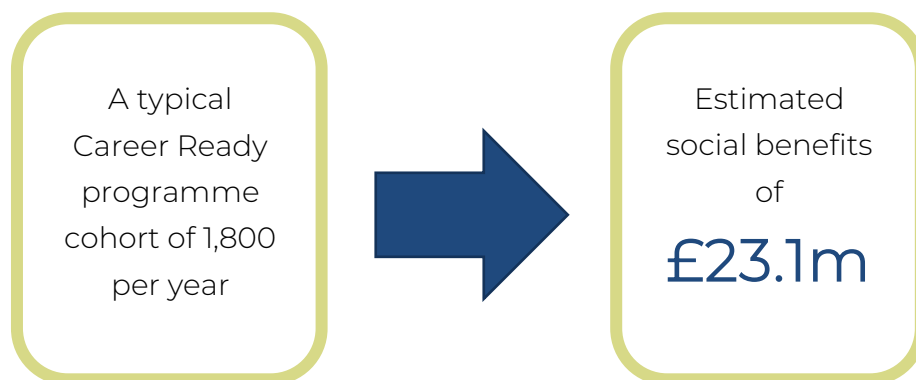
### Sensitivity analysis

In this section we explore the impact that two of the key assumptions have on the results of our analysis:

- Sensitivity 1: Uncertainty over impact of Career Ready on A-level outcomes

We explore the effect of alternative assumptions for the impact of Career Ready on alumni's A-level outcomes. This could reflect both uncertainty in the data but also over how much of the improvement in outcomes can be attributed to Career Ready (as opposed to other factors, like underlying differences in unobserved characteristics such as motivation).

- **Sensitivity 2: Impact of including potential benefits from reduced unemployment**
  We use evidence on the potential difference in unemployment outcomes for Career Ready beneficiaries compared to the comparison group to provide an illustrative scenario for how this would impact key results.

### Sensitivity 1: Uncertainty over impact of Career Ready on A-level outcomes

Uncertainty around our central estimate suggests that Career Ready participation is likely to be associated with between a 5.5ppt and 22.3ppt improvement in the likelihood of obtaining A-levels. [15] We use this range of impacts to demonstrate the impact that uncertainty over the strength of this relationship could have on the results of our analysis.

### Chart 3: Outcome difference for the alumni group relative to comparison group
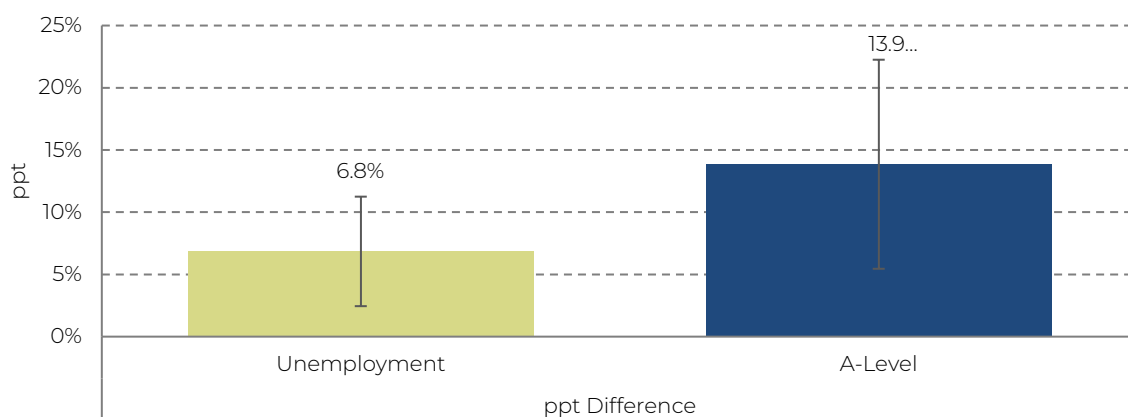


It is possible that the average lifetime benefits per beneficiary could range from £5,100 - £20,600, compared to our central estimate of £12,800. This would imply that total cohort benefits could range from £9.1m to £37.1m, compared to a central estimate of £23.1m. This suggests that the assumption about the impact of Career Ready on A-level results is (unsurprisingly) important. However, we find that there

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[15] Low and high estimates represent statistical 95% confidence intervals – full method described in Annex B.

are substantial lifetime benefits per participant across a wide range of plausible assumptions. Results are summarised in Table 2.

## Table 2: Sensitivity 1 - economic benefits of Career Ready programme (unrounded)

| | Impact on alumni group relative to comparison group | | |
| --- | --- | --- | --- |
| | Low | Central | High |
| ppt. difference | | | |
| Incidence of attaining A-level as highest qualification | 5.5 | 13.9 | 22.3 |
| per person benefit | | | |
| Enhanced social benefits through typically higher lifetime productivity (inc. higher individual wages) | £5,053 | £12,835 | £20,617 |
| per (1,800 person) cohort benefit | | | |
| Enhanced social benefits through typically higher lifetime productivity (inc. higher individual wages) | £9,095,052 | £23,103,217 | £37,111,383 |

## Sensitivity 2: Impact of including potential benefits from reduced unemployment

We draw on the same matched comparison group to compare recorded outcomes for unemployment. Our central estimate is that Career Ready alumni are 6.8ppt. less likely to be unemployed than the comparison group.

We convert this difference into fiscal savings for the government based on increased taxation and reduced Universal Credit using the methodology outlined in Annex C.[16] Our analysis suggests that the near term fiscal benefits from reduced unemployment would make relatively little difference to the scale of benefits

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[16] The analysis relies on a critical assumption about how long these individuals spend unemployed. In the absence of evidence for this particular group of individuals we make the assumption that the average period of unemployment is 6 months – this is discussed in Annex C. There is also a risk that these benefits could overlap with the improved productivity estimates from achieving 2+ A-levels.  We do not incorporate any long-term wage scarring impacts that could result from this period of unemployment (see, for example, See, for example, Gregg P, Tominey E (2004): *The wage scar from youth unemployment*, CMPO Working Paper Series No. 04/097) .

estimated in the central case, adding just £0.2m to the benefits of £23.1m from improved A-level outcomes (a 0.8% increase).

Table 3: Sensitivity 2: Economic and fiscal benefits of Career Ready programme, incorporating unemployment impacts (unrounded).

| | Impact on alumni group relative to comparison group Central |
|---|---|
| ppt. difference | |
| Incidence of unemployment | 6.8 |
| Incidence of attaining A-level as highest qualification | 13.9 |
| per person benefit | |
| Reduced fiscal costs associated with a lower incidence of unemployment | £100 |
| Enhanced social benefits through typically higher lifetime productivity (inc. higher individual wages) | £12,835 |
| per (1,800 person) cohort benefit | |
| Reduced fiscal costs associated with a lower incidence of unemployment | £180,707 |
| Enhanced social benefits through typically higher lifetime productivity (inc. higher individual wages) | £23,103,217 |

Overall, our sensitivity analysis highlights that our conclusion that the Career Ready programme could be delivering significant long-term economic benefits is robust to a range of alternative assumptions.

# Conclusion

This analysis of the economic and fiscal benefits of the Career Ready programme has shown that the programme delivers significant benefits through the support it provides to young people aged 15-18.

Our analysis suggests that Career Ready alumni experience a lower incidence of unemployment and typically higher levels of educational attainment. In terms of the latter, this leads to a typically higher level of lifetime productivity equivalent to an average of £12,800 over their lifetimes. Our estimates of the benefits related to a lower incidence of unemployment are far more uncertain and significantly smaller, partly due to the fact that unemployment for young people tends to be a relatively short-term occurrence.

The analysis is built on the strong foundation that was provided by survey data from Career Ready and a comparison group, which enabled us to match individuals with similar characteristics to those who have participated in Career Ready programmes. There remains the need to be cautious about how much can be specifically attributed to the support provided by the programme: we have not been able to account for the possibility that individuals (either the alumni or the comparison group) may have received support through other avenues, nor can we account for the motivational characteristics of the young people who have engaged with the programme i.e. positive self-selection.

However, our overall conclusion is that the Career Ready programme is likely to be delivering a significant scale of benefits to the young people it supports through improved lifetime earnings, and, could therefore directly contribute towards improving social mobility in the communities it operates in.

# Annex A – Detailed Methodology

Our analysis is based on a survey of Career Ready alumni and a comparison group commissioned from Opinium Research in 2020. This survey was conducted with 411 Career Ready alumni aged 18-35 and 500 young people who did not take part in the programme [17]

A review of this data suggested that the initial comparison group was correctly weighted by a range of demographic characteristics such as gender, age, ethnicity, Free School Meals (FSM[18]) eligibility and location. However, this exercise did note a difference in ex ante (pre support) educational attainment between the alumni group and the comparison group.[19]

Given the important role that prior academic attainment plays in predicting later academic attainment, this difference in academic attainment between the Career Ready alumni and the comparison group was viewed as a barrier to comparing A-level outcomes.

The sample was initially adjusted by removing entries with missing values before coding prior educational attainment into three categories:

- 5 GCSE's A*-C
- 5 GCSE's A*-A
- 5 GCSE's A*-B

The results of this breakdown are shown in the below table.

## Table 4: Breakdown of prior GCSE attainment for alumni and potential comparison groups

| Variable | Label | % of sample this includes | | |
|---|---|---|---|---|
| | | Total | Alumni | Potential Comparison |
| 5 A*- C | Educ 1 | 91% | 94% | 88% |
| 5 A* - A | Educ 2 | 32% | 30% | 34% |
| 5 A*- B | Educ 3 | 63% | 67% | 59% |
| | | N = 515 | N = 254 | N = 261 |

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[17] The comparison sample was chosen to broadly match the Career Ready alumni on a number of key characteristics. The sample was closely monitored and later weighted on age, gender, ethnicity, region (London vs. Non-London, Scotland vs. Rest of the UK), area (urban/suburban/rural) and eligibility for free school meals to match the alumni as closely as possible.

[18] Used as a proxy for disadvantaged status

[19] This difference had been noted in the Career Ready at 18 research report

To ensure the final comparison group closely matched the Career Ready alumni based on observable characteristics, we adopted Propensity Score Matching. This approach searches the data to match the treated unit (in this case a Career Ready alumnus) to their most similar comparison unit (in this case an individual in the comparison group) based on the key characteristics/variables contained in the dataset.[20] The advantage of this technique is that if the matching method works well the two individuals should have very similar characteristics pre-intervention. The only differences between the two individuals should be characteristics post-intervention (after Career Ready support).

The variables used in building the propensity score match are shown in Table 5.

Table 5: Variables contained within survey

| Variables | Descriptions |
|---|---|
| - Unemployed | |
| - A-level | - A-level as their highest education attainment |
| - Age1 | - 18-21 |
| - Age2 | - 22-26 |
| - Educ1 | - 5 A*- C |
| - Educ2 | - 5 A* - A |
| - Educ3 | - 5 A*- B |
| - Gender | - 1 for female, 0 for male |
| - White[21] | - 1 for "English / Welsh / Scottish / Northern Irish / British", 0 otherwise |
| - FSM | - In receipt of free school meals |
| - CARE01 | - 1 if received part of the Career Ready programme, 0 otherwise. |

There are a range of Propensity Score Matching approaches that can be used. We ran five PSM approaches to understand whether there were different results across the techniques. These were also used alongside other simpler reweighting techniques. Table 6 summarises the results from this range of matching approaches. Comparing results from Row 1 and 7 shows the two extremes of results given the least and most stringent methods used. Each of these two methods produces statistically significant results and the difference between them is well within the 95% confidence intervals set on both coefficients.

[20] This method does mean some of the observations will be dropped where the technique cannot find close matches for individuals.
[21] This reflects ethnicity, but we have used the nomenclature used by Opinium in the original survey

PSM4 and PSM5 also uses a 'caliper'[22] (also a stringent method) which produces improved balances of the groups at the similar cost of dropping observations as the exact matching approach (labelled as PSM3). Again, the magnitudes of impacts are well within the initial 95% confidence intervals for the simplest approach. All methods told a similar story in terms of the rough direction and magnitude of impacts of the Career Ready programme.

Table 6: Results from range of reweighting methods

| Method | Difference in likelihood of obtaining 2+ A-levels between Career Ready alumni and comparison group (ppt.) | Sample Size | |
|---|---|---|---|
| | | Comparison | Treated |
| No reweighting | 11.5 | 261 | 254 |
| Simple regression (OLS) | 11.5 | 261 | 254 |
| Simple reweighting method | 10.8 | 261 (EES) 235 | 254 (EES) 254 |
| PSM1 | 11.6 | 254 | 254 |
| PSM2 | 11.5 | 254 | 254 |
| PSM3 | 13.9 | 242 (EES) 169.6 | 248 (EES) 248 |
| PSM4 | 11.8 | 224 | 224 |
| PSM5 | 13.1 | 224 | 224 |

Note: EES reflects effective sample size (after the original sample is weighted). That is, this reflects the sample size after the method used if we were to resample from the population using a simple random sample. For instance, PSM3 uses exact matching meaning we discard a proportion of individuals we cannot match across both groups. We have adjusted the sample size to reflect this bias: we have recalculated what is the sample size now we have discarded individuals and then what is the final effective sample size given the matching method discarded individuals of certain characteristics and didn't discard individuals at random. The aim is to ensure the EES sample gives a similar distribution to the original sample and therefore reflects a sample of the population – not a biased sample of the population.

We adopted PSM3 for our analysis. This relied on adopting those individuals that had an exact match i.e. a ratio of 1:1. This is shown in the below graphic – with the matches between individuals (the blue dots) illustrating the exact match across the six characteristic binary variables used. The use of this approach was tested through internal discussions between PBE and the volunteer team, with the use of

[22] A caliper means the maximum tolerated difference between matched subjects in a 'non-perfect' matching intention. It was set at 0.2 standard deviations.

alternative techniques (including calipers) included as part of the QA process – yielding comparable results – as shown in Table 6.

## Chart 4: Results of Propensity Score Matching approach
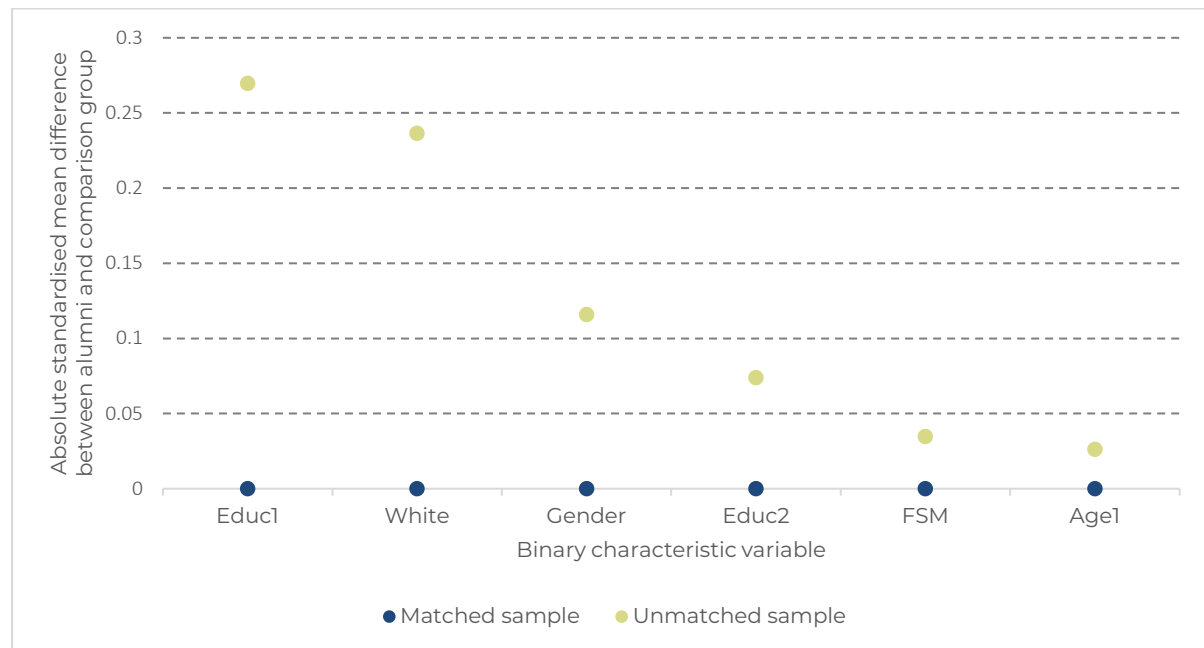


The dots indicate the standardised mean differences in characteristics between the alumni and comparison samples prior to matching or reweighting. Essentially, if these groups differ by characteristics, we cannot make a fair comparison in terms of education and employment outcomes after the Career Ready programme takes place.

The blue dots represent the results of the samples after undergoing the propensity score matching method (PSM3 in the table above). We have exactly matched each individual in the alumni group to an equivalent match in the comparison group based on their characteristics at the cost of 25 observations which were dropped where we could not find an exact match.

## Limitations of approach

Unfortunately, due to the reductions in sample size required to provide a robust comparison group to the Career Ready alumni, it is not statistically robust to undertake analysis on any sub-samples. For example, we could not robustly analyse whether outcomes differed by gender, free school meals status and/or internship experience.

As previously referenced, the age breakdown of the alumni sample was 18-21 (70%), 22-26 (27%), 27-35 (3%). Given the Career Ready programme is focused on providing support to 15-18 year olds, the survey sample covers a cohort from years

2011-2019 so that sufficient time had passed after the final year to observe differences in later outcomes. The age breakdown therefore means that the survey was undertaken for the majority (97%) up to 8 years after completing the programme. 70% of responses covered those alumni between 1-3 years after programme support. Therefore, it is important to recognise that the survey data does not necessarily capture the impact of the programme in later life. Clearly – particularly with regards to our approach to lifetime productivity returns - we make some assumption about the persistence of the impact on alumni later in life.

We assume the alumni sample is representative of the whole population of young people that have gone through the programme. Alongside this, we also assume that the form of support provided through Career Ready has been largely consistent over the programme life. In discussion with the charity, it has indicated that whilst the programme has grown over time in terms of scale its focus and delivery model has largely remained consistent throughout. We feel it is important to recognise that each different cohort will have entered their post-18 life under different conditions. For example, if they entered the labour market from education in 2008 to 2009 they would probably have experienced a more difficult time finding a job due to the financial crash and recession.

There remains a risk of selection bias due to the fact that young people can apply to be part of the Career Ready programme through an application process. In that sense, they need to choose to opt into the programme. Therefore, it could be argued that this represents a degree of proactivity on their behalf and may mean that alumni would be more likely to perform well at A-levels than the comparison group even without the support of Career Ready. This has not been accounted for in this analysis, but we need to be mindful of this in the interpretation of the results. Having stated that, it is true that young people are also selected (or rejected) by the school coordinator or Career Ready to participate, and as part of this young people may be rejected if it were deemed they did not necessarily need the programme.

## Annex B – Sensitivity Analysis

The survey results found could be due to random chance of the sample being biased a certain way. Given this, we produce statistical confidence intervals around our central estimate to indicate the uncertainty of sampling out of a population[23].

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[23] Accounting for the inherent uncertainty of a ~250 sample out of the whole population ~18,000 Alumni in the Career Ready Programme

The outcome variable we estimate is a proportion of the total sample that obtains A-levels. For an outcome like this we estimate the 95% confidence intervals around the central estimate using standard statistics for proportions (for risk difference statistics). This shows if we were to resample the alumni and comparison group (with the same ~250 sample sizes) 100 times and remeasure the effect size again, what the likely impacts are that we would measure 95 out of 100 times[24].

Confidence interval methodology:

We estimate the difference in proportions of the outcome variable occurring in the two groups.

$$estimated\ difference\ in\ proportions 25 = p_1 - p_0$$

We assume a normal distribution to estimate the confidence intervals[26]:

$$confidence\ interval = (p_1 - p_0) \pm z * s.e.(p_1 - p_0)$$

where,

$$s.e.(p_1 - p_0) = (s.e.(p_1)^2 + s.e.(p_0)^2)^{\frac{1}{2}}$$

# Annex C – Enhanced employment outcomes

We apply the same Propensity Score Matching approach as described in Annex A to compare unemployment outcomes for Career Ready alumni and a matched comparison group of individuals with similar background characteristics. The difference between the outcome probabilities for the two groups reflects the impact of the Career Ready programme. As Table 6 shows, our preferred matching

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[24] This assumes a 5% significance level two-tailed test and a normal distribution of the outcome variables of interest

[25] For example, where $p_1$ is the proportion of those in the alumni group that are unemployed (or A-level is their highest educational attainment) and $p_0$ is the proportion of those in the comparison group that are unemployed (or A-level is their highest educational attainment)

[26] Where the normal z-statistic for a 95% confidence interval is 1.96

model suggests that the average Career Ready alumnus is 6.8ppt. less likely to be unemployed than similar young people who did not partake in the programme.

Table 6: Results from a range of reweighting methods

| Method | Likelihood of being unemployed (ppt.) |
| --- | --- |
| No reweighting | -6.06 |
| Simple reweighting in Excel | -6.21 |
| Simple regression (OLS) | -6.06 |
| Simple reweighting in R | -6.70 |
| PSM1 | -5.82 |
| PSM2 | -5.93 |
| **PSM3** | **-6.85** |
| PSM4 | -7.28 |
| PSM5 | -7.36 |

We have used this difference between the alumni and comparison group to estimate the potential fiscal savings associated with the Career Ready programme. In this analysis, we have focused on Universal Credit (UC) as a measurement of the fiscal cost of unemployment. Universal Credit is now the main unemployment benefit in the UK today.

We recognise that UC is a replacement for other employment-related benefits that have been in place during the time when the Career Ready programme has operated. It would have added a layer of complexity to the analysis to effectively use the various benefit/welfare schemes in place over the 20 years and to match them to each annual Career Ready cohort. By focusing on the (un)employment/income element of UC, we do not include other elements of UC which individuals may claim, such as housing and childcare costs. The survey data did not hold this level of information on the personal circumstances of the Career Ready alumni (or the comparison group) and we would not be able to draw any conclusions about these elements.

The income-element of UC is paid out at different rates according to two main factors:

- Age – those under 25 receive a lower payment than those over 25[27]
- Relationship status – single claimants receive less than joint claimants

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[27] https://www.gov.uk/universal-credit/what-youll-get

The survey data showed that each individual that was unemployed in the alumni cohort was under the age of 25, with the majority (80%) of the comparison group also under 25. Therefore, we have assumed for the purpose of this analysis that savings are based on a typical claimant being aged under 25.

In addition, the survey data does not contain any information on the relationship status of Career Ready alumni. We have estimated the savings on the basis of a single person claimant aged under 25. Following on from the announcements at the UK Budget and Spending Review in October 2021, this entails the following entitlement[28]:

### Table 6: Basic Universal Credit entitlement for a single claimant under 25

| Universal Credit element | Value |
|---|---|
| Basic entitlement | £257 per month |
| Taper rate | 55%[29] |
| Work allowance | nil[30] |

To estimate the potential fiscal savings from the Career Ready programme we also needed to consider the typical duration of a period of unemployment. Our assumption was informed by evidence from the most recent ONS survey on length of unemployment. As Table 6 shows, this suggests a weighted average of six months if we conservatively cap the 1+ year category at one year. This means that our fiscal savings based on UC should only be viewed as over a one-year period – effectively an average of six months unemployment duration.

We recognise that this is a conservative approach to adopt given that it does not attempt to capture the lifetime impacts of short-term unemployment i.e. the probability of further unemployment periods in the future and/or impact on lifetime earnings. However, we were mindful of guarding against double-counting in the context that the differences in A-level attainment also take into account lifetime earnings. Therefore, whilst we feel we have been prudent to focus on the

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[28] HM Treasury, Autumn Budget and Spending Review, 27 October 2021 – Budget 2021: Protecting the jobs and livelihoods of the British people (publishing.service.gov.uk)

[29] The taper rate is the rate at which UC entitlement is withdrawn for every extra pound that a claimant is earning through work. At the 2021 Budget, it was announced that this rate was being reduced from 63% to 55%

[30] The work allowance is the amount of income that someone can earn under UC before the taper rate kicks in. For a single claimant under the age of 25, however, this amount is nil

benefits of avoiding short-term unemployment, we do recognise that this may understate the full fiscal benefits.

Table 7: ONS data[31] on length of time spent in unemployment

| Duration | % |
|---|---|
| 0-3 months | 44 |
| 3-12 months | 31 |
| 1+ years | 25 |
| | Time (months) |
| Weighted average | 6.0 |

The other important consideration for potential fiscal savings using UC as a proxy is that although Career Ready alumni are less likely to be unemployed, some may still be claiming an element of UC based on their earnings. This relates to UC not simply being an unemployment-related benefit, but also an income-support benefit for those with low earnings.

For the alumni cohort, the survey data shows that 44% of those who were 'in work' stated that their earnings fell within the 'up to £10,000 a year' bracket. Assuming that implies average (mean) earnings of £5,000 a year, or £417 a month, such an individual would be able to claim a small amount of UC based on their low income. Factoring in the current entitlement, work allowance and taper rate as set out in Table 6, they would still be able to claim £28 per month through UC.

For any individual earning more than £10,000 a year, the current UC entitlement conditions would mean that they would not be entitled to claim any income-related component because it would be tapered away. This means that we only needed to factor in the UC earnings of that group in the "up to £10,000 a year" bracket.

## Findings

We can now consider what the potential UC savings might be for a typical young person supported through the Career Ready programme, when compared to the comparison group. The survey results – as shown in Table 1 - show that the difference in unemployment rates between the two groups is 6.8 percentage points. On an annual basis, we have estimated that the average length of time spent in unemployment is 6 months, and that a single claimant under the age of

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[31] ONS data is based on a 2018 survey. Full survey data can be seen here: Length of time spent in unemployment - GOV.UK Ethnicity facts and figures (ethnicity-facts-figures.service.gov.uk)

25 will be entitled to £257 per month (£3,084 per year) – based on the current UC rates.

We can therefore calculate that for every 100 individuals, the additional potential cost of UC for the comparison group would be £10,563 - as set out below in Table 8.

### Table 8: Calculation of avoided cost of UC for unemployed people in comparison group

| | |
|---|---|
| Annual UC amount for single claimant under 25 | £3,084 |
| Multiplied by | |
| Additional comparison group claimants unemployed | 6.85 |
| Multiplied by | |
| Assumed period spent in unemployment (years) | 0.5 |
| Total | £10,563 |

We then need to deduct from this the UC being claimed by those who went through the Career Ready programme but have earnings low enough to still claim UC. This reflects the assumption that this is not simply a binary situation i.e. someone is unemployed or not and claiming UC. There is also an earnings element we need to consider.

As set out above, we only need to consider those with earnings in the "up to £10,000 a year" category, and we assume average annual earnings in this group of £5,000 (acting as the mid-point between £0-£10,000). This provides a monthly UC entitlement of £28 (£334 per annum). Table 9 set out below shows that the UC being claimed by these individuals will be £497.

### Table 9: Calculation of UC being claimed by individuals in the alumni group

| | |
|---|---|
| Monthly UC amount for single claimant under 25 with earnings of £5,000 | £257 |
| Taper rate | 0.55 |
| Assumed earnings (monthly) | £417 |
| UC after tapering for earnings (monthly) | £28 |

| | |
|---|---|
| UC after tapering for earnings (annual) | £334 |
| Multiplied by | |
| Number of individuals with earnings in the 'up to £10,000 a year' category per additional 6.85 unemployed individuals in comparison group[32] | 3 |
| Multiplied by – assumed period of unemployment (per year) | 0.5 |
| Total UC claimed by individuals in alumni group (annual) | £497 |

Based on this approach, this means that the fiscal savings represented by averted UC payments per 100 individuals that have been supported by the Career Ready programme would equate to £10,039 per year (this being the £10,563 less the £497). This equates to approximately £100 per young person supported through the programme.

With a typical Career Ready programme cohort of 1,800 per year, this would equate to an overall social benefit of around £181,000 delivered per annual cohort. Again, we have undertaken some sensitivity analysis using these estimates.

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[32] This calculation assumes that for every additional 6.85 individuals that are unemployed in the comparison group, 44% of individuals in the alumni group will have earnings in the 'up to £10,000 a year' category

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