Department for Education

Estimating the impact of Traineeships

Final Report

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Executive summary

Introduction

Traineeships are an education and training programme that provide young people aged 16-24 with an intensive period of work experience and work preparation training, as well as offering them support in improving their English and maths, to give them the best opportunity of entering an apprenticeship or employment.

This report estimates the impact of participating in a Traineeship. It forms part of a wider evaluation of the Traineeships programme. The evaluation includes the following strands:

- Surveys of trainees, employers and providers;
- Qualitative provider case studies to build up an in-depth picture of implementation;
- An analysis of national administrative data to estimate the impact of Traineeships.

This report is based on the analysis of national administrative data and estimates the effect of participating in a Traineeship on the three intended outcomes of progress into an apprenticeship, further learning or employment. The impact is estimated by comparing the outcomes observed for those participating in Traineeships against an estimate of their expected outcomes if they had not participated in the programme.

Traineeships were introduced in August 2013 and the analysis in this report focuses on the cohort of young people who started a Traineeship in the 2013/14 academic year. The results presented in this report are therefore specific to participants in 2013/14. A number of changes to Traineeships have been made since the policy was introduced, which may have had an impact on the overall effectiveness of the programme.

Methods

The evaluation estimates impacts using propensity score matching (PSM). PSM is an econometric method that attempts to estimate the effect of an intervention by comparing the outcomes of participants to the outcomes of non-participants who have similar characteristics. It requires that we control for all influences on outcomes that differ between participants and non-participants.

Despite controlling for a rich variety of background characteristics, it is still possible that an important influence – motivation, for example – has not been captured. We therefore also undertake an instrumental variables (IV) analysis, in order to explore the sensitivity of our results. The IV approach does not require that all influences are observed, but instead requires a variable that influences Traineeship participation but does not influence outcomes.

Results

Overall, Trainees had positive outcomes in the 12 months after starting their Traineeship, with 29% beginning an apprenticeship and 57% starting further learning within this time frame. There is a more marked divide between 16-18 and 19-23 year old trainees, with the younger group less likely to begin employment[1] within 12 months of starting a Traineeship – 19% compared with 53%. The combined picture shows that around 75% of Trainees have started in *any* positive destination within 12 months of starting the Traineeship.

The estimates of the impact of undertaking a Traineeship are based on PSM and IV techniques, comparing the outcomes observed for Trainees with an estimate of their expected outcomes had they not participated in the programme[2]. Key outcome variables of the impact analysis were the comparative likelihood of Trainees progressing into an apprenticeship, further learning or a job, within 12 months of starting their Traineeship – and their status 12 months after their Traineeship start date. The intention of a Traineeship is to give the trainee the skills to do a suitable level apprenticeship, Further Education (FE) course or job, once they are considered able to undertake these – this should be borne in mind when interpreting the various destinations of trainees.

Effects of Traineeships on attaining any positive outcome

- The PSM estimates indicate that for 16-18 year olds, Traineeships increased the likelihood of being in any positive destination (apprenticeship, further learning or employment) 12 months after starting the programme. There was also a significant impact on attaining any positive outcome *within* 12 months.
- For 19-23 year olds, there was also a significant positive impact on both being in a positive destination 12 months after starting the Traineeship and on attaining any positive outcome within 12 months.

Effects of Traineeships on take-up of apprenticeships

- For 16-18 year olds, the PSM estimates indicate that Traineeships increased the probability of being in an apprenticeship 12 months following the start of the

[1] In this report, the outcomes for Trainees and non-Trainees are assessed as the likelihood of progressing into further learning, an apprenticeship or employment. Here employment means “a job that is not an apprenticeship”, as apprenticeships contain a work-based element in addition to training.
[2] It is important to note that not participating does not mean not doing anything; learners eligible for Traineeships, but who do not participate in one, may be undertaking a range of other activities including other pre-employment programmes or training.

Traineeship, and of starting an apprenticeship within 12 months. A positive impact was also apparent for Trainees aged 19 and over.

- Results from the IV analysis also show a positive impact on being an apprentice at 12 months for 16 to 18 year olds, but not for 19-23 year olds.
- The PSM estimates indicate no impact on progression to an advanced or higher apprenticeship. Given outcomes were assessed 12 months after starting the Traineeship, it is perhaps not surprising that no impact was seen for progression to higher-level apprenticeships at this point.

Effects of Traineeships on further learning

- Traineeships increased the likelihood of 16-18 year olds and 19-23 year olds undertaking further learning 12 months following the start of the Traineeship.
- However, the impact was focused on low-level qualifications (Level 2), with some evidence that Traineeships reduced the likelihood of progressing to vocational education above Level 2 compared to what would have happened if the young person had not participated in a Traineeship. This is likely to be at least partly driven by the fact that Trainees had lower levels of educational attainment prior to starting their Traineeship.

Effects of Traineeships on employment

- Results from both the PSM and IV analysis for 16-18 year olds suggested that Traineeships had no significant impact on the likelihood of a young person being employed 12 months after starting on the programme.
- For 19-23 year olds, the PSM analysis indicates a positive impact on being in employment 12 months after starting the Traineeship. The IV analysis found no significant effect on employment at 12 months.

Discussion and limitations

The PSM estimates indicate positive impacts of the Traineeships programme on progression to apprenticeships, and to further learning at Level 2, as well as negative effects on participation in Level 3 vocational education. This is likely to be at least partly driven by the fact that Trainees had lower levels of educational attainment prior to starting their Traineeship. For older Trainees, the PSM estimates suggest a positive impact on progression to employment.

Results from IV estimates suggest however that these findings may need to be treated with some caution. The IV estimates also indicate a positive impact on progression to

apprenticeships for 16-18 year olds. However, no significant employment effect was found for either age group.

The differing results between the two approaches suggest our PSM estimates may be upward-biased. While the data used in our analysis are relatively rich, unobserved characteristics are likely to affect whether individuals participate in a Traineeship. If these unobserved characteristics are also associated with achieving better outcomes, the resulting estimates may overstate the positive impact of the programme. As an aside, the ability to probe the assumptions underpinning PSM in this way arose from the detailed geographic information included in the data. While the results end up more ambiguous as a result of this sensitivity analysis, this helps avoid the problem of "incredible certitude" (Manski, 2011).

Some limitations of the analysis stem from the nature of the available data and the evolving policy landscape. With regard to data, impacts are estimated over a relatively short period of time (the 12 months after the learner had started on the programme). Repeating the analysis using later data extracts would make it possible to assess the impact of Traineeships over a longer period of time. With regard to policy, a number of changes to Traineeships have been made since the policy was introduced. These might have an impact on the overall effectiveness of the programme and so it should be borne in mind that the results presented in this report are specific to participants in the academic year 2013/14.

With these caveats in mind, there is the question of how we assess the overall value of the programme. Apprenticeships and learning at level 2 appear to be boosted, while learning at a higher level is reduced, especially among younger Trainees. How to consider the balance of these effects is a question of judgement. The effects on employment are mixed; not significant for 16-18 year-olds and positive for 19-23 year-olds, although the IV results sound a note of caution for the latter. A fundamental question is whether promoting employment among 16-18 year-olds is an optimal aim when set against the alternatives of, for example, an apprenticeship. Longer-term, one might expect the latter to be associated with higher earnings. In this light, little employment effect on younger Trainees might be viewed as a positive social outcome. In terms of effects on learning, it may be that a Traineeship guides learners to the appropriate next level of study. In future analyses it would be valuable to consider whether such individuals are more likely to successfully complete their course, and their progression beyond that, compared with individuals who moved directly to higher learning levels.

In the longer-term, an analysis based on Longitudinal Education Outcomes (LEO)[3] data might be beneficial, as it would provide more detailed information on young people, both in terms of outcomes and on individuals' prior educational participation and achievement. This could potentially improve the match between treatment and comparison groups and reduce the likelihood that currently unobserved characteristics influence outcomes. Furthermore, rather than simply identifying whether there is an impact on being in employment or not, the LEO data would also allow examination of earnings, enabling exploration of whether Trainees not only progress to any job, but jobs with higher earnings in the longer-term.

[3] LEO brings together data on education with data on employment, benefits and earnings, enabling estimation of impacts based on more robust information on labour market outcomes.

1. Introduction

Traineeships are an education and training programme that provide young people aged 16-24 with an intensive period of work experience and work preparation training, as well as offering them support in improving their English and maths, to give them the best opportunity of entering an apprenticeship or employment.

Traineeships were introduced in 2013 and this report presents estimates of the impact of Traineeships on the intended outcomes of progression to an apprenticeship, further learning or employment, based on the first year of the programme.

1.1 The Traineeships programme

1.1.1 Policy background

Traineeships are an integral part of the Government's plans to tackle youth unemployment. Backed by employers, they give motivated young people the skills, qualifications, experience and behaviours that employers look for when recruiting for apprenticeships and other jobs.

Traineeships are primarily intended for young people who:

- are not currently in employment and have little work experience, but who are focused on work and the prospect of it;
- are aged 16-24 (25 with an Education, Health and Care plan or Learning Difficulty Assessment)[4] and qualified below level 3; and
- are believed by providers and employers to have a reasonable chance of being ready for employment or an apprenticeship within six months of engaging in a Traineeship (Department for Education and Department for Business, Innovation and Skills, 2015).

Traineeships are intended to last between six weeks and six months. The high degree of flexibility and freedom in the way Traineeships have been designed allows providers and employers to tailor Traineeships to the needs of individual Trainees as well as local employers. This flexibility is also reflected in the range of organisations that are involved in referring Trainees and delivering Traineeships – including Jobcentre Plus (JCP), local authorities, schools, colleges, Youth Contract providers, National Careers Service advisers and National Citizen Service providers. Traineeships are built around several of

[4] Provided they start the Traineeship before their 25th birthday.

the same principles as apprenticeships; however, Traineeships are not jobs (unlike apprenticeships) so offer unpaid work experience.

1.1.2 Purpose of the programme

A successful Traineeship programme is one that secures a positive outcome for participants in the form of further training, apprenticeships or other sustainable employment, reducing the proportion of young people not in employment, education and training (NEET).

This report focuses on the cohort of young people who started a Traineeship in the 2013/14 academic year. In this year, Traineeships were targeted at individuals who were:

- aged between 16 and 18 on 31 August in the relevant funding year and with qualifications below level 3.
- aged between 19 and 23 at the start of the Traineeship and with qualifications below level 2.
- aged between 16 and 24 and subject to a Learning Difficulty Assessment (LDS) or an Education, Health and Care Plan (EHCP) issued by their home local authority.

As noted above, the learner must also be assessed as having a reasonable chance of being ready for employment or an Apprenticeship within six months of starting the Traineeship. Participation was voluntary, so only a small proportion of young people who were eligible for a Traineeship actually chose to take part. However, over 10,000 young people participated in Traineeships in their first year of operation (BIS 2014: 3). Experimental statistics for this cohort of Trainees indicated that 71 per cent of learners who completed their Traineeship in 2013/14 progressed to a sustained positive destination[5] (Department for Education, 2016).

1.1.3 Changes to the eligibility criteria

The original eligibility criteria for the programme were adjusted in August 2014 and January 2015. From 1 August 2014 Traineeships became available to a slightly older age group – namely to those under the age of 25 at the start of the programme (i.e. including those without a LDS or EHCP). The qualification requirements were also standardised across the 16 to 18 and 19 to 24 age groups from 1 January 2015, so that learners with a

[5] Defined as progressing to a sustained learning destination, including apprenticeships, a sustained employment destination, or to be in learning or employment in each of the six months between October 2014 and March 2015.

qualification below level 3 were potentially eligible for the programme provided they were in the 16-24 age range (BIS and DfE 2015: 4-5). As the analysis presented in this report focuses on a cohort of young people who started a Traineeship in the 2013/14 academic year, these changes would not affect the findings of the current study. However, it is possible that impacts for later Trainees would differ from those estimated in this report due to these changes.

An overview of the Traineeship programme and policy changes made since August 2014 are included in the 2015/16 Framework for Delivery (Department for Education and Department for Business, Innovation and Skills, 2015[6]).

1.2 The evaluation

The evaluation team consists of a consortium of independent research partners, led by Kantar Public. NIESR was initially responsible for the analysis of national administrative data, with IES and Richard Dorsett playing an active role in the later stages of research.

This report forms part of a wider evaluation of the impact of Traineeships. The evaluation includes the following strands:

- Surveys of trainees, employers and providers;
- Qualitative provider case studies to build up an in-depth picture of implementation;
- An analysis of national administrative data to estimate the impact of Traineeships.

Findings from a process evaluation on the first few months of the programme, based on surveys of trainees, providers and employers, were published in March 2015 (BIS 2015[7]), and findings from the process evaluation of year two of the Traineeship programme were published in July 2017 (Fitzpatrick et al., 2017[8]).

This report is based on the analysis of national administrative data and estimates the effect of participating in a Traineeship on the three outcomes of progression into employment, an apprenticeship or further learning. The impact is estimated by comparing

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6 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/410737/Framework_for_delivery_2015-2016.pdf

7 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/412424/bis-15-189-traineeships-first-year-process-evaluation.pdf

8 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/626792/Traineeships_Year_Two_Process_Evaluation.pdf

the outcomes observed for those participating in Traineeships (also known as the **treatment group**) against an estimate of their expected outcomes if they had not participated in the programme (known as the **counterfactual**). To estimate the counterfactual it is necessary to observe outcomes for a comparison group of similar individuals. We discuss the methods used in our analysis in Chapter 4 of this report.

The analysis presented in this report draws on the recommendations of an earlier feasibility study which used management information from the Individualised Learner Record (ILR), the Local Authorities National Client Caseload Information System (NCCIS), and other sources on the population of interest, to understand the provision of Traineeships and identify methods suited to the robust evaluation of the programme. As part of this task, the feasibility study also considered data requirements for the impact evaluation. We briefly summarise the findings of the feasibility study below.

1.3 Findings of the feasibility study

1.3.1 Data

The feasibility study recommended that the evaluation used linked data from the ILR, the NCCIS and the National Pupil Database (NPD) to estimate the impact of participation in a Traineeship for young people aged between 16 and 19. The ILR provides management information on participation in Traineeships, as well as other further education, but does not include young people who have not participated in further education. As a result, a comparison group drawn from this source alone would exclude young people without prior participation in further education. The NCCIS provides information on the wider population of young people (aged 16-19), including those not in employment, education or training and therefore excluded from the ILR. Linking the NCCIS and ILR data to the NPD makes it possible to build up a more complete picture of educational participation and engagement prior to the Traineeship, which is vital to ensure that the treatment and comparison groups are well-matched.

As older learners are not observed in the NCCIS, the feasibility study also suggested using ILR data linked to information on employment and benefits from the Work and Pensions Longitudinal Study (WPLS) to estimate impacts for those aged between 16 and 23. In practice, it was only possible to obtain linked WPLS data for those aged 19 and above. These data provided information on the activities, or more specifically, employment, of older Trainees.

1.3.2 Methods

Learners who were eligible for Traineeships, but did not participate in one, may have taken part in other activities that might have affected their likelihood of progressing to

sustained employment, an apprenticeship or further learning. This report estimates the effect of participating in a Traineeship rather than participating in the range of activities that eligible learners might have otherwise undertaken. It does not consider the impact of participating in a Traineeship compared to doing nothing.

The feasibility study recommended the use of propensity score matching and instrumental variables analysis to estimate the impact of Traineeships on the outcomes of interest. Both methods were identified as likely to be appropriate, given the available data. The use of two different approaches also makes it possible to assess the robustness of the findings to varying the method of analysis. The reasons for the choice of these two methods are explained later in the report, see chapter 4.

1.4 Report outline

Chapter 2 of this report describes the data used in the analysis and sets out the outcome measures considered. It also explains the main limitations of the available data for the purposes of addressing the current research questions and the approaches taken to seek to minimise these problems.

Chapter 3 uses these data to explore the characteristics of Trainees, including their demographic characteristics and background in terms of their participation in education and prior qualifications. It then moves on to consider their outcomes after starting on the programme, in terms of progression to an apprenticeship, further learning, or employment.

Chapter 4 sets out the methods applied and explains how the analysis sought to estimate the impact of Traineeships and the assumptions which need to be met for the findings to be credible. It also assesses whether these assumptions are likely to hold.

Chapter 5 presents results for each of the outcomes considered, both for Trainees as a whole, where data permit, and for learners aged 16 to 18 and 19 to 23 separately.

Finally, Chapter 6 concludes with an overview of the main findings from the analysis. It summarises the limitations of the current study and considers ways in which these issues might be addressed in any future research.

2. Data

2.1 Introduction

The feasibility study identified a range of data sources that could be used for this evaluation, covering participation in Traineeships and other further education (the ILR), local authority data on the economic activity of young people (the NCCIS), background information on participation in education and educational attainment (the NPD) and data on benefit claims and employment (the WPLS). The feasibility study also proposed how these data sources could be combined for the purposes of this evaluation. This chapter describes the contents of these datasets, their coverage of the population of those eligible for Traineeships, and how they are linked together for analysis. It also sets out the main outcome measures that can be observed from these sources. Throughout the chapter the potential limitations of the linked datasets derived from these data sources are highlighted, along with the steps that were taken to seek to mitigate these limitations, where that was in fact possible.

2.2 Data sources: contents, coverage and linkage

The feasibility study proposed the use of two linked datasets to conduct the evaluation:

- Merged ILR-NCCIS-NPD
- Merged ILR-WPLS

For each of the merged datasets, Table 1 provides a summary of the key information provided by each of the component data sources. Analysis of these two different linked datasets allows us to explore impacts for different outcomes and different age groups of trainees. They also differ in the extent to which they enable coverage of individuals who were eligible for a Traineeship, but did not participate in one. These issues are described in further detail below.

Table 1 Key data sources used in construction of linked datasets

	ILR-NCCIS-NPD			ILR-WPLS (19-23)	
	ILR	**NCCIS**	**NPD**	**ILR**	**WPLS**
Demographic characteristics			√	√	
Prior attainment	√		√	√	
Prior activity/employment		√ (16-18)			√
Prior educational participation (including absence, exclusions)			√		
Employment outcomes		√ (16-18)			√ (19-23)
Apprenticeship	√			√	
Further learning	√			√	

2.2.1 ILR-NCCIS-NPD

Individualised Learner Record (ILR)

The ILR collects information on learners and their learning in the Further Education system in England. The ILR is constructed from records kept by the learning provider and includes contact details, demographic information, prior attainment, funding, details of the learning undertaken (known as a learning aim, and including start and end dates of each spell as well as the outcome), their employment status and their destination on completing learning. An individual learner may have multiple records in an academic year if they undertake different learning aims, or study with different providers, or if their circumstances change.[9]

A series of variables on the ILR recorded whether the learner was participating in a Traineeship and so these were used to identify the treatment group. The ILR records spells in further education (covering academic[10] and vocational qualifications), but excludes young people in other types of education, employment, unemployment or

[9] For example, the provider is required to record employment status when the learner commences a learning aim with them and then to update employment records when employment status changes (also recording the start and end dates of spells). Each update is recorded separately, rather than overwriting existing records.

[10] This could include, for example, A levels or higher level qualifications (such as Level 4 or 5), as long as they were being undertaken at an FE provider (including sixth form colleges).

inactivity. As a result, whilst the ILR should be completed by all providers offering Traineeships and therefore provide coverage of all Trainees, some young people who are eligible for a Traineeship, but do not participate (i.e. the potential comparison group) cannot be observed in ILR data.

National Client Caseload Information System (NCCIS)

As noted above, the key limitation of the ILR is that only individuals in further education are observed. As young people who had not had contact with a further education provider covered by the ILR could also be eligible for Traineeships, basing the analysis on the sample of learners observed on the ILR might mean that the comparison group differed from those actually undertaking Traineeships. Because the NCCIS covers all young people in England, it has the potential to provide a more representative sample of non-participants.

The NCCIS is compiled from information supplied by local authorities to the Department for Education. The NCCIS covers all those who are in year 11 and below school leaving age, to those below the age of 20, or below 25 if they have a learning difficulty or disability. It records detailed monthly activity status[11], covering employment, education and training, along with individual characteristics. As the NCCIS only covers younger learners, we only use NCCIS to consider outcomes in our analysis for 16-18 year olds (we describe the outcome measures used for this evaluation in Section 2.3). The NCCIS data available for this analysis cover a 60-month period from September 2010 to August 2015.

National Pupil Database (NPD)

The NPD provides detailed information on pupils and the schools they attend. These detailed data are collected for pupils and schools in the state sector.[12] The feasibility study recommended that the ILR and NCCIS be combined with pupil-level data from the NPD to provide detailed background information on young people, including their qualifications prior to undertaking the Traineeship. As well as providing demographic information, such as gender, age, ethnicity and region, the NPD extract contained information on whether the pupil had special educational needs (SEN), their attainment at Key Stages 2, 3 and 4 (KS2, KS3 and KS4), school attendance and whether the pupil had been excluded from school for a fixed period of time. It was considered important to ensure that treatment and comparison groups were well-matched in terms of their rate of absenteeism whilst at school and whether they were excluded from school as it is

[11] The detailed activity codes available on the NCCIS were combined into 11 broad categories; details are provided in Appendix 1.
[12] The same information is not available for pupils and schools in the independent sector, with the exception of some data on attainment (Department for Education, 2015).

possible that these might be related to their later motivation to find employment – one of the eligibility criteria for the Traineeships programme.

Merged ILR-NCCIS-NPD

The resulting linked dataset enables us to compare outcomes for Trainees with not only non-Trainees who were learners, but also to compare with the wider group of non-Trainees who may not be learners (and therefore not observed in ILR), but who would be eligible to participate.

Overall, just over 10,000 young people were listed as Trainees in the ILR in 2013/14, and are used as the basis for the analysis using this linked dataset. While the ILR and NPD data allow us to conduct analysis for Trainees of all ages, NCCIS data are only available up to the age of 20. From this source we are therefore not able to explore impacts on employment outcomes for older Trainees. For this purpose, we instead use linked ILR-WPLS data.

2.2.2 ILR-WPLS

Work and Pensions Longitudinal Study (WPLS)

The Work and Pensions Longitudinal Study (WPLS) is an administrative dataset that links benefit and programme information held by the Department for Work and Pensions on its customers to employment and earnings records from HMRC. Data from the ILR could be linked to the WPLS for those individuals aged 19 and over, enabling us to examine impacts on employment.

Merged ILR-WPLS

Linked ILR-WPLS data were provided by the DfE. These data cover Trainees aged 19 and over. A separate ILR extract was provided to that used for constructing the linked ILR-NCCIS-NPD dataset. The ILR data provided for linking to WPLS comprised records for all learners aged between 19 and 23 who began a Traineeship in 2013/14, along with records for all learners aged between 19 and 23 who participated in any aim below level 3 in 2013/14 (this restriction aimed to ensure the non-Trainee group were more likely to be comparable). Records for learners who were undertaking an aim below level 3 in the previous year, 2012/13, were also provided (thus could also be considered as part of the potential non-Trainee comparison group). Where possible, for all of the above learners, records were linked to any learning aims undertaken in 2014/15 (and 2013/14 for the 2012/13 cohort), and also to WPLS records.

The main limitation of using merged ILR-WPLS data is that we only observe those individuals who appear at some point in the ILR. While this allows us to capture all Trainees, it means that any comparison group is made up of individuals who, at some

point, have been ILR learners. It also does not allow us to explore impacts for Trainees aged 16-18. At the time of this study, it was not possible to link WPLS data to the linked ILR-NCCIS-NPD dataset.

An indicator for participation in a Traineeship was provided on the dataset by the DfE. This linked dataset comprises information for just over 3,289 Trainees, who form the basis for the analysis using this linked dataset.

2.3 Outcome measures

In considering outcomes, we explore whether individuals were engaged in an apprenticeship, further learning or employment 12 months following the start of their Traineeship. That is, if they began their Traineeship in September 2013, we consider their outcomes in September 2014. We also consider whether individuals undertook any of these activities *within* 12 months of starting their Traineeship, that is, at any point during the year following the start of their Traineeship. Table 2 summarises the outcome measures used in our analysis, the sources from which they are taken and the age range they cover; we describe these measures in further detail below.

As well as employment, we also consider outcomes in terms of unemployment for those aged 19-23, measured in terms of whether individuals were recorded as being in receipt of Jobseekers' Allowance (JSA) in the WPLS. Finally, we also combine information on whether learners progress to an apprenticeship, further learning or employment, in order to ascertain whether they achieve "any positive outcome". Due to the limitations of the data (i.e. that assessing impacts on employment relies on the use of different datasets), we explore this separately for 16-18 year olds and for 19-23 year olds.

As mentioned in the introduction to this report, our analysis involves the comparison of outcomes for Trainees with those of a comparison group. As this comparison group did not participate in the programme, it is necessary to assign them an artificial date of starting on the programme (known as a **pseudo-start date**), so that outcomes can be measured from this point onwards. This pseudo-start date is derived by assigning young people at random to a start date which follows the known distribution of start dates observed for programme participants.

Table 2 Summary of outcome measures

Outcome	Measure	Age range	Source	Linked dataset
Apprenticeships	In apprenticeship 12 months post (pseudo)-start	All	ILR	ILR-NCCIS-NPD

Outcome	Measure	Age range	Source	Linked dataset
	Began apprenticeship within 12 months of (pseudo-) start	All	ILR	ILR-NCCIS-NPD
	In advanced or higher apprenticeship aim 12 months post (pseudo)-start	All	ILR	ILR-NCCIS-NPD
	Began advanced or higher apprenticeship aim within 12 months of (pseudo-) start	All	ILR	ILR-NCCIS-NPD
Further learning	In learning 12 months post (pseudo)-start	All	ILR	ILR-NCCIS-NPD
	Began another learning aim within 12 months of (pseudo-) start	All	ILR	ILR-NCCIS-NPD
	Undertaking a Level 2 learning aim 12 months post (pseudo)-start	All	ILR	ILR-NCCIS-NPD
	Undertaking a Level 3 or higher learning aim 12 months post (pseudo)-start	All	ILR	ILR-NCCIS-NPD
	Any non-traineeship aim (Level 2) started within 12 months of (pseudo-) start	All	ILR	ILR-NCCIS-NPD
	Any non-traineeship aim (Level 3 or higher) started within 12 months of (pseudo-) start	All	ILR	ILR-NCCIS-NPD
Employment	In employment 12 months post (pseudo)-start	16-18	NCCIS	ILR-NCCIS-NPD
	Any employment within 12 months of (pseudo)-start	16-18	NCCIS	ILR-NCCIS-NPD
	In employment 12 months post (pseudo)-start	19-23	WPLS	ILR-WPLS
	Any employment within 12 months of (pseudo)-start	19-23	WPLS	ILR-WPLS

Outcome	Measure	Age range	Source	Linked dataset
Unemployment	Receiving JSA 12 months post (pseudo)-start	19-23	WPLS	ILR-WPLS
	Any JSA received within 12 months of (pseudo-) start	19-23	WPLS	ILR-WPLS
Any positive outcome	In apprenticeship, further learning or employment 12 months post(pseudo)-start	16-18	ILR, NCCIS	ILR-NCCIS-NPD
	Starts apprenticeship, further learning or employment within 12 months of (pseudo-) start	16-18	ILR, NCCIS	ILR-NCCIS-NPD
	In apprenticeship, further learning or employment 12 months post(pseudo)-start	19-23	ILR, WPLS	ILR-WPLS
	Starts apprenticeship, further learning or employment within 12 months of (pseudo-) start	19-23	ILR, WPLS	ILR-WPLS

2.4 Observing eligibility for Traineeships

For the treatment and comparison groups to be well-matched, it was necessary to draw the comparison group from a sample of young people who were eligible for Traineeships. This section explains how the linked data were used to identify those likely to be eligible for Traineeships. Ultimately, a number of other characteristics are also used in order to construct the comparison group, as discussed in Chapter 4.

2.4.1 Adhering to the age requirements

The NPD data supplied included information on month and year of birth and so this was used to identify those who were within the age range targeted by Traineeships. For the linked ILR-NCCIS-NPD this covered those aged between 15 and 22, although the majority (85%) of participants were between 16 and 19 years old. The linked ILR-WPLS data were provided for those aged 19-23. A small number of individuals appeared to be aged 24, but are retained in the analysis (98% of participants were aged 19 to 23).

2.4.2 Adhering to qualification requirements

The qualification requirements for Traineeship eligibility only applied to learners aged between 16 and 23. The ILR contained information on qualifications held by learners prior to starting the Traineeship. However, this variable suffers from consistent underreporting. For the linked ILR-NCCIS-NPD data, the pre-existing qualifications included in this analysis were taken from KS4 leaver data within the NPD and the post-16 learning participation and outcomes data from the ILR. For the linked ILR-WPLS data, it was necessary to rely on prior attainment as recorded on the ILR.[13]

2.4.3 Requirement that trainee has little previous work experience and is focused on work

The ILR records the learner's employment status prior to enrolment. This is recorded by the provider at the point when they enrol. Traineeships are supposed to be targeted at individuals who are not working, have little work experience, but are focused on work. The ILR does not provide the sort of information that could be used to quantify the amount of work experience that the learner has. However, in the linked ILR-NCCIS-NPD data it was possible to use information from the NCCIS on what the learner was doing three months before starting the Traineeship to ensure that the treatment and comparison groups were well-matched in terms of prior activities. In the linked ILR-WPLS data, it was possible to use information on prior employment based on the WPLS to match individuals based on previous work histories.

It was not possible to observe whether an individual met the requirement of being focused on work within any of the available data, or to develop a measure that might act as a proxy for this. This results in a potential unobserved difference between the treatment and comparison groups which might result in differences in outcomes for the two groups if Trainees are better-motivated to find work than those in the comparison group, for example. There is a risk that this biases the PSM impact estimates, as any difference in outcomes between the treatment and comparison groups may be partly due to differences in their level of motivation, rather than the impact of the Traineeships programme. Access to richer data might reduce this risk, although it is unlikely to resolve it, due to the difficulty in capturing attitudinal information within large-scale administrative data.

[13] If we observed that an individual achieved a higher level qualification based on the most recent aim prior to their pseudo-start date, we used this as our measure of prior attainment instead.

2.4.4 Additional data sources

Having constructed the linked ILR-NCCIS-NPD and linked ILR-WPLS datasets, some gaps remained in the range of information available on Trainees and the potential comparison group. In many cases it was possible to match on information from other sources to build up a more complete picture of provision for participants and non-participants. This process is described in the subsections which follow.[14]

Identifying potential providers of Traineeships

When Traineeships were first introduced, not all providers were eligible to offer these. As the ILR data extract did not contain information on whether the provider met the criteria to offer Traineeships, this information was matched on from a spreadsheet produced by the Skills Funding Agency (SFA).[15] Providers with an Ofsted rating of Outstanding or Good on 1 August 2013, which did not subsequently receive a grade 4 rating, or a notice of concern, were able to offer Traineeships.[16] It was assumed that if a provider did not appear on the SFA list of providers, they were therefore ineligible to offer Traineeships.[17]

Identifying distance to Traineeship providers

The May 2014 version of the **National Statistics Postcode Look-up file** (NSPL) was used to identify the precise location of providers (using Northings and Eastings) so that the distance from the delivery location to the learner's home could be calculated. At the time of conducting the feasibility study, information on learner postcodes was available, and used in constructing a measure of distance to the nearest provider. This remained possible for our analysis using the linked ILR-WPLS data. However, learner postcodes were not available in our linked NPD-NCCIS-ILR data, and so analysis of these data instead make use of the Lower Layer Super Output Area (LSOA) of the learner instead. We discuss this issue in more detail in Chapter 4.

[14] In addition to the data described below, the **Learning Aims Reference Service (LARS)** dataset was used to match on subject area categories and qualification levels for the aims undertaken by learners, since only codes were included in the ILR data extract.
[15] The analysis used the version dated 26 June 2014.
[16] The requirement for providers to meet the specified Ofsted criteria was removed with effect from 1 February 2016.
[17] 16 providers that were listed as able to offer Traineeships did not appear on the ILR.

Local area characteristics

Data on local area characteristics was also matched on, namely data on the unemployment rate[18] and on the urban-rural classification of the local area.[19]

[18] Unemployment rate for 16-64 year olds, 12 months prior to September 2013, Travel To Work Areas. Source: Annual Population Survey, ONS, downloaded from NOMIS 12 September 2014 (ONS Crown Copyright).
[19] In the ILR-NCCIS-NPD data, information on the urban-rural classification was matched on at LSOA level; in the ILR-WPLS data this was matched on based on learner postcodes.

3. Characteristics of Trainees

3.1 Introduction

This chapter compares the characteristics of Trainees with those of individuals who do not undertake a Traineeship (referred to from here onwards as **non-Trainees).** The chapter begins by describing the demographic characteristics and background of both groups, including their participation in education and their educational attainment prior to the Traineeship. In describing these characteristics we focus on the Trainees and non-Trainees observed in the linked ILR-NCCIS-NPD data, which covers the full eligible age range. Here non-Trainees are those KS4 leavers who do not go on to undertake a Traineeship - they may however have been undertaking other learning, pre-employment programmes or work. It is possible to identify 92 per cent of Trainees in the NPD. However, for some characteristics data are not available for all individuals; for each characteristic the number of observations on which the analysis is based is reported. Equivalent characteristics based on the linked ILR-WPLS data, which covers those aged 19 and over, are presented in Appendix 2.

The chapter then goes on to provide information on when learners started their Traineeship, based on both the ILR-NCCIS-NPD for all Trainees, and based on the ILR-WPLS for the subset of Trainees aged 19-23. Finally the chapter describes outcomes for Trainees and the comparison group, using both the ILR-NCCIS-NPD and the ILR-WPLS. These outcomes include further learning, apprenticeships and employment, as discussed in Chapter 2.

Throughout this chapter, history and outcomes are considered in relation to the pseudo-start date for the comparison group, since they did not actually start a Traineeship over the time period considered. In order to make data processing manageable, our analysis is based on a random ten per cent sample of non-Trainees. All descriptives for non-Trainees presented in this chapter are therefore also based on this random ten per cent sample of non-Trainees.

All the analysis presented in this chapter is based on a comparison between Trainees and the comparison group prior to matching. It cannot therefore be used to draw conclusions about the impact of Traineeships.

3.2 Personal characteristics

Table 3 shows the demographic characteristics of Trainees compared with non-Trainees.

- A slightly higher percentage of Trainees were male (53% compared with 51% of non-Trainees identified in the KS4 data).

- Trainees were typically younger than non-Trainees; 72 per cent were aged between 16 and 18 compared with 49 per cent of non-Trainees.
- Trainees were more likely to have been identified as having special educational needs (SEN), seven per cent had a statement of SEN, while a further 37 per cent were identified as having SEN but had not been issued with a statement. The equivalent percentages for non-Trainees were four per cent and 19 per cent respectively.
- The distribution of Trainees by broad ethnic group was similar to that of non-Trainees.
- Trainees were more commonly from the North West; one quarter (25%) were located in this region at the time they completed KS4, compared with 14 per cent of non-Trainees.

Table 3 Characteristics of Trainees and non-Trainees

Variable	Group	Trainees		Non-trainees	
		%	N	%	N
Gender	Female	47.2		48.8	
	Male	52.8	9,598	51.2	317,453
Age	16	14.9		9.5	
	17	31.0		19.8	
	18	26.2		19.7	
	19	13.2		20.0	
	20	9.9		20.2	
	21	4.8		10.6	
	22	0.0	9,598	0.2	317,453
SEN	None	55.8		77.1	
	SEN, no statement	37.2		19.1	
	SEN, with statement	7.0	8,628	3.8	278,908
Ethnicity	Asian	7.9		7.8	
	Black	5.5		4.5	
	Chinese	0.1		0.4	
	Mixed	3.4		3.3	
	White	81.5	8,628	81.8	278,908

Variable	Group	Trainees		Non-trainees	
	Any other group	0.6		1.2	
	Unclassified/other	1.0		1.1	
Region	East Midlands	7.7		8.6	
	East of England	4.7		11.3	
	London	16.6		13.8	
	North East	8.9		4.9	
	North West	24.9		13.8	
	South East	9.4		16.3	
	West Midlands	11.0		11.0	
	Yorkshire and Humber	9.5		10.2	
	South West	7.2	9,598	10.0	317,453

Note: Unweighted bases differ due to differing levels of missing values on the variables presented.
Source: Linked ILR-NCCIS-NPD

3.3 Educational participation prior to Traineeship

Table 4 describes young people's previous participation in education.

- Trainees were more likely to have completed their Key Stage 4 (KS4) qualifications more recently than non-Trainees, reflecting the fact that they tended to be younger.
- The school attendance of Trainees in their final year of KS4 was lower than for non-Trainees. Furthermore, when looking at unauthorised absence, whilst 61 per cent of non-Trainees had no unauthorised absence in their final year of KS4 education, this was the case for just 45 per cent of Trainees.
- Trainees were also more likely to have been excluded from school in this final year, with nearly 10 per cent receiving one or more fixed-period exclusions, compared to less than 5 per cent of non-Trainees.
- Trainees and non-Trainees were fairly similar in terms of the amount of time that they spent in education after the age of 16. **The younger age profile of Trainees may explain why Table 4 indicates that Trainees appeared to have fewer years of post-16 education than non-Trainees**.

Table 4 Educational participation prior to Traineeship

Variable	Group	Trainees		Non-trainees	
		%	N	%	N
KS4 final year	2009	7.9		20.3	
	2010	11.5		20.1	
	2011	20.8		19.8	
	2012	29.0		19.7	
	2013	30.7	9,598	20.1	317,453
Sessions missed	No session missed	17.1		15.8	
	One session missed	1.3		1.9	
	Two to nine sessions missed	14.5		24.0	
	Ten to 24 sessions missed	25.6		29.7	
	25 to 49 sessions missed	22.0		18.9	
	More than 50 sessions missed	19.6	10,383	9.6	318,006
Unauthorised sessions	No session missed	45.0		60.6	
	One session missed	4.6		6.3	
	Two to nine sessions missed	22.8		19.9	
	Ten to 24 sessions missed	12.5		7.3	
	25 to 49 sessions missed	7.3		3.1	
	More than 50 sessions missed	7.8	10,383	2.8	318,006
Exclusions	None	90.3		95.3	
	One or more	9.7	10,383	4.7	318,006
Years of post-16 FE	None	45.4		48.3	
	One	27.3		19.0	
	Two	17.9		21.1	
	Three	7.4	10,383	9.0	318,006

Variable	Group	Trainees		Non-trainees	
	Four	2.1		2.6	

Source: Linked ILR-NCCIS-NPD

3.4 Educational attainment prior to Traineeship

- Moving on to the qualifications held by learners before they started a Traineeship, Table 5 shows that Trainees were much less likely to have attained any A*-C grade GCSEs than non-Trainees. Just 11 per cent of Trainees had five or more GCSEs at grades A*-C, compared with 53 per cent of non-Trainees.
- Key Stage 3 (KS3) qualifications for Trainees were also lower than those for non-Trainees. Around two-in-five Trainees (44%) were below the expected level in Maths, compared with one-in-five non-Trainees (19%). Similarly, 44 per cent of Trainees were below the expected level in English compared with 21 per cent of non-Trainees.
- Trainees were also more likely to be below the expected levels in Maths and English at Key Stage 2 (KS2).
- **These findings suggests that Trainees experienced lower levels of educational attainment than non-Trainees and that this divergence occurred at an early stage in their schooling.**

Table 5 Educational attainment prior to Traineeship (compulsory schooling)

Variable	Group	Trainees		Non-trainees	
		%	N	%	N
GCSEs	0 GCSE A*-C passes	47.4		17.9	
	1 GCSE A*-C pass	16.0		7.6	
	2 GCSE A*-C passes	9.6		5.8	
	3 GCSE A*-C passes	7.0		5.2	
	5 GCSE A*-C passes	9.0		10.4	
	More than 5 GCSE A*-Cs	11.0	9,598	53.1	317,453
KS3	KS3 maths below expected level	43.5		19.1	
	KS3 maths at expected level	50.1	8,851	51.1	268,039

	KS3 maths above expected level	6.4		29.8	
	KS3 English below expected level	44.0		21.1	
	KS3 English at expected level	54.9		68.1	
	KS3 English above expected level	1.2	8,844	10.8	267,548
KS2	KS2 maths below expected level	37.7		18.9	
	KS2 maths at expected level	50.1		47.2	
	KS2 maths above expected level	12.2	8,047	34.0	274,856
	KS2 English below expected level	33.6		15.0	
	KS2 English at expected level	56.4		52.9	
	KS2 English above expected level	10.0	8,141	32.0	273,936

Source: Linked ILR-NCCIS-NPD

Table 6 considers the qualifications attained by Trainees after they reached the end of compulsory schooling, but prior to starting their Traineeship.[20] It generally suggests that Trainees attempted and achieved learning aims which were at a lower level to those attempted and achieved by non-Trainees. It was also the case that Trainees appeared to be attempting to gain, and achieving, lower-level aims in English and Maths than non-Trainees before they started the Traineeship. This could in part reflect the younger age profile of Trainees compared with non-Trainees.

[20] A sizeable proportion are not observed in the ILR, which will in part be due to the fact that many are young and as such have only recently completed compulsory schooling. This table does not take into account any academic qualifications attained at KS5 within the school system; however, this group would be unlikely to form an appropriate comparison group for Trainees given the eligibility criteria relating to qualifications.

Table 6 Educational attainment prior to Traineeship (post-compulsory schooling)

Variable	Group	Trainees %	Non-trainees %
Highest level learning aim attempted	Other level	0.1	0.1
	Not in ILR before or level not identified	46.2	48.8
	Entry Level	1.0	0.9
	Level 1	14.2	4.7
	Level 2	25.7	14.2
	Level 3	12.7	30.5
	Level 4	0.1	0.6
	Level 5	0.0	0.0
Highest level learning aim achieved	Level not identified	0.1	0.2
	Not in ILR before	52.6	54.1
	Entry Level	2.4	1.2
	Level 1	18.8	6.4
	Level 2	19.1	13.8
	Level 3	7.0	24.2
	Level 4	0.0	0.2
	Level 5	0.0	0.0
Highest English aim attempted	Not in ILR before, or not observed doing English aim	65.4	76.4
	Entry Level	10.9	3.9
	Level 1	14.9	7.5
	Level 2	7.9	7.5
	Level 3	1.0	4.7
Highest English aim achieved	Not in ILR before, or not observed doing English aim	78.0	83.8
	Entry Level	9.5	3.4
	Level 1	8.1	4.5
	Level 2	3.8	4.4

Variable	Group	Trainees %	Non-trainees %
	Level 3	0.6	3.9
Highest maths aim attempted	Level not identified	0.0	0.0
	Not in ILR before, or not observed doing Maths aim	68.5	78.3
	Entry Level	11.3	4.1
	Level 1	13.9	7.0
	Level 2	5.7	6.5
Highest maths aim achieved	Level not identified	0.0	0.0
	Not in ILR before or not observed doing Maths aim	80.0	85.3
	Entry Level	10.6	3.8
	Level 1	6.5	4.0
	Level 2	2.6	4.1

Base: 10,383 Trainees and 318,006 non-Trainees. Source: Linked ILR-NCCIS-NPD

3.5 Timing of Traineeship start

Pseudo-start dates for non-Trainees were generated at random to follow the distribution for those of Trainees (see Chapter 4). The similarities between the two groups, for both linked datasets, as shown in Table 7, illustrate the fact that this process was successful.

Table 7 Timing of Traineeship start

	ILR-NCCIS-NPD		ILR-WPLS (19-23 year olds only)	
Start date/Pseudo start date	**Trainees %**	**Non-trainees %**	**Trainees %**	**Non-trainees %**
Aug-13	4.7	4.7	6.4	6.3
Sep-13	8.2	8.2	10.3	10.3
Oct-13	6.6	6.6	6.8	6.9
Nov-13	6.4	6.4	5.5	5.4
Dec-13	3.9	3.8	3.2	3.1
Jan-14	10.4	10.4	9.5	9.5
Feb-14	9.0	8.9	8.4	8.3
Mar-14	12.2	12.2	11.7	11.8
Apr-14	8.9	8.9	11.5	11.6
May-14	8.9	8.9	10.4	10.3
Jun-14	8.3	8.3	8.8	8.8
Jul-14	10.0	10.0	7.6	7.6
Aug-14	2.5	2.5	-	-

Base: ILR-NCCIS-NPD:10,383 Trainees, 318,006 non-Trainees; ILR-WPLS: 3,289 Trainees, 414,679 non-Trainees

3.6 Descriptive outcomes

The following sections describe observed outcomes for Trainees and non-Trainees. As noted earlier, the descriptives for non-Trainees are based on findings for a random ten per cent sample of non-Trainees; they do not take account of differences in the characteristics of Trainees and non-Trainees. As such, **these descriptive outcomes should not be used to draw conclusions about the impact of Traineeships**.[21] Table 8 presents a summary of these descriptive outcomes, from which it can be seen that Trainees were more likely than non-Trainees to have started an apprenticeship, further

[21] Note that these percentages differ from those presented later in Chapter 5 due to the different sample on which the impact analysis is conducted, where some observations are dropped due to missing data.

learning (excluding learning in schools) or employment within 12 months of the start (or pseudo-start) of the Traineeship.

Table 8 Descriptive outcomes – summary: apprenticeships, further learning, employment

Variable	Trainees %	Non-trainees %
Any positive outcome within 12 months: 16-18 years	74.1	48.8
Any positive outcome within 12 months: 19-23 years	75.8	46.4
Started apprenticeship within 12 months	28.6	4.6
Started further learning within 12 months	56.7	24.2
Started employment within 12 months: 16-18 years	19.4	11.7
Started employment within 12 months: 19-23 years	52.9	28.5

Base: 10,383 Trainees and 318,006 non-Trainees

3.6.1 Apprenticeship starts

Table 9 shows that Trainees were much more likely to be in an apprenticeship than non-Trainees 12 months following the (pseudo-)start of the Traineeship, and to have begun an apprenticeship within 12 months of this date. The following chapter explores whether this difference can be attributed to the impact of the programme. Trainees were also more likely to have started an advanced or higher apprenticeship.

Table 9 Apprenticeships

Variable	Trainees %	Non-trainees %
Started apprenticeship within 12 months	28.6	4.6
In apprenticeship 12 months post-start	23.7	4.0
Started advanced or higher apprenticeship within 12 months	3.6	1.9
In advanced or higher apprenticeship 12 months post-start	3.3	1.7

Base: 10,383 Trainees and 318,006 non-Trainees.

3.6.2 Educational outcomes

Table 10 shows Trainees were more likely to be observed on the ILR as participating in a learning aim 12 months following the start of the Traineeship than non-Trainees. Trainees were also more likely to have started another learning aim within 12 months of starting the Traineeship. It is important to bear in mind that these are learning outcomes based on whether individuals are observed in the ILR. Non-Trainees may be engaged in learning in schools, or for older individuals, in higher education, neither of which would be captured in these measures. However, it is unlikely that those non-Trainees who are undertaking KS5, or are in higher education, are likely to form the most appropriate comparison group for those individuals undertaking a Traineeship.

Table 10 Learning outcomes

Variable	Trainees %	Non-trainees %
Started another learning aim within 12 months	56.7	24.2
In learning 12 months post-start	40.1	17.2
Level 2 aim started within 12 months	36.7	8.2
Level 3 or higher aim started within 12 months	8.6	12.4
In level 2 learning 12 months post start	27.7	5.6
In level 3 or higher learning 12 months post start	6.8	9.8

Base: 10,383 Trainees and 318,006 non-Trainees. Note if an individual undertook both a Level 2 and Level 3 or higher aim, they are counted once within the Level 3 or higher category.

Differences are apparent however by the level of learning. Trainees were more likely to be undertaking a Level 2 or higher learning aim 12 months post-starting the Traineeship. Further exploration shows that this is driven by Trainees being more likely to undertake further learning at Level 2; non-Trainees were more likely to be undertaking a Level 3 or higher learning aim. This is likely to be at least partly driven by the fact that Trainees had lower levels of educational attainment prior to starting the Traineeship, as discussed earlier in section 3.1.3.

3.6.3 Employment outcomes

Table 11 reports employment outcomes for the two separate age groups considered in our analysis. Among 16-18 year olds, around 15 per cent of Trainees were in employment 12 months following the start of the Traineeship, compared with 10 per cent of non-Trainees.

For 19-23 year olds, Trainees were more likely to be in employment 12 months following the start of the Traineeship (40% of Trainees compared with 23% of non-Trainees). A similar pattern is observed if we instead consider whether individuals had any employment spell within 12 months of starting the Traineeship.

Table 11 Employment outcomes

Variable	Trainees %	Non-trainees %
16-18 year olds		
Any employment within 12 months	19.4	11.7
In employment 12 months post-start	14.8	9.8
19-23 year olds		
Any employment spell within 12 months	52.9	28.5
In employment 12 months post-start	40.1	22.5

Base: 16-18 year olds (6,190 Trainees and 134,974 non-Trainees); 19-23 year olds (3,289 Trainees and 414,679 non-Trainees)

3.6.4 Any positive outcome

Table 12 summarises differences in obtaining any positive outcome. For both age groups, we observe that Trainees were more likely to attain any of the desired outcomes of apprenticeship, further learning or employment.

Table 12 Any positive outcome (apprenticeship, further learning or employment)

Variable	Trainees %	Non-trainees %
16-18 year olds		
Starts apprenticeship, further learning or employment within 12 months	74.1	48.8
In apprenticeship, further learning or employment 12 months post-start	60.5	38.9
19-23 year olds		
Starts apprenticeship, further learning or employment within 12 months	75.8	46.4
In apprenticeship, further learning or employment 12 months post-start	55.2	35.5

Base: 16-18 year olds (6,190 Trainees and 134,974 non-Trainees); 19-23 year olds (3,289 Trainees and 414,679 non-Trainees)

4. Methods

4.1 Methodology of a non-experimental impact analysis

This report aims to provide estimates of the quantitative impact of Traineeship participation on outcomes of participants in the year 2013/14. As described earlier in this report, we consider outcomes in terms of progression to apprenticeships, further learning and employment.

The impact estimates in this report represent an effect of the programme on participants (i.e. **treatment on the treated**). As mentioned in the introduction to this report, two main methods are used to conduct the impact analysis – propensity score matching and instrumental variables analysis. The following sections describe how each of these methods attempt to estimate the counterfactual and to compare this to observed outcomes for participants in order to estimate the impact of Traineeships.

4.2 Propensity score matching

Participation in Traineeships is not a random process[22]. Therefore, participants and non-participants show notable differences in characteristics affecting both participation and outcomes as shown in the previous chapter on the 'Characteristics of Trainees'. As a consequence, the unadjusted observed outcomes of non-participants do not represent a valid counterfactual estimate for participants.

For this reason, we estimate the counterfactual outcome using propensity score matching[23]. Propensity score matching is an econometric method that attempts to estimate the effect of an intervention by comparing the outcomes of participants to the outcomes of non-participants who have similar characteristics. When participation appears to be determined by several factors it is difficult to find distinct individuals in the two groups who are similar in terms of (or can be 'matched on') every relevant characteristic. Propensity Score Matching deals with this by taking into account all the relevant factors to determine the *probability* of each individual's participation, and matching them for comparison with non-participants who had similar estimated probabilities of participating. The possibility of bias arises when some of those characteristics are unobserved. In this case the **conditional independence**

[22] Although some element of randomness exists with regard to local availability of Traineeship options, which we exploit in the IV analysis described below to provide an alternative estimate of programme impacts.
[23] A detailed description of the method is included in Appendix 3.

assumption[24] is not met. The richness of the data, which includes education biographies, information about previous educational attainment back to primary school (at least in the case of the linked ILR-NCCIS-NPD data) and the record of participation and attainment in education of participants and non-participants after leaving secondary school, allows a great deal of the young people's education trajectories to be observed and included in the propensity score matching. This reduces the sources of unobserved heterogeneity.

The majority of our analysis is conducted using the linked ILR-NCCIS-NPD data. Since all of the participants analysed here, observed with pre-existing qualifications in the NPD, left secondary school between July 2009 and July 2013, the universe of all non-participants was drawn as a ten per cent random sample from the KS4 leavers of these five school years. Using these data, we observe the particular characteristics of Traineeship participants and then – using propensity score matching – estimate a counterfactual outcome with similar characteristics, in particular previous education achievement and the pre-programme education and labour market biography. The difference between observed labour market and education outcomes after the programme of the participants and the estimated non-participation counterfactual can be interpreted as an estimate of the programme effect if specific assumptions, which we outline in the next section, are likely to hold.

Propensity scores were estimated using binomial Probit models explaining individual participation of particular groups (by age and by gender) in the Traineeship programme compared to non-participation[25] on the basis of the following observable characteristics:

- **Socio-economic/demographic characteristics** (Sex, Age, Ethnic group, SEN, Region, Year of KS4)
- **Achievement and behaviour in final year of KS4** (Number of GCSEs A*-C, Number of sessions absent from class, Unauthorised absence, Number of exclusions)
- **Post-16 education participation and outcomes** as found in ILR (Years of post-16 education, Level of highest aim attempted post-16, Level of highest aim achieved post-16)

[24] The conditional independence assumption requires that all differences between Trainees and non-Trainees in characteristics that determine potential outcomes, are controlled for.
[25] Appendix 3 provides the full specifications estimated in the different Probit models, which were also estimated separately by gender and age (as the groups remained dissimilar in these dimensions when aiming to estimate the programme impact for the full group of Traineeship participants in 2013/14). The final specification of the Probits were chosen based on the explanatory power of the models (Pseudo-R2) and how well they achieved balance in observable characteristics of participants and estimated counterfactual in post-matching tests.

- Observed education and labour market status from NCCIS three months before programme participation.

Further details about the implementation of the matching are provided in Appendix 3. Since differences by gender remained imbalanced, even when using a very narrow bandwidth to estimate outcomes based on very similar propensity scores, we additionally separate the analysis of the programme by gender and provide estimates for male and female participants separately. These results are reported in Appendix 4. In practice, the results suggest little difference in impacts by gender.

Effectively the same approach is conducted for the analysis of ILR-WPLS data, which is used to evaluate impacts on employment outcomes for 19-23 year olds. Here the universe of all non-participants was drawn as a ten per cent random sample from individuals who were aged between 19 and 23 and participating in any aim below level 3 in 2013/14, along with those who were observed as undertaking an aim below level 3 in the previous year, 2012/13. These models are based on similar observable characteristics to those used in the analysis of ILR-NCCIS-NPD, but with some differences as a result of differences in the data available:

- **Socio-economic/demographic characteristics** (Sex, Age, Ethnic group, Region, local area characteristics)
- **Prior attainment** (based on information taken from ILR)
- **Observed employment history**

A key difference is that we do not have the same level of detailed information on individuals' educational participation and attainment in compulsory schooling. However, we do have more detailed information on individuals' previous employment histories. Again, further details about the implementation of the matching and full specifications are provided in Appendix 3.

4.2.1 Constructing the comparison group

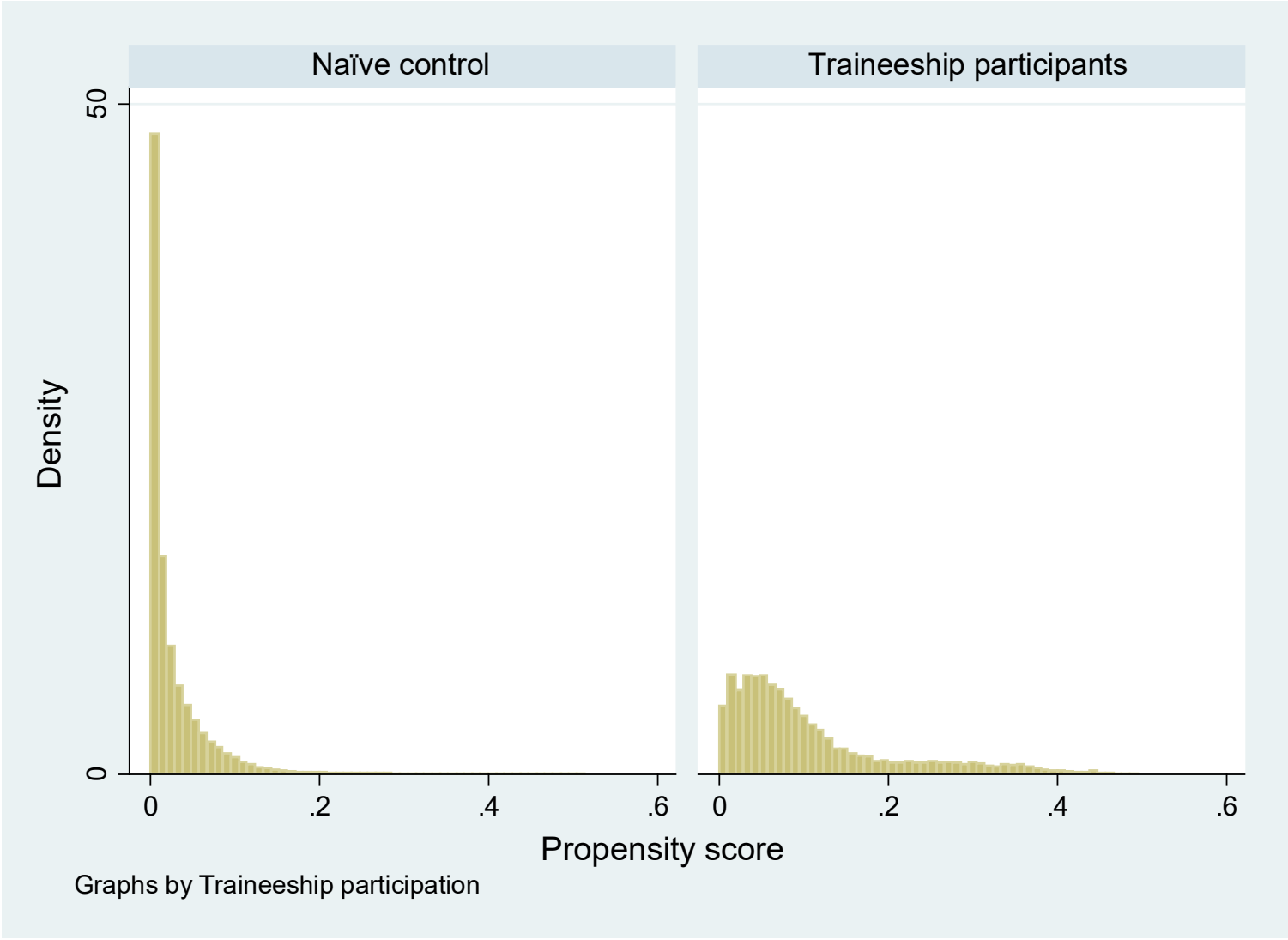
Common support

In order to assess whether non-participants can be used to estimate counterfactual outcomes of participants, the distribution of the propensity scores of non-participants should 'support' the distribution of participants, so that counterfactuals can be estimated for all 'local' participants. Heckman et al. (1999) emphasise that a treatment effect can only be estimated in an area of common support. Accordingly, no effects can be estimated for participants with propensity scores located outside the range of the non-participants.

Histograms of the estimated propensity scores, for the analysis based on each of the linked datasets, are shown in Figure 1 and Figure 2 respectively. These graphs plot scores separately for non-participants and participants[26]. The graphs show marked differences between participants and non-participants, indicating that the programme is very narrowly targeted at the specific population of young people. However, it also shows that the full range of estimated propensity score of non-participants empirically 'supports' the estimation of counterfactuals for participants. Therefore, none of the observations for participants need to be removed from the analysis.

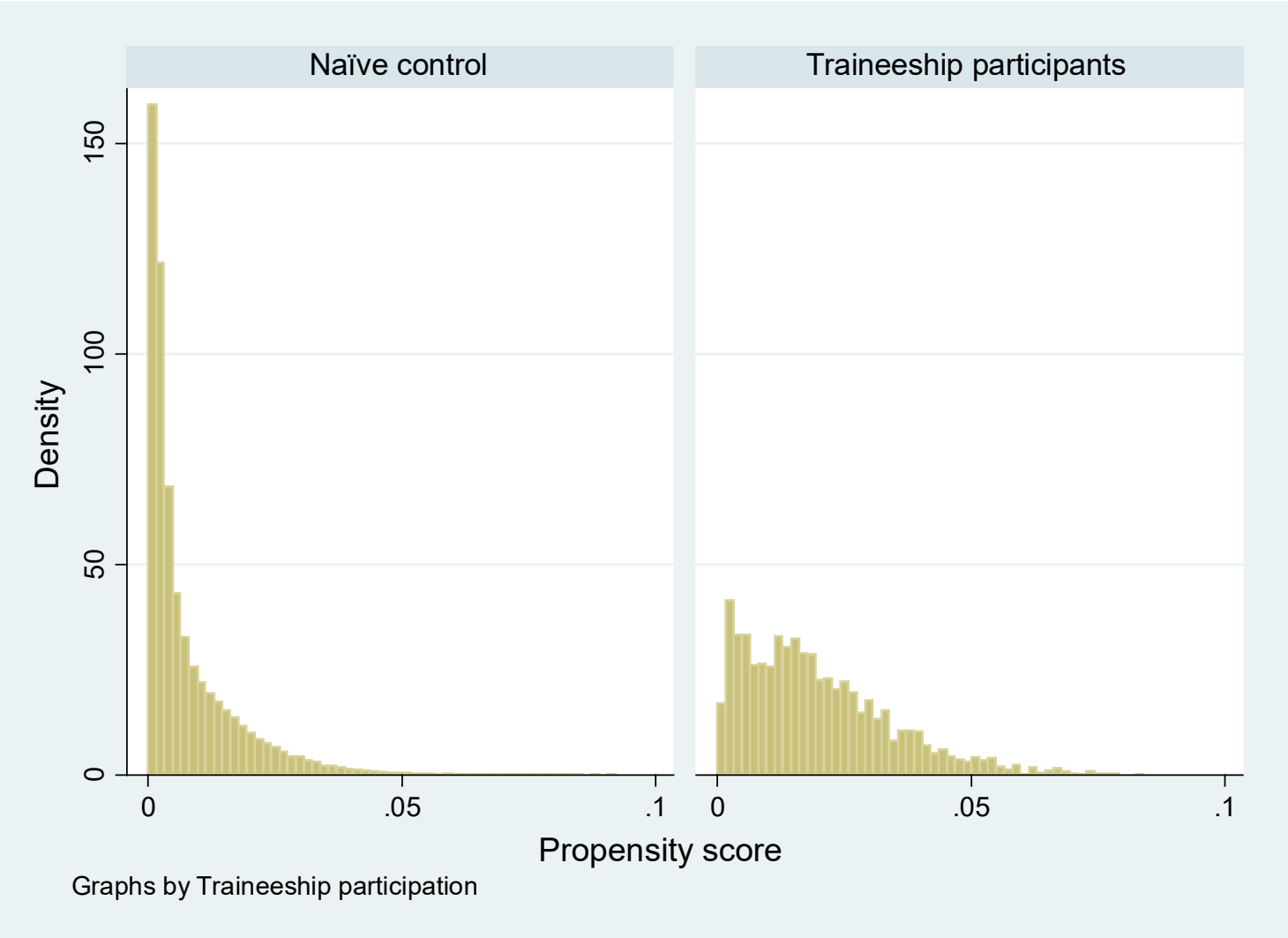
[26] See Appendix 4 for propensity scores by gender.

Figure 1 Histograms of propensity scores, ILR-NCCIS-NPD



Source: ILR and NCCIS merged to NPD KS 4 leaver cohorts (2009/10-2013/14)

Figure 2 Histograms of propensity scores, ILR-WPLS



Source: ILR-WPLS

Matching quality

As a test for the quality of matching, we test on the significance of the differences in mean observed characteristics of participants and estimated characteristics of the counterfactual, which are estimated using the same local linear regression as used for the prediction of outcomes variables. If propensity score matching works well, there should be no statistical difference between the characteristics of individual participants and their predicted non-programme characteristics. The results of the tests are shown in Appendix 3. These tests show that there are no significant differences found after implementing propensity score matching separately for men and women at a narrow bandwidth.

4.3 Instrumental Variables analysis

4.3.1 Overview

The propensity score matching results rely on the conditional independence assumption (CIA) being satisfied, that is, that all differences between Trainees and non-Trainees are captured by the observed characteristics included in our model. Despite controlling for a rich variety of background characteristics, it is still possible that an unobserved influence on participation - that is also likely to influence post-Traineeship outcomes - has not been captured. This could arise through two channels. First, it may simply be that an important determinant of the decision is not recorded in the available data. Having richer data is the best way of reducing this risk. The available data provides information on circumstances and characteristics at the end of Key Stage 4, but does not cover all circumstances beyond that point or attitudes, both of which may well influence participation decisions. The second channel, though related, is distinct. Since we are unable to observe the Traineeship eligibility criteria for non-Trainees (for instance, the highest level of qualification at the time of Traineeship pseudo-start date is not available for those who do not appear in the ILR), ineligible comparators cannot be excluded from the analysis. Individuals observed to participate in a Traineeship, on the other hand, will exclude ineligibles, assuming the rules have been faithfully implemented. Consequently, there may be a compositional difference between the treated and matched comparison groups identified through PSM.

In response to this possibility, we also estimate impacts using an alternative approach that does not rely on the CIA. The Instrumental Variable (IV) approach requires a variable that influences Traineeship participation but does not influence outcomes. The intuition behind this is that such a variable (the 'instrument') can be viewed as introducing essentially random variation in participation in a similar way to a randomised control trial. If this holds, identification of causal impact no longer relies on explicitly controlling for all important differences between participants and non-participants. Hence, this provides a means of assessing the robustness of the propensity score matching results; if similar results are found using an alternative approach, that increases our confidence that the matching results are legitimate. However, the IV results also allow us to gain some insight into impact heterogeneity; that is, the extent to which the impact of Traineeships varies with individuals' resistance (alternatively, their inclination) to participate.

We consider as an instrument the learner's geographical distance from the nearest Traineeship provider. The intuition here is that the greater the distance, the higher the cost of participation and the less likely a learner is to participate. Here, "cost" is not necessarily a monetary disadvantage but could also include cost of time, inconvenience etc. Results below indicate a relationship between distance and participation. Figure 3

presents Traineeship participation by distance to nearest Traineeship provider and shows a clear negative relationship, that is, the probability of participating in a Traineeship falls as distance to the nearest Traineeship provider increases. Modelling results show this relationship to be significant. Hence, the first condition for an instrument is satisfied; in this case, participation in a Traineeship is associated with distance to the nearest provider.

The second condition is that the instrument should not affect outcomes (other than via Traineeship participation). This is always more difficult to justify and we may have suspicions that distance might be correlated with outcomes for other reasons. For instance, if distance to the nearest supplier of Traineeships is greater in rural areas and rural areas have fewer job opportunities, this potential instrument would be correlated with the employment outcome. Alternatively, if providers only choose to deliver Traineeships where they perceive demand for Traineeships to be relatively high, this perception might be influenced by local economic circumstances. We can go some way towards addressing these concerns. For example, as considered in more detail below, we exclude individuals living more than fifteen kilometres from a training provider, thereby making the estimation sample more homogenous with regard to rurality. Also, we include the local unemployment rate as a means of controlling for variation in local economic circumstances and a variable indicating whether individuals live in urban areas as opposed to on urban fringes.

Since the instrument is continuous, it is possible to derive a probability of participation that is also continuous. Our estimation strategy is described more fully below but, in essence, it involves using a local instrumental variable (LIV) approach to estimate the impact of participation on those who, at a particular distance, are indifferent between participating and not participating (see Heckman and Vytlacil, 1999). This is the marginal treatment effect (MTE), as introduced by Björklund and Moffitt (1987). A separate MTE exists at each distance. Aggregating across all distances for which we observe participants yields the average effect of treatment on the treated (ATT). Since this is the same parameter that propensity score matching estimates, we are able to compare the MTE-based estimates with the corresponding propensity score matching estimate.

In conducting the IV analysis we focus on three outcomes: apprenticeships, employment and unemployment. Apprenticeships and employment are chosen since they are two of the key outcomes that Traineeships are designed to influence. Unemployment is included as an alternative measure related to employment; this is in recognition of possible quality issues in the WPLS employment data. We do not include learning as an outcome since we believe that an analysis of this outcome is less likely to satisfy the assumption underlying IV (discussed further below).

4.3.2 Constructing the instrument

For all individuals in our sample, we calculate the distance from their home to the nearest Traineeship provider. For 16-18 year-olds, home location is approximate; the finest geographic detail we have is the 2001 lower layer super output area (LSOA). These LSOAs vary in size (for reference, the mean number of households in 2011 LSOAs was 672) and we took the home location as being the centre of the population in the LSOA.[27] For 19-23 year-olds, residential postcode is available. Location of Traineeship providers was taken from the ILR. This was measured precisely, using post codes. We identified all Traineeships in the ILR and kept a record of unique delivery locations. For each learner, we read across all Traineeship providers and identified the closest. This is the measure used throughout.

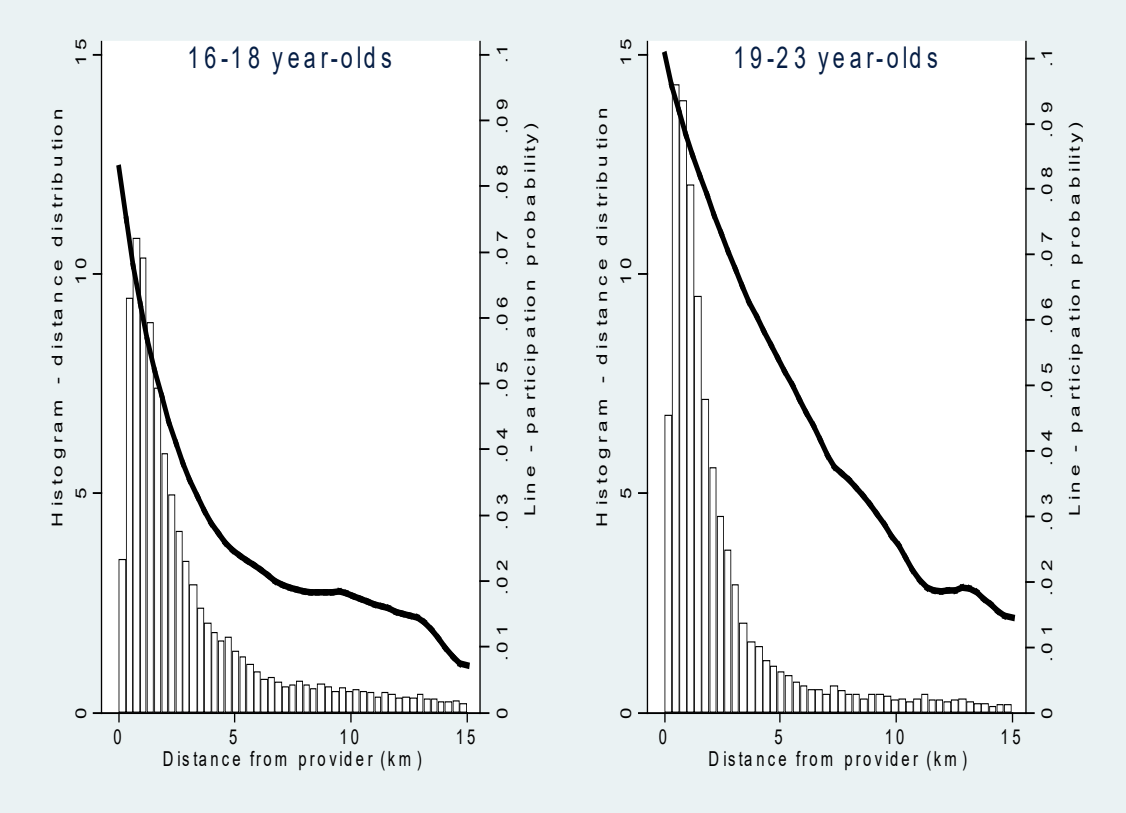
Figure 3 demonstrates the relationship between Traineeship participation and distance from the nearest provider. The lines show that, for both age groups, participation is more common when distance is less. For 16-18 year-olds, the relationship is particularly strong at smaller distances and for this reason we model this as a quadratic relationship in the estimates that follow. For 19-23 year-olds, we assumed a linear relationship.

Also included in Figure 3 are histograms showing the distribution of individuals' distances from the nearest Traineeship provider. It is clear that, for the majority, their nearest provider is quite nearby. Not included are those living at a distance of more than 15 km. This applies to very few people and we exclude them from the analysis since the relationship with participation becomes more erratic. This results in only a minor reduction in the number of Trainees; 37 out of 4,319 16-18 year-olds and 17 out of 3,180 19-23 year-olds (less than 1% for both age groups).

As an aside, we note that these probabilities of participation are inflated due to the way the estimation sample has been created. To keep computation manageable, the estimation sample was constructed to include all Trainees but only a 10% sample of non-Trainees, as discussed above. The probabilities shown in the chart are based on this sample and therefore are roughly 10 times the true participation probabilities.

[27] More specifically, this is the population-weighted centroid for the LSOA. These centroids represent the spatial distribution of the population in the LSOA as a single reference point (see ONS, 2016 for further details).

Figure 3 The probability of Traineeship participation as a function of distance from provider



While we can see that there is a (negative) relationship between distance and Traineeship participation, for the approach to be valid distance must not directly influence outcomes. Whether this is likely to be satisfied cannot be verified since observed correlations may reflect both direct influence and the influence mediated by the treatment. It must therefore be considered on theoretical grounds.

It seems credible to argue that, after controlling for local unemployment and population density and restricting the sample to those within fifteen kilometres of a Traineeship provider, distance from a provider is unlikely to independently affect the chances of finding a job or an apprenticeship.[28] However, if distance influences Traineeship participation it seems likely that it could also influence participation in learning. On this basis, distance is unlikely to be a valid instrument for evaluating the impact on learning outcomes. This is less of a concern for apprenticeships, which will often require much

[28] A separate concern might be that providers' decisions to deliver Traineeships is based on their perception of the local availability of employment and apprenticeship opportunities. As noted, local unemployment is included in the model to control for geographic variations in the strength of the labour market. More qualitatively, the first-year process evaluation states that, rather than local availability of jobs/apprenticeships, "Providers who decided not to participate in Traineeships, did so largely due to their perceptions of the impact of delivering a new and untested programme on their resources and concerns about whether they had the full expertise to roll out all elements of the programme."

less college attendance than other learning. Consequently, the IV analysis is restricted to estimating the impact on apprenticeships, employment and unemployment.

4.3.3 Approach

Our estimation approach involves the following steps:

1. Use propensity score matching to construct a comparison group of non-Trainees who are similar to Trainees in respect of key observed characteristics.
2. For the matched sample, estimate the probability of being a Trainee as a function of distance from the nearest Traineeship provider.
3. Use nonparametric regression to capture the relationship between the outcome and the probability estimated in step 2.
4. Calculate the MTE as the slope of that relationship at a given value of the probability estimated in step 2.
5. Aggregate across the distribution of probabilities to get the average effect of treatment on the treated (ATT).

5. Results

5.1 Introduction

This chapter presents estimates of the impact of Traineeships, considering outcomes in terms of whether individuals progress to an apprenticeship, further learning or employment, as defined earlier in the report. Our focus is primarily on the estimates obtained from the PSM analysis. We also report the results from the IV analysis, which present a form of sensitivity analysis for the PSM results.[29]

In addition to presenting findings, where possible, for Trainees as a whole, the chapter also describes the findings separately for those aged 16 to 18, or 19 to 23. As discussed in Chapter 2, this is often driven by differences in data availability, but it is also of interest to consider whether the impact of the programme was different for these different age groups.[30]

As previously mentioned, the intention was that Traineeships would last a maximum of six months, but in practice the length of participation in the programme varied between individuals. In considering outcomes, we explore whether individuals were engaged in an apprenticeship, further learning, or employment 12 months following the start of their Traineeship. We also consider whether individuals undertook any of these activities within 12 months of starting their Traineeship. For apprenticeships, we additionally consider whether individuals began an advanced or higher apprenticeship. In considering learning outcomes, we further distinguish between undertaking learning at Level 2, or Level 3 or higher. In considering both progression to higher level apprenticeships and higher level learning, it is important to remember that progression to these levels is not an intended outcome of the Traineeships programme, particularly within the relatively short timeframe within which we are assessing outcomes. It is unlikely that Trainees would have been signposted towards these levels as a next step after completing the Traineeship. Finally, we consider whether Trainees were more likely to attain any positive outcome, that is, to progress to *any* of an apprenticeship, further learning or employment.

This is a relatively short period in which to observe outcomes, but was necessitated by the data available for this analysis. Future analysis (beyond the scope of this report) would be able to explore whether longer-term impacts are apparent.

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[29] As discussed in Chapter 4, the IV analysis focuses on the impacts on apprenticeships and employment.
[30] In Appendix 4 we also present results separately by gender, although impacts were similar for both men and women.

5.2 Key findings

The key findings from the PSM analysis can be summarised as follows:

- Participating in a Traineeship increased the likelihood of being in an apprenticeship 12 months post-start, and of starting an apprenticeship within 12 months.
- Further investigation by age indicates this positive impact was evident for both 16-18 year olds and 19-23 year olds.
- Traineeships increased the probability of being in further learning 12 months after starting the programme. Again, this impact was significant for both age groups.
- While there was a positive impact on undertaking learning at Level 2, there was a negative impact on the probability of undertaking learning at Level 3 or above.
- For 19-23 year olds, Traineeships had a positive impact on being in employment 12 months later. However, there was no significant impact for 16-18 year olds.
- Overall, Traineeships increased the likelihood of being in a positive outcome 12 months after starting the programme and of attaining any positive outcome within 12 months for both age groups.

IV estimates are also produced for selected outcomes, providing a form of sensitivity test for the PSM estimates. These indicate:

- For 16-18 year olds, there is still a positive and statistically significant impact on being an apprentice 12 months post-start. While the magnitude of the impact differs, the direction and significance of the impacts are consistent across the two methods. For 19-23 year olds, the IV estimates show no significant impact on being an apprentice 12 months later.
- For both 16-18 year olds, and 19-23 year olds, the IV estimates suggest Traineeships have no statistically significant impact on being in employment 12 months later.

The results from the IV analysis suggest the PSM results may be upward-biased since they may not be able to adequately account for selection into a Traineeship.

5.3 Propensity score matching estimates

5.3.1 Effects of Traineeships on take-up of Apprenticeships

All Trainees

Table 13 shows the impact of Traineeships on participants and the matched comparison group. The first two rows report the percentage of each group who had started an apprenticeship within 12 months following the start (or pseudo-start) of the Traineeship, the percentage who were in an apprenticeship 12 months post-start, and whether the difference between Trainees and non-Trainees is statistically significant.

Progressing to an apprenticeship is a key aim of the Traineeships programme. **Undertaking a Traineeship increased the likelihood of a young person both being in an apprenticeship 12 months post-start, and of starting an apprenticeship within 12 months.** Around a third (33%) of Trainees had started an apprenticeship within 12 months of starting a Traineeship, compared with seven per cent of the matched comparison group. Although a much smaller percentage overall were participating in an advanced or higher apprenticeship, there was some indication that Traineeships also had a positive impact on participating in these higher level apprenticeships, although this was only statistically significant at the ten per cent level (4.1% of Trainees had started an advanced or higher apprenticeship within 12 months, compared with 2.3% of the matched comparison group).

Table 13 Impact of Traineeships on Apprenticeship starts

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Started apprenticeship within 12 months	32.7	7.4	25.3***
In apprenticeship 12 months post-start	27.4	6.1	21.3***
Started advanced or higher apprenticeship within 12 months	4.1	2.3	1.9*
In advanced or higher apprenticeship 12 months post-start	3.8	2.1	1.7*

Base: 8,075 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 500 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.
Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR)

By age

Table 14 shows that Traineeships had a positive impact on progression to an apprenticeship for those aged 16-18 and for those aged 19 and over. There was little evidence of an impact on the likelihood of undertaking an advanced or higher apprenticeship for Trainees when considered separately by age group. However, progression to advanced or higher level apprenticeships would not be expected within 12 months of starting a Traineeship.

Table 14 Impact of Traineeships on Apprenticeship starts by age

	Aged 16 to 18			Aged 19 or over		
	Treatment group (%)	**Matched comparison group (%)**	**Impact (pp difference)**	**Treatment group (%)**	**Matched comparison group (%)**	**Impact (pp difference)**
Started apprenticeship within 12 months	38.2	8.7	29.5***	17.3	4.4	12.9***
In apprenticeship 12 months post-start	31.9	7.1	24.8***	14.6	3.6	10.9***
Started advanced or higher apprenticeship within 12 months	4.9	2.6	2.3*	1.9	1.5	0.4
In advanced or higher apprenticeship 12 months post-start	4.6	2.4	2.2	1.6	1.4	0.2

Base: 5,954 aged 16 to 18 and 2,121 aged 19 or more. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR)

5.3.2 Effects of Traineeships on further learning

All Trainees

Traineeships increased the likelihood of young people participating in further learning. Table 15 shows that 42 per cent of Trainees were in further learning 12 months later, compared with 29 per cent of the matched comparison group. Similarly, 58 per cent of Trainees had started another learning aim within 12 months, compared with 43 per cent of the matched comparison group.

Table 15 Impact of Traineeships on educational attainment

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Started another learning aim within 12 months	58.0	42.5	15.5***
In learning 12 months post-start	42.0	28.8	13.2***
Level 2 aim started within 12 months	38.0	18.2	19.8***
Level 3 or higher aim started within 12 months	9.2	15.3	-6.1***
In level 2 learning 12 months post start	29.3	12.0	17.3***
In level 3 or higher learning 12 months post start	7.3	12.2	-4.9***

Base: 8,628 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level.

Bootstrapped standard errors based on 500 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR)

By Age

Table 16 considers the impacts separately by age group. Again we see that significant impacts were observed for both age groups, withTraineeships having a positive impact on being in further learning 12 months after starting the Traineeship. However, this positive impact related to progression to further Level 2 learning only. In contrast, Trainees were less likely to progress to further learning at Level 3 or higher, although this was only statistically significant for 16-18 year olds. Given the prior attainment levels of Trainees, progression to higher level learning is not an expected outcome within the short timeframe examined.

Table 16 Impact of Traineeships on educational attainment by age

	Aged 16 to 18			Aged 19 or more		
	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Started another learning aim within 12 months	63.5	49.6	13.9***	42.9	21.5	21.4**
In learning 12 months post-start	49.2	34.9	14.2***	22.0	10.9	11.2**
Level 2 aim started within 12 months	42.8	21.3	21.5***	24.5	9.2	15.3
Level 3 or higher aim started within 12 months	11.1	19.2	-8.1**	3.9	4.5	-0.6
In level 2 learning 12 months post start	34.3	14.5	19.8***	15.4	4.8	10.8***
In level 3 or higher learning 12 months post start	9.0	15.3	-6.3*	2.6	3.3	-0.7

Base: 6,190 aged 16 to 18 and 2,437 aged 19 or more. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR)

5.3.3 Effects of Traineeships on employment

We also consider the impact of Traineeships on whether individuals were in employment 12 months following the start of their Traineeship. As discussed in Chapter 2, our estimates for 16-18 year olds use information from NCCIS (Table 17), while our estimates for 19-23 year olds are instead based on WPLS data (Table 18).

Traineeships had no statistically significant impact on employment of young people aged 16-18, as measured 12 months after the start of the Traineeship; 14.8 per cent of Trainees in this age group were in employment 12 months later, compared with 13.0 per cent of the matched comparison group.

Table 17 Impact of Traineeships on employment status 12 months after Traineeship start, 16-18 year olds

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Any employment within 12 months	19.4	15.8	3.6
In employment 12 months post-start	14.8	13.0	1.9

Base: 6,190 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.
Source: Linked NPD-NCCIS-ILR (outcomes measured based on NCCIS)

Traineeships had a significant positive impact on employment of 19-23 year olds, both when considered in terms of whether individuals were in employment 12 months later, or whether they had had any employment spell within 12 months of starting. Over half of Trainees aged 19-23 (53.2%) had worked in the 12 months since starting their Traineeship, compared with 29% of the matched comparison group.

Table 18 Impact of Traineeships on employment, 19-23 year olds

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Any employment spell within 12 months	53.2	29.0	24.2***
In employment 12 months post-start	40.4	21.8	18.6***

Base: 3,219 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 500 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.
Source: Linked ILR-WPLS (outcomes measured based on WPLS)

For the older group of Trainees we can also consider impacts on unemployment, as measured by whether individuals were receiving Jobseekers' Allowance. This indicates increased unemployment among those participating in a Traineeship. Employment and unemployment make up the economically active. Since Traineeships are estimated to have a positive effect on both employment and unemployment for 19-23 year olds, it follows that there must be a positive effect on economic activity as a whole. An alternative way of viewing this is that Traineeships appear to reduce economic inactivity among this age group.

Table 19 Impact of Traineeships on unemployment, 19-23 year olds

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Any JSA received within 12 months of (pseudo-) start	16.6	12.5	4.1**
Receiving JSA 12 months post (pseudo)-start	9.8	6.5	3.2**

Base: 3,219 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 500 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.
Source: Linked ILR-WPLS (outcomes measured based on WPLS)

5.3.4 Effects of Traineeships on attainment of any positive outcome (apprenticeship, further learning or employment)

Finally, we consider whether there appeared to be an impact on obtaining any positive outcome (that is an apprenticeship, further learning or employment). Given the results reported above, it is not surprising that we also see a positive impact of Traineeships on attaining any of the three desired outcomes.

Table 20 reports estimates for 16-18 year olds, based on the linked NPD-NCCIS-ILR data. This captures whether individuals were in an apprenticeship or further learning based on information from the ILR, and whether they were in employment based on NCCIS. This indicates a positive impact of Traineeships on being in any positive destination 12 months post-start and on attaining any positive outcome within 12 months.

Table 20 Impact of Traineeships on attaining any positive outcome, 16-18 year olds

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Starts apprenticeship, further learning or employment within 12 months	74.4	61.3	13.2***
In apprenticeship, further learning or employment 12 months post-start	60.8	46.6	14.2***

Base: 8,075 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.
Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR and NCCIS)

For 19-23 year olds, this measure is constructed using the ILR-WPLS data. Table 21 indicates that 55.5 per cent of Trainees were either in an apprenticeship, undertaking further learning or in employment 12 months post-start, compared with 35.1 per cent of the matched comparison group. A similar positive impact is seen for attaining any of these positive outcomes within 12 months of starting the Traineeship (76% compared with 47.6%).

Table 21 Impact of Traineeships on attaining any positive outcome, 19-23 year olds

	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Starts apprenticeship, further learning or employment within 12 months	76.0	47.6	28.3***
In apprenticeship, further learning or employment 12 months post-start	55.5	35.1	20.4***

Base: 3,219 observations. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 500 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.
Source: Linked ILR-WPLS (outcomes measured based on WPLS)

5.4 IV estimates

This section presents results from the IV analysis. To recap, these rely on a different identifying assumption from that required in order for the matching estimates to be valid. They therefore provide a sensitivity test; if estimated impacts are similar across the two approaches, we can be more confident in the results.

Before turning to the impact estimates, we first provide evidence that the relationship between participation and distance persists after carrying out the matching. Table 22 presents the results of estimating the probability of participation as a function of distance, on the matched sample. The results show the relationship to be statistically significant for 16-18 year-olds and 19-23 year-olds.[31]

Table 22 The results of estimating a probit model of Traineeship participation for the matched sample

	Coefficient	Standard error	Confidence interval
16-18 year olds			
Distance from provider (km)	-0.102***	0.013	(-0.127, -0.077)
Distance from provider, squared (km)	0.005***	0.001	(0.003, 0.007)
Constant	0.173***	0.016	(0.140, 0.205)
19-23 year olds			
Distance from provider (km)	-0.053***	0.008	(-0.068, -0.038)
Constant	0.100***	0.014	(0.072, 0.128)

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 200 replications.

[31] A quadratic term was found not to be significant for the older group and so was excluded from the preferred specification reported in Table 22.

Impact estimates are presented in Table 23. For each outcome, both the results from the first-stage matching are reported (labelled "PSM") and the results from aggregating the MTE estimates (labelled "LIV").[32] Some MTE estimates are based on very few individuals, and are imprecise as a result. The preferred LIV estimates exclude MTE estimates representing fewer than 20 Trainees. These are labelled "LIV, trimmed" and are preferred since they remove the influence of outliers. In discussing the LIV results, we therefore focus on these "trimmed" estimates.

As an overall comment, the width of the confidence intervals shows PSM estimates to be much more precise than LIV estimates. Nevertheless, it is important to note that the LIV results do show some significant effects. This has two possible interpretations. First, it might be taken to suggest that the instrument, distance, should be included among the matching variables. This would be most appropriate if distance was felt to exert a direct effect on the outcomes considered. If instead it was felt to proxy an unobserved characteristic that could influence outcomes, it might still be appropriate to include it although it highlights the role of unobserved influences and, in the absence of a theoretical reason for why it should exert a direct effect, it might raise concerns that there are other unobserved factors that are also important, or that including the instrument does not fully control for this unobserved heterogeneity.

The second interpretation, which follows from this, is that the CIA underpinning the matching estimates is unlikely to hold. This may be a reasonable conclusion since adequately understanding and capturing individual choice is a considerable challenge. While the available data are quite rich, our judgment would be they are unlikely to be sufficiently so to satisfy the CIA. The LIV estimates are, in principle, preferable from this point of view but do rely on the adequacy of the instrument and, in particular, that it does not influence outcomes other than through its effect on participation. As discussed above, to control for the possibility of distance exerting a direct influence on outcomes, we have included local unemployment rates among the matching variables in order to address the possibility that those living further from Traineeship providers may not have access to the same employment opportunities. We have also restricted our analysis sample to those living within 15 km and included a measure of population density.

As a second overall comment, the LIV estimates are generally less positive than the PSM estimates. Informally, this might provide further suggestion that the CIA does not hold and that the PSM results have not satisfactorily addressed the selection into participation. In this case, assuming participation is concentrated among those individuals with unobserved characteristics more likely to secure positive outcomes (more motivated, for

[32] Note that the PSM estimates presented here are not identical to those reported earlier in the chapter as they are based on a slightly different sample that forms the basis for the IV analysis; however, they are qualitatively similar both in terms of magnitude and statistical significance.

example), PSM results would be expected to be upward-biased since they reflect this positive selection.

Turning to the results in more detail, among 16-18 year olds, Traineeships are estimated to increase the probability of being an apprentice 12 months later.[33] The PSM results estimate a positive impact of 25.5 percentage points. The LIV estimates are smaller, but still positive (and significant), at 15.6 percentage points. For 19-23 year olds, the PSM estimates indicate a significant positive impact of 11.1 percentage points, while the LIV estimates do not find a significant impact. For employment, neither the PSM nor the LIV estimates are significant for 16-18 year olds at conventional levels. However, among 19-23 year olds, PSM results suggest a significant positive effect of 17.1 percentage points on the probability of being employed 12 months later, while the LIV estimates find no significant effect. Unemployment is estimated to be increased among this older group. The PSM estimate is of a significant 2.6 percentage point increase. The LIV impact estimate is bigger (6.5 percentage points) but less precisely estimated and only significant at the ten per cent level.

[33] For non-Trainees, a “pseudo” start date was used. This was imputed as a random draw from the distribution of start dates observed among Trainees.

Table 23 Estimates of the average impact of Traineeship participation, IV and PSM

		Impact	Standard error	Confidence interval
16-18 year olds				
Apprenticeship at 12 months	PSM	0.255***	0.009	(0.237, 0.273)
	LIV	0.190	0.260	(-0.320, 0.700)
	LIV, trimmed	0.156***	0.043	(0.072,0.240)
Employed at 12 months	PSM	0.013	0.009	(-0.005, 0.030)
	LIV	-0.059	0.291	(-0.628, -0.511)
	LIV, trimmed	-0.065	0.047	(-0.156,0.027)
19-23 year olds				
Apprenticeship at 12 months[34]	PSM	0.111***	0.012	(0.148,0.195)
	LIV	-0.206	0.331	(-0.609,0.690)
	LIV, trimmed	-0.048	0.055	(-0.057,0.161)
Employed at 12 months	PSM	0.171***	0.012	(0.148,0.195)
	LIV	0.041	0.331	(-0.609,0.690)
	LIV, trimmed	0.052	0.055	(-0.057,0.161)
Unemployed at 12 months	PSM	0.026***	0.006	(0.013,0.038)
	LIV	0.196	0.176	(-0.150,0.541)
	LIV, trimmed	0.065*	0.038	(-0.009,0.138)

Notes: ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 200 replications. Trimmed LIV estimates exclude MTE estimates based on fewer than 20 learners.

Source: Linked NPD-NCCIS-ILR (16-18 year olds), linked ILR-WPLS (19-23 year olds)

5.4.1 Variation in estimated effects

In summary, the LIV estimates suggest a less positive impact of Traineeships on apprenticeships than is suggested by PSM. The impact on employment is broadly consistent across the two approaches for 16-18 year-olds but the positive PSM impact among 19-23 year olds is not replicated in the LIV results. For unemployment, the approaches are consistent in finding a slight positive impact for 19-23 year-olds. This is larger (but less precise) in the case of LIV than it is with PSM.

We can also look beyond these overall impacts to understand whether Traineeships might work better for some than for others. As discussed earlier, the idea underpinning the LIV approach is that distance implies a "cost" of participation. At a given distance, some people will be willing to participate and some will not. Whether an individual is willing to participate depends on the cost s/he associates with doing so. Those attaching a higher cost to participation are more resistant than those attaching a lower cost. The MTE framework allows us to estimate how impacts vary according to the level of resistance. This provides a means of understanding how the effectiveness of Traineeships differs for those who are more willing to participate compared to those who are less willing.

Figure 4 shows, for 16-18 year-olds, the MTEs on the probability of being an apprentice 12 months after Traineeship start date (confidence intervals corresponding to 95% statistical significance are also shown). The x-axis, represents the (increasing) degree of resistance to participation (alternatively, the decreasing willingness to participate). The estimated MTEs are positive across the full distribution of resistance. They achieve statistical significance within (roughly) the second quartile of resistance, suggesting that it is among that subgroup that we can be most confident of positive impacts. For 19-23 year-olds, the results in Figure 5 suggest, if anything, a negative effect. The MTEs are mostly some way short of statistical significance at the conventional level but, with this caveat in mind, the estimated effects are more negative among those more resistant to participation.

Figure 4 Marginal treatment effect of Traineeship participation on becoming an apprentice, 16-18 year olds

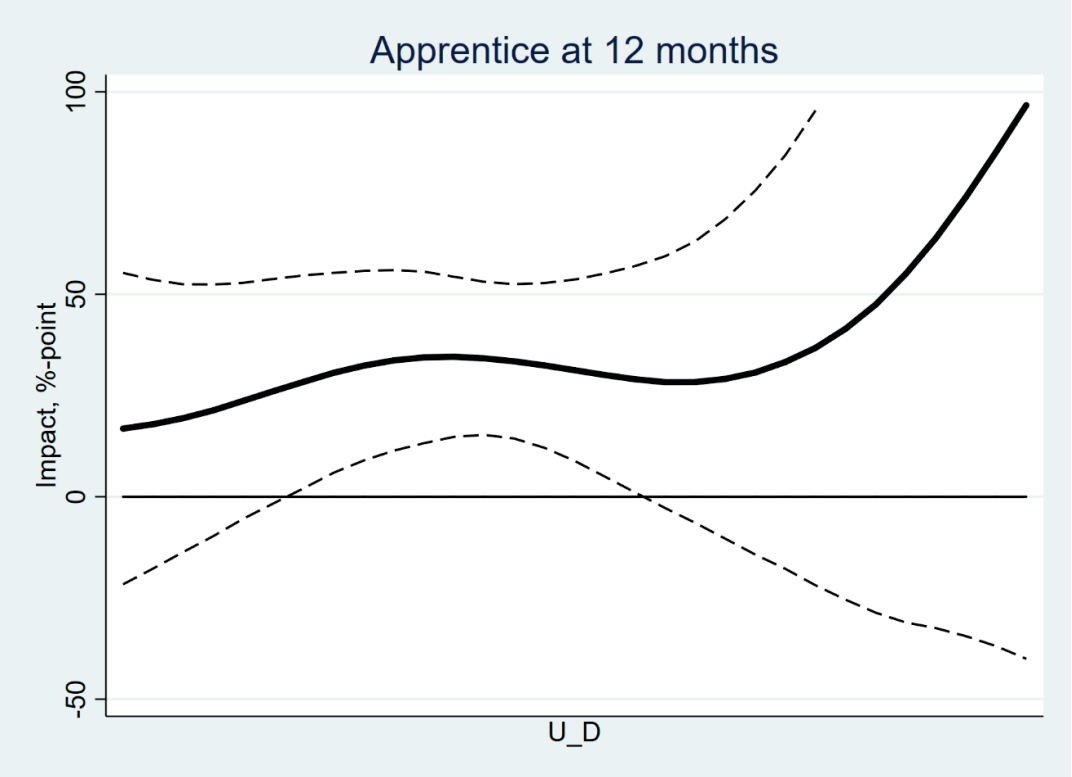


Figure 5 Marginal treatment effect of Traineeship participation on becoming an apprentice, 19-23 year olds

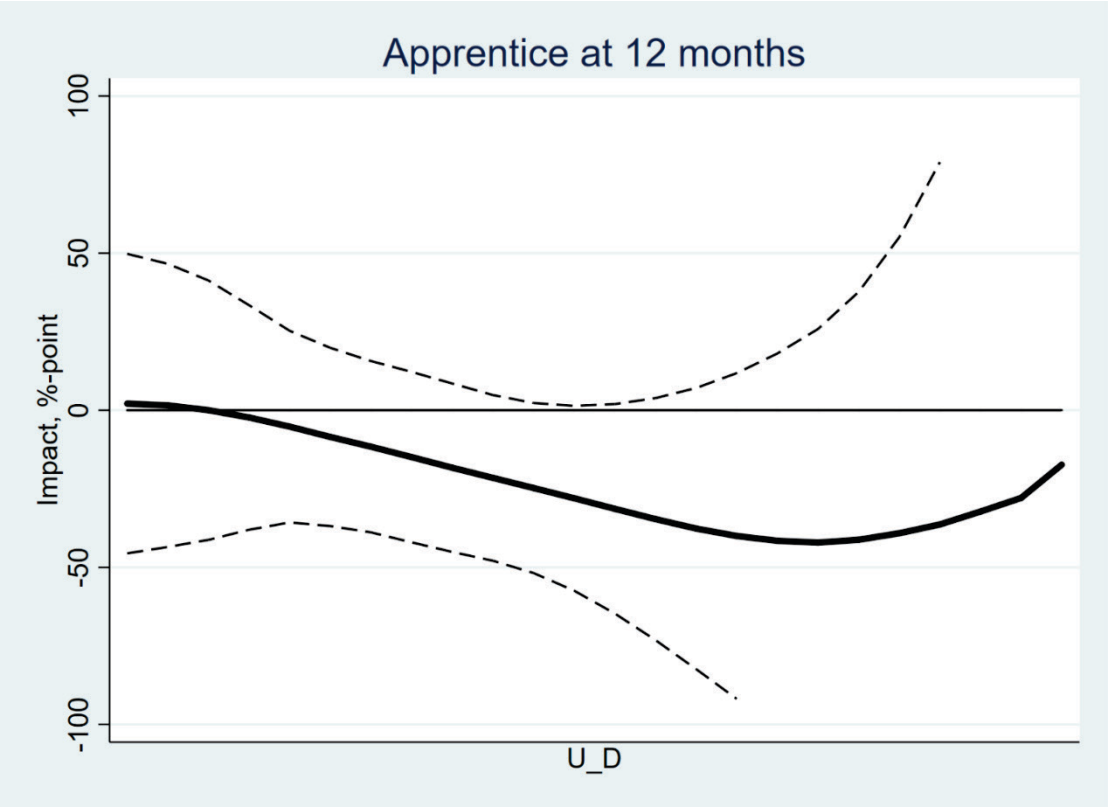


Figure 6 and Figure 7 show how the impact on the probability of being employed varies, for 16-18 year olds and 19-23 year olds respectively. For the younger group, MTEs are negative across most of the resistance distribution. The estimates are more precise closer to the centre of the distribution and on the border of statistical significance as conventionally regarded. For the older group, the estimated impact is positive for the majority of Trainees. However, the confidence intervals are wider than those seen for 16-18 year-olds and at no point does the estimated MTE come close to conventional statistical significance.

Figure 6 Marginal treatment effect of Traineeship participation on employment, 16-18 year olds

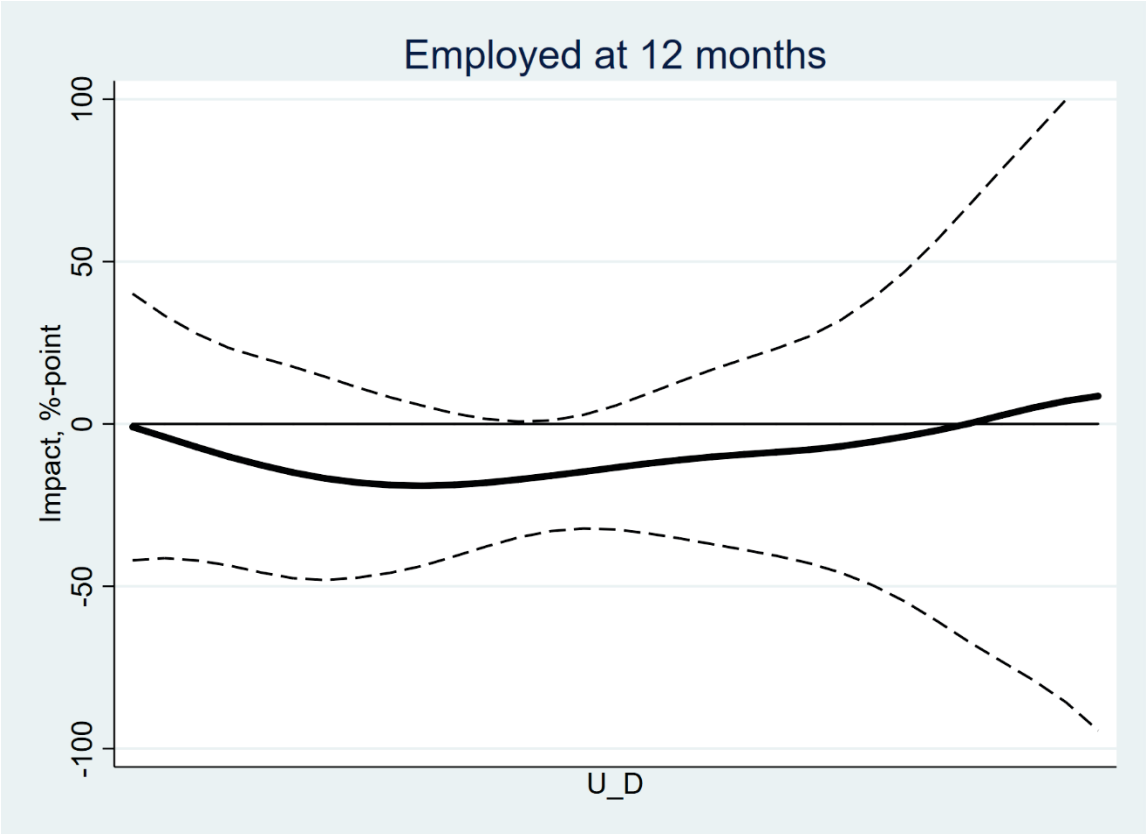
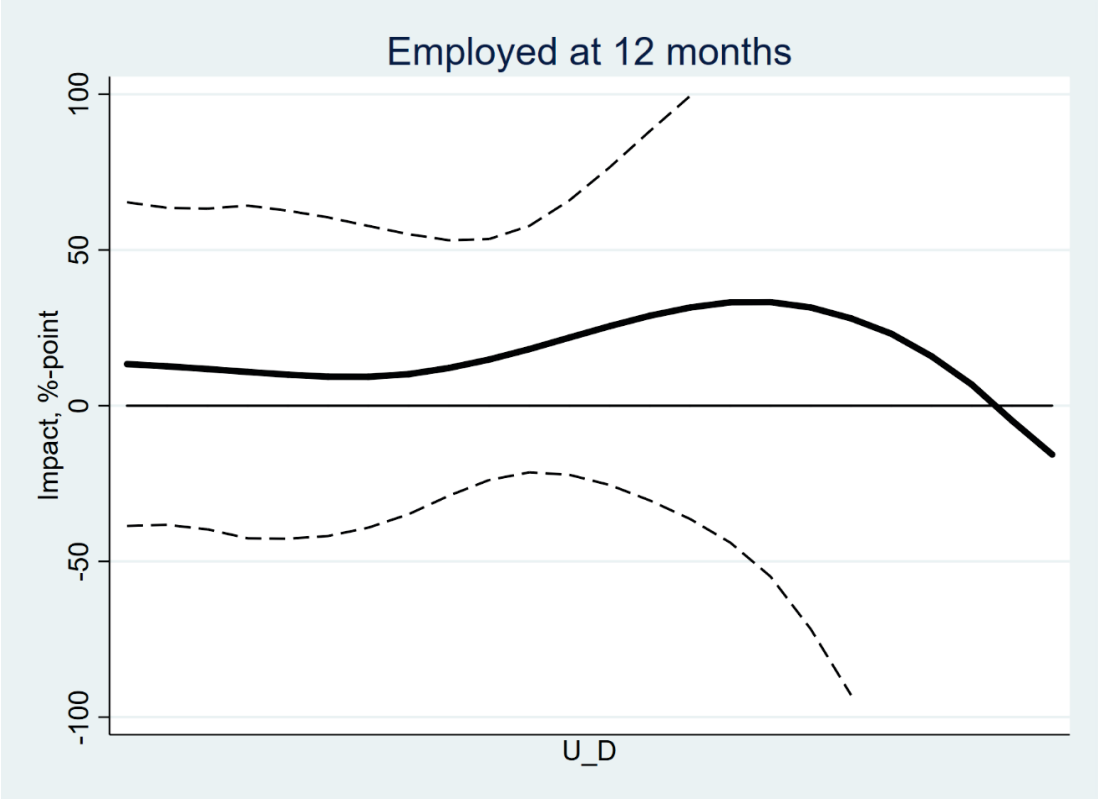
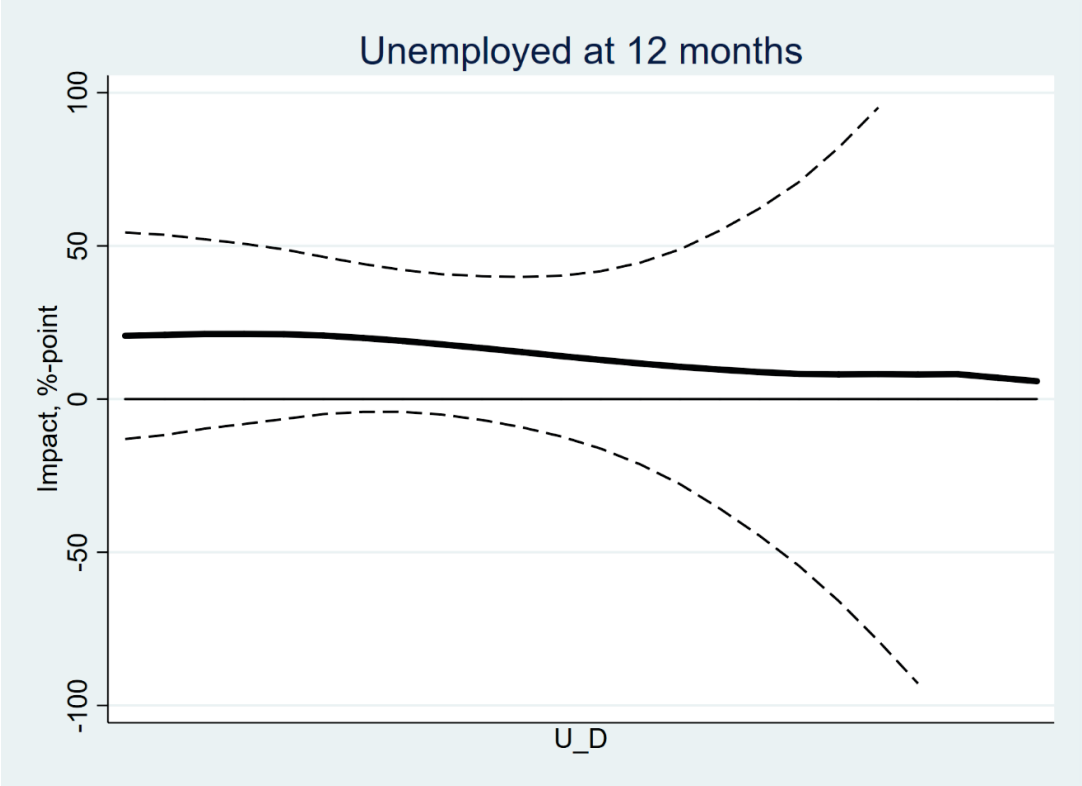


Figure 7 Marginal treatment effect of Traineeship participation on employment, 19-23 year olds



Lastly, Figure 8 shows the impacts on unemployment for 19-23 year-olds. Consistent with the employment MTEs, the unemployment MTEs are not significant at the conventional level at any point in the resistance distribution. However, it is notable that, like the employment MTEs, they are positive.

Figure 8 Marginal treatment effect of Traineeship participation on unemployment, 19-23 year olds



6. Conclusions

6.1 Introduction

This concluding chapter summarises the main findings from the analysis. It assesses findings from both the PSM and IV analyses to draw overall conclusions on the impact of Traineeships on the main outcomes that it seeks to effect. It also discusses the limitations of the analysis and suggests ways in which the research could be further developed in future.

6.2 Effects of Traineeships on take-up of apprenticeships

For both 16-18 year olds and 19-23 year olds, Traineeships increased the probability of being in an apprenticeship 12 months following the start of the Traineeship, and of starting an apprenticeship within 12 months. Results from the IV analysis showed a positive impact for 16-18 year olds but not for 19-23 year olds. The PSM estimates provide little indication of a positive impact on progression to an advanced or higher apprenticeship, but as noted earlier, this would not be an expected outcome from participating in a Traineeship, particularly within the short timeframe within which we are observing outcomes.

6.3 Effects of Traineeships on further learning

Traineeships increased the likelihood of 16-18 year olds and 19-23 year olds undertaking further learning 12 months following the start of the Traineeship. However, the impact was focused on low-level qualifications, with some evidence that Traineeships reduced the likelihood of studying for higher-level qualifications compared to what would have happened if the young person had not participated in a Traineeship. Again, as noted earlier, this is to be expected given the prior attainment levels of Trainees and the short timeframe within which we are observing outcomes.

6.4 Effects of Traineeships on employment

For older Trainees, the results from the PSM analysis suggested that Traineeships had a positive impact on the likelihood of a young person being employed 12 months after starting on the programme. However, the IV analysis indicated no significant impact on being in employment 12 months after starting on the programme for either age group.

6.5 Effects of Traineeships on attaining any positive outcome

The PSM estimates indicate that for both 16-18 year olds and 19-23 year olds, Traineeships increased the likelihood of being in a positive outcome 12 months after starting the programme and of attaining any positive outcome within 12 months.

6.6 Discussion and limitations

The PSM estimates indicate positive impacts of the Traineeships programme on progression to apprenticeships, and to further learning at Level 2, as well as negative effects on participation in Level 3 vocational education. For older Trainees, they suggest a positive impact on progression to employment.

Results from IV estimates suggest however that these findings, particularly those related to employment, should be treated with some caution. The IV estimates also indicate a positive impact on progression to apprenticeships for 16-18 year olds, although this is smaller in magnitude. However, they show no significant impact on employment for either age group.

The differing results between the two approaches suggest our PSM estimates may be upward-biased. While the data used in our analysis are relatively rich, unobserved characteristics are likely to affect whether individuals participate in a Traineeship. If these unobserved characteristics are also associated with achieving better outcomes, the resulting estimates may overstate the positive impact of the programme. As an aside, the ability to probe the assumptions underpinning PSM in this way arose from the detailed geographic information included in the data. While the results end up more ambiguous as a result of this sensitivity analysis, this helps avoid the problem of “incredible certitude” (Manski, 2011).

Some limitations of the analysis stem from the nature of the available data and the evolving policy landscape. With regard to data, impacts are estimated over a relatively short period of time after the learner had started on the programme. Repeating the analysis using later data extracts would make it possible to assess the impact of Traineeships over a longer period of time.

With regard to policy, a number of changes to Traineeships have been made since the policy was introduced. These might have an impact on the overall effectiveness of the programme and so it should be borne in mind that the results presented in this report are specific to participants in the academic year 2013/14.

With these caveats in mind, there is the question of how we assess the overall value of the programme. Apprenticeships and learning at level 2 appear to be boosted, while learning at a higher level is reduced, especially among younger Trainees. How to

consider the balance of these effects is a question of judgement. The effects on employment are mixed, but a fundamental question is whether promoting employment among 16-18 year-olds is an optimal aim when set against the alternatives of, for example, an apprenticeship. Longer-term, one might expect the latter to be associated with higher earnings. In this light, a non-significant employment effect for younger Trainees might be viewed as a positive social outcome In terms of effects on learning, it may be that a Traineeship guides learners to the appropriate next level of study. In future analyses it would be valuable to consider whether such individuals are more likely to successfully complete their course, and their progression beyond that, compared with individuals who moved directly to higher learning levels.

In the longer-term, an analysis based on Longitudinal Education Outcomes (LEO)[35] data might be beneficial, as it would provide more detailed information on young people, enabling more detail on individuals' prior educational participation and achievement to be taken into account in exploring impacts on labour market outcomes, particularly among the 19-23 year old group. This could potentially improve the match between treatment and comparison groups and reduce the likelihood that currently unobserved characteristics influence outcomes. It would also allow the evaluation of longer-term impacts.

[35] LEO brings together data on education with data on employment, benefits and earnings, enabling estimation of impacts based on more robust information on labour market outcomes.

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Appendices

Appendix 1: NCCIS activity groups

The detailed activity codes available on the NCCIS were combined into 10 broad categories for the purposes of the analysis, as shown in Table 24.

Table 24 NCCIS activity groups

Broad activity group	Detailed activity description and NCCIS code
Pre-school leaving age	110 'Year 11 pre-SLA: school or other edu'
	120 'Year 11 pre-SLA: Edu at home'
	130 'Year 11 pre-SLA: Custodial sentence'
	140 'Year 11 pre-SLA: Not registered in edu'
	150 'Year 11 pre-SLA: not known'
Education post SLA	210 'SLA+ in edu: FT edu, School 6 Form'
	220 'SLA+ in edu: FT edu, 6 Form College'
	230 'SLA+ in edu: FT edu, FE'
	240 'SLA+ in edu: FT edu, HE'
	250 'SLA+ in edu: PT edu'
	260 'SLA+ in edu: Gap Year students'
	270 'SLA+ in edu: FT edu, other (incl. year 10 or 11)'
Apprenticeship	310 'Emp: Apprenticeship'
Employment	320 'Emp: Emp with accred trg or PT study'
	330 'Emp: Emp without training'
	340 'Emp: Emp with non-accred training'
	350 'Emp: Temp emp'
	360 'Emp: PT emp'
	380 'Emp: Self Emp'
	381 'Emp: Self Emp with PT study'
	550 'Emp: unpaid with PT study'
Training	410 'Training: EFA funded WBL'
	420 'Training: other LSC-funded'

Broad activity group	Detailed activity description and NCCIS code
	430 ‘Training: Other ‘
	440 ‘Training: Work Programme (not 17 or 17 year olds)’
	450 ‘Training: Traineeships’
	510 ‘Personal Development Opportunity (waged)’
	520 ‘Personal Development Opportunity (other)’
Re-engagement activity	530 ‘Re-engagement Provision’
NEET	540 ‘NEET: unpaid work’
	610 ‘NEET: Not ready for work or learning’
	611 ‘NEET: awaiting an E2E place’
	612 ‘NEET: requiring sub level 2 training - place not available’
	613 ‘NEET: requiring level 2 training - place not available’
	614 ‘NEET: requiring level 3+ training - place not available’
	616 ‘NEET: Start Date agreed (emp, edu or trg)’
	617 ‘NEET: New Deal Gateway/New JSA Stage 3 Regime’
	618 ‘NEET: Activity Agreement/Entry to Learning Pilot’
	620 ‘NEET: inac - Young carers’
	630 ‘NEET: inac - Teenage parents’
	640 ‘NEET: inac - Illness’
	650 ‘NEET: inac - Pregnancy’
	660 ‘NEET: inac - religious grounds’
	670 ‘NEET: inac - currently unlikely to be economically active’
	680 ‘NEET: inac - Other reason’
NEET – seeking employment, education or training	619 ‘NEET: Seeking emp, edu or trg’
Custody	710 ‘Other: Custody’
Other/unknown	720 ‘Other: Refugees or asylum-seekers without citizenship’
	810 ‘Unknown: situation not known’

Broad activity group	Detailed activity description and NCCIS code
	820 ‘Unknown: Cannot Be Contacted’
	830 ‘Unknown: Refused to disclose’

Appendix 2: Characteristics of 19-23 year old Trainees

In Chapter 3 we provided a comparison of the characteristics of Trainees and non-Trainees based on linked ILR-NCCIS-NPD data, which covers Trainees of all ages. These data do not allow us to explore impacts on employment for older Trainees, for which we instead use linked ILR-WPLS data. For completeness, in this appendix we present the characteristics of the group of 19-23 year old Trainees and non-Trainees, based on the linked ILR-WPLS data.

Table 25 reports demographic characteristics:

- A higher proportion of Trainees were male (64% of Trainees were male compared with 55% of non-Trainees).
- Even within the 19-23 year old age group, Trainees were more likely to be concentrated within the younger end of this age group, compared with non-Trainees.
- The distribution of Trainees by ethnic group was broadly similar to that of non-Trainees.
- 19-23 year old Trainees were more commonly located in London and in the North West.

These findings are broadly similar to those for Trainees of all ages based on the linked ILR-NCCIS-NPD; both show similar distributions of Trainees and non-Trainees by ethnic group; that Trainees tend to be younger than non-Trainees, and similar regional patterns. However, while the descriptives presented in Chapter 3 also indicated a slightly higher percentage of Trainees were male compared with non-Trainees, this difference was more pronounced among older Trainees.

Table 25 Characteristics of Trainees and non-Trainees, 19-23 year olds

Variable	Group	Trainees	Non-trainees
		%	%
Gender	Female	36.0	44.9
	Male	64.0	55.1
Age	19	18.1	11.1

Variable	Group	Trainees	Non-trainees
	20	27.6	20.8
	21	19.8	20.0
	22	18.6	19.6
	23	13.5	19.4
	24	2.4	9.3
Ethnicity	Asian	8.7	7.6
	Black	9.0	6.5
	Chinese	0.1	0.4
	Mixed	4.2	3.6
	White	75.6	77.6
	Any other group	1.1	2.2
	Unclassified/other	1.3	2.1
Region	East Midlands	6.4	8.1
	East of England	5.7	8.6
	London	26.0	16.0
	North East	5.8	8.4
	North West	21.5	14.8
	South East	7.2	11.7
	West Midlands	11.2	12.5
	Yorkshire and Humber	8.9	11.0
	South West	7.2	8.8

Base: 3,289 Trainees and 414,679 non-Trainees. Source: Linked ILR-WPLS

Table 26 reports prior attainment of Trainees and non-Trainees. In common with the findings for Trainees of all ages reported in Chapter 3, 19-23 year old Trainees were more likely to have lower levels of prior attainment than non-Trainees in this age group.

Table 26 Prior attainment, 19-23 year olds

Variable	Group	Trainees	Non-trainees
		%	%
	Entry level	13.7	9.1

Variable	Group	Trainees	Non-trainees
Prior attainment	Level 1	41.1	21.3
	Level 2	14.1	39.7
	Level 3	3.5	13.7
	Level 4 and above	0.3	4.6
	Other	4.7	5.0
	None	22.6	6.6

Base: 3,243 Trainees and 412,767 non-Trainees. Source: Linked ILR-WPLS

Table 27 reports employment history, based on information available in WPLS. As noted in the introduction to this report, Traineeships are aimed at those who have little or no work experience. In line with this, Table 27 indicates that Trainees were less likely to have previously been in employment than non-Trainees. Nevertheless, it does suggest that a reasonable proportion of Trainees in this age group did have at least some prior employment experience.

Table 27 Employment history, 19-23 year olds

Variable	Group	Trainees	Non-trainees
		%	%
Employment history	Employed 6 months before start	25.8	44.3
	Employed 12 months before start	24.0	39.9
	Any prior employment spell	59.7	71.5

Base: 3,289 Trainees and 414,679 non-Trainees. Source: Linked ILR-WPLS

Appendix 3: Full detail on Propensity score matching

Implementation

The practical implementation of the matching approach uses non-parametric local linear regressions, which, in our analysis based on ILR-NCCIS-NPD data, estimate counterfactual outcomes for individual Traineeship participants based on a ten per cent random sample of all people leaving KS4 in 2009-2013. These unmatched ('naïve') control groups have been chosen because all Traineeship participants observed in the NPD left secondary education in one of these years.

In our analysis based on ILR-WPLS, counterfactual estimates are based on a ten per cent random sample of non-participants who were observed as studying for a learning aim below Level 3 in either 2013/14 or 2012/13 (and who met the age criteria for eligibility).

In the matching algorithm, the local linear regressions use the difference in the propensity score between individual ('local') participants and the whole sample of non-participants as the only covariate. This difference between local participants and non-participants is then weighted applying a standard normal probability distribution ("kernel matching"). A bandwidth parameter[36] ensures that more distant observations, i.e. non-participants with dissimilar propensity scores, are then down weighted relative to non-participants who are more similar to local participants.

Identification and estimation of programme impacts

We follow the usual framework of programme evaluation (e.g. Rubin 1974, Heckman et al. 1998). The microeconomic effect of Traineeship participation is the expected value of the participants' outcome (YT) after the programme (D=1) minus the hypothetical situation of the same population in the absence of the programme (YC|D=1), represented as:

$$E\{YT|D=1\} - E\{YC|D=1\}.$$

[36] The choice of the bandwidth parameter is very important to achieve bias reducing properties of propensity score matching. A number of important approaches have been discussed in the literature to obtain a bandwidth with bias-minimising properties, see e.g. our own previous work (Bergemann et al., 2009) or Galdo, Smith and Black (2008). However, given the size of the data used here, implementing such methods of bandwidth choice would have required extensive simulations, which would have run for weeks. We therefore decided to operate fixed bandwidths (.001/.004 depending on specification), which resulted in acceptable balancing of covariates, but which have been derived heuristically using a fixed set of bandwidth parameters, rather than implementing a comprehensive analytical solution.

Since *E{YC|D=1}* cannot be observed, it has to be estimated based on groups not affected by the programme as long as characteristics of these groups are comparable. This results in the conditional independence assumption (CIA), i.e. expected values of non-participation outcomes for individuals are equal to outcomes of the non-participating individuals conditional on characteristics *X*[37]:

$$E\{YC|D=1,X\}= E\{YC|D=0,X\}$$

and the programme effect for the group of the participating individuals implementing the programme can be estimated as:

$$\frac{1}{N_1}\sum_{i\in\{D=1\}}\left(YT_i - \sum_{j\in\{D=0\}} w_{N_0,N_1}(i,j)YC_j\right)$$

where $j \in \{D=0\}$ represents non-participants unaffected by the programme.

A weight $w(i,j)$ is attached to all individual observations j of the non-participants with regards to the particular characteristics of every individual Traineeship participant i. This 'weighted average' of the non-participation group represents the estimated non-participation outcome for the particular individual i, which can be subtracted from the observed outcome YT. The mean value of these differences for the total group of participants N_1 provides an estimate of the microeconomic effect of the programme for all participants.

Non-programme outcomes are estimated based on kernel matching, specifying (2) as:

$$w_{N_0,N_1}(i,j) = \frac{K_{ij}}{\sum_{j\in\{D=0\}} K_{ij}}$$

where $K_{ij} = K\left(\left(X_j - X_i\right)/h\right)$ is a weighting function that down-weights distant observations with dissimilar observable characteristics X_j relative to observed characteristics for individual participants X_i. h is a bandwidth parameter (Heckman et

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37 In other words, participants and non-participants do not differ by unobserved characteristics that are correlated with outcomes of interest.

al. 1998: 1024)[38]. Counterfactual outcomes are estimated for individuals participating in the programme i based on a weighted average of all non-treated individuals $j \in \{D = 0\}$ using local linear regressions.

When looking into post-participation outcomes such as learning aims and achievement or apprenticeship starts, such outcomes can be easily observed for participants. However, non-participants in Traineeships lack an observed starting date of the programme. To address this problem, we imputed starting dates for non-participants based on the empirical distribution of starting dates observed for participants, following the approach of Lechner (2000).

Propensity scores and bootstrapping

The observable characteristics X used in matching should ideally summarise all factors relevant for a particular individual's participation in the programme. However, this might result in a 'curse-of-dimensionality' and it may be difficult to identify exact matches for one particular individual with respect to a high-dimensional vector of X. Therefore, this report follows the result of Rosenbaum and Rubin (1983) that the CIA in equation (2) also holds with respect to the probability of participation (propensity score) $P(X)$ as a function of the observable characteristics X, i.e.:

$$E\{YC|D = 1, P(X)\} = E\{YC|D = 0, P(X)\} \quad (1)$$

On the one hand, this result allows matching using the one-dimensional probability as the weighting scheme applied above and reduces the problem of finding adequate matches. On the other hand, the propensity score itself is an estimate and suffers, as all estimates, from estimation errors, etc. As a consequence, matching on the propensity score as an estimated variable requires additional adjustment, so that the standard errors and statistical tests of the estimated treatment effects incorporate the estimation error. This is achieved by implementing a bootstrap procedure for significant programme estimates because it can be expected that bootstrapped standard errors are larger than unadjusted standard errors. The bootstrap works by drawing a large number, normally several hundred, of random samples from a ten per cent sample of Traineeship participants and a one per cent random sample of non-participants to carry out a series of estimates of the treatment effects resulting from any of the resamples. Because of the random sampling from the original data, estimated treatment effects vary and empirical standard

[38] Note that a fixed bandwidth had to be selected (0.01 for most subgroups), as an 'optimal bandwidth choice' as suggested by Galdo et al. 2008 could not be implemented because of the large size of non-participants.

errors can be estimated based on this series of treatment effects. Because most of the empirical estimates are either clearly significant or clearly not significant for this programme both based on non-bootstrapped and bootstrapped standard errors, we use the obtained bootstrapped standard errors to derive confidence intervals, i.e. the 95% probability range of programme effects. As a rule, one would expect the treatment effects to be statistically different from zero if the confidence interval surrounding the effects does not intersect zero.

Implementing the bootstrap for a number of outcome variables and in very large data sets is computationally demanding because of the way estimates are obtained locally for individual participants. We therefore only report bootstrapped standard errors for impacts, which have been found significant based on non-bootstrapped inference and ignore other estimates.

Full results of the empirical analysis

Table 28 reports the full specification used to estimate the propensity scores, based on the linked ILR-NCCIS-NPD data. Equivalent results for the separate models based on 16-18 year olds and 19-23 year olds are available from the authors on request. Table 29 reports this for the models for 19-23 year olds using the linked ILR-WPLS data.

Table 28 Propensity score estimates for Traineeship participants 2013/14, all

Variable	Entered	β	SE	P
Sex (Base: male)	Female	0.07	0.01	0.00
Age (Base under 17)	17	-0.01	0.02	0.61
	18	-0.11	0.03	0.00
	19	-0.39	0.04	0.00
	20	-0.30	0.05	0.00
	21	-0.19	0.06	0.00
	22	0.00	(omitted)	
Ethnic group (Base: Non-White)	White	-0.01	0.02	0.44
SEN (Base: SEN)	None	-0.06	0.01	0.00
Region (Base: South-East of England)	East Midlands	0.12	0.03	0.00
	East of England	-0.17	0.03	0.00
	London	0.35	0.02	0.00
	North East	0.39	0.03	0.00
	North West	0.45	0.02	0.00
	West Midlands	0.14	0.02	0.00
	Yorkshire and Humber	0.11	0.02	0.00
	South West	0.09	0.03	0.00
Year completed KS4 (Base: 2012/13)	2008/09	-0.68	0.06	0.00
	2009/10	-0.42	0.05	0.00

Variable	Entered	β	SE	P
	2010/11	-0.15	0.03	0.00
	2011/12	-0.08	0.03	0.00
GCSE (Base: 1-4 GCSE A*-C)	0 GCSE A*-C passes	0.13	0.02	0.00
	More than 5 GCSE A-Cs	-0.48	0.02	0.00
Absence (Base: One or fewer)	Two to nine sessions	-0.02	0.03	0.44
	Ten to 24 sessions	0.04	0.03	0.10
	25 to 49 sessions	0.04	0.03	0.10
	More than 50 sessions	0.06	0.03	0.06
Unauthorised absence (Base: One or fewer)	Two to nine sessions	0.07	0.01	0.00
	Ten to 24 sessions	0.09	0.02	0.00
	25 to 49 sessions	0.10	0.03	0.00
	More than 50 sessions	0.06	0.03	0.04
Exclusion (Base: None)	One or more	0.00	0.02	0.94
KS3 maths (Base: KS3 maths below expected level)	At expected level	-0.05	0.01	0.00
	Above expected level	-0.18	0.03	0.00
KS3 English (Base: KS3 English below expected level)	At expected level	0.00	0.01	0.82
	Above expected level	-0.33	0.04	0.00
Years of post-16 education (base: None)	One	0.23	0.06	0.00
	Two	0.36	0.07	0.00
	Three	0.53	0.07	0.00
	Four	0.62	0.08	0.00
ILR: Highest aim (Base: None/Not in ILR)	ILR before Entry Level	-0.37	0.09	0.00
	ILR before Level 1	-0.08	0.07	0.25
	ILR before Level 2	-0.05	0.07	0.47

Variable	Entered	β	SE	P
	ILR before Level 3	-0.18	0.07	0.01
	ILR before Level 4	-0.39	0.17	0.02
	ILR before Level 5	0.00	(omitted)	
ILR: Highest aim achieved (Base: None/Not in ILR)	ILR before Entry Level	0.10	0.05	0.06
	ILR before Level 1	0.16	0.03	0.00
	ILR before Level 2	-0.02	0.03	0.43
	ILR before Level 3	-0.22	0.03	0.00
	ILR before Level 4	0.00	(omitted)	
	ILR before Level 6	0.00	(omitted)	
NCCIS Status 3 months before start (Base: Not observed)	Pre School Leaving Age	0.14	0.52	0.79
	Education post SLA	-0.16	0.02	0.00
	Apprenticeship	-0.18	0.03	0.00
	Traineeship	0.81	0.21	0.00
	Employment	-0.18	0.03	0.00
	Training	0.62	0.03	0.00
	Re-engagement activity	0.69	0.08	0.00
	NEET	0.02	0.05	0.62
	NEET - seeking EET	0.59	0.03	0.00
	Custody	-0.09	0.22	0.67
	Other/unknown	0.03	0.03	0.27
Intercept		-1.64	0.04	0.00
N				261656
LR chi2(41)				13306.22
Prob > chi2				0

Variable	Entered	β	SE	P
Log likelihood				-29382.92
Pseudo R2				0.1846

Source: ILR and NCCIS merged to NPD KS4 leaver cohorts (2009/10-2013/14)

Table 29 Propensity score estimates for Traineeship participants 2013/14, age group 19+, ILR-WPLS

Variable	Entered	β	SE	P
Sex (Base: male)	Female	-0.09	0.01	0.00
Age (Base: 19)	20	-0.10	0.02	0.00
	21	-0.21	0.02	0.00
	22	-0.22	0.02	0.00
	23	-0.34	0.03	0.00
	24	-0.71	0.04	0.00
Ethnic group (Base: Non-White)	White	0.09	0.02	0.00
Region (Base: South-East of England)	North East	-0.06	0.04	0.13
	North West	0.26	0.03	0.00
	Yorkshire and The Humber	-0.03	0.04	0.41
	East Midlands	-0.02	0.04	0.67
	West Midlands	0.06	0.04	0.09
	East	0.02	0.04	0.52
	London	0.30	0.03	0.00
	South West	0.15	0.03	0.00
Local area (Base: Major conurbation)	Urban minor conurbation	0.13	0.04	0.00
	Urban city and town	-0.03	0.02	0.12
	Rural town and fringe	-0.11	0.04	0.00
	Rural town and fringe in a sparse setting	0.03	0.19	0.88
	Rural hamlet and isolated dwellings	-0.34	0.06	0.00

Variable	Entered	β	SE	P
	Rural hamlet and isolated dwellings in a sparse setting	-0.43	0.09	0.00
Local economic conditions	Unemployment rate in local area, September 2013	0.02	0.00	0.00
Prior attainment (Base: Level 1)	Entry Level	-0.10	0.02	0.00
	Level 2	-0.59	0.02	0.00
	Level 3	-0.66	0.03	0.00
	Level 4 and above	-1.00	0.10	0.00
	Other/unknown	-0.25	0.03	0.00
	None	0.24	0.02	0.00
Employment history	Employed 6 months before treatment	-0.18	0.02	0.00
	Employed 12 months before treatment	-0.04	0.02	0.07
	Any employment spell prior to start	0.07	0.02	0.00
Intercept		-2.31	0.06	0.00
N				410794
LR chi2(41)				3744.43
Prob > chi2				0
Log likelihood				-16943.137
Pseudo R2				0.0995

Source: ILR-WPLS

Balancing tests

Table 30 reports the results of balancing tests for the full sample based on ILR-NCCIS-NPD data. These show that, other than for gender, there are no significant differences in the mean characteristics of participants with those of the matched control group. When models are estimated separately by gender, no significant differences remain. Furthermore, impact estimates do not differ substantively by gender (see Appendix 4). Table 31 presents equivalent balancing tests for the ILR-WPLS sample.

Table 30 Post matching tests of differences in observable characteristics, all participants

		Participants	Matched controls	Diff.	T-Stat	N
Sex	Female	0.477	0.463	0.014	2.675	8628
	Male	0.523	0.537	-0.014	-2.675	8628
Age at start of programme	15	0.000	0.000	0.000	.	8628
	16	0.152	0.150	0.002	0.520	8628
	17	0.303	0.295	0.007	1.536	8628
	18	0.263	0.268	-0.005	-1.058	8628
	19	0.134	0.136	-0.002	-0.533	8628
	20	0.099	0.102	-0.003	-0.805	8628
	21	0.049	0.049	0.000	0.017	8628
	22	0.000	0.000	0.000	-0.100	8628
Ethnic group	White	0.815	0.815	0.000	0.024	8628
SEN	None	0.558	0.548	0.010	1.959	8628
Region	East Midlands	0.077	0.077	0.001	0.176	8628
	East of England	0.048	0.048	0.000	-0.063	8628
	London	0.156	0.160	-0.004	-1.065	8628
	North East	0.093	0.093	0.000	-0.037	8628
	North West	0.254	0.246	0.008	1.849	8628
	South East	0.094	0.094	0.000	0.116	8628

		Participants	Matched controls	Diff.	T-Stat	N
	West Midlands	0.108	0.111	-0.003	-0.769	8628
	Yorkshire and Humber	0.099	0.102	-0.002	-0.776	8628
	South West	0.070	0.070	0.000	0.145	8628
Year completed KS4	2008/09	0.084	0.086	-0.002	-0.594	8628
	2009/10	0.117	0.120	-0.004	-1.066	8628
	2010/11	0.215	0.220	-0.005	-1.096	8628
	2011/12	0.282	0.280	0.002	0.422	8628
	2012/13	0.303	0.294	0.008	1.689	8628
GCSE	0 GCSE A*-C passes	0.448	0.456	-0.008	-1.610	8628
	more than 5 GCSE_ACs	0.117	0.115	0.002	0.593	8628
Sessions missed	No session	0.042	0.045	-0.003	-1.297	8628
	One session	0.014	0.012	0.002	1.857	8628
	Two to nine	0.168	0.167	0.001	0.198	8628
	Ten to 24	0.296	0.291	0.004	0.907	8628
	25 to 49	0.255	0.256	-0.001	-0.204	8628
	More than 50	0.225	0.229	-0.004	-0.867	8628
Unauthorised sessions	No session missed	0.365	0.361	0.004	0.768	8628
	One session	0.053	0.052	0.001	0.283	8628
	Two to nine sessions	0.264	0.266	-0.002	-0.361	8628
	Ten to 24 sessions	0.145	0.146	-0.001	-0.262	8628
	25 to 49 sessions	0.083	0.083	0.000	-0.006	8628

		Participants	Matched controls	Diff.	T-Stat	N
	More than 50 sessions	0.090	0.091	-0.002	-0.601	8628
Exclusions	None	0.890	0.886	0.003	0.931	8628
	One or more	0.110	0.114	-0.003	-0.931	8628
Years of Post-16 before programme	None	0.406	0.399	0.007	1.402	8628
	One	0.288	0.291	-0.003	-0.709	8628
	Two	0.200	0.204	-0.004	-0.941	8628
	Three	0.082	0.082	0.000	0.116	8628
	Four	0.024	0.024	0.000	-0.147	8628
Highest Level of leaving aim before	Level not identified	0.001	0.001	0.000	0.990	8628
	Not in ILR before	0.415	0.408	0.007	1.292	8628
	ILR before Entry Level	0.011	0.012	-0.001	-0.449	8628
	ILR before Level 1	0.147	0.151	-0.004	-1.159	8628
	ILR before Level 2	0.279	0.281	-0.002	-0.494	8628
	ILR before Level 3	0.147	0.146	0.001	0.165	8628
	ILR before Level 4	0.001	0.001	0.000	-0.743	8628
	ILR before Level 5	0.000	0.000	0.000	.	8628
Highest Level of achieved before	Level not identified	0.001	0.001	0.000	0.383	8628
	Not in ILR before	0.482	0.478	0.003	0.613	8628
	ILR before Entry Level	0.024	0.025	0.000	-0.284	8628
	ILR before Level 1	0.200	0.203	-0.003	-0.820	8628
	ILR before Level 2	0.212	0.211	0.001	0.189	8628
	ILR before Level 3	0.081	0.081	0.000	-0.083	8628

		Participants	Matched controls	Diff.	T-Stat	N
	ILR before Level 4	0.000	0.000	0.000	.	8628
	ILR before Level 6	0.000	0.000	0.000	.	8628
NCCIS status – Three months before	Not in NCCIS	0.237	0.237	-0.001	-0.117	8628
	Pre School Leaving Age	0.000	0.000	0.000	0.126	8628
	Education post SLA	0.361	0.364	-0.003	-0.572	8628
	Apprenticeship	0.037	0.037	0.000	-0.095	8628
	Traineeship	0.002	0.001	0.000	0.400	8628
	Employment	0.041	0.041	0.000	-0.058	8628
	Training	0.100	0.097	0.003	0.977	8628
	Re-engagement activity	0.010	0.010	0.000	0.295	8628
	NEET	0.018	0.019	-0.001	-0.478	8628
	NEET - seeking EET	0.125	0.124	0.001	0.194	8628
	Custody	0.001	0.001	0.000	0.184	8628
	Other/unknown	0.069	0.069	0.001	0.190	8628

Source: ILR and NCCIS merged to NPD KS 4 leaver cohorts (2009/10-2013/14)
Bandwidth 0.004, universe of Traineeship participants/non-participants

Table 31 Post matching tests of differences in observable characteristics, 19+ year old participants, ILR-WPLS

		Participants	Matched controls	Diff.	T-Stat	N
Sex	Female	0.36	0.36	-0.01	-0.67	3219
	Male	0.64	0.64	0.01	0.67	3219
Age at start of programme	19	0.18	0.18	0.00	-0.27	3219
	20	0.28	0.27	0.01	0.90	3219
	21	0.20	0.19	0.00	0.51	3219
	22	0.19	0.19	0.00	0.25	3219
	23	0.14	0.14	0.00	-0.32	3219
	24	0.02	0.03	-0.01	-3.30	3219
Ethnicity	Ethnic group: White	0.75	0.75	0.00	-0.22	3219
Region	North East	0.06	0.06	0.00	-0.57	3219
	North West	0.22	0.21	0.00	0.64	3219
	Yorkshire and the Humber	0.09	0.09	0.00	-0.02	3219
	East Midlands	0.06	0.06	0.00	-0.09	3219
	West Midlands	0.11	0.11	0.00	0.18	3219
	East	0.06	0.06	0.00	-0.22	3219
	London	0.26	0.26	0.00	-0.15	3219
	South East	0.07	0.07	0.00	-0.29	3219
	South West	0.07	0.07	0.00	0.13	3219
Local area	Urban major conurbation	0.54	0.55	0.00	-0.10	3219
	Urban minor conurbation	0.05	0.05	0.00	0.64	3219
	Local area: Urban city and town	0.35	0.35	0.00	0.49	3219

		Participants	Matched controls	Diff.	T-Stat	N
	Local area: Rural town and fringe	0.03	0.04	0.00	-0.40	3219
	Local area: Rural town and fringe in a sparse setting	0.00	0.00	0.00	-0.15	3219
	Local area: Rural hamlet and isolated dwellings	0.01	0.01	0.00	-1.31	3219
	Local area: Rural hamlet and isolated dwellings in a sparse setting	0.00	0.01	0.00	-1.72	3219
Local economic conditions	Unemployment rate local area	8.81	8.80	0.01	0.25	3219
Prior attainment	Entry level	0.14	0.13	0.01	1.60	3219
	Level 1	0.41	0.40	0.01	1.76	3219
	Level 2	0.14	0.15	-0.01	-1.54	3219
	Level 3	0.04	0.04	-0.01	-2.68	3219
	Level 4	.	0.01	-0.01	.	3219
	Other/unknown	0.05	0.04	0.01	1.55	3219
	None	0.23	0.23	-0.01	-0.94	3219
Employment history	Employed 6 months before	0.26	0.27	-0.01	-1.24	3219
	Employed 12 months before treatment	0.24	0.25	-0.01	-1.20	3219
	Any employment spell prior to start	0.60	0.60	0.00	-0.49	3219

Source: ILR-WPLS

Appendix 4: Impact estimates by gender

Impact estimates using PSM were also produced separately by gender; Tables 32-38 summarise the results. The full propensity score models and results of the balancing tests are available from the authors on request.

Key findings

- There was generally little difference in impacts of Traineeships by gender.
- The positive impact of Traineeships on the take-up of Apprenticeships was evident for both men and women (Table 32). Impacts by gender on higher-level apprenticeships were not statistically significant when considered separately for men and women (perhaps as a result of smaller sample sizes), but were significant at the 10 per cent level when considered for all Trainees.
- Impacts on undertaking any further learning were positive for both male and female Trainees, although only statistically significant for women (Table 33). However, when considering the level of further learning, the only statistically significant impact was for male Trainees, in terms of a positive impact on being in level 2 learning 12 months after starting the Traineeship.
- Impacts on employment by gender followed the same pattern observed for all Trainees, with no statistically significant impact on employment for 16-18 year olds (Table 34), but a positive and statistically significant impact on employment for 19-23 year olds, regardless of gender (Table 35).
- In terms of impacts on unemployment, it was only for men that there was an indication that participating in a Traineeship increased the probability of being in receipt of JSA within 12 months of starting the programme, although this was only statistically significant at the 10 per cent level. For women there was no significant impact (Table 36).
- Among 16-18 year old Traineees, for both men and women, there was a positive and statistically significant impact on the likelihood of attaining any positive outcome (apprenticeship, further learning or employment) within 12 months (Table 37). For 19-23 year olds, there was a positive and statistically significant impact on attaining any positive outcome within 12 months, and on being in any positive outcome 12 months post-starting, for both male and female Trainees (Table 38).

Table 32 Impact of Traineeships on Apprenticeship starts by gender

	Men			Women		
	Treatment group (%)	**Matched comparison group (%)**	**Impact (pp difference)**	**Treatment group (%)**	**Matched comparison group (%)**	**Impact (pp difference)**
Started apprenticeship within 12 months	31.2	7.4	23.8***	34.4	7.5	26.9***
In apprenticeship 12 months post-start	26.3	6.2	20.1***	28.6	6.1	22.4***
Started advanced or higher apprenticeship within 12 months	4.4	2.2	2.2	3.9	2.4	1.5
In advanced or higher apprenticeship 12 months post-start	4.0	2.0	2.0	3.5	2.1	1.4

Base: 4,202 men and 3,873 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR)

Table 33 Impact of Traineeships on educational attainment by gender

	Men			Women		
	Treatment group (%)	**Matched comparison group (%)**	**Impact (pp difference)**	**Treatment group (%)**	**Matched comparison group (%)**	**Impact (pp difference)**
Started another learning aim within 12 months	56.2	41.2	14.9	60.1	44.2	15.9**
In learning 12 months post-start	40.0	27.4	12.6	44.3	30.6	13.7*
Level 2 aim started within 12 months	35.2	18.1	17.2	41.0	18.3	22.7
Level 3 or higher aim started within 12 months	9.2	13.9	-4.6	9.2	17.1	-7.9
In level 2 learning 12 months post start	27.0	11.7	15.4**	31.8	12.3	19.5
In level 3 or higher learning 12 months post start	7.4	11.1	-3.7	7.2	13.6	-6.4

Base: 4,202 men and 3,873 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR)

Table 34 Impact of Traineeships on employment,16-18 year olds, by gender

	Men			Women		
	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Any employment within 12 months	20.8	16.9	3.9	18.0	14.3	3.6
In employment 12 months post-start	16.2	14.0	2.2	13.4	11.7	1.8

Base: 2,955 men and 2,999 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on NCCIS)

Table 35 Impact of Traineeships on employment,19-23 year olds, by gender

	Men			Women		
	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Any employment within 12 months	55.9	31.4	24.5***	48.4	24.9	23.4***
In employment 12 months post-start	42.1	23.2	18.9***	37.4	19.5	17.9***

Base: 2,063 men and 1,156 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked ILR-WPLS (outcomes measured based on WPLS)

Table 36 Impact of Traineeships on unemployment,19-23 year olds, by gender

	Men			Women		
	Treatment group (%)	**Matched comparison group (%)**	**Impact (pp difference)**	**Treatment group (%)**	**Matched comparison group (%)**	**Impact (pp difference)**
Any JSA received within 12 months of (pseudo-) start	18.2	13.8	4.4*	13.8	10.1	3.7
Receiving JSA 12 months post (pseudo)-start	10.3	7.1	3.2	8.8	5.6	3.3

Base: 2,063 men and 1,156 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked ILR-WPLS (outcomes measured based on WPLS)

Table 37 Impact of Traineeships on attaining any positive outcome,16-18 year olds, by gender

	Men			Women		
	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Starts apprenticeship, further learning or employment within 12 months	74.8	61.6	13.2***	74.0	60.7	13.3**
In apprenticeship, further learning or employment 12 months post-start	61.4	47.0	14.5	60.2	46.1	14.2

Base: 2,955 men and 2,999 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked NPD-NCCIS-ILR (outcomes measured based on ILR and NCCIS)

Table 38 Impact of Traineeships on attaining any positive outcome,19-23 year olds, by gender

	Men			Women		
	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)	Treatment group (%)	Matched comparison group (%)	Impact (pp difference)
Starts apprenticeship, further learning or employment within 12 months	78.3	49.3	29.0***	71.9	44.7	27.2***
In apprenticeship, further learning or employment 12 months post-start	56.2	35.6	20.6***	54.2	34.2	19.9***

Base: 2,063 men and 1,156 women. ***=difference statistically significant at the 1 per cent level; **=difference statistically significant at the 5 per cent level; *=difference statistically significant at the 10 per cent level. Bootstrapped standard errors based on 300 replications and a 10 per cent sample of the treatment group and 1 per cent sample of the comparison group.

Source: Linked ILR-WPLS (outcomes measured based on ILR and WPLS)

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