Department for Education

Post 16 education and labour market activities, pathways and outcomes (LEO)

Research report

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Oliver Anderson and Moira Nelson, Department for Education

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Contents

Executive summary 5

Longitudinal Education Outcomes (LEO) pathways of individuals completing key stage 4 (KS4) at the same time 5

Key findings 5

Post 16 Education and labour market pathways are incredibly diverse 5

Post 16 Education and labour market activities, pathways and outcomes differ based on individual characteristics 6

Higher levels of education lead to better labour market outcomes 6

For most sub-groups achieving a higher education level leads to better labour market outcomes than their comparators (with different characteristics) 7

Even with similar levels of education, there are different labour market outcomes based on individual characteristics 8

However, for a few select sub-groups a higher education level does not always lead to better labour market outcomes than their peers 8

Conclusions and next steps 9

Introduction 10

Coverage 11

Number of years post KS4 12

Measures 12

Labour market outcomes 13

Combining cohorts of individuals 13

Methodology 14

Main activities 14

Earnings 15

Pathways 16

Key themes from analysis 17

Comparisons of sub-groups based on socioeconomic, demographic and education factors 18

Analysis at different education levels 21

Graduates and non-graduates 22

Level 3 achievement for non-graduates 23

Section 1: Education and labour market activities, pathways and outcomes for all individuals (completing GCSEs at same time) 25

Education and labour market pathways are diverse and often complex 25

Education and labour market activities, pathways and outcomes differ based on individual characteristics 27

There are some sub-groups where education and labour market activities, pathways and outcomes have similarities (however, earnings differ) 28

Black and minority ethnic groups tend to have higher levels of post 16 education, when compared with those from the White British group, yet not necessarily better labour market outcomes 33

Within some key sub-groups, education and labour market activities, pathways and outcomes are totally different 41

Section 2: Education and labour market activities, pathways and outcomes at different education levels 48

Higher education levels are associated with better labour market outcomes 48

Individuals completing a degree have significantly better labour market outcomes than those without a degree 49

For those without a degree, achieving a level 3 or above qualification is associated with significantly better labour market outcomes than for those achieving level 2 or below (as their highest level) 52

At similar education levels, labour market outcomes differ by individual characteristics 55

The difference between average earnings of graduates and non-graduates varies significantly for different sub-groups 55

Similarly, for those without a degree, the difference between average earnings of those achieving a level 3 or above or not varies significantly for different sub-groups 57

The proportions in employment and claiming out of work benefits and average earnings vary for different sub-groups with similar levels of education 59

For some sub-groups getting a higher education level leads to better labour market outcomes than their peers 60

However, for a few select sub-groups, getting a higher education level does not lead to better labour market outcomes than their comparators 68

For both region and gender, there is a slightly more complex relationship (than other sub-groups) when observing labour market outcomes at similar education levels. 75

Conclusions and next steps 86

Conclusions 86
Setting the scene: new evidence on post 16 education and labour market outcomes 86
Stimulating interest, debate and follow up analysis 86
Key findings: contribution to evidence base and limitations 86
Next steps 87

Executive summary

Longitudinal Education Outcomes (LEO) pathways of individuals completing key stage 4 (KS4) at the same time

1. This report looks at the post 16 education and labour market activities, pathways and outcomes of young people that took their General Certificate of Secondary Education (GCSEs) exams between 2002 and 2007. It uses the LEO administrative data set[1] to explore the pattern and nature of the pathways that people take from completing school, through their education and into the labour market. As well as illustrating the sheer diversity of routes through education into the labour market, it also sheds light on the effects and implications of key personal socioeconomic and demographic characteristics for subsequent outcomes.

Key findings

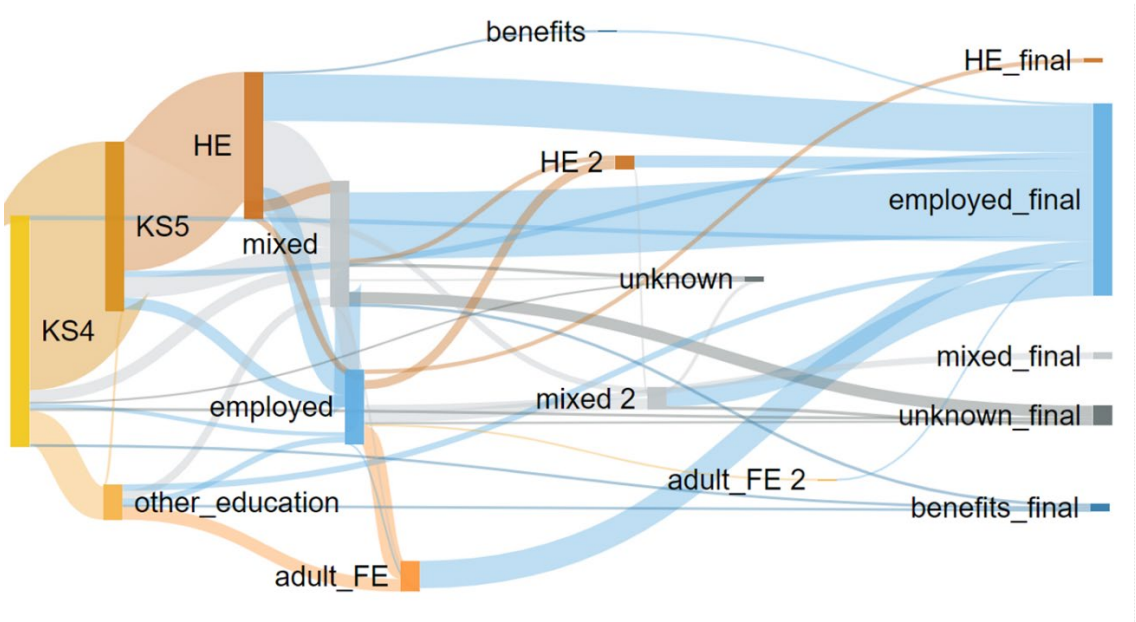
Post 16 Education and labour market pathways are incredibly diverse

2. Pathways are used to show the transition from education into the labour market. They are constructed as a set of education and labour market activities over time, starting with the first activity after KS4 (GCSEs) and ending with the most recent activity. A pathway can range from one to fifteen different activities. For example, someone who got a job immediately after GCSEs and remained employed would have a pathway simply as 'employed'. However, most pathways contain several activities and a range of education, such as: key stage 5 (KS5), other education (at 16-19), adult further education (FE) and higher education (HE) and labour market activities (employment and benefits).
3. Education and labour market pathways are incredibly diverse. For the 3.6 million individuals taking their GCSEs between 2002 and 2007 there are over 262,000 different pathways. Of these, almost 168,000 pathways are unique, i.e. each only observed for a single individual. Whilst the complexity of pathways is perhaps not surprising, clear and robust evidence on their sheer diversity did not previously exist.
4. Figure 1 shows the 50 most common education and labour market pathways of all those in the sample, representing just under a third (31%) of all individuals. The pathways move from left to right with the key activities being the nodes (the rectangular or square blocks) and the line thickness reflecting the numbers of individuals moving from one activity to the next. We can see that the most common

[1] The Longitudinal Education Outcomes (LEO) dataset contains a range of anonymised information about individuals including personal characteristics, education attainment, employment and income and out of work benefits claimed.

paths pass through KS5 and HE, before ending up in employment, but that there are a variety of other activities and routes that are taken.

Figure 1: Most common education and labour market pathways of all individuals - KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

Post 16 Education and labour market activities, pathways and outcomes differ based on individual characteristics

5. The proportions participating in education (KS5, HE and other education/adult FE) immediately post-GCSE varies significantly for key sub-groups. Similarly, the proportion in employment or claiming out of work benefits and the average earnings can differ by a large amount depending on socioeconomic, demographic and education characteristics.

6. Individuals from certain ethnic groups, who have a special education need, have poorer GCSE attainment (at KS4), are from a lower socioeconomic background or attended a state-funded (non-selective) school have worse labour market outcomes than those from more “advantaged” comparator sub-groups.

Higher levels of education lead to better labour market outcomes

7. Higher levels of education lead to better labour market outcomes, for all sub-groups examined and at all levels of qualification. These comparisons are made between those with the *same* characteristics, for example individuals that were free school

meals (FSM) eligible with a higher education level compared to FSM eligible individuals with lower education level. This is analysed at two levels in this report:

- Higher proportions of individuals completing a degree are in employment, having higher average earnings than those without a degree and with lower proportions claiming out of work benefits.
- Similarly, for those without a degree, individuals achieving a level 3 qualification are more likely to be employed, earn more when employed and are less likely to claim out of work benefits than those achieving level 2 or below as their highest qualification level[2].

For most sub-groups achieving a higher education level leads to better labour market outcomes than their comparators (with different characteristics)

8. Higher education leads to better outcomes for all groups when compared within groups, but how does that compare with comparator groups, i.e. those with *different* characteristics? For example, comparing individuals that were free school meals (FSM)[3] eligible and those non-FSM eligible with different education levels. Paragraph 6 identified that individuals with certain characteristics have poorer labour market outcomes than their comparators (with different characteristics).
9. In most cases, those completing a degree have better labour market outcomes than their comparators who do not have a degree. Similarly, for non-graduates achieving a level 3 or above qualification, they usually have better labour market outcomes than their comparators who have a level 2 or below as highest education level.
10. For example, there are higher proportions of graduates that were FSM eligible in employment and lower proportions claiming benefits than non-FSM eligible non-graduates, 15 years after their GCSEs (63 percent versus 58 percent and five versus nine percent respectively). Of those in employment, the FSM eligible graduates earn around £5,000 more per year than non-FSM eligible non-graduates and their earnings potential seem to have different trajectories.
11. Completing a degree is used as an exemplar above, but similar patterns exist for non-graduates that achieve a level 3 or above qualification.

[2] Level 3 is two A-level passes or an equivalent qualification whereas level 2 is five GCSEs A* to C or an equivalent qualification.
[3] FSM are available to children from low-income families whose parents are claiming certain benefit types. It is included as a proxy for (lower) socioeconomic status and is a common measure used in education analysis, research and statistics.

Even with similar levels of education, there are different labour market outcomes based on individual characteristics

12. Flipping the previous key finding around, it implies that individuals that were FSM eligible and identified as having special educational needs (SEN) have poorer labour market outcomes than their comparators with similar education levels.

13. The proportions in employment, proportions claiming out of work benefits and average earnings is often different for different sub-groups with similar education levels. This holds for comparisons between: graduates; (non-graduates) level 3 or above; and level 2 or below highest education level. The employment and earnings 'premium' for completing a degree or a level 3 or above qualification also differs on socioeconomic, demographic and education characteristics.

However, for a few select sub-groups a higher education level does not always lead to better labour market outcomes than their peers

14. For a few specific sub-groups, having a higher education level does not lead to better labour market outcomes than their peers (from different sub-groups) with a lower education level. This is the case for those that complete a degree and for non-graduates that achieve a level 3 or above qualification. It should be noted that this is only for a few specific groups, and for the majority of sub-groups getting a degree or level 3 or above qualification is associated with better outcomes than comparators with a lower qualification.

15. For example, non-graduates with a statement of SEN with a qualification at level 3 or above have similar proportions in employment (both 54 percent) and claiming out of work benefits (15 versus 13 percent) as individuals not identified with SEN with level 2 or below qualifications (15 years after GCSEs). However, despite similar levels of employment, they have lower earnings: £20,000 versus £17,000 (in year 15).

16. Individuals with a statement of SEN start from a lower point than their comparators, individuals not identified as having SEN (in terms of employment and earnings). In this case achieving a level 3 does not overcome the difference (nor does getting a degree) as it does for those with SEN without a statement. On the face of it, these findings suggest that having a more severe form of SEN is a stronger influence than achieving level 3 (or a degree) on labour market outcomes. In reality, there could a combination of factors that explain this (for example, prior attainment and subject and type of study at level 3, in addition to SEN status).

17. Despite the above finding, achieving a level 3 or above qualification for individuals with a statement of SEN is associated with greater likelihood of gaining

employment and higher average earnings when they do (compared with those achieving level 2 or below).

Conclusions and next steps

18. This report has several main objectives:
    - **Setting the scene**: in terms of showing transition from school, through all post compulsory education routes and into the labour market, using a 'whole system' approach (i.e. not just learners completing HE or FE). Little analysis using the LEO dataset has been carried out in this manner.
    - **Creating new evidence**: This analysis aims to fully utilise and exploit a range of variables from administrative datasets and demonstrate that education and labour market activities, pathways and outcomes differ based on them.
    - **Stimulate interest, debate and follow-up analysis**: Crucially to encourage analysts, internal and external to the Department for Education (DfE), to follow up on the analysis. As the LEO data becomes available to the wider research community we hope that others will follow up and investigate further.
19. **However**, **whilst the analysis shows 'what' is happening, it does not explain 'why'.** It should be noted that these findings are descriptive and there may be other factors driving them. Other socioeconomic, demographic and education factors, and the interrelationships between them, could be explaining the findings we observe. It could also be employer discrimination. Taking differences between FSM eligible and non-FSM eligible sub-groups for instance, factors such as gender, region, first language, ethnicity and education type, quality and subject studied (as well as education level) may all have an effect. It is likely to be a complex mix of these factors that drives outcomes.
20. The reader should also be aware that there are a host of unobserved factors that are more difficult to capture that could be driving these findings. Factors such as motivation, parental aspirations, innate ability, mental health and wellbeing and home learning environment cannot be derived from administrative data but are known to be important.
21. **We are currently undertaking more technical and in-depth analysis to further investigate these findings and will publish this in the near future**. For example, regression analysis allows us to look at the association of different factors with labour market outcomes, enabling us to control for some of the aforementioned factors and isolate the relationship between the characteristics in question and labour market outcomes. This will be combined with further descriptive analysis, focusing on relationships between some of the characteristics and educational factors mentioned in paragraph 6.

Introduction

22. This research report presents analysis on the education and labour market activities, pathways and outcomes of individuals. It tracks those doing their GCSEs between 2002 and 2007 and follows their education and labour market activities for a 10 to 15 year period after they left secondary school. The analysis looks at different sub-groups based on socioeconomic, demographic and education variables and investigates how activities, pathways and outcomes differ for these sub-groups. It also factors in education level i.e. whether individuals have completed a degree or a level 3 or higher qualification (for non-graduates).

23. The analysis in this report is designed to answer the following analytical questions:

    - What types of educational and labour market pathways do individuals typically take? How many (and what proportions) of individuals go down each 'path'?

    - Do different educational and labour market pathways lead to consistently different labour market outcomes? How different are they?

    - Do educational and labour market pathways differ for different groups of interest? How do they differ by gender, ethnicity, special educational need status, social disadvantage, geography, school type, etc? How do labour market outcomes differ for these groups?

    - How do education and labour market pathways and outcomes differ for the aforementioned groups based on their education level? As well as exploring differences between graduates and non-graduates we look at variations in routes for non-graduates, such as whether level 3 achievement leads to different pathways and outcomes than those with a level 2 or below.

24. The research follows school leavers through post 16 learning and into the labour market using LEO[4]. The LEO dataset links information about individuals, including:

    - personal characteristics such as gender, ethnic group, special educational needs, free school meals eligibility

    - education, including schools, colleges and higher education institutions attended, courses taken and qualifications achieved

    - employment and income

[4] The privacy statement explaining how personal data in this project is shared and used is published at: https://www.gov.uk/government/publications/longitudinal-education-outcomes-study-how-we-use-and-share-data

- benefits claimed

25. By combining these sources, we can look at the progress of individuals doing their GCSEs into post-compulsory education and the labour market. Further information on the data included in the LEO dataset can be found in the accompanying Technical Report[5], which also contains further information on the data quality and match rates.

Coverage

26. This publication looks at those individuals who finished KS4, i.e. taking their GCSEs, in a school in England between the 2001/02 and 2006/07 academic years. Their education and labour market outcomes are followed for the 2003-04 to 2017-18 tax years.

27. The 2001/02 KS4 academic year is the earliest cohort matched to LEO. This means we have data for all those born from 1986 who competed their GCSEs at a school in England. Using the latest tax year data available (2017-18) we can track individuals for a maximum of 15 years after their GCSEs.

28. All labour market figures are based on UK tax and benefit records only[6]: further education data is from English institutions only, and higher education figures are from UK institutions.

29. There has been a series of outputs using LEO data to assess returns to education which have different scopes, objectives and approaches to this research report. The Institute of Fiscal Studies (IFS) have produced several reports on returns to higher education[7] and the Centre for Vocational Education Research (CVER) have published a series of reports on returns to further education, particularly vocational qualifications[8]. This research report takes a "whole system" approach, reflecting on these sector-focused analyses, but putting them into the wider context of all

[5] https://www.gov.uk/government/publications/post-16-education-and-labour-market-activities-pathways-and-outcomes-leo

[6] Northern Ireland benefits system is not covered by DWP. Although the benefits have the same criteria and payments, we do not have benefits claims for Northern Ireland

[7] https://www.gov.uk/government/publications/undergraduate-degrees-relative-labour-market-returns; https://www.gov.uk/government/publications/undergraduate-degrees-labour-market-returns; https://www.gov.uk/government/publications/undergraduate-degrees-lifetime-labour-market-returns; https://www.gov.uk/government/publications/postgraduate-degrees-labour-market-returns Undergraduate degrees: labour market returns by background characteristics - GOV.UK (www.gov.uk)

[8] http://cver.lse.ac.uk/; https://www.gov.uk/government/publications/estimating-the-labour-market-returns-from-qualifications-gained-in-english-further-education-using-the-individualised-learner-record-ilr; https://www.gov.uk/government/publications/further-education-impact-of-skills-and-training-on-the-unemployed; https://www.gov.uk/government/publications/further-education-comparing-labour-market-economic-benefits-from-qualifications-gained

pupils' paths leaving school and into continued education and the labour market. Some findings are consistent with the previous IFS and CVER reports, but use a different methodology, thus supporting existing findings. However, this report goes further than the IFS and CVER reports, addressing whole system patterns for the sub-groups identified. It makes visible the sheer complexity of choices and options and the varied consequences of those choices for young people with different characteristics.

Number of years post KS4

30. The first year we follow individuals (year 1) is the first full tax year after the individual finished KS4, i.e. after they completed their GCSEs. For example, the 2001/02 academic year cohort finished school in summer 2002, part way through the 2002-03 tax year. The next, and therefore their first, full tax year is 2003-04.

31. Pupils in their final year of KS4 are generally aged 15 (age at 31 August before starting GCSE year), with some exceptions. This means that most individuals will be aged 17 at some point in the first full tax year after leaving school. Table 1 below shows that, as we have 15 years of data for the oldest individuals, they are 31 years old in the latest data (2017-18 tax year). The table can be applied to individuals regardless of which academic year they finished KS4.

Table 1: Years post KS4 and age

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Age	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Measures

32. The following measures are used in the analysis:

- **Employment** – the individual has been in paid employment for at least one day in each of the 12 months of the tax year. If the individual has a spell of employment but no income in the tax year (e.g. career break) then the individual is not counted as being employed.
- **Key stage 5 (KS5)** – the individual was entered for one or more level 3 qualifications (A levels or equivalent) and was aged 16 to 18 at the start of the academic year (in English institutions) in the tax year which overlaps the start of the academic year.
- **Other education** – for (tax) years 1 and 2 only. The individual appeared in the Individualised Learning Record (ILR) aims data (in England) for at least one day in each of six consecutive months of the tax year. This includes classroom learning at level 2 or below (level 3 learning in this time period is covered by key stage 5) and apprenticeships at any level.

- **Adult FE (19+)** – for (tax) years 3 to 15. The individual appeared in the ILR aims data (in England) for at least one day in each of six consecutive months of the tax year. This includes both classroom learning and apprenticeships at any level.
- **Higher education (HE)** – the individual appears in the Higher Education Statistics Agency (HESA) Student Record data (UK HE institutions) for at least one day in each of six consecutive months of the tax year, studying for a level 4 or higher qualification.
- **Claiming out of work benefits** – the individual was claiming out of work benefits for at least one day in each of (at least) six consecutive months of the tax year. Details on out of work benefits can be found in the Technical report.
- **No sustained activity** – the individual had some paid employment, participated in some learning (KS5, other education, adult FE or HE) or claimed some out of work benefits in the tax year, but did not fulfil the requirements for any of the definitions outlined above. In the pathways analysis this is sometimes referred to (for example in charts and tables) as 'mixed' for presentational purposes.
- **Activity not captured** – the individual was matched to LEO data but could not be found in any of the applicable labour market or education datasets for that tax year. In the pathways analysis this is sometimes referred to as 'unknown', again in charts and tables, for presentational purposes.

Labour market outcomes

33. When referring to labour market outcomes this report is talking about employment, out of work benefits claims and average earnings. For example, if when comparing two groups we said one group had better labour market outcomes, it is implying they have higher proportions in employment, lower proportions claiming out of work benefits and higher average earnings. This is often explicitly stated however the reader should be aware.

Combining cohorts of individuals

34. Cohorts of individuals who completed KS4 in England between 2001/02 and 2006/07 have been combined to produce a more representative and robust picture of peoples' education and labour market activities, pathways and outcomes. This is particularly important when looking at smaller sub-groups of interest. Combining several cohorts of individuals completing their GCSEs at the same age means any changes or patterns (to education, labour market outcomes or pathways) are more likely to be real differences and not reflective of random variations between year groups.

35. For example, when comparing labour market outcomes of individuals from certain minor ethnic groups we can have more confidence that observed differences are systematically meaningful and there is not just something randomly different about the learners from these minor ethnic groups from a given school year (cohort).

36. As the school leavers in the later cohorts are older this means that years 1 to 10 contain data from all six cohorts, i.e. all those doing GCSEs between 2002 and 2007, whilst year 15 contains data from only those doing GCSEs in 2002. Years 11 to 14 after GCSEs see decreasing number of cohorts included in the analysis. When looking at all six cohorts of individuals in this way we are considering the paths of 3.6 million young people. See Technical report for more information.

Methodology

37. There are three main elements to the analyses discussed in this report:

- Main activities: this shows the main education and labour market activity of individuals over time, from years 1 to 15 after GCSEs.
- Earnings: showing the average earnings trajectories of individuals in employment, from years 1 to 15 after GCSEs.
- Pathways: representing education and labour market pathways of individuals and showing flows of activities.

Main activities

38. For each tax year an individual is assigned a main (or principal) activity based on their education and/or labour market activity. This is based on meeting the criteria of the categories outlined in the Measures section above.

39. When an individual meets the criteria for more than one activity in the same year a **hierarchy** (see Figure 2 below) is applied to assign a 'main activity'. It is based on the following assumptions:

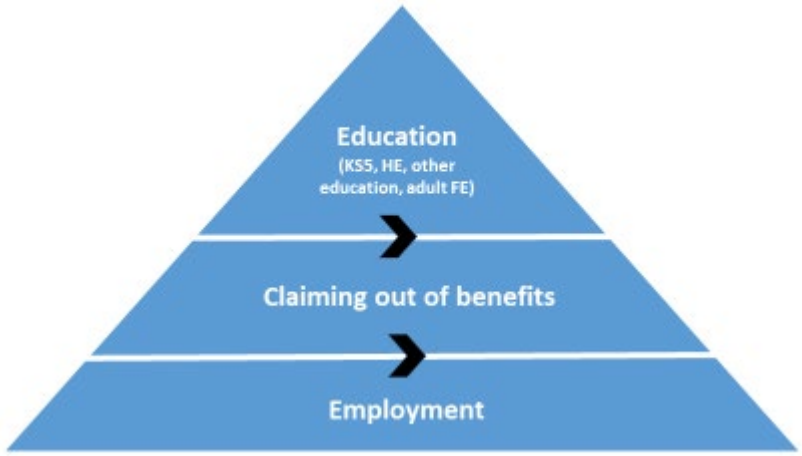
    - Education and employment: education is assigned to be the main activity. It is most important for the DfE to capture educational information and employment is usually low income.

    - Education and claiming out of work benefits: education is assigned to be the main activity. The criteria for claiming out of work benefits and being in education is strict and it is important to capture education information as could be vehicle for changing situation.

    - Employment and claiming out of work benefits: claiming out of work benefits assigned to be the main activity. There are strict criteria for claiming out of

work benefits and if employed while doing so they are likely to be seeking alternative work (with better pay or more hours).

Figure 2: Main activities hierarchy applied when individuals meet criteria for more than one activity



40. The above ordering allows representation of education and labour market activities over time in chart format, as shown in both sections of the report. It should be noted that when proportions employed and proportions claiming out of work benefits are presented in table format it is the proportion that is classed as a main activity.

Earnings

41. Average earnings over time are shown for all individuals and different sub-groups. To calculate the average, the median number is used. The average earnings for a given year are made up from earnings of individuals that are in employment (see definition above in Measures) during that year. Average earnings are annualised earnings.

42. As the dataset includes several cohorts of individuals, their earnings are from different tax years when comparing the same time point. For example, year 1 for the 2001/02 KS4 academic year cohort is 2003-04 but for the 2006/07 KS4 academic year cohort it is 2008-09. To reflect this, and to make comparisons like for like, we inflate earnings from all years in line with the most recent tax year (2017-18). This uses price inflation, i.e. the Consumer Prices Index that includes owner occupiers housing costs (CPIH).

Pathways

43. The ‘main’ activities from years 1 to 15 are turned into numbered activities, i.e. first activity, second activity etc, and multiple consecutive activities are removed. This allows multiple tax years of the same activity to be ‘collapsed’ into one activity.

44. For example, the ‘classic’ education and labour market pathways of KS5 (A levels), HE (degree) and finding a job and remaining employed would look like the top line of Figure 3, below. After applying the pathways approach, it becomes the lower part of Figure 3.

Figure 3: pathways approach

PMR	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Individual X	KS5	HE	HE	HE	mixed	employed	employed	employed	employed	employed	employed	employed	employed	employed	employed

PMR	First activity	Second activity	Third activity	Fourth activity
Individual X	KS5	HE	Mixed'	employed

45. Pathways are defined as a collection of education and labour market activities over time. They start with the first activity after KS4 and end with the most recent activity. The aim is to show the transition from education into the labour market. A pathway can range from one to fifteen different activities. For example, someone who secured employment immediately after GCSEs and remained employed would have a pathway simply as ‘employed’. However, most pathways contain several activities and range of education (KS5, other education, adult FE (19+) and HE) and labour market activities (employment and benefits).

46. This approach allows us to examine more easily and in greater depth the education and labour market pathways of individuals (completing GCSEs at same age). To aid visualisation of these pathways in the commentary, **Sankey charts** are used (see box below).

Sankey charts

Sankey charts are a type of flow diagram in which 'nodes' indicate the education or labour market activity. The 'flows' between the nodes reflect the numbers or proportions moving from one activity to the next. Therefore, the width/size of the flows and nodes are important as they indicate how many individuals are moving between different education and labour market activities. These charts are a useful tool in distilling complex information and particularly the direction and size of flows within a system.

In the examples shown in this report, the Sankey charts show the most common education and labour market pathways of individuals. These pathways are often diverse and complex, making it difficult to depict them all in the same visualisation. For this reason, the 50 most common pathways (of over 260,000 unique routes) were selected. This covers over 1 million learners, which is just less than a third (31%) of all individuals. The representativeness of the Sankey charts varies for different sub-groups due to the number of individuals taking the most common pathways and the number and complexity of pathways for that sub-group.

In the Sankey charts (only), purely for presentational purposes, 'mixed' has replaced 'no sustained activity' and 'unknown' is used instead of 'activity not captured'.

Key themes from analysis

47. This report pulls out some of the key themes from a range of analyses. The analyses reflected in this report are chosen to be illustrative of the key themes. A range of data tables showing the full range of findings on main activities and earnings have been released alongside this report[9].

48. The full analysis contains the following:

    - Main activities, pathways and outcomes of everyone in the sample who completed GCSEs (KS4) between 2002 and 2007.
    - Shows education main activities, pathways and outcomes of key sub-groups based on important 'characteristics' (e.g. socioeconomic and demographic and education variables) of individuals as captured in GCSE year. These are taken from the school census data collection[10]. Includes: gender, FSM

[9] https://www.gov.uk/government/publications/post-16-education-and-labour-market-activities-pathways-and-outcomes-leo
[10] https://www.gov.uk/government/collections/statistics-school-and-pupil-numbers

eligibility, SEN status, ethnicity, first language, KS4 attainment, Income Deprivation Affecting Children Index (IDACI), region and school type.

- For each sub-group, further analysis compares graduates and non-graduates, i.e. those with a level 6 or higher qualification against those who do not.
- More granular analysis of the 'non-graduate' group compares those who achieve level 3 (or above) qualifications or not. A full level 3 qualification is passing at least two A-levels or completing another equivalent qualification (or set of qualifications).

Comparisons of sub-groups based on socioeconomic, demographic and education factors

49. The key themes highlighted in this report reflect patterns emerging from the analysis comparing sub-groups, as explained in the section above. Different sub-groups are used as an example to illustrate each theme. When choosing the characteristics to illustrate a given theme, three criteria were applied:
    - Breadth: the aim was to use a broad range of different characteristics
    - Relevance and importance: focusing on key areas of interest. For example, comparisons using FSM eligibility, ethnicity, SEN status, gender and KS4 results are used because these are important areas for the Department for Education (DfE).
50. **It is important to note when considering the sub-group comparisons throughout this report that we have not controlled for other factors that may also have an effect in paths.** For example, when comparing ethnic groups there could be differences in location, socioeconomic status, special educational need, school type attended, first language spoken, type of education (academic versus vocational), subject or sector area of qualifications, institution type etc. Some of these factors could be more significant than the characteristic in question. Exploration of interdependencies in influencing factors will be considered future publications.
    - FSM comparisons are based on eligibility in their GCSE year. FSMs are available to children from low-income families whose parents are claiming certain benefit types[11] and hence it is used as a proxy for lower socioeconomic status or social disadvantage. FSM eligibility was chosen as a key metric. IDACI score/quintile could have been used a proxy for socioeconomic status instead, but FSM was chosen because it is high profile

[11] https://www.gov.uk/apply-free-school-meals

and of prominent interest to the DfE. Analysis shows similar patterns but is not discussed in the report.

- SEN[12]: A child or young person has a statement when a formal assessment has been made. A document is in place that sets out the child's need and the extra help they should receive. For comparison purposes, individuals were characterised as being in one of three groups: 1) with statement of SEN, 2) SEN without a statement and 3) not identified with SEN. Groups were determined by classification of individuals in their GCSE year. Those with SEN without a statement are therefore those with lesser needs than individuals with statement of SEN or put another way, less severe forms of SEN.
- For ethnicity, two main comparisons are made:
    - Major ethnic group: sub-group comparisons are made between individuals from Asian, Black, Chinese, Mixed and White major ethnic groups. White individuals are used as the reference or comparator group. 'Any other ethnic group' is not examined as it was deemed of lesser interest. This is based on classifications from the 2001 census[13]
    - Minor ethnic group: comparisons in this report are made between the following minor ethnic groups: (Asian[14]) Bangladeshi, (Asian) Indian, (Asian) Pakistani, Black African, Black Caribbean and White British minor ethnic group. White British is used as a reference or comparator throughout. Comparisons are not included for 'mixed' minor ethnic groups, but some can be found in accompanying data tables. Other minor ethnic groups were not included in the analysis as they were deemed to be of less interest
- As an indicator for geography, analysis comparing individuals doing their GCSEs in different regions is drawn upon. The report uses three illustrative regions: East Midlands, London and the North East. These were chosen to show North, Midlands and South and are broadly representative of patterns for other regions within each subset. Presenting analysis from all nine regions

[12] 'Children have special educational needs if they have a learning difficulty which calls for special educational provision to be made for them'. Those identified as SEN are split into two categories: 1) individuals with statement of SEN and 2) individuals with SEN without a statement based on the SEN code of practice 2002: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/273877/special_educational_needs_code_of_practice.pdf .
A child or young person has a statement or Education, Health and Care (EHC) plan when a formal assessment has been made. A document is in place that sets out the child's need and the extra help they should receive.

[13] https://www.ethnicity-facts-figures.service.gov.uk/style-guide/ethnic-groups#2001-census

[14] The Asian major ethnic group is made of individuals from the Pakistani, Indian, Bangladeshi and Asian Other minor ethnic groups. The major ethnic group Black is comprised of individuals that are identified as Black African, Black Caribbean or Black Other minor ethnic group.

is not possible in this report, but statistics for other regions can be found in the data tables accompanying the report.

- Attainment at KS4 is split into two groups: 1) individuals that achieved at least five GCSE passes A* to C (and equivalents) and 2) those that did not achieve five GCSE passes A* to C (and equivalents). Equivalents include short GCSEs (half the value of a GCSE), double award vocational GCSEs (the value of two GCSEs), GNVQ intermediate (worth four GCSEs for a full award or two GCSEs for a partial award) and key skills level 2[15]. The analysis is based on achievements by pupils at the end of KS4 and not post 16. For example an individual that did not achieve at least five GCSE passes A* to C that re-sat GCSEs post KS4 (e.g. at further education college) would be included in the 'did not achieve' group. The reason for this is to focus in on the importance of KS4 results.
- Three school types are examined in this report: independent (private) schools, selective (grammar schools) and state-funded (non-selective). The latter is primarily local authority maintained schools, but also includes some of the earliest sponsored academies.
- A comparison is made by first language, comparing those speaking English as a first language and those not speaking English as first language. A pupil's first language of 'other than English' is defined as 'where the pupil has been exposed to a language other than English during early development and continues to be exposed to this language in the home or in the community'.

[15] These qualifications all counted towards school performance tables at the time thereby creating an incentive for schools to teach these qualifications

New opportunities arising from administrative data

The LEO data offers new opportunities for analysis and potential to create new evidence in a range of areas. Previous analysis of the link between education and labour market links has used the Labour Force Survey (LFS) and cohort studies/longitudinal surveys. This has generated a wealth of evidence on socioeconomic, demographic and education factors and their link with labour market outcomes. However, the LEO data offers not just more statistical power, but different variables and coverage arising from the admin data.

The characteristics mentioned above (paragraph 50) are examples of this. These are defined using administrative data from various DfE data collections. It was not possible to examine (in as much detail) the link between these variables and labour market outcomes before LEO. This data overcomes some of the issues around small sample size and lack of detail. For example, it was previously difficult to explore the link between education and labour market outcomes for different minor ethnic groups due to numbers being too small. Similarly, whilst education has been explored extensively, there was no opportunity to focus in on detailed GCSE results.

This report aims to show where evidence is new or corroborative. However, it does this by comparing to the evidence base using LEO data. It does not make reference to the wider evidence base using the LFS and cohort studies for example. This is because any analysis using LEO is assumed to be novel, when compared with previous literature, because the opportunities were not there to explore these type of factors. There are some areas where evidence exists and similar patterns could undoubtedly be inferred. For example, the link between family background and social class and education and labour market outcomes could be similar to what this report shows for FSM eligibility. However, the report does not attempt to summarise or make reference to this wider literature, as it is deemed that in the vast majority of cases new evidence from LEO will advance the literature.

Analysis at different education levels

51. Section 2 carries out the main activities and earnings analysis outlined above (see methodology section) at different education levels:
    - Graduates and non-graduates
    - (non-graduates) level 3 achievement split

Graduates and non-graduates

52. This approach splits all individuals into two groups: 1) those who subsequently obtain a degree ('graduates') and 2) those who do not. The 'graduates' are defined as individuals who have achieved a level 6 qualification (and/or above). Non-graduates are all those with education qualifications of level 5 or below[16]. Around a third (34%) of all individuals achieve a degree but the proportion varies significantly across different sub-groups.

53. This purpose of the graduate and non-graduate analysis is not to show the value of a degree per se, as that has already been shown in greater detail and with more technical analysis by the IFS. As mentioned in paragraph 29 (in the coverage section) the IFS have produced several reports (and accompanying analysis) on returns to higher education. Here the analysis focuses on the nature of the different education and labour market activities and outcomes of different groups of individuals with similar education levels. The analysis is descriptive and does not control for factors other than education level.

54. The DfE produces regular statistics on graduate outcomes using the LEO data[17]. Readers looking to follow graduate outcomes and groups of individuals that completed higher education at the same time should consult these statistics.

55. Thus the differing objectives are:

    - IFS: to explore the 'returns', i.e. economic value, to university degrees (at age 29 and over a lifetime). The aim is to provide information (to students and other stakeholders) on the 'impact' of completing a degree in different subjects and universities and how this differs for different groups (based on socioeconomic and demographic and educational attainment). The main focus is on earnings.
    - Graduate outcomes (LEO) publication series: shows employment and earnings outcomes for graduates to inform student choice, show the public outcomes and for accountability purposes.
    - This report: show how education and labour market activities and outcomes differ for different groups of individuals despite similar education levels. The aim is to see how education and labour market outcomes differ for graduates and non-graduates with different individual characteristics.

[16] This is different to the IFS definition who use 'started an undergraduate degree (i.e. level 6)' for graduates and limit non-graduates to those achieving five GCSEs A* to C.
[17] https://www.gov.uk/government/collections/statistics-higher-education-graduate-employment-and-earnings

Differences between this report and DfE graduate outcome statistics

Whilst readers are encouraged to look at this report alongside graduate outcomes (LEO) we do not recommend trying to make direct comparisons between the two outputs.

The numbers in this report are not directly comparable to the graduate statistics publications for two main reasons:

- Firstly, this report tracks cohorts of individuals who left school at the same time, whilst graduate statistics tracks cohorts of graduates, i.e. people who left university at the same time. We have seen in this report that individuals' pathways are complex and not everyone who goes to HE does A levels/KS5 immediately after school and then straight to university. People take gap years, study for longer than 3 years, do sandwiched courses and do other forms of less uniform study. See Table 5 in the technical report for more detail of when individuals (doing their GCSEs at the same age) complete their degree, i.e. how many years after KS4.
- Secondly, there are differences in the definition of employment and median earnings. This report uses a measure of being in employment for 12 months of the tax year (see measures section), whilst graduate outcomes uses 5 out of 6 months between October and March. In median earnings calculations, this report includes all those who meet the employment definition, whereas graduate outcomes statistics exclude those in education. Additionally, self-employment income is included in graduate outcomes but not in this report.

The differences in methodologies and definitions are driven by differences in objectives.

Level 3 achievement for non-graduates

56. Having explored graduate differences and the potential impacts of having a degree against not having one, the analysis subsequently focuses on non-graduate individuals, i.e. those that have not achieved a degree (level 6 or above). It splits these into two groups, based on their highest level of educational achievement:
    - level 3 or above qualification (i.e. levels 3 to 5): A full level 3 qualification is two A-level passes or equivalents (i.e. the same size). Just over two fifths (42%) of non-graduate individuals achieve level 3 or above, but there is a large variance depending on characteristics of individuals.
    - level 2 or lower qualification. a full level 2 qualification is five GCSE passes A* to C (or equivalents).

57. As with graduate and non-graduate analysis, the level 3 achievement split is aimed to show different education and labour market activities and outcomes for individuals of different characteristics but with similar education levels. A wealth of evidence exists on returns to different qualifications and types of education, including analysis undertaken by CVER using LEO data. As mentioned in paragraph 29, CVER has undertaken extensive work focusing on the returns to further and vocational education (see coverage section). This body of work should be referred to if the reader is interested in returns and analysis aimed to tease out causality.

58. The DfE publishes regular statistics using LEO data following groups of individuals that completed FE at the same time[18]. Readers looking for outcomes of those completing vocational education should consult these statistics. Level 3 (to 5) qualifications included in this analysis are mainly made up of what is often classified as FE, in this report categorised as other education and adult FE (including sixth form colleges), but a small proportion of level 3 achievement come from school sixth forms (mainly A levels). FE LEO statistics use similar definitions for employment and earnings as HE graduate outcomes statistics (see box above). For these reasons, comparisons between FE LEO statistics and this report are not recommended.

59. In summary, the different aims of the publications are:

- CVER: to estimate returns to FE, i.e. vocational education, in terms of earnings, employment and benefits premium(s). This is done by focusing on level of education and type (e.g. apprenticeships, national vocational qualifications, skills for life, etc) and how this differs for different groups (by sex, age, etc).
- FE LEO statistics: to show annual statistics on the employment, earnings and learning outcomes of FE learners. This is broken down by level, type of learning, sector area, individual characteristics and geography. The main purpose is accountability of FE providers, though informing learner choice and transparency around effectiveness of training are important secondary objectives.
- This report: as mentioned above, to show how education and labour market activities and outcomes differ for different groups of individuals despite similar education levels. The objective is to see how education and labour market outcomes differ for non-graduates with different individual characteristics based on whether they have achieved a level 3 (or above) qualification or not.

[18] https://www.gov.uk/government/collections/statistics-outcome-based-success-measures

Section 1: Education and labour market activities, pathways and outcomes for all individuals (completing GCSEs at same time)

60. In this first section, we track the education and labour market activities, pathways and outcomes of all individuals completing KS4 at the same age. The methodological approaches introduced in this section are new. The main activities, pathways and earnings trajectories shown have not been used elsewhere.

Education and labour market pathways are diverse and often complex

61. Education and labour market pathways are varied and often complex. For the 3.6 million post-GCSE individuals, between 2002 and 2007, there are almost 265,000 different pathways. Of these, almost 168,000 pathways are only taken by one individual. A pathway is defined as a collection of activities over time (see paragraph 45 in pathways sub-section on page 16).

62. Findings in this section are completely novel and therefore fill a gap in the evidence base. Education and labour market pathways have not been explored in this way before the current methodology and the use of LEO dataset is new.

63. The 10 most common pathways of all individuals are shown in Table 2, arranged in order of descending frequency. These paths represent less than a fifth (16%) of the overall group.

Table 2 – 10 most common education and labour market pathways all individuals for KS4 cohorts 2001/02 to 2006/07

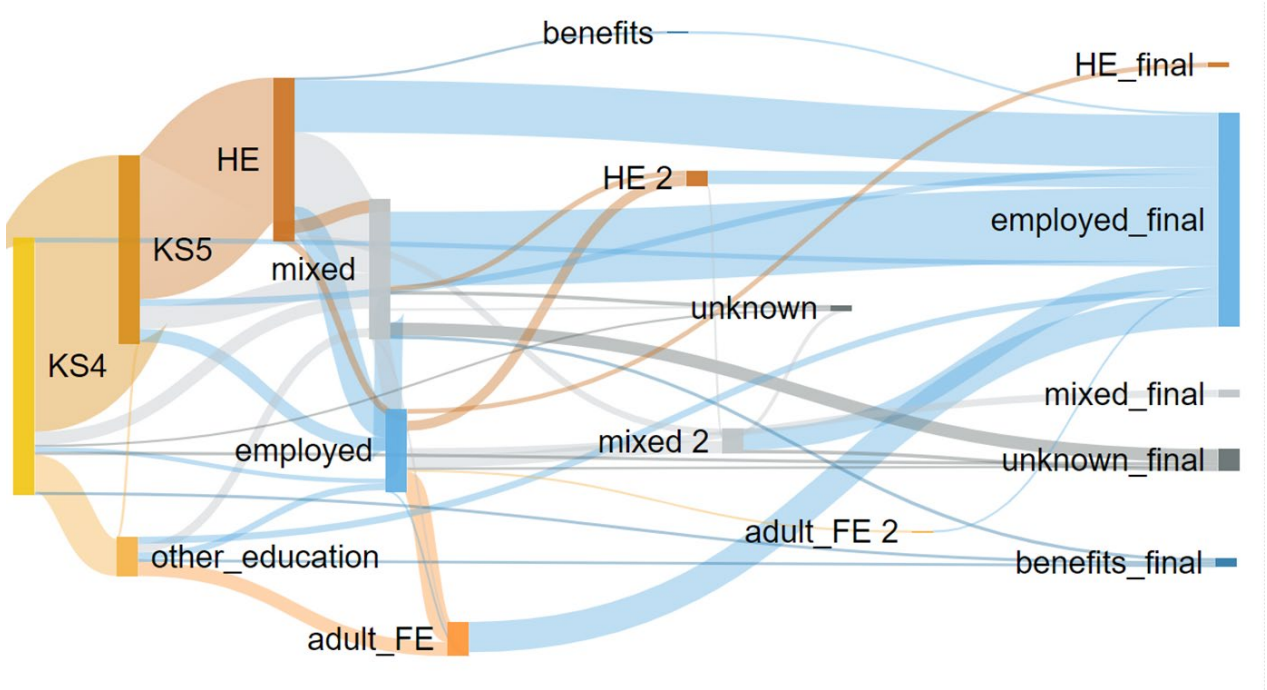
Tax years: 2003-04 to 2017-18

First activity	Second activity	Third activity	Fourth activity	Fifth activity	Sixth activity	Number in each pathway	% of total
1	KS 5	HE	employed			176,546	5%
2	KS 5	HE	mixed	employed		161,348	4%
3	Other education	Adult FE	employed			33,647	1%
4	KS 5	HE	employed	mixed	employed	32,006	1%
5	KS 5	HE	employed	HE	employed	30,673	1%
6	Other education	employed				30,217	1%
7	KS 5	employed				29,497	1%
8	KS 5	mixed	HE	mixed	employed	28,945	1%
9	KS 5	HE	mixed	employed	mixed	28,575	1%
10	KS 5	mixed	HE	employed		26,058	1%
total						577,512	16%
number in sample						3,605,480	

Source: Longitudinal Education Outcomes dataset

64. Figure 4 is a Sankey chart that maps the 50 most common pathways taken after completion of KS4. It includes all the pathways that were followed by more than 8,000 individuals. These paths total some 1.1 million individuals, just under a third (31%) of all those completing KS4. See explanation of Sankey charts (box on page 17).

Figure 4: Most common education and labour market pathways of all individuals for KS4 cohorts 2001/02 to 2006/07[19]
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

65. Despite some quite complicated flows, 'classic' pathways such as KS5, HE to employment, and other education to adult FE to employment stand out. Some of the complexity comes from moving in and out of activities, i.e. multiple bouts of the same or different activities (for example adult FE, HE and no sustained activity depicted by adult_FE2, HE 2 mixed). In addition, many individuals move through 'mixed' (no sustained activity) after education. Overall it shows that beyond some the 'classic' pathways, the pathways of individuals vary and can be non-uniform.

Education and labour market activities, pathways and outcomes differ based on individual characteristics

66. Education and labour market activities after leaving school often vary depending on characteristics of individuals. For some sub-groups, education and labour market activities and pathways are broadly similar, whilst in other cases they are very different.

[19] Mixed 2, adult_FE 2 and HE 2 are the second separate instances of the same activity, be it no sustained activity (mixed), adult FE or HE (respectively)

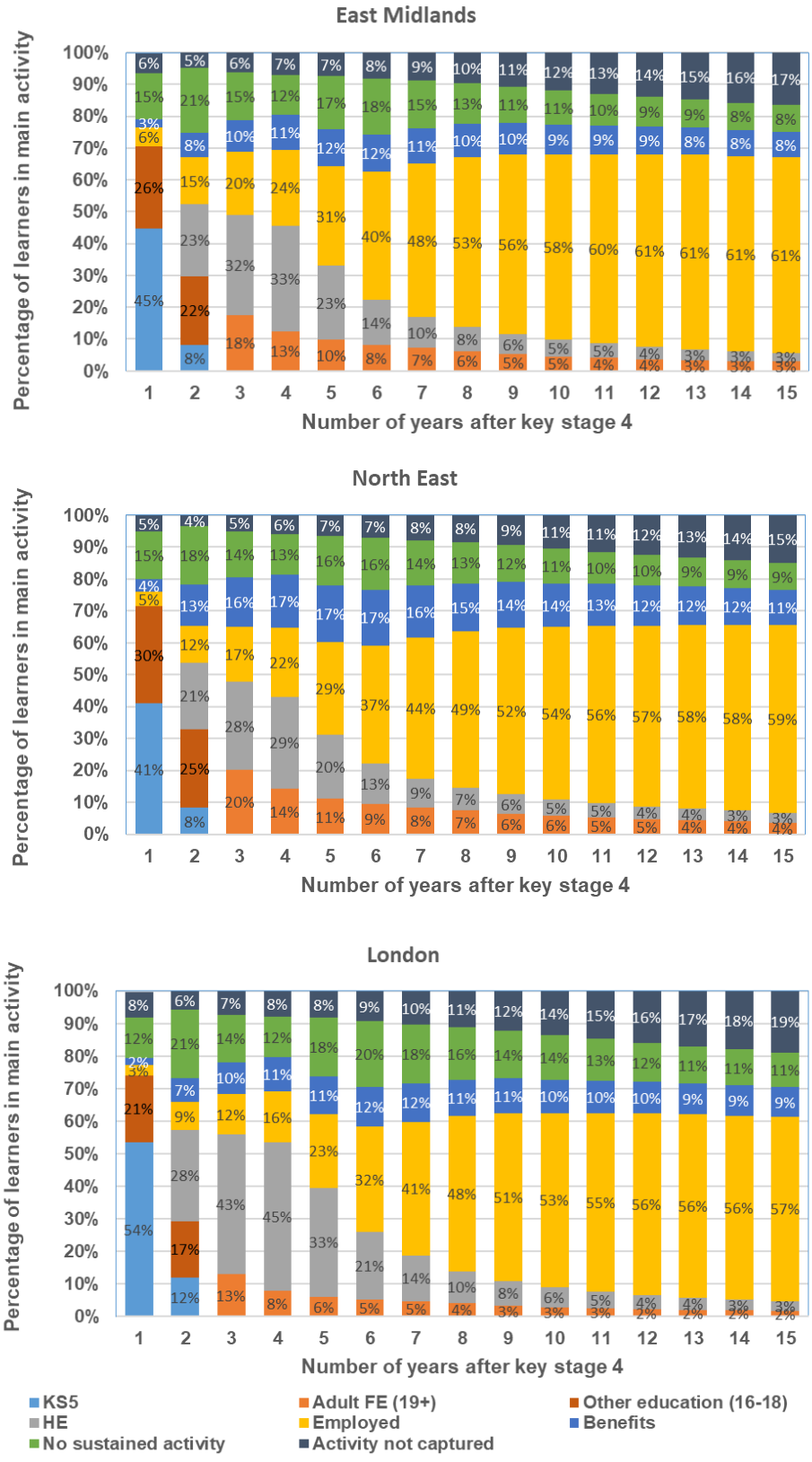
There are some sub-groups where education and labour market activities, pathways and outcomes have similarities (however, earnings differ)

67. Observing the main activities of individuals doing their GCSEs in the East Midlands, North East, and London (Figure 5) we see similar patterns. Despite some differences in the proportions undertaking education and labour market activities in different years, the three charts are relatively similar. This holds across all regions and similar patterns exist for first language and gender.

68. The key finding in this sub section is new evidence as activities, pathways and outcomes have not been explored this way before. The LEO data has not been used to examine education and (long-term) labour market relationships for region or first language[20], though gender has been focused on. Though some evidence exists on regional labour market outcomes, the uniqueness of this report is that it tracks those completing their GCSEs in different regions and their subsequent labour market outcomes.

[20] The report 'Characteristics of young people who are long-term NEET (Feb 2018)' uses LEO data to focus on the characteristics of young people who are not in education, employment or training (NEET) for a year three years after completing key stage 4 (in the 2010/11 academic year). This includes first language, as well as a host of other characteristics, but has a very different focus as it has a short term focus: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/679535/Characteristics_of_young_people_who_are_long_term_NEET.pdf

Figure 5: Main activities of individuals doing their GCSEs in different regions; East Midlands, North East and London for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



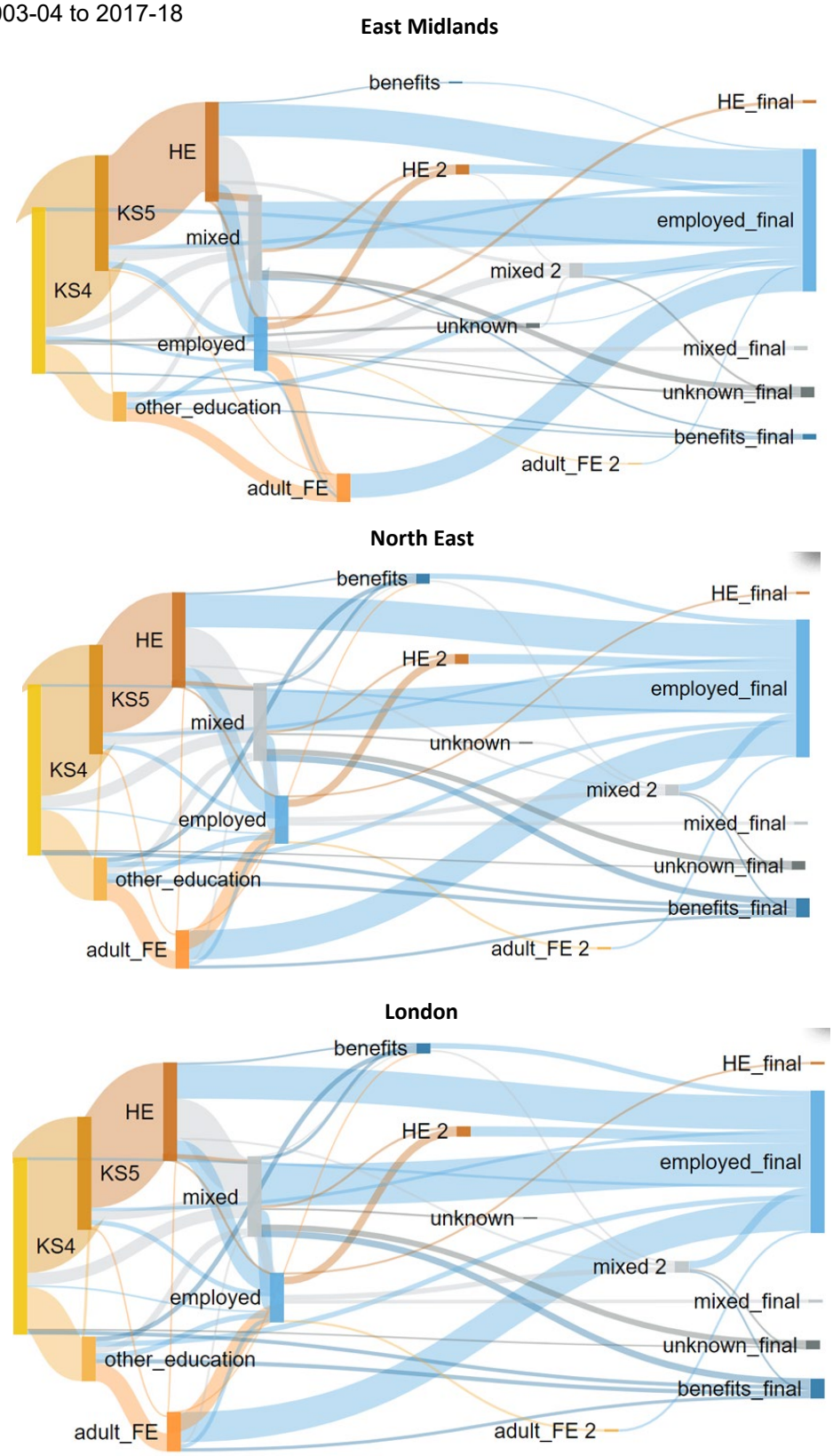
Source:

69. Those doing GCSEs in London are more likely to do KS5 (and subsequently HE) and those from North East least likely, with the contrary true for other education (FE level 2 or below or an apprenticeship in years 1 or 2). Those from the East Midlands have slightly better outcomes (higher proportions in employment and lower proportions claiming out of work benefits) than individuals from London and the North East. However, the charts are broadly similar.

70. Figure 6 shows the (50) most common pathways for the three regions mentioned above and again we can see they are *broadly* similar. It shows similar themes to the main activities charts. Individuals from London were more likely to move through KS5 and HE than individuals from the other two regions. Whilst individuals from the North East (and to a lesser extent East Midlands) were more likely to do other education immediately after leaving school. Otherwise, flows and patterns are very similar for the top pathways.

Figure 6: Most common education and labour market pathways of individuals doing their GCSEs in different regions; East Midlands, North East and London for KS4 cohorts 2001/02 to 2006/07

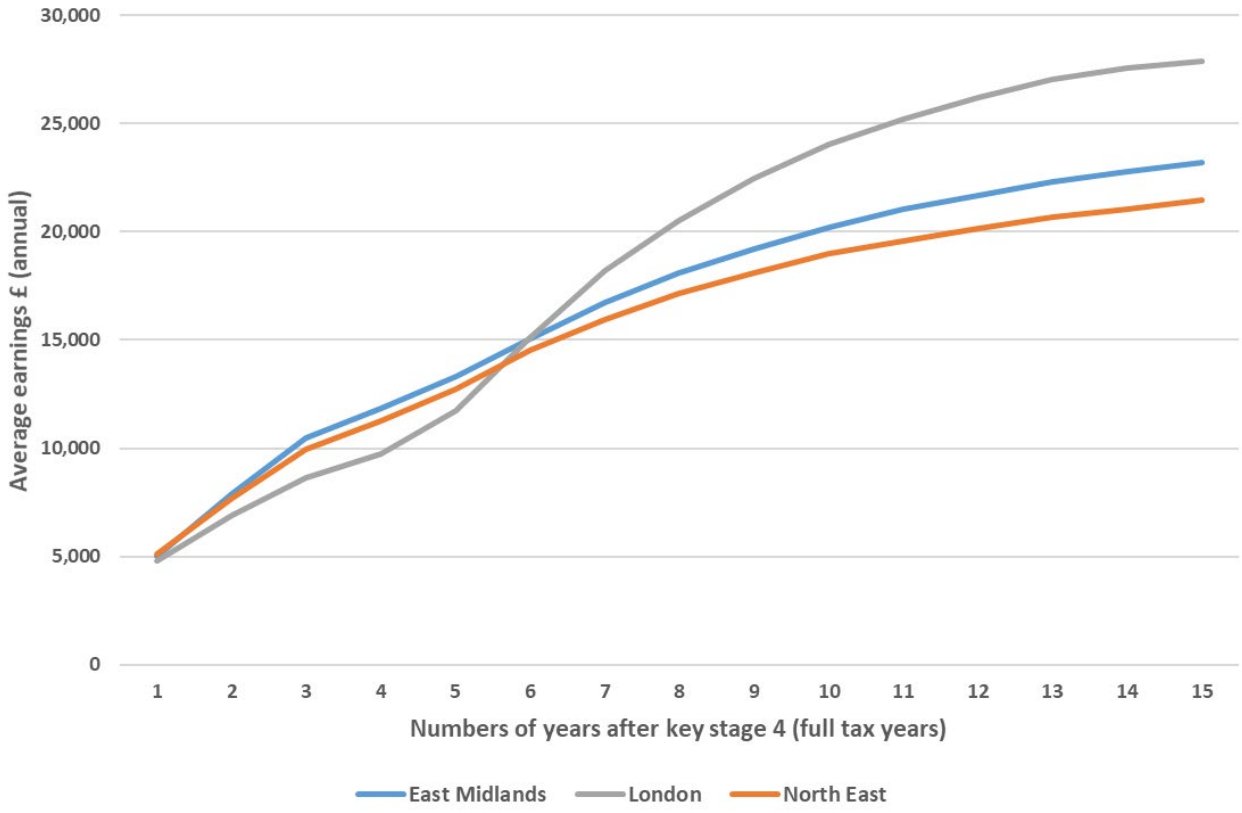
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

71. Despite similar education and labour market activities and pathways, we do see a clear difference in one key labour market outcome: average earnings of those in employment (see Figure 7). Individuals that did their GCSEs in London earn around £5,000 more than those from the East Midlands, who in turn earn on average around £2,000 more than those from the North East (15 years after completing GCSEs). Movement between regions has not been explored but the findings could simply reflect cost of living and regional economies, should the majority stay in their region.

Figure 7: Average earnings of individuals doing their GCSEs in different regions; East Midlands, North East and London for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

72. Despite similar broad patterns to education and labour market activities and pathways across regions, focusing in on labour market outcomes (see Table 3) shows a few insights. The North East stands out as having the poorest outcomes, i.e. second lowest proportion in employment, highest proportion claiming out of work benefits and lowest average earnings. London is a bit of an anomaly with lowest proportion in employment and highest average earnings. This table also shows labour market outcomes by gender and first language as these sub-groups have similarities with region.

73. It should be noted that the analysis in this sub section is based on where the individual did their GCSEs and not necessarily the region in which they now live.

Table 3: Labour market outcomes of different sub-groups - 15 years after GCSEs for the 2001/02 KS4 cohort

Tax year: 2017-18

Sub-group (characteristic)	Proportion in employment	Proportion claiming out of work benefits	Average earnings (of those in employment)
Region			
East Midlands	61%	8%	£23,000
East of England	61%	7%	£26,000
London	57%	9%	£28,000
North East	59%	11%	£21,000
North West	60%	10%	£22,00
South East	60%	6%	£27,000
South West	60%	6%	£23,000
Gender			
Male	60%	6%	£28,000
Female	59%	10%	£20,000
First language			
English	61%	8%	£23,000
Other than English	56%	8%	£24,000

Source: Longitudinal Education Outcomes dataset

Black and minority ethnic groups tend to have higher levels of post 16 education, when compared with those from the White British group, yet not necessarily better labour market outcomes

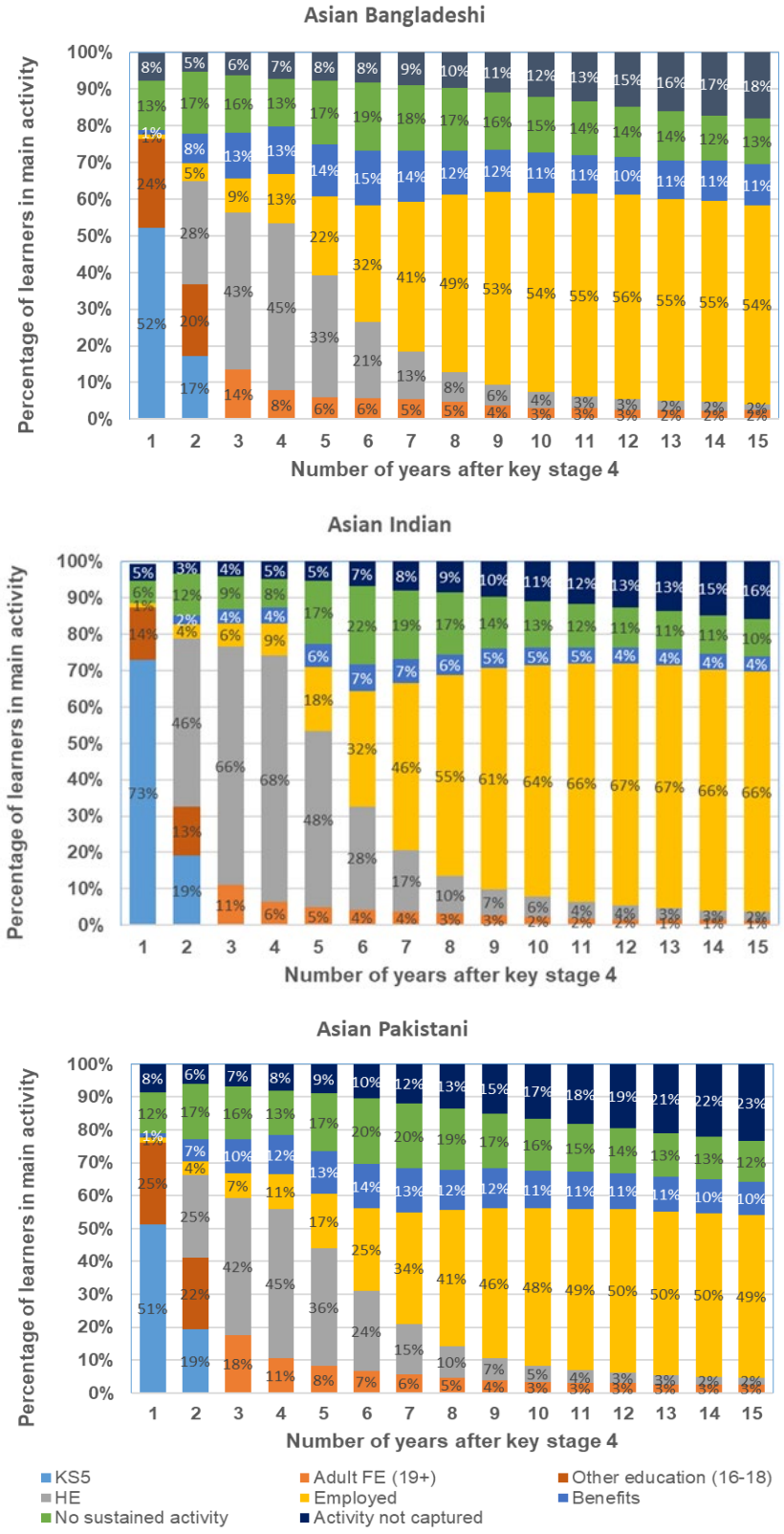
74. The LEO dataset offers the ability to explore education and labour market outcomes of different ethnic groups in a way that was not possible before. Surveys and cohort studies often lack the statistical power to carry out robust analysis on minor ethnic groups and the Labour Force Survey has limited information on education and qualifications. This report is one of the first outputs to use LEO to explore the relationship between education and labour market outcomes for different minor ethnic groups. The IFS report has examined returns to undergraduate degrees by ethnicity, but this report takes a broader approach.

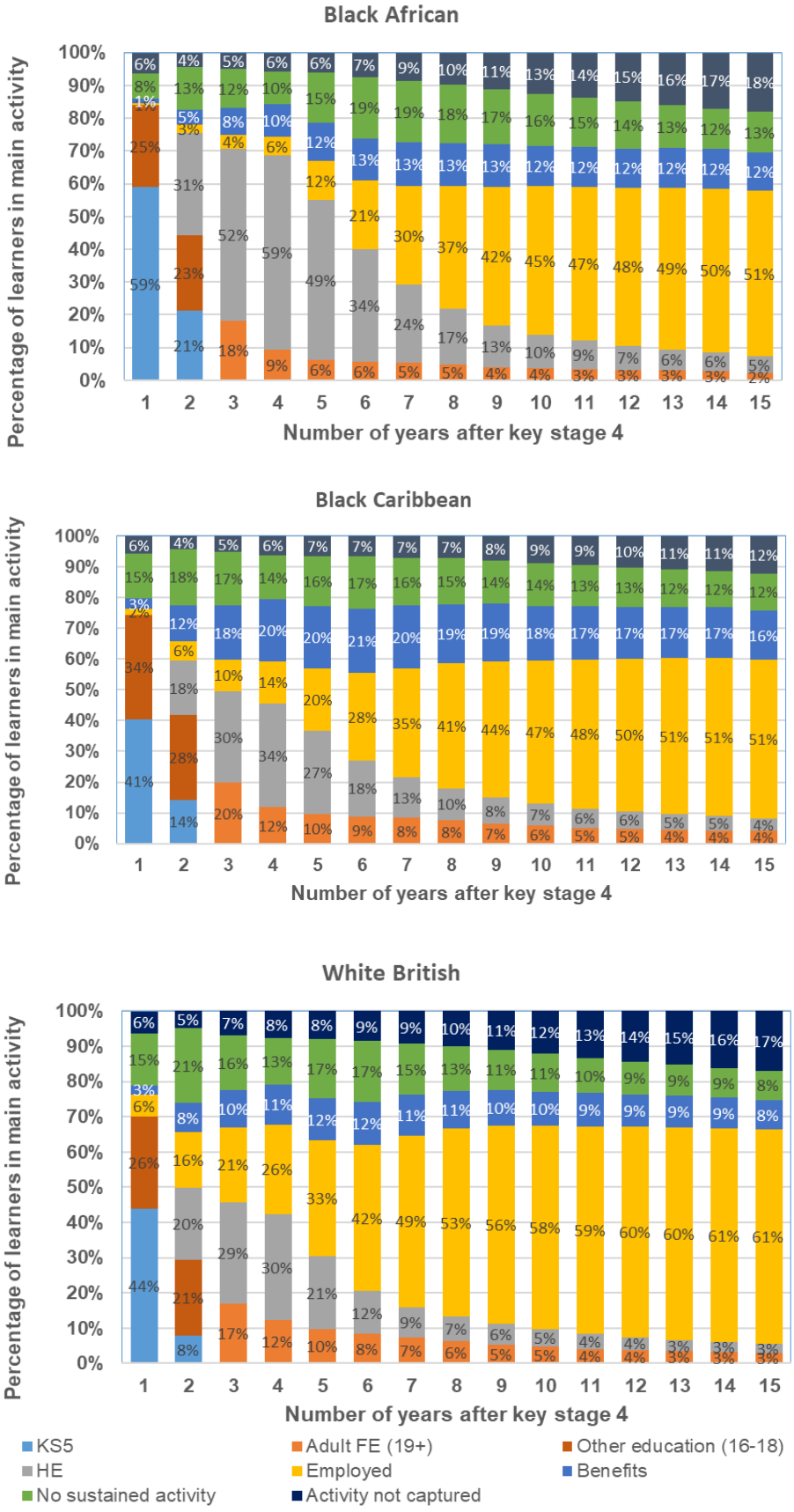
75. Figure 8 shows that most black and minority ethnic groups have larger proportions doing KS5 and going on to HE, but this does not necessarily lead to higher proportions in employment and lower proportions claiming out of work benefits. There are higher proportions of Bangladeshi, Pakistani and Black African individuals undertaking KS5 and subsequently going to university, when compared with White British, yet there are lower proportions (of Bangladeshi, Pakistani and Black African individuals) in employment and higher proportions claiming out of work benefits in the most recent years.

76. Similar proportions of Black Caribbean individuals do KS5 and HE as White British, yet have lower proportions in employment and many more claiming out of work benefits. Indian is the only minority ethnic group that has higher proportions in employment and lower proportions claiming out of work benefits than White British, though almost twice as many undertake KS5 and HE.

Figure 8: Main activities of individuals from minor ethnic groups for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18





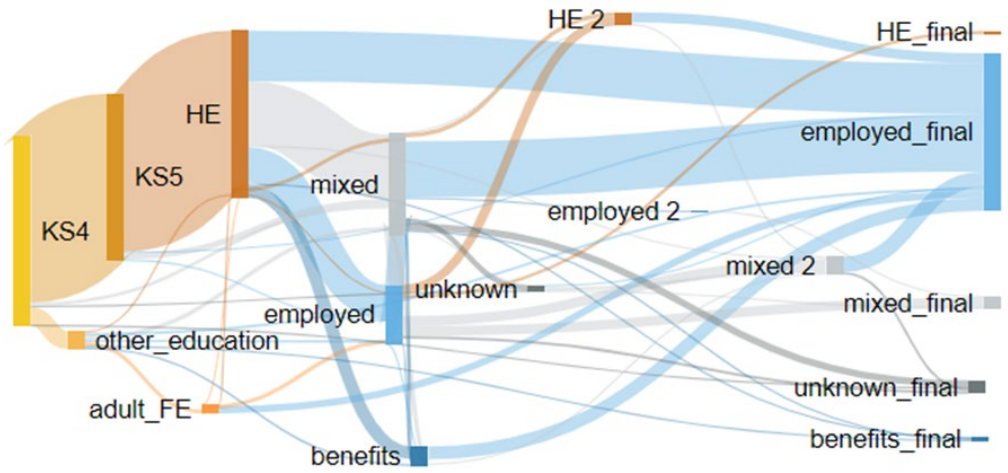
Source: Longitudinal Education Outcomes dataset

77. The education and labour market pathways of these different minor ethnic groups are explored further in the Sankey charts in Figure 9. The charts look very similar at first glance, suggesting most common pathways are similar, but there are some subtle differences. White British and Black Caribbean individuals have large flows passing through other education and adult FE, whilst the other minority ethnic groups shown have larger flows passing through KS5 and HE. The majority of the most common pathways end up in employment, though some have no activity (unknown) and others end up claiming out of work benefits. Black Caribbean individuals have large proportions claiming out of work benefits in the latest years.

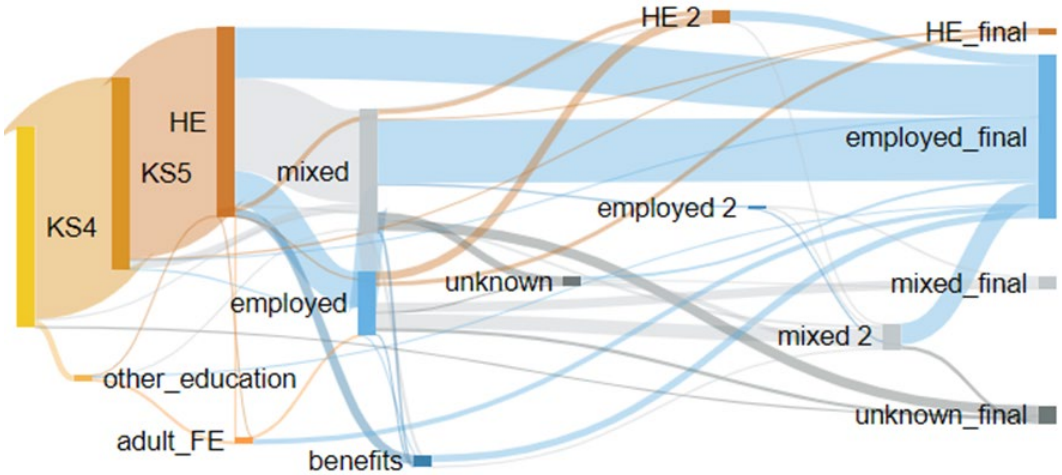
Figure 9: Most common education and labour market pathways of individuals from minor ethnic groups for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

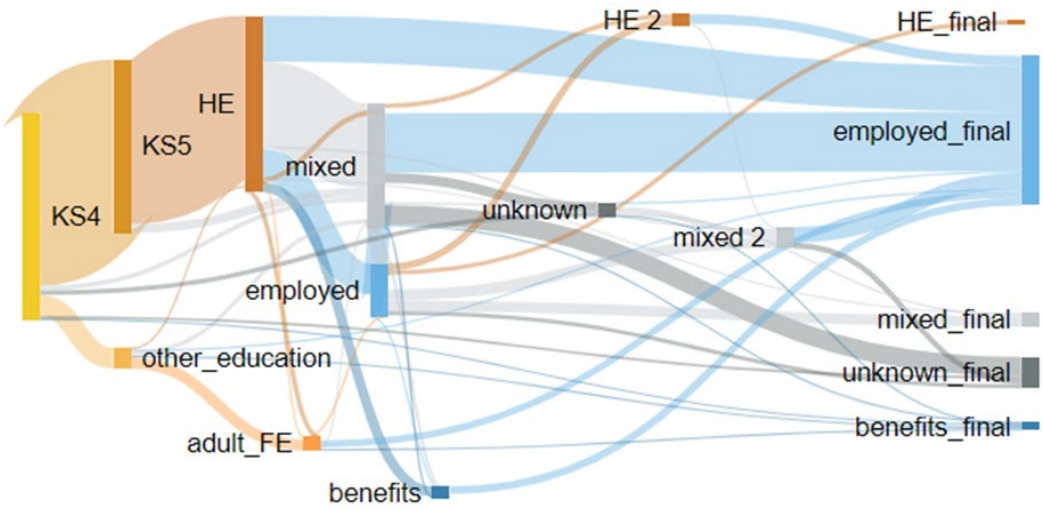
Bangladeshi



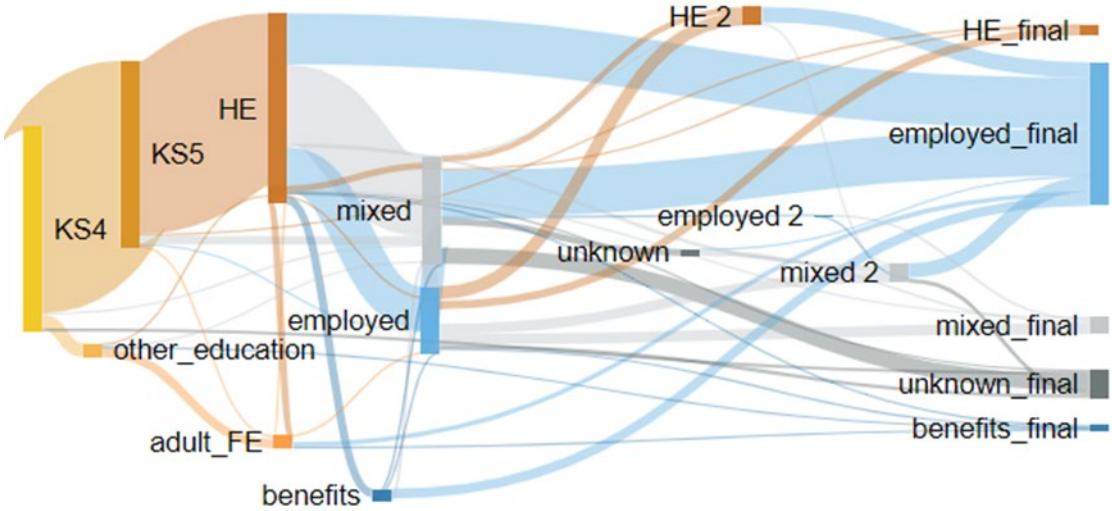
Indian



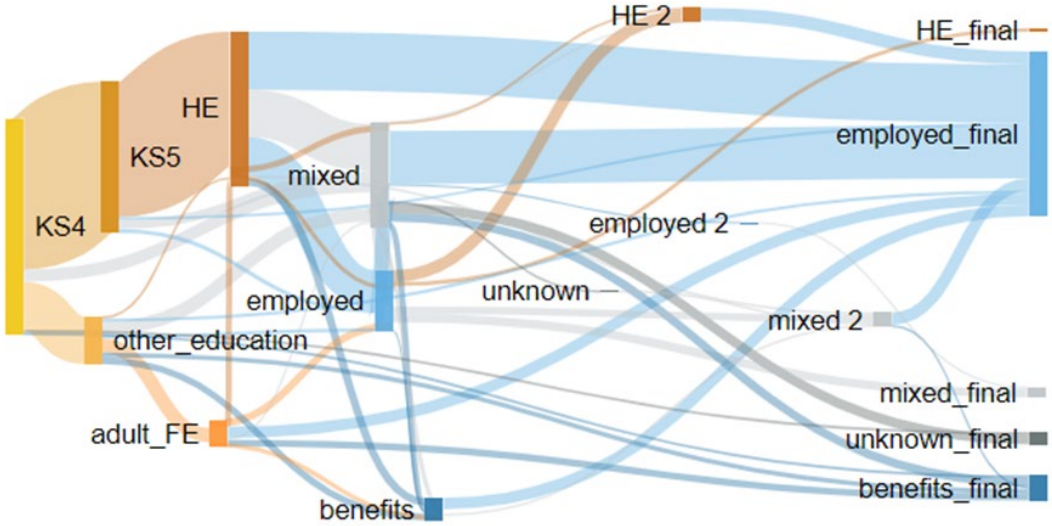
Pakistani



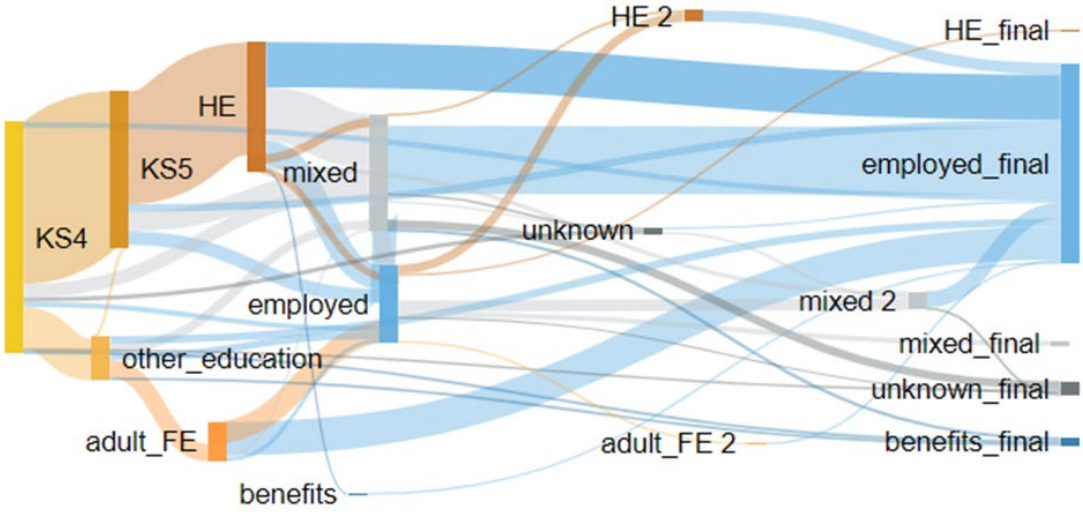
Black African



Black Caribbean



White British



Source: Longitudinal Education Outcomes dataset

78. Another interesting difference in education and labour market pathways is the representativeness of the 50 most common pathways. It is almost half for Indian individuals, yet less than a quarter for Black Caribbean individuals (see Table 4). Lower representativeness implies that pathways are more likely to be more diverse, complex and non-linear. Thus Black Caribbean individuals have a broader range of pathways and are more likely to switch between different activities than Indian individuals.

Table 4: Representativeness of 50 most common pathways for different sub-groups for the 2001/02 to 2006/07 KS4 cohorts

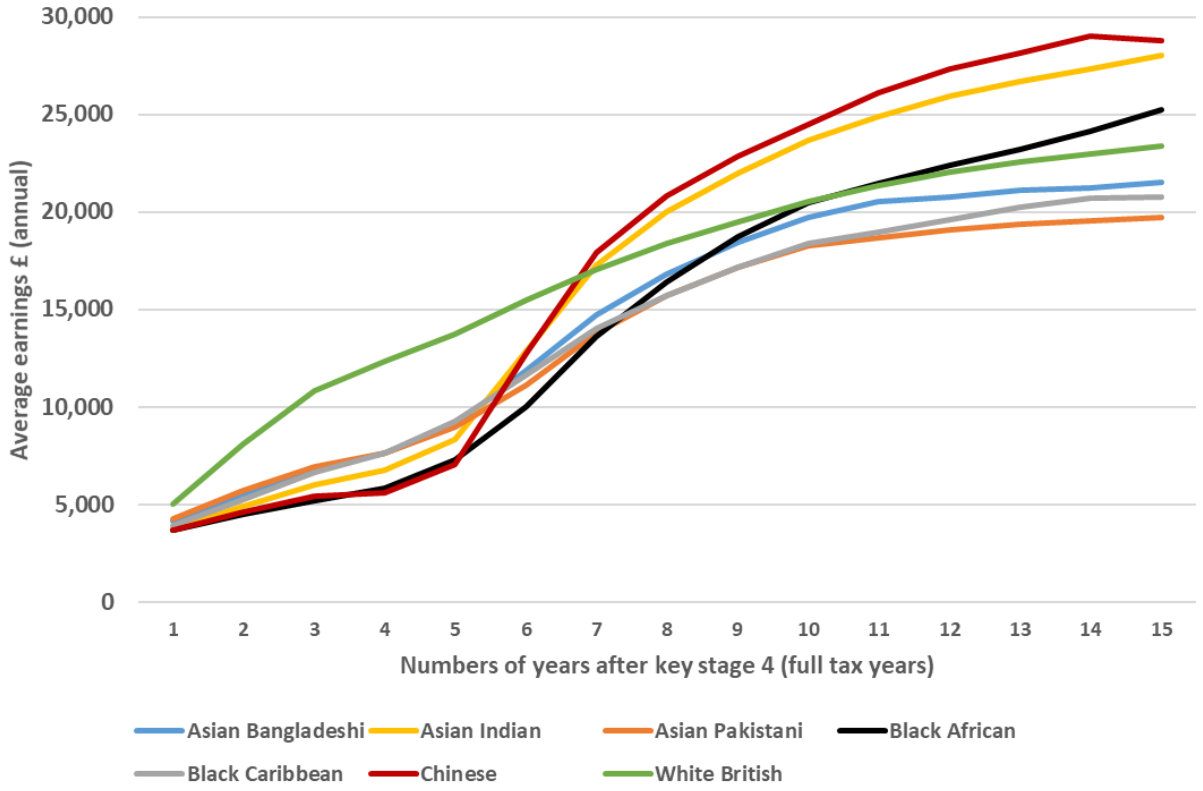
Tax year: 2003-4 to 2017-18

Sub-group (characteristic)	Proportion of individuals in 50 most common pathways
Bangladeshi	30%
Indian	49%
Pakistani	29%
Black African	32%
Black Caribbean	22%
White British	30%

Source: Longitudinal Education Outcomes dataset

79. We see large differences in average earnings for different minor ethnic groups, as shown in Figure 10. Individuals from Pakistani, Bangladeshi and Black Caribbean ethnic groups have lower average earnings than White British individuals. This means that these minor ethnic groups face a significant 'double whammy' of fewer in employment and lower earnings when compared to White British. Conversely, Chinese, Indian and Black African individuals have higher median earnings than White British individuals in the most recent years. Combining the information from Figure 10 and Figure 8 we see that only Indian individuals have higher proportions in employment (and lower proportions claiming out of work benefits) and higher average earnings for those in employment than White British.

Figure 10: Average earnings of individuals in employment from different minor ethnic groups for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

Within some key sub-groups, education and labour market activities, pathways and outcomes are totally different

80. Differing KS4 attainment is an example of where education and labour market activities, pathways and outcomes are completely different. This is also the case for FSM eligibility, SEN status and school type comparisons. Figure 11 illustrate this point as we see that the charts for individuals that achieved at least five GCSEs passes A* to C and those that did not achieve this have very different patterns. Individuals achieving five GCSEs A* to C have much higher proportions doing KS5 and HE and ultimately in employment. On the other hand, those not achieving five GCSEs A* to C are more likely to do ‘other education‘ (i.e. FE level 2 or below or an apprenticeship in year 1 or 2) and end up claiming out of work benefits.

81. Socioeconomic status ('disadvantage'[21]), KS4 attainment[22] and SEN[23] have been analysed using the LEO data and, though not in the same way, similar themes could be inferred from the publications referenced at the foot of this page. However, the relationship between school type and labour market outcomes is less explored using LEO[24].

[21] Post 16 education: outcomes for disadvantaged students (November 2018): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/756893/Post_16_education_outcomes_for_disadvantaged_students.pdf

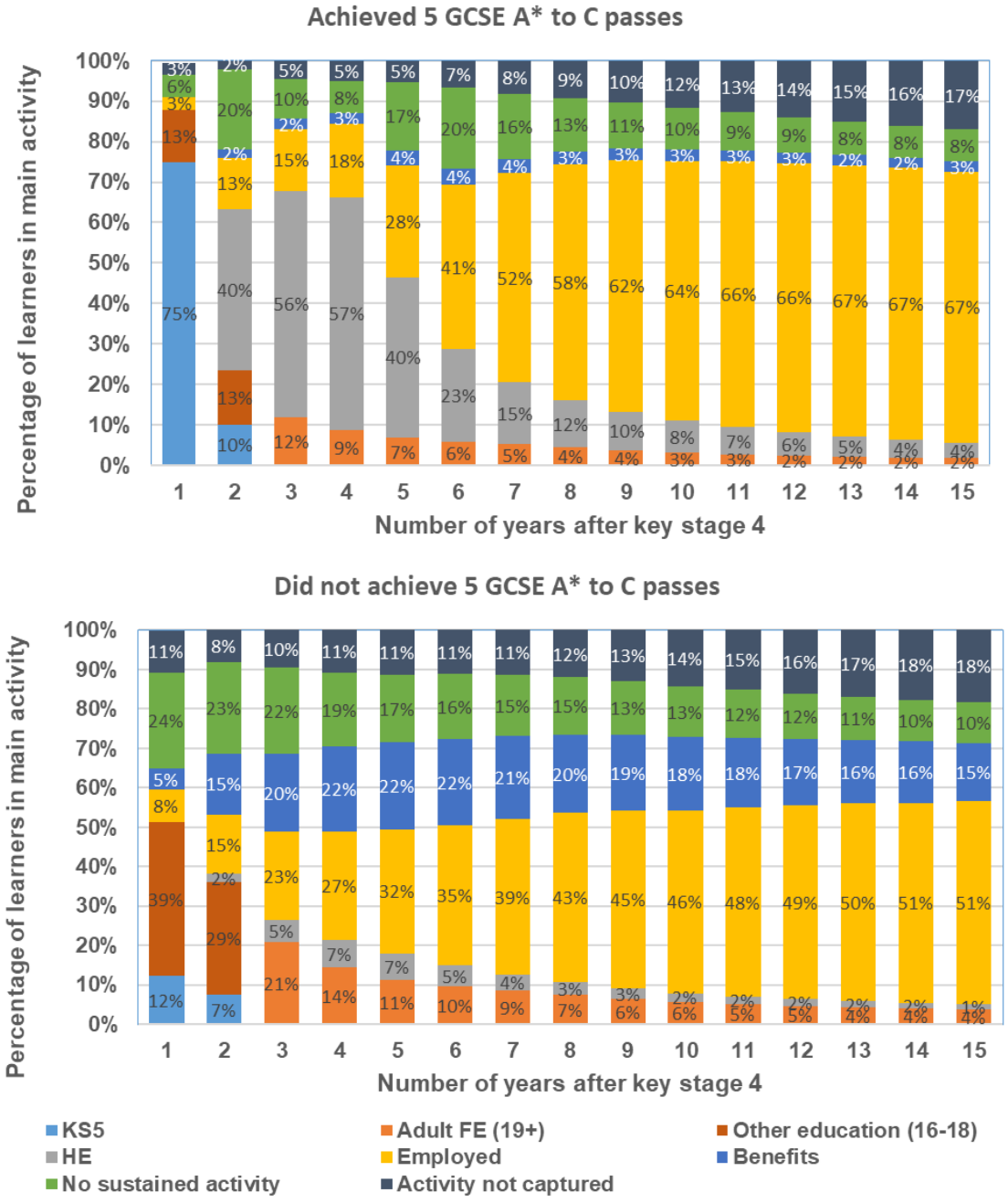
[22] Post 16 education: highest level of achievement by age 25: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/705269/Post_16_education_highest_level_of_achievement_by_age_25.pdf

[23] Outcomes for pupils eligible for free school meals and identified with special educational needs: https://www.gov.uk/government/publications/school-and-labour-market-outcomes-by-pupil-characteristics

[24] FFT Education lab carried out some analysis on the long-term outcomes of grammar schools using LEO https://ffteducationdatalab.org.uk/2019/06/long-term-outcomes-do-grammar-schools-make-a-difference/

Figure 11: Main activities of individuals that achieved at least five GCSE A* to C (or equivalents) and those that did not achieve (at KS4) for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



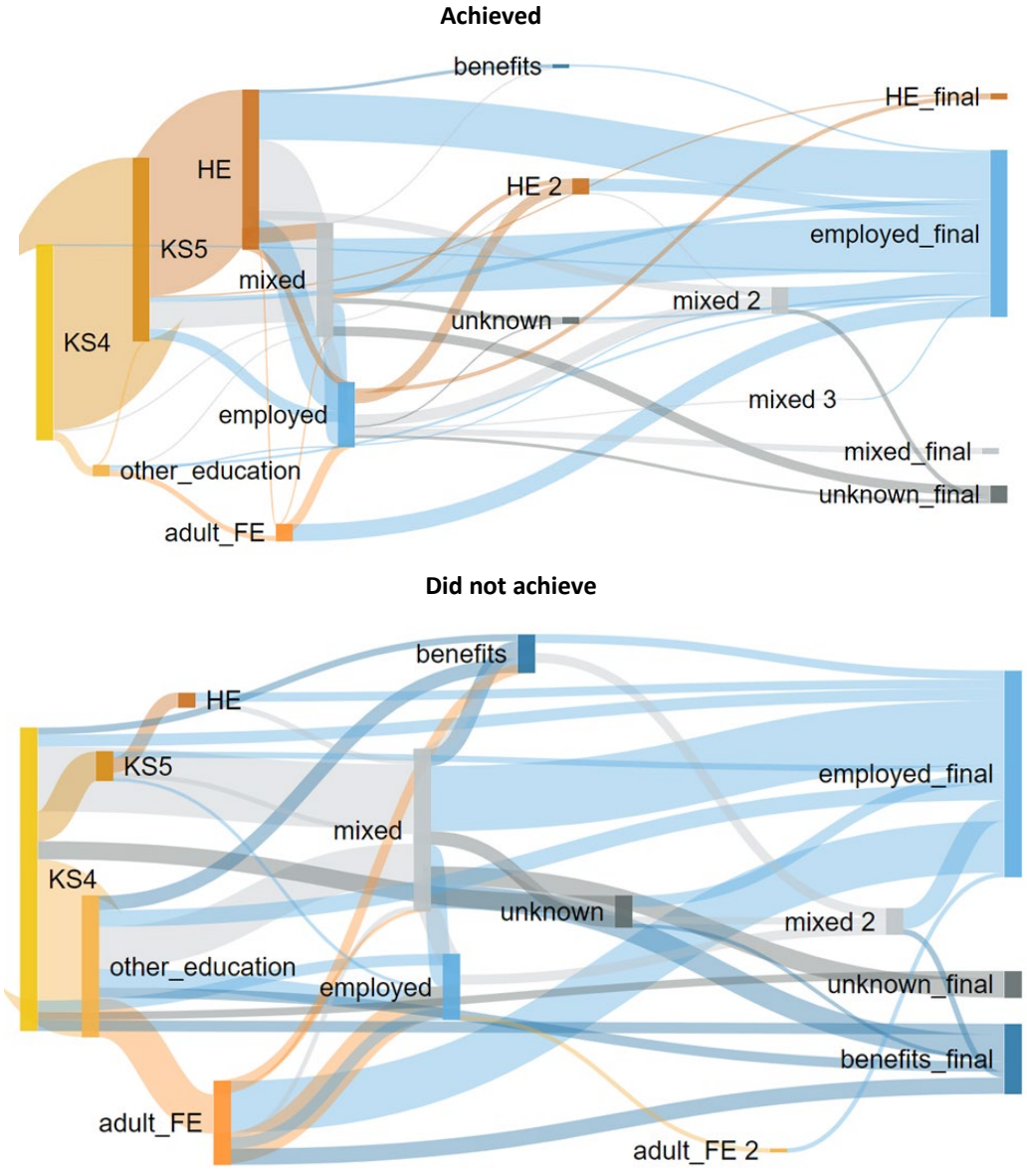
Source: Longitudinal Education Outcomes dataset

82. The Sankey charts in Figure 12 show the educational and labour market pathways of individuals that achieved at least five GCSE passes A* to C (or equivalents) and those that did not achieve. The charts show similar overall structure, but the similarity ends there. The flows are very different, i.e. the proportions actually

taking each pathway. For example, we see that individuals achieving five GCSE passes A* to C have large flows passing through KS5 and HE and almost all end up in employment. For those not achieving five passes A* to C there are much larger flows passing through other education and adult FE. Whilst most top pathways lead to employment, a large proportion lead to claiming out of work benefits in the latest year.

Figure 12: Most common education and labour market pathways of individuals that achieved at least five GCSE passes A* to C (or equivalents) and those that did not achieve at KS4 - for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

83. Those not achieving five GCSE passes A* to C, those who were FSM eligible or those who identified as SEN have much smaller proportions passing through KS5

and HE and larger proportions passing through other education and adult FE (when compared to their peers). This is likely to be down to poorer attainment at KS4 than their peers. As explained in measures, other education is FE level 2 or below or apprenticeships, whilst KS5 is level 3 qualifications. As five GCSEs A* to C passes (including English and maths) are usually needed to enrol for a level 3 course, it is likely that this explains (at least partly) other education being higher for these groups.

84. Pathways for those who did not achieve at least five GCSE passes A* to C appear to be more complex and non-uniform. The 50 most common pathways of sub-groups with poorer labour market outcomes tend to be less representative of the overall group than their counterparts. The most common pathways represent 45 percent of all individuals achieving at least five GCSE passes A* to C (or equivalents). However, for those individuals that did not achieve, these pathways only represent 24 percent.

85. This is also the case for several other comparisons. These are shown in Table 5.

Table 5: Representativeness of 50 most common pathways for different sub-groups for the 2001/02 to 2006/07 KS4 cohorts

Tax years: 2003-4 to 2017-18

Sub-group (characteristic)	Proportion of individuals in 50 most common pathways
FSM eligibility	
FSM eligible	21%
FSM not eligible	32%
SEN	
Not identified with SEN	33%
With statement of SEN	34%
SEN without a statement	21%
Major ethnic group	
Asian	38%
Black	26%
Chinese	55%
Mixed	28%
White	30%
School type	
State-funded (non-selective)	29%
Independent	54%
Selective	56%

Source: Longitudinal Education Outcomes dataset

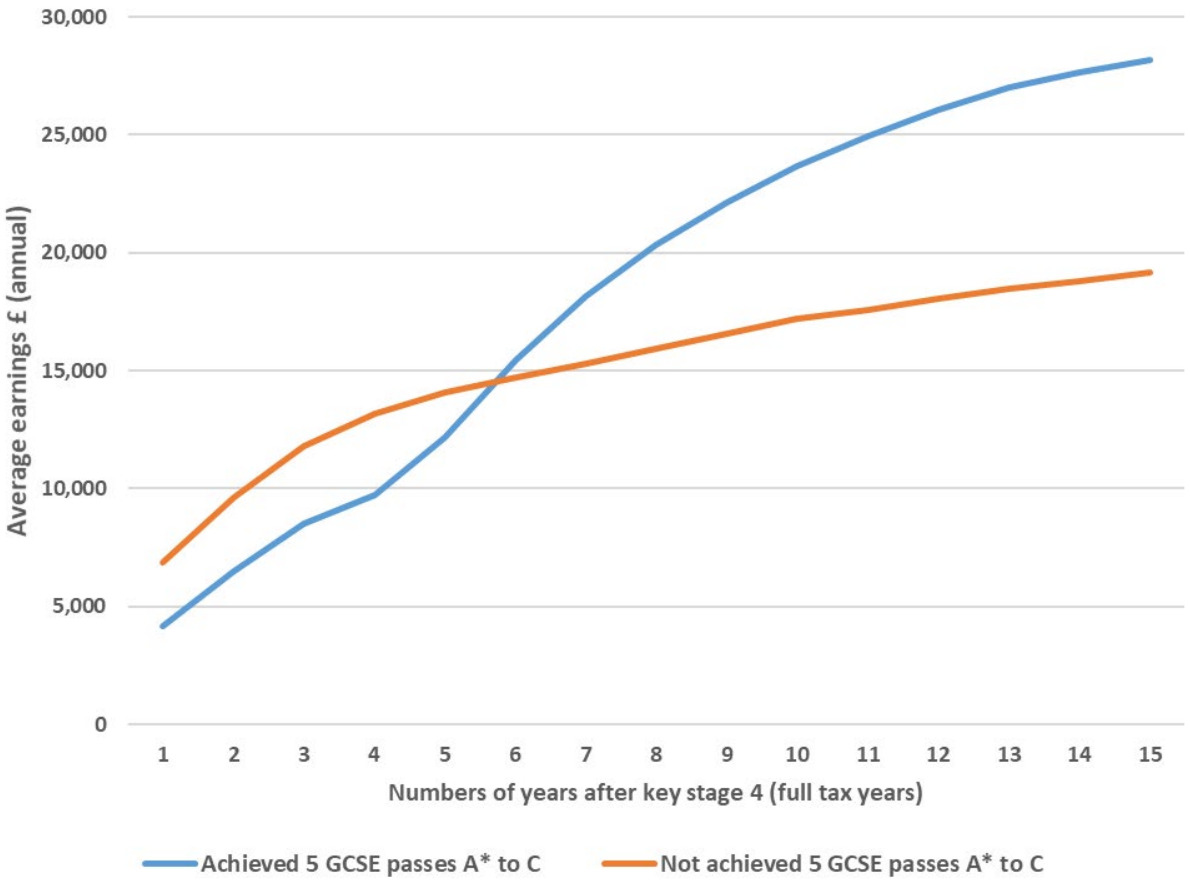
86. The education and labour market pathways of all sub-groups included in the analysis in this report can be requested by emailing oliver.anderson@education.gov.uk

87. There is also a large difference in average earnings trajectories for those in employment. 15 years after KS4, individuals achieving five GCSE (or equivalents) passes A* to C earn around £9,000 more than those not achieving and the gap is

widening. This means there is a ‘double whammy’ of fewer in employment and lower earnings for those in employment for individuals not achieving five GCSEs (or equivalents) A* to C. This is illustrated in Figure 13.

Figure 13: Average earnings of individuals that achieved at least five GCSE passes A* to C (or equivalents) and that did not achieve (at KS4) for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

88. The theme highlighted in this sub-section holds for several sub-group comparisons, i.e. some sub-groups have lower proportions in employment (and higher proportions claiming out of work benefits) than their peers (i.e. comparator sub-groups). It could be a combination of some of these characteristics that explaining some of the differences in Table 6 below.

Table 6: Labour market outcomes of individuals from different sub-groups 15 years after GCSEs for the 2001/02 KS4 cohort

Tax year: 2017-18

Sub-group (characteristic)	Proportion in employment	Proportion claiming out of work benefits	Average earnings
FSM eligibility			
Eligible	48%	20%	£19,000
Not eligible	62%	7%	£24,000
SEN status			
With Statement	39%	33%	£17,000
Without a statement	50%	15%	£20,000
Not identified with SEN	63%	6%	£24,000
Minor ethnic group			
Bangladeshi	54%	11%	£22,000
Pakistani	49%	10%	£20,000
Black Caribbean	51%	16%	£21,000
White British	61%	8%	£23,000
School type			
State-funded (non-selective)	60%	8%	£23,000
Independent	60%	2%	£35,000
Selective	67%	2%	£33,000

Source: Longitudinal Education Outcomes dataset

Section 2: Education and labour market activities, pathways and outcomes at different education levels

89. This section of the report follows up on the analysis in Section 1 by splitting groups by education level, focusing on: 1) graduates and non-graduates and 2) (for non-graduates) the level 3 achievement split. The aim is to focus on education and labour market activities of different groups at similar education levels.

90. It is well known that better education leads to better job prospects[25] and that returns to education vary dependent on different factors. Both the IFS and CVER have shown that returns to higher education and vocational education (respectively) are dependent on factors such as gender, subject or sector area, socioeconomic status and attainment (and ethnicity as shown above). This adds to a large evidence base where returns to education has been extensively explored using other data sources (for example the LFS and longitudinal and cohort studies in the UK).

91. Though individual studies tend to focus on the differences between specific groups of interest (e.g. men and women, by socioeconomic status, for different ethnic groups etc) collectively the literature shows 'heterogeneity' in returns. This means that education leads to differential improvements in labour market outcomes according to a host of socioeconomic, demographic, education and labour market factors.

92. This report highlights some key themes using facts that are already known and adding new evidence to support it. For example, for individuals with SEN (without a statement) and certain ethnic groups the key themes in some of the sub sections below was previously unknown. However, for those from a lower socioeconomic status and poor attainment it has been explored. Another novel aspect of this analysis is showing earnings trajectories of different groups with different education levels over time. This exploits the LEO dataset in a way not done before.

Higher education levels are associated with better labour market outcomes

93. There is a vast literature on 'human capital theory', i.e. the link between education (or training) and labour market outcomes. It is beyond doubt that higher levels of education lead to higher earnings, lower levels of unemployment and better

[25] "How does education affect employment rates? OECD (2012): https://www.oecd-ilibrary.org/education/education-at-a-glance-2014_eag_highlights-2014-en

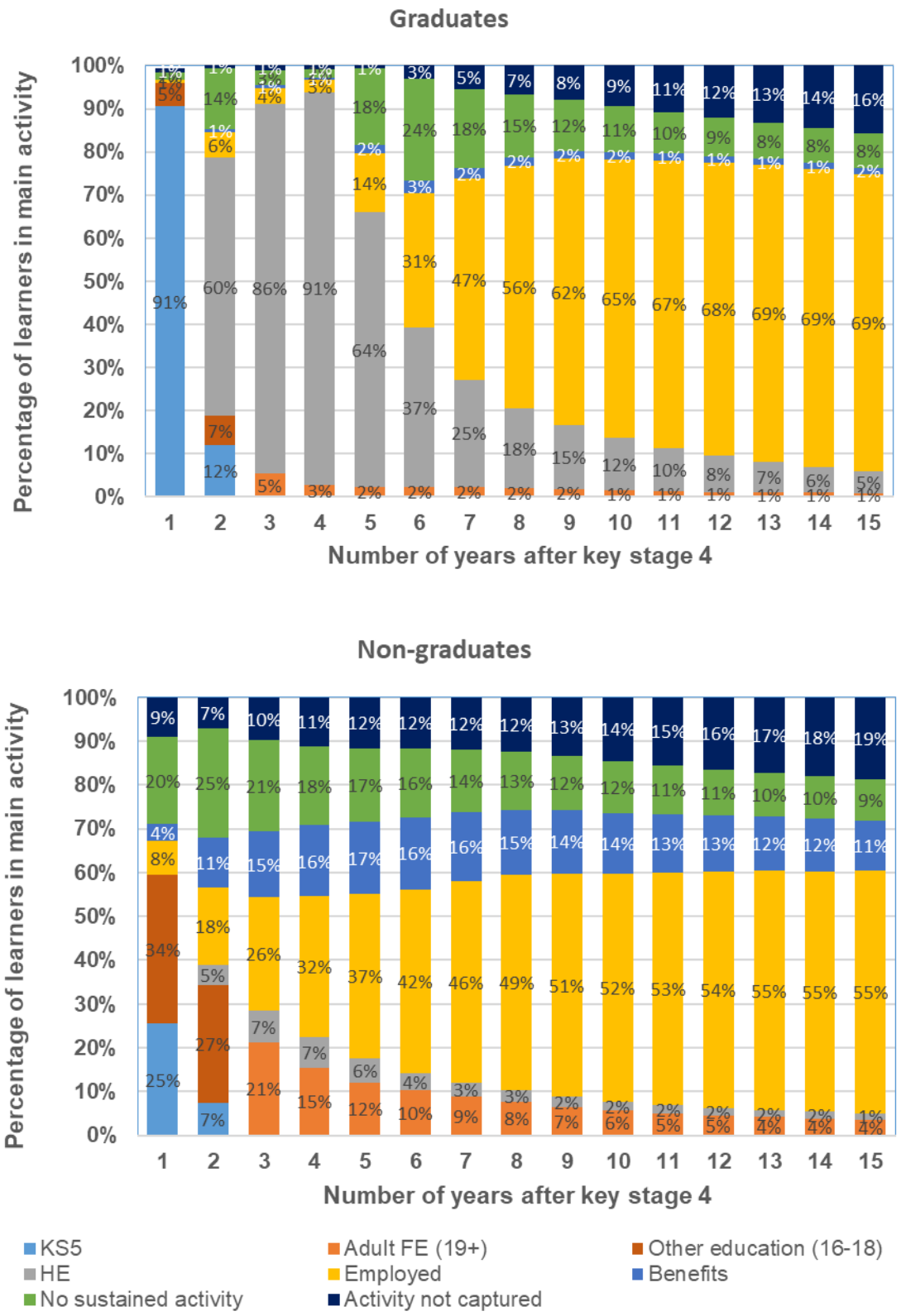
wages. For example, in a seminal publication Card[26] states 'Hundreds of studies in many different countries and time periods have confirmed that better-educated individuals earn higher wages, experience less unemployment, and work in more prestigious occupations than their less-educated counterparts'. The LEO dataset has elsewhere been used (as referenced throughout this document) to add some additional value to this literature and this report does so in the same vein, by using a different approach to corroborate what is already known.

Individuals completing a degree have significantly better labour market outcomes than those without a degree

94. As might be expected, analysis shows that larger proportions of individuals that complete a degree are in employment, as an outcome and over time, than those that do not (see Figure 14). Conversely, fewer are claiming out of work benefits. Subsequently we also see average earnings are higher (Figure 15). The key findings in this sub-section corroborate the IFS publications which show that there is a substantial return, in terms of earnings and employment, to achieving a degree. The analysis in this report shows two new elements: 1) information on those claiming out of work benefits for graduates and non-graduates and 2) earnings trajectories mapped over time. Neither has been published before.

[26] THE CAUSAL EFFECT OF EDUCATION ON EARNINGS – David Card (1999) https://eml.berkeley.edu/~card/papers/causal_educ_earnings.pdf

Figure 14: Main activities of individuals that completed a degree and those that did not for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18

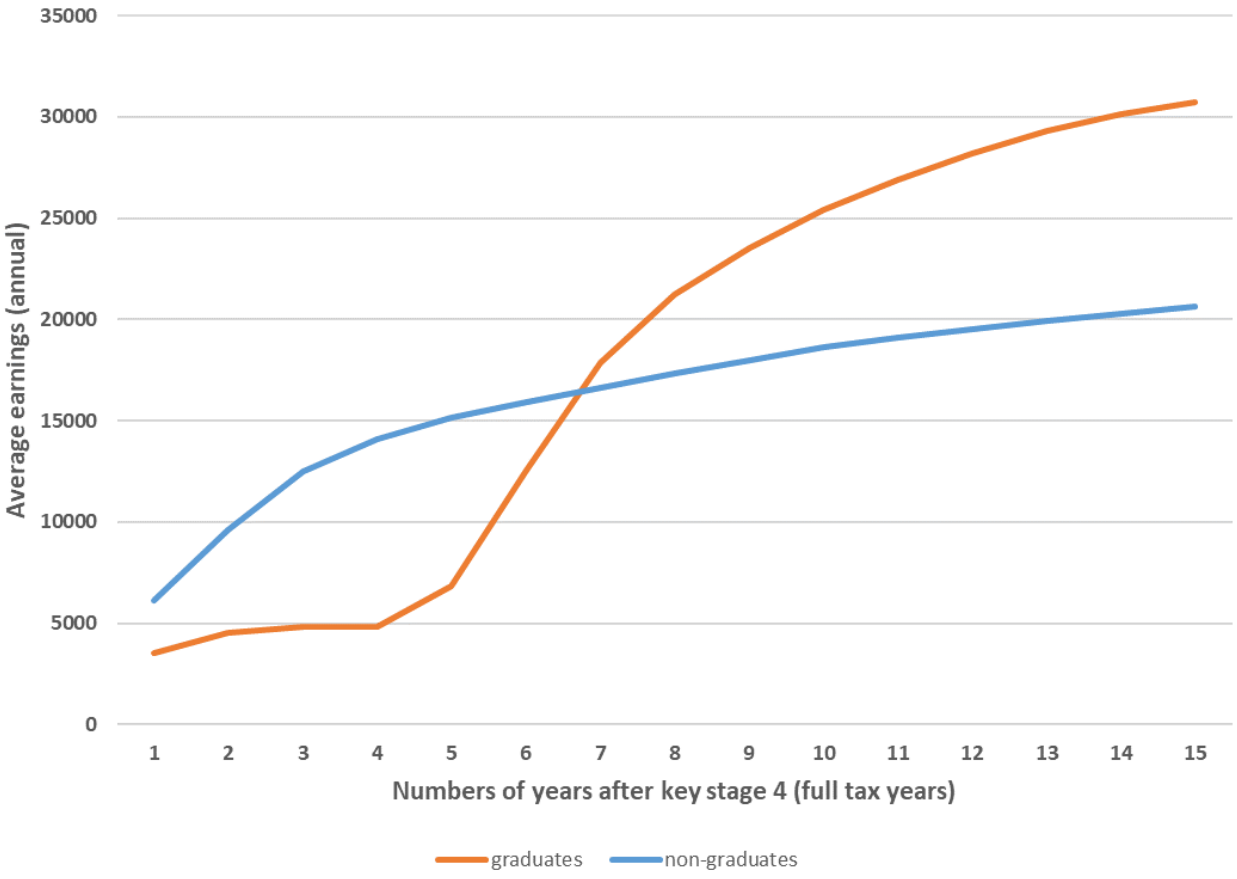


Source: Longitudinal Education Outcomes dataset

95. There is also considerable difference in the earnings trajectories and outcomes for graduate and non-graduate individuals in employment, as illustrated in Figure 15. We see around a £10,000 difference in annual average earnings for graduates and non-graduates in employment 15 years after finishing KS4 – for most graduates this is around 8 to 10 years after graduation (however, this varies – see paragraph 96). Though the curve for graduates flattens after a sharp increase as more graduates join the labour market, it continues to increase at a faster rate than that for non-graduates.

Figure 15: Average earnings of individuals in employment with a degree and without for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

96. Most graduates complete their degree 5 to 7 (full tax) years after completing GCSEs, though some take longer (see Technical report for more details). This means that earnings in earlier years are likely to be from part time employment whilst studying. This helps to explain why the graduate income trajectories start with low earnings and rises sharply from year 5 onwards. Figure 14 above shows graduates moving from higher education into employment (in terms of their main activity) from year 5 onwards. The reader is also reminded that earnings refer to

tax years and for example, (tax) year 1 essentially covers the second year of A levels/KS5.

97. Similarly, those that continue in education (for example in postgraduate studies) while also working would meet the employment criteria and would be captured in the average earnings figures.

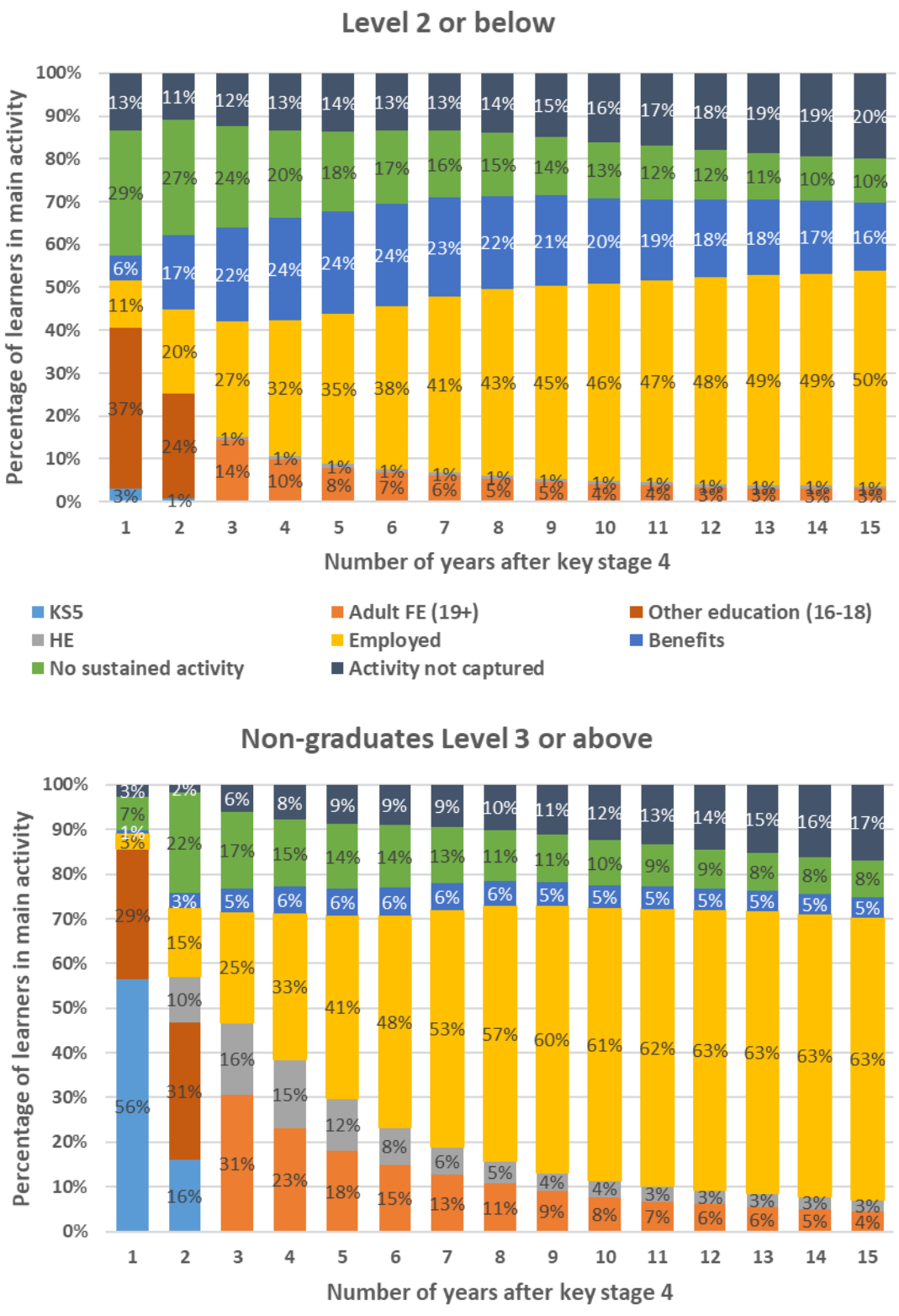
98. Should the reader be familiar with Graduate Outcomes (LEO) Official Statistics they may try to make comparisons between it and this this report. **This is not recommended** due to the differences in methodologies highlighted in box on pages 22 and 23 in graduates and non-graduates sub-section (and paragraphs 52 to 55).

For those without a degree, achieving a level 3 or above qualification is associated with significantly better labour market outcomes than for those achieving level 2 or below (as their highest level)

99. Figure 16 shows that, for those without a degree, achieving a level 3 or above qualification is associated with significantly higher proportions in employment and significantly lower proportions claiming out of work benefits than individuals with level 2 or below (as their highest level). We also see that average earnings are much higher. This analysis complements analysis by CVER which finds that level 3 qualifications have significant positive returns to employment and earnings (and lower likelihood of claiming out of work benefits).

Figure 16: Main activities of individuals (without a degree) who have achieved level 3 or above and who have achieved level 2 or below for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

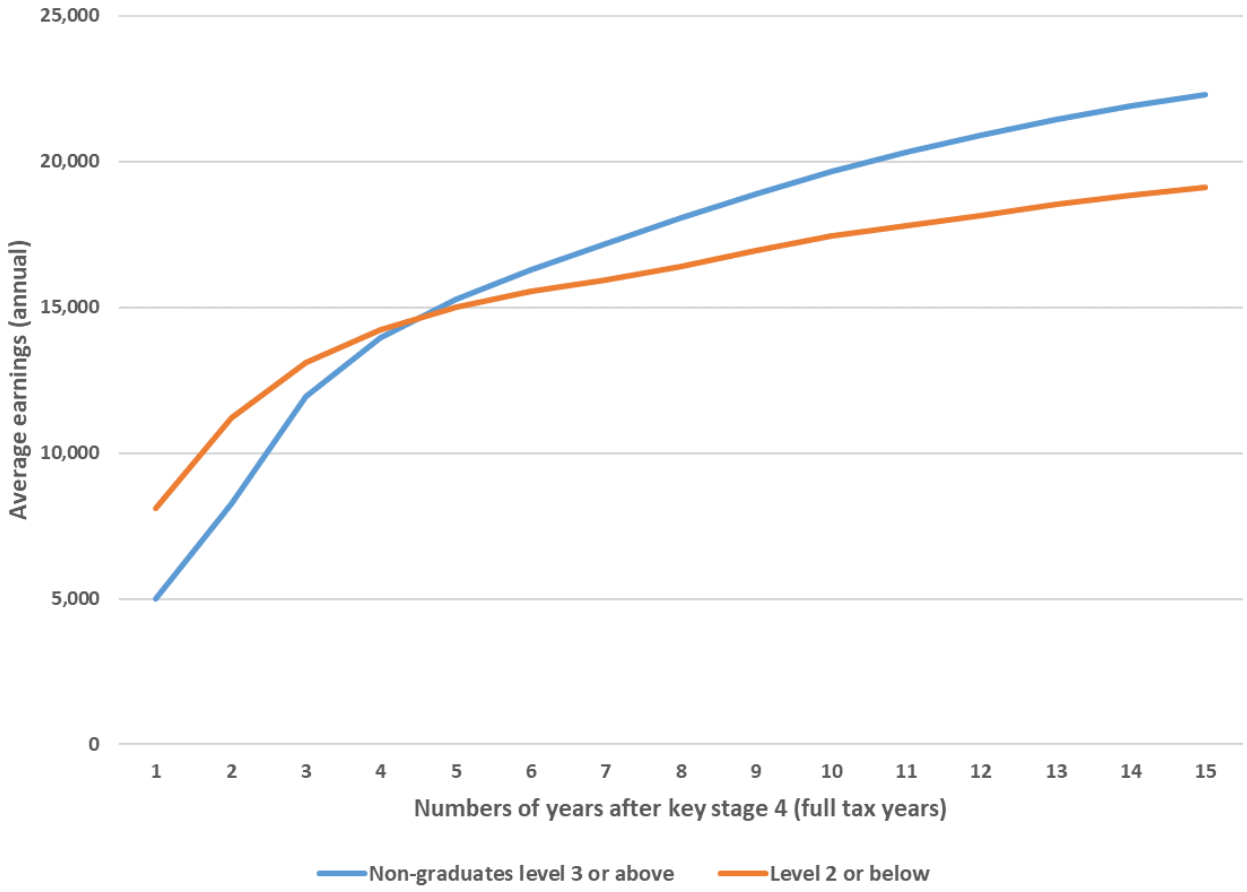


Source: Longitudinal Education Outcomes dataset

100. Additionally, 15 years after completing GCSEs, there is an 'earnings premium' of over £3,000 per annum for non-graduates with a level 3 or above (highest) qualification compared with those with level 2 or below (highest) qualification. Figure 17 shows their average earnings trajectories.

Figure 17: Average earnings of individuals (without a degree) who have achieved level 3 or above and who have achieved level 2 or below for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

101. It is once again necessary to note that the £3,000 difference between the two groups does not account for other differences within the two groups. For example, there may be socioeconomic or demographic differences and differences in the education, such as subject(s) or sector area, type of qualification, etc.

At similar education levels, labour market outcomes differ by individual characteristics

The difference between average earnings of graduates and non-graduates varies significantly for different sub-groups

102. Table 7 shows the employment and earnings 'premium' for achieving a degree, i.e. difference between graduates and non-graduates in terms of: 1) proportions in employment and 2) average earnings. This varies significantly, and to an extent is reflective of an individual's personal characteristics. Fifteen years after completing GCSEs the employment 'premium' ranges between 5 and 19 percent, whilst the earnings 'premium' ranges between £4,000 and £13,000.

103. The IFS have estimated returns to education (on income) for men and women, individuals with different prior attainment and socioeconomic status and there has been a statistical publication focusing on region[27]. They go further than this report by controlling for a host of background characteristics in order to estimate individualised returns. In particular,they found controls for prior attainment and subject of study at HE level to be very important in determining returns to degrees. However, to date, the LEO dataset has not been used to show differences between graduates and non-graduates by ethnicity, SEN, school type or first language.

104. The reader is thus reminded that the statistics in this section are descriptive and there may be other factors influencing patterns. In addition to some of the socioeconomic, demographic and education variables explored, there may be some HE specific factors (for example, the IFS show subject and institution is important). Realistically it is likely to be a complex interaction of all these factors which contribute towards the labour market outcomes for individuals and groups.

[27] https://www.gov.uk/government/statistics/graduate-outcomes-leo-regional-outcomes-2016-to-2017

Table 7: Difference in proportion in employment and difference in average earnings between graduate and non-graduate individuals for selected sub-group comparisons 15 years after GCSEs for the 2001/02 KS4 cohort

Tax year: 2017-18

Sub-group (characteristic)	Difference between graduates and non-graduates	
	Percentage point difference in employment	Average earnings (difference)
Gender		
Female	16	£10,000
Male	11	£12,000
FSM eligibility		
Eligible	18	£8,000
Not eligible	12	£9,000
SEN status		
With Statement	22	£4,000
Without a statement	16	£7,000
Not identified with SEN	12	£9,000
Major ethnic group		
Asian	18	£11,000
Black	17	£8,000
Chinese	5	£12,000
Mixed (year 14)[28]	18	£11,000
White	14	£9,000
Minor ethnic group		
Bangladeshi	19	£10,000
Indian	12	£11,00
Pakistani	18	£9,000
Black African	19	£8,000
Black Caribbean	17	£7,000
White British	14	£9,000
KS4 attainment		
Did not achieve five GCSEs A* to C	11	£4,000
Achieved five GCSEs A* to C	6	£8,000
Region at KS4		
East Midlands	13	£10,000
North East	14	£8,000
London	15	£11,000
School type		
State-funded (non-selective)	14	£9,000
Independent	13	£13,000
Selective	7	£9,000
First language		
English	14	£9,000
Not English	17	£10,000

Source: Longitudinal Education Outcomes dataset

105. As previously highlighted, it is important to note that this report is not aiming to show returns (at a given age) from higher education (as shown in the IFS report: The relative labour market returns to different degrees). This report serves simply to show the earnings trajectories of different groups of individuals, based on their characteristics, over time for similar education levels. The analysis is descriptive, not controlling for other factors, and not inferring causality.

Similarly, for those without a degree, the difference between average earnings of those achieving a level 3 or above or not varies significantly for different sub-groups

106. The difference in both proportions in employment and average earnings either side of the level 3 split holds for all groups of individuals. However, the 'premium' differs based on characteristics. The earnings 'premium' is generally lower for sub-groups that we saw had poorer labour market outcomes in Section 1, i.e. FSM eligible, identified as SEN, certain ethnic groups, poor attainment and those from the North East. However, it seems to be the converse for proportions in employment, with these groups seeing a larger employment 'premium'. Table 8 below illustrates this.

107. The relationship between achieving a level 3 qualification and not for many of the groups shown in this report has not been explored before. The CVER's analysis has explored employment and earnings premiums to males and females and individuals of different ages, but nothing specific on factors such socioeconomic status, SEN, ethnicity, region and school type.

[28] Year 14 is used as a comparison for individuals from the mixed major ethnic group due to changes in the 2002/03 school census, which mean consistent comparisons were not possible.

Table 8: Difference in proportion in employment and average earnings between non-graduates achieving level 3 or above and level 2 or below 15 years after GCSEs for the 2001/02 KS4 cohort

Tax year: 2017-18

Sub-group (characteristic)	Difference between (non-graduate) individuals with a level 3 or above and those with level 2 or below	
	Percentage point difference in employment	Average earnings
Gender		
Female	15	£4,000
Male	12	£7,000
FSM eligibility		
Eligible	15	£2,000
Not eligible	11	£3,000
SEN status		
With Statement	18	£2,000
Without a statement	13	£2,000
Not identified with SEN	10	£3,000
Major ethnic group		
Asian	15	£3,000
Black	12	£2,000
Chinese	8	£5,000
Mixed (year 14*)	10	£2,000
White (same for year 14)	13	£3,000
Minor ethnic group		
Bangladeshi	11	£4,000
Indian	13	£4,000
Pakistani	16	£1,000
Black African	11	£3,000
Black Caribbean	13	£2,000
White British	13	£3,000
KS4 attainment		
Did not achieve five GCSEs A* to C	12	£1,000
Achieved five GCSEs A* to C	5	£2,000
Region at KS4		
North East	13	£2,000
East Midlands	13	£3,000
London	11	£4,000
School type		
State-funded (non-selective)	12	£3,000
Selective	8	£4,000
Independent	9	£7,000
First language		
English	13	£3,000
Not English	14	£3,000

Source: Longitudinal Education Outcomes dataset

The proportions in employment and claiming out of work benefits and average earnings vary for different sub-groups with similar levels of education

108. Minor ethnic group is used to illustrate this finding but it is also the case for most sub-groups, with the exception of region and, to a lesser extent, gender. The IFS have showed that returns to higher education vary based on gender, attainment, socioeconomic status and ethnicity and therefore this theme could probably be inferred from that. Where this report goes further is in showing this for additional groups (particularly ethnicity, but also SEN, first language and school type). Nor has there been any analysis of out of work benefits claims.

109. Table 9 shows that labour market outcomes vary significantly for those with similar education levels (graduates, non-graduates level 3 or above, and level 2 or below) depending on ethnicity. We see that there is a large difference in proportions in employment, claiming out of work benefits and average earnings despite a similar education level for different minor ethnic groups.

Table 9: Labour market outcomes 15 years after GCSEs for different minor ethnic groups with similar education levels for the 2001/02 KS4 cohort
Tax year: 2017-18

Labour market outcome year 15	Education level	Minority ethnic group					
		Bangladeshi	Indian	Pakistani	Black African	Black Caribbean	White British
Proportion in employment	graduates	66%	71%	61%	61%	64%	71%
	(non-graduates) level 3 or above	55%	66%	52%	47%	55%	65%
	level 2 or below	44%	53%	37%	36%	42%	52%
Proportion claiming out of work benefits	graduates	5%	1%	4%	5%	5%	1%
	(non-graduates) level 3 or above	9%	4%	9%	13%	13%	4%
	level 2 or below	17%	12%	17%	21%	24%	16%
Average earnings (for those in employment)	graduates	£27,000	£33,000	£25,000	£29,000	£26,000	£30,000
	(non-graduates) level 3 or above	£21,000	£24,000	£17,000	£22,000	£20,000	£22,000
	level 2 or below	£16,000	£20,000	£16,000	£19,000	£18,000	£19,000

Source: Longitudinal Education Outcomes dataset

110. Only Indian former pupils have similar, or slightly better, labour market outcomes than White British at similar education levels. Thus for Bangladeshi, Pakistani, Black African and Black Caribbean individuals with a similar education level to White British, they have worse labour market outcomes. There is quite a lot of

variance within each measure. For both proportions in employment and proportions claiming out of work benefits, the differences become larger at lower educations levels. However, for earnings, the variation is less at level 2 or below.

For some sub-groups getting a higher education level leads to better labour market outcomes than their peers

For a few sub-groups, completing a degree leads to better labour market outcomes than their comparators without a degree.

111. We have observed that better education levels are associated with better labour market outcomes, particularly for graduates versus non-graduates. However, the previous sub-section started to show some interesting subtleties when considering the different patterns for people with different characteristics. Some groups of people appear to have poorer labour market outcomes than others even when they have similar education levels. However, within these populations the graduates usually still have better labour market outcomes than non-graduates. This can be illustrated comparing those people who were FSM eligible and those who were not.

112. FSM eligible individuals are less likely to complete a degree than their non-FSM eligible peers, however those that do complete a degree have better labour market outcomes (than their non-graduate peers). The proportion of FSM eligible individuals that graduate is less than half of that for non-FSM eligible peers (see Table 10 below). Figure 18 and Figure 19 show FSM eligible individuals that completed a degree have significantly higher proportions in employment, lower proportions claiming out of work benefits and higher average earnings than non-FSM eligible non-graduate individuals – thus confirming that having a degree matters.

Table 10: Percentage of FSM eligible and non-FSM eligible individuals completing a degree for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

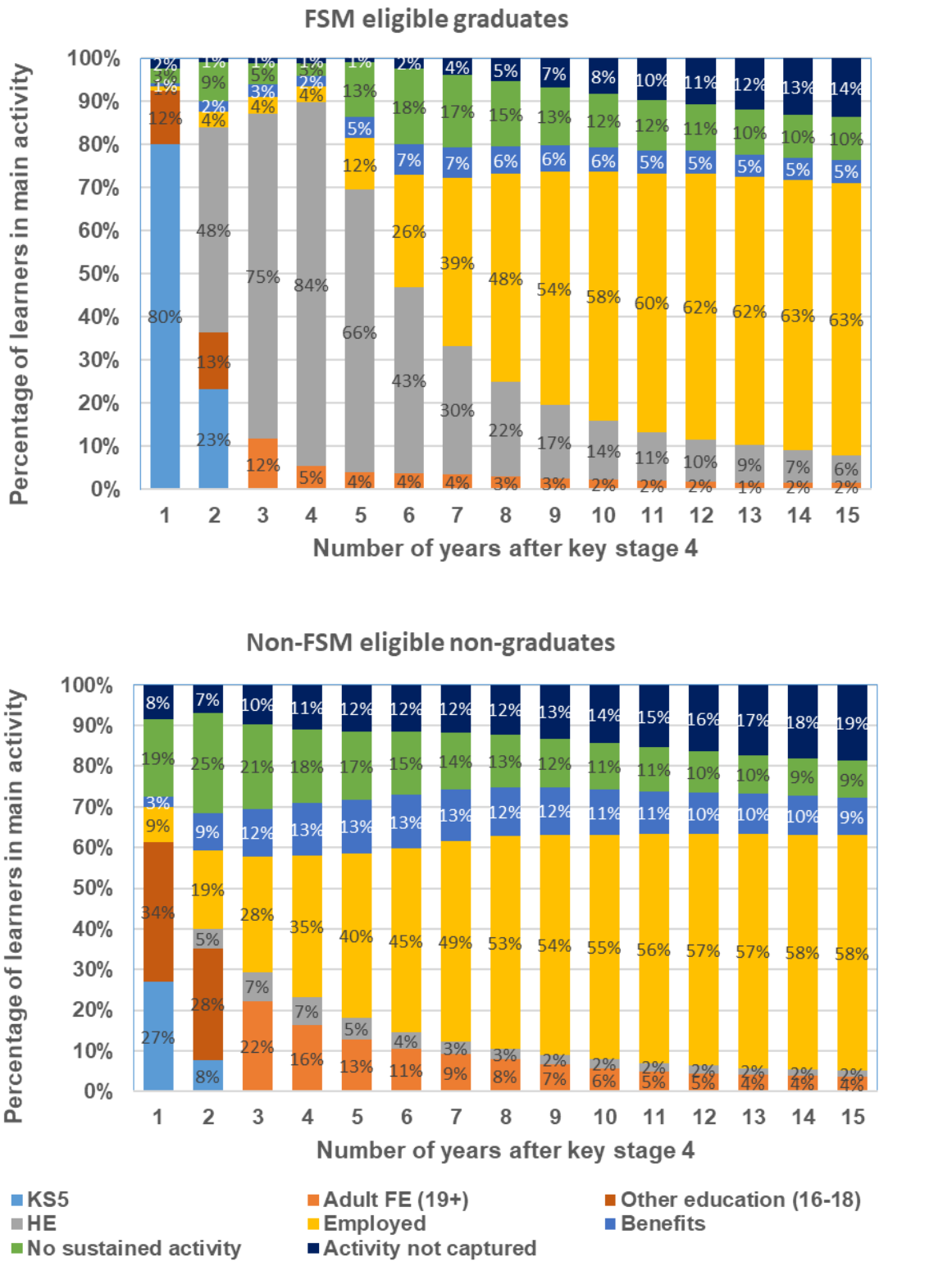
Group	Percentage of individuals from sub-groups completing a degree
FSM eligible	16%
Non-FSM eligible	34%

Source: Longitudinal Education Outcomes dataset

113. However, for both graduates and non-graduates respectively, FSM eligible individuals have poorer labour market outcomes than their non-FSM eligible peers (higher proportion claiming out of work benefits, lower proportion in employment and lower average earnings). Non-graduate FSM eligible individuals have worse labour market outcomes than non-FSM eligible non-graduates do.

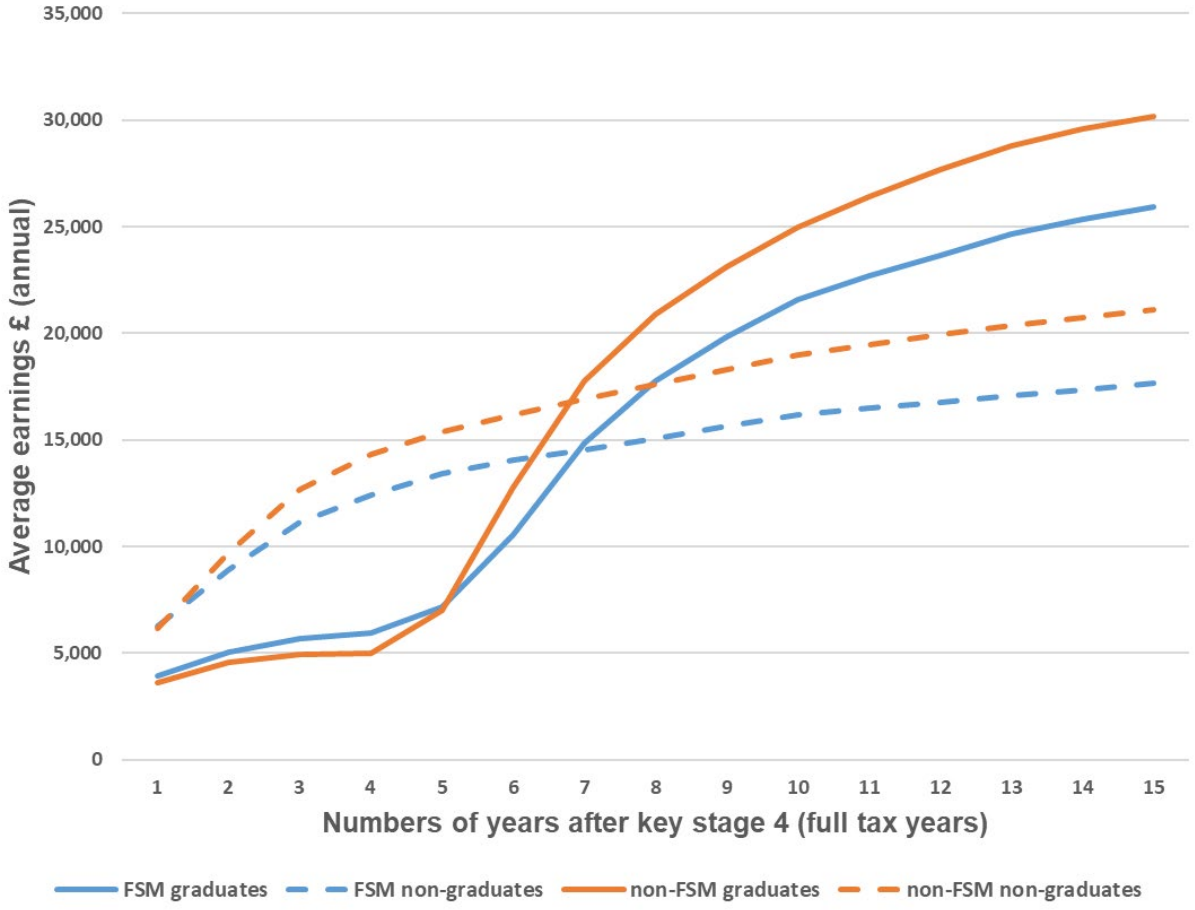
114. Overall, we could say that graduating from university is associated with better labour market outcomes for those from a disadvantaged background, but it does not put them onto the same terms (regarding proportion in employment and average earnings) as their lesser disadvantaged graduate peers.

Figure 18: Main activities of individuals that were FSM eligible and non-FSM eligible with a degree and without for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

Figure 19: Average earnings of FSM eligible and non-FSM eligible individuals in employment with and without a degree for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

115. For example, when analysing individuals by FSM eligibility, average earnings for FSM eligible graduates are around £5,000 higher than non-FSM eligible non-graduates (in most recent years). The trajectories are shown in Figure 19.

116. The difference between average earnings for graduates and non-graduates is similar for FSM eligible and non-FSM eligible individuals, around £8,000 for the former and £9,000 for the latter. This suggests the 'premium' for completing a degree is similar despite socioeconomic status. However average earnings for FSM eligible non-graduate individuals are significantly lower than for their non-FSM eligible counterparts.

117. The finding highlighted in para 115 holds for several other sub-groups of individuals (15 years after GCSEs) as shown in Table 11 below.

Table 11: Labour market outcomes of graduates and non-graduates from selected sub-group comparisons 15 years after GCSEs for the 2001/02 KS4 cohort
Tax year: 2017-18

Sub-group (characteristic)	Proportion in employment	Proportion claiming out of work benefits	Average earnings (for those in employment)
Major ethnic group			
Black graduates	62%	5%	£27,000
White non-graduates	57%	11%	£20,000
Minor ethnic group			
Bangladeshi graduates	66%	5%	£27,000
Pakistani graduates	61%	4%	£25,000
Black Caribbean graduates	64%	5%	£26,000
White British non-graduates	57%	11%	£21,000
SEN status			
SEN without a statement graduates	64%	4%	£26,000
Not identified with SEN non-graduates	59%	9%	£21,000
First language			
Other than English graduates	65%	3%	£21,000
English non-graduates	56%	11%	£30,000
School type			
State-funded (non-selective) graduates	70%	2%	£29,000
Selective non-graduates	62%	4%	£27,000

Source: Longitudinal Education Outcomes dataset

Similar to degree achievement, achieving a level 3 qualification is associated with better labour market outcomes than their comparators with a level 2 or below qualification.

118. For most sub-groups of non-graduates, achieving a level 3 or above qualification levels leads to higher levels of employment, lower levels of out of work benefits claims and higher average earnings than comparators groups that have achieved level 2 or below as their highest education level. The comparison of SEN without a statement and not identified with SEN individuals is used as an exemplar. This theme does not apply to more severe cases of SEN, i.e. those with a statement (which is explored subsequently). The reason FSM is not continued as an exemplar is because it does not fit under this theme (and is explored later). However the reader is reminded that the report tries to use a breadth of sub-groups to illustrate different themes.

119. This key finding is new, as is the analysis on different sub-groups supporting it, thus filling a gap in the evidence base.

120. Table 12 indicates around half of non-graduates not identified with SEN achieve a level 3 or above qualification, compared with just less than a quarter for SEN without a statement.

Table 12: Percentage of individuals with SEN without a statement and not identified with SEN (without a degree) achieving a level 3 or above qualification for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

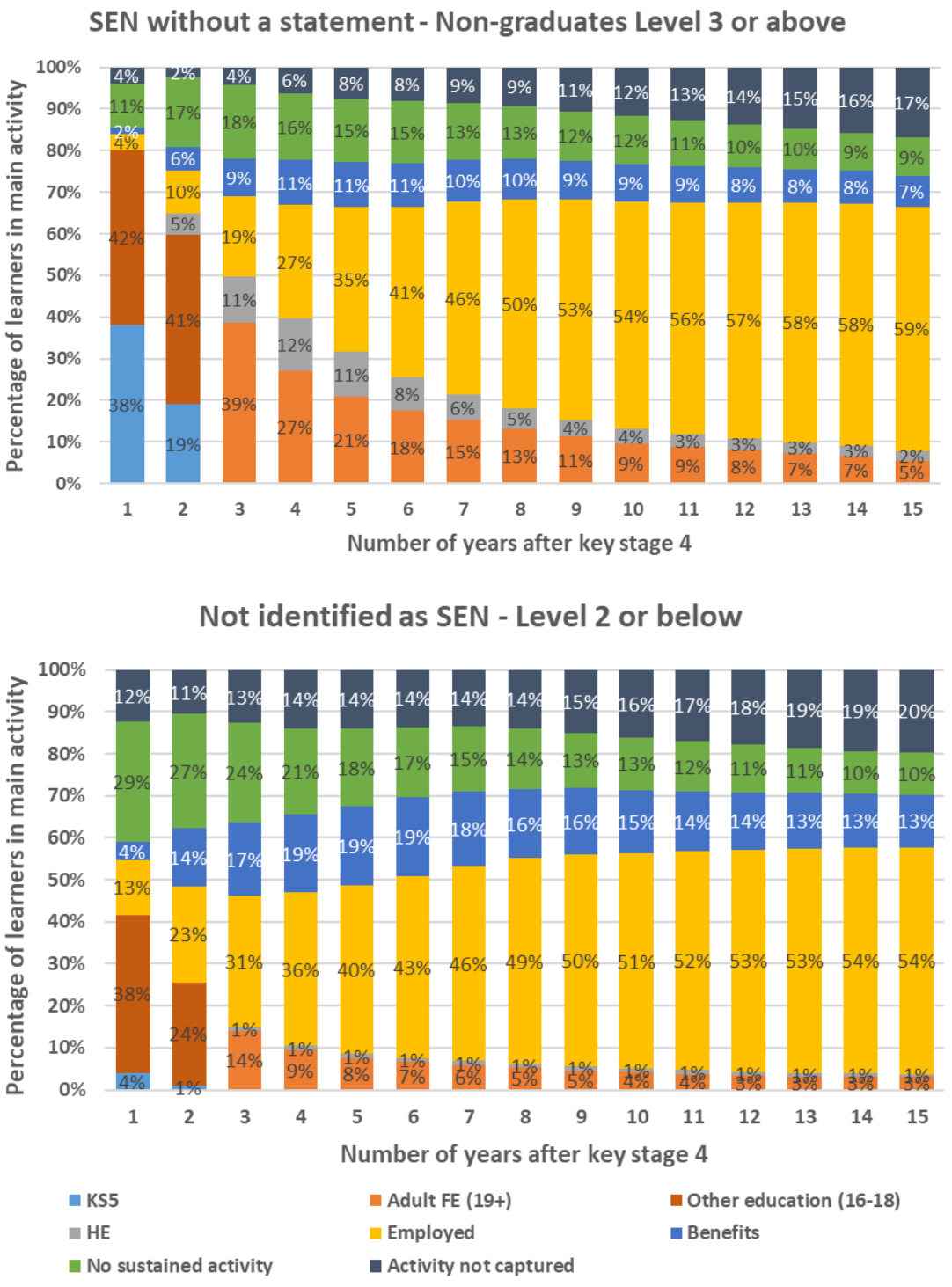
Group	Percentage of individuals from sub-group achieving level 3 or above
Not identified with SEN	48%
SEN without a statement	24%

Source: Longitudinal Education Outcomes dataset

121. Figure 20 does however illustrate that for those SEN without a statement non-graduates that do achieve level 3, they have a higher proportion in employment (and lower proportion claiming out of work benefits) than those not identified with SEN with level 2 or below. This is not the case for more severe cases of SEN, i.e. those with a statement.

122. Achieving a level 3 or above qualification is associated with better labour market outcomes for both those with SEN without a statement and not identified as SEN. However, at similar education levels (both level 3 or above and level 2 or below) those not identified as SEN have higher proportions in employment, lower proportions claiming out of work benefits and higher average earnings (than individuals with SEN without a statement). The reason for the comparison in Figure 20 and alluded to above is to see if achieving a level 3 or above overcomes these differences. That means comparing individuals with SEN without a statement with a level 3 or above against individuals not identified as SEN with a level 2 or below.

Figure 20: Main activities of (non-graduate) individuals with SEN without a statement who have achieved level 3 or above and individuals not identified with SEN and who have achieved level 2 or below for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18

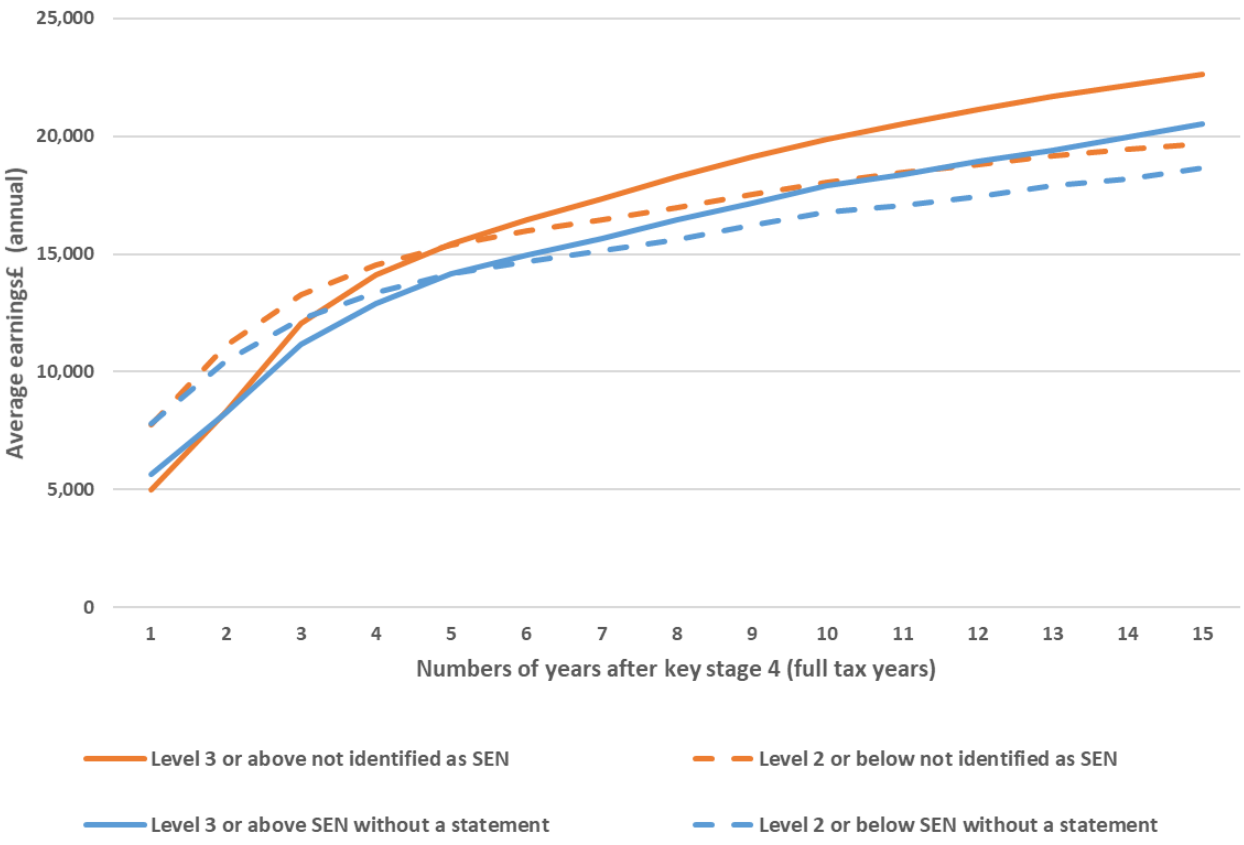


Source: Longitudinal Education Outcomes dataset

123. Figure 21 shows the average earnings for non-graduates with SEN without a statement who achieve level 3 or above is over £1,000 higher than not identified

with SEN level 2 or below. This suggests that whilst achieving a level 3 is important in terms of earnings, those identified as SEN without a statement have a lower starting point in terms of average earnings. As mentioned above, this is not the case for those with statement of SEN (see also Figures 24 and 25 explored in subsequent sub-section).

Figure 21: Average earnings of individuals SEN without a statement and not identified with SEN (without a degree) who have achieved level 3 or above and who have achieved level 2 or below for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

124. This theme, illustrated by SEN above, is also the case for several other comparisons (15 years after GCSEs) as shown in Table 13.

Table 13: Labour market outcomes of non-graduates level 3 and above and level 2 or below 15 years after GCSEs for selected sub-group comparisons for the 2001/02 KS4 cohort

Tax year: 2017-18

Sub-group (characteristic)	Proportion in Employment	Proportion claiming out of work benefits	Average earnings
Major ethnic group			
Asian non-graduates level 3 or above	58%	7%	£21,000
Chinese non-graduates level 3 or above	57%	2%	£22,000
Mixed non-graduates level 3 or above (year 14*)	56%*	8%*	£21,000
White level 2 or below (year 14*)	52% (51%*)	15% (17%*)	£19,000
Minor ethnic group			
Bangladeshi non-graduates level 3 or above	55%	9%	£21,000
Black Caribbean non-graduates level 3 or above	55%	13%	£20,000
White British level 2 or below	52%	16%	£19,000
First language			
Other than English non-graduates level 3 or above	56%	7%	£21,000
English level 2 or below	51%	16%	£19,000

Source: Longitudinal Education Outcomes dataset

However, for a few select sub-groups, getting a higher education level does not lead to better labour market outcomes than their comparators

For a few specific sub-groups getting a degree does not lead to better labour market outcomes than their non-graduate peers.

125. Those with poorer attainment at KS4 that go on to complete a degree do not have better labour market outcomes than individuals with better KS4 attainment that do not complete a degree. The finding shown in this sub-section is also the case for individuals with statement of SEN when compared with those not identified with SEN (see table 14 below). It is important to note that this finding only holds for these two groups and hence for every other sub-group explored in this report completing a degree leads to better labour market outcomes than comparators without a degree.

Table 14: Labour market outcomes of individuals not identified with SEN non-graduates and with statement of SEN graduates, 15 years after GCSEs for KS4 cohort 2001/02

Tax year: 2017-18

Sub-group (characteristic)	Employed	Claiming out of work benefits	Average earnings
Not identified with SEN non-graduates	59%	9%	£21,000
Statement of SEN graduates	60%	12%	£21,000

Source: Longitudinal Education Outcomes dataset

126. This finding has not been shown for SEN and this therefore is an addition to the evidence base.

127. Table 15 illustrates that few individuals who did not achieve at least five GCSE passes actually go on to complete a degree. This is compared with over half of those who achieved at least five passes A* to C (or equivalents).

Table 15: Percentage of individuals that achieved at least five GCSE passes A* to C (or equivalents) and those that did not complete a degree for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

Group	Percentage of individuals from sub-group completing a degree
Achieved 5 passes A* to C (or equivalents)	55%
Did not achieve 5 passes A* to C (or equivalents)	6%

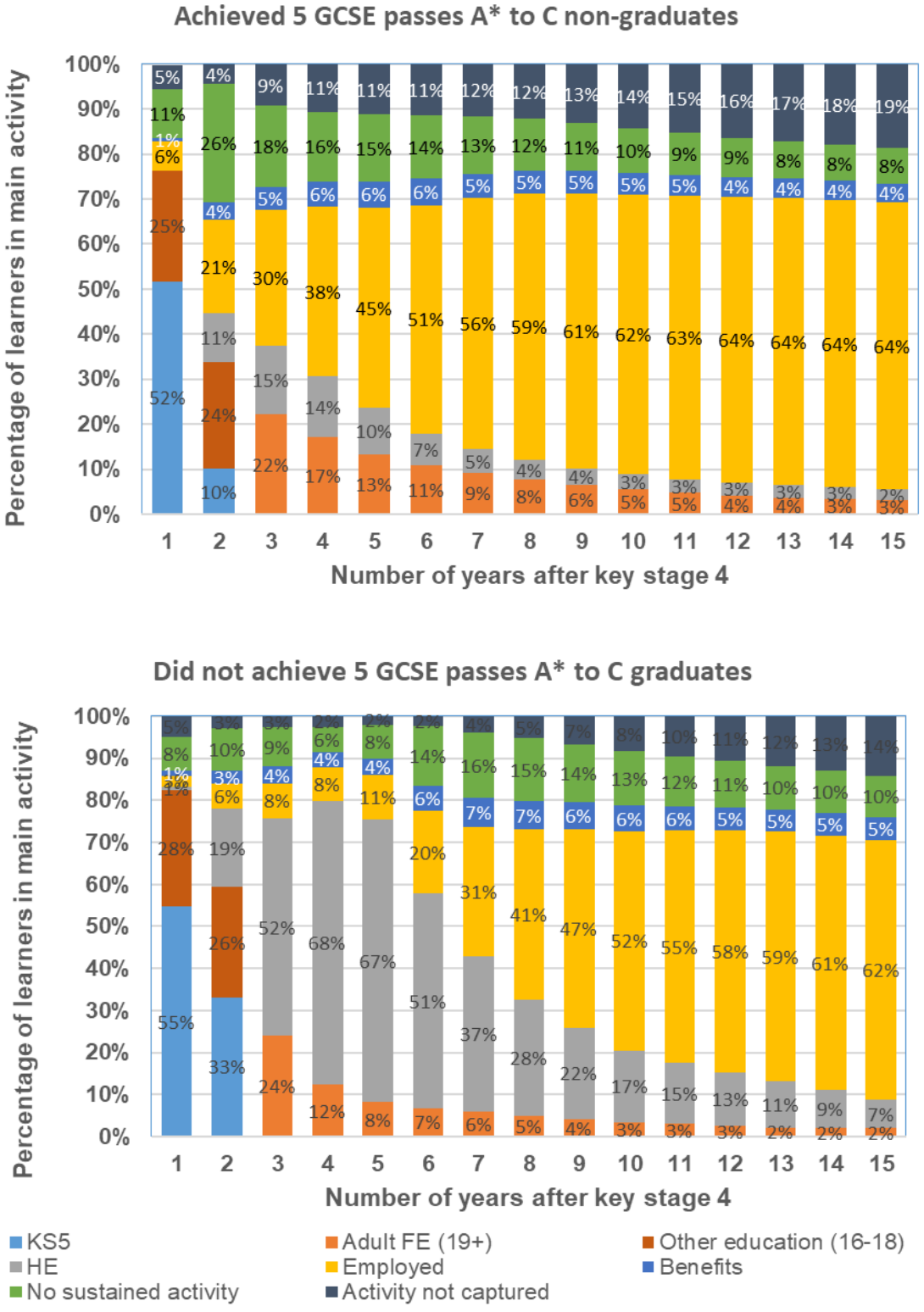
Source: Longitudinal Education Outcomes dataset

128. Despite getting a degree, individuals who did not achieve five GCSE passes A* to C (or equivalents) at KS4 have lower proportions in employment than those who achieved at least five GCSE passes without a degree (see Figure 22). These are sandwiched between those who achieved at least five GCSE passes A* to C (or equivalents) and are graduates, and individuals who did not achieve at least five passes and are non-graduates, which have, not surprisingly, the best and worst outcomes respectively.

129. It should be noted that for individuals that did not achieve five GCSEs A* to C but went on to obtain a degree, the effect on employment may not have taken place yet. This group tend to study and graduate later. This is reflected in the charts where the proportion in HE is higher in later years for individuals from this group.

Figure 22: Main activities of non-graduate individuals that achieved at least five GCSE passes A* to C (or equivalents) and those that did not achieve with a degree for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

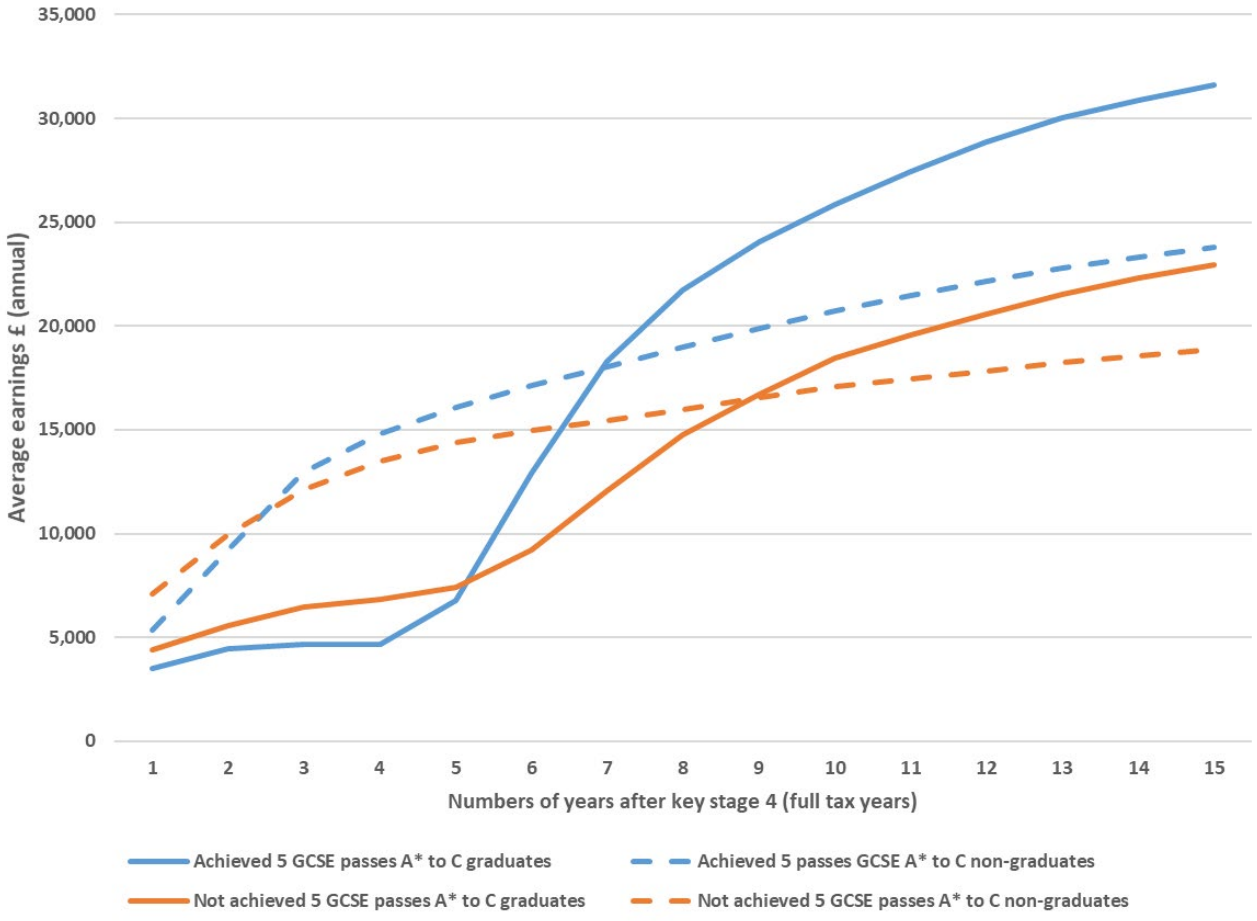


Source: Longitudinal Education Outcomes dataset

130. Figure 23 shows that individuals who achieved five GCSEs A* to C (or equivalents) at KS4 but do not have a degree also have higher average earnings than those that did not achieve five GCSEs A* to C yet went on to complete a degree.

Figure 23: Average earnings of individuals that achieved at least five GCSE passes A* to C (or equivalents) and those that did not with a degree and without for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

As with completing a degree, for a few select sub-groups (of non-graduates) achieving a level 3 or above qualification does not lead to better labour market outcomes than their comparators (who achieve level 2 or below).

131. This suggests that for certain sub-groups (explored below), whilst achieving a level 3 or above qualification is important, the starting point (in terms of employment level and average earnings) is much lower than their counterparts and does not overcome it. Many other factors (socioeconomic, demographic, educational and personal or familial) could be influencing this.

132. The example shown below is a comparison of individuals with statement of SEN and not identified with SEN. For non-graduates, individuals with statement of SEN are much less likely to achieve a level 3 or above qualification than those not identified with SEN (see Table 16). For those who do achieve a level 3 or above qualification, it does not lead to better labour market outcomes than those not identified as SEN with a lower education level (i.e. level 2 or below).

133. This finding is new evidence in the sense that this theme has not been highlighted before and that it holds for several groups. For certain ethnic groups and for SEN this has not previously been explored in the literature, whilst for GCSE attainment and disadvantage (i.e. lower socioeconomic status) it is known.

Table 16: Percentage of individuals with statement of SEN and not identified with SEN individuals (without a degree) achieving a level 3 or above qualification for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

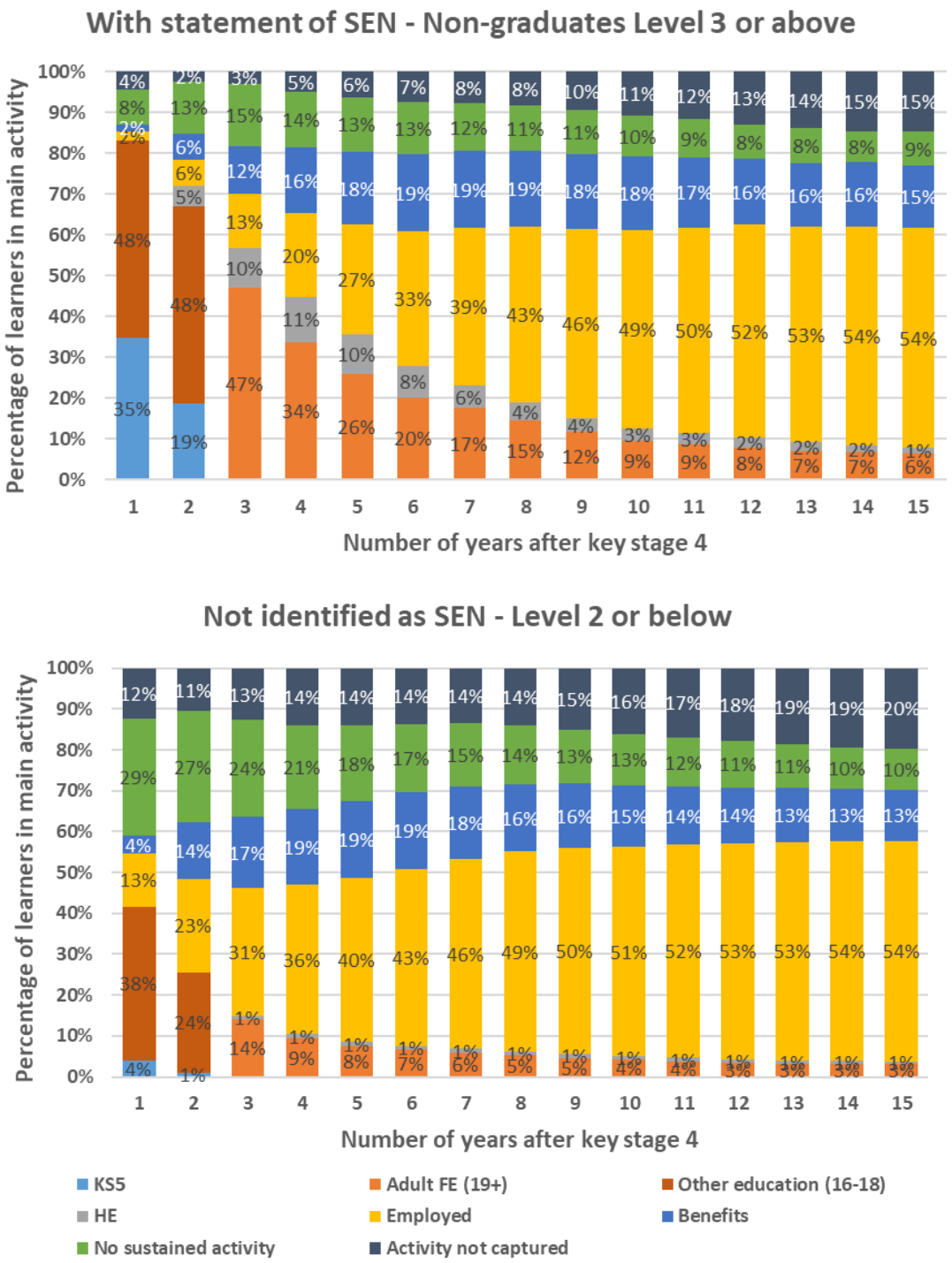
Group	Percentage of (non-graduate) individuals from sub-group achieving level 3 or above
Not identified with SEN	48%
With statement of SEN	13%

Source: Longitudinal Education Outcomes dataset

134. In Figure 24, we see that individuals not identified with SEN (non-graduates) with a level 2 or below as highest education level have almost the same proportions in employment and claiming out of work benefits as individuals with statement of SEN (non-graduates) with a level 3 or above qualification.

135. Achieving a level 3 or above qualification is associated with better labour market outcomes for both those with a statement of SEN and not identified as SEN. However, at similar education levels (both level 3 or above and level 2 or below) those not identified as SEN have higher proportions in employment, lower proportions claiming out of work benefits and higher average earnings (than individuals with a statement of SEN). The reason for the comparison in Figure 24 and alluded to above is to see if achieving a level 3 or above overcomes these differences. That means comparing individuals with SEN without a statement with a level 3 or above against individuals not identified as SEN with a level 2 or below.

Figure 24: Main activities of (non-graduate) individuals with statement of SEN who have achieved level 3 and those not identified with SEN who have achieved level 2 or below for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



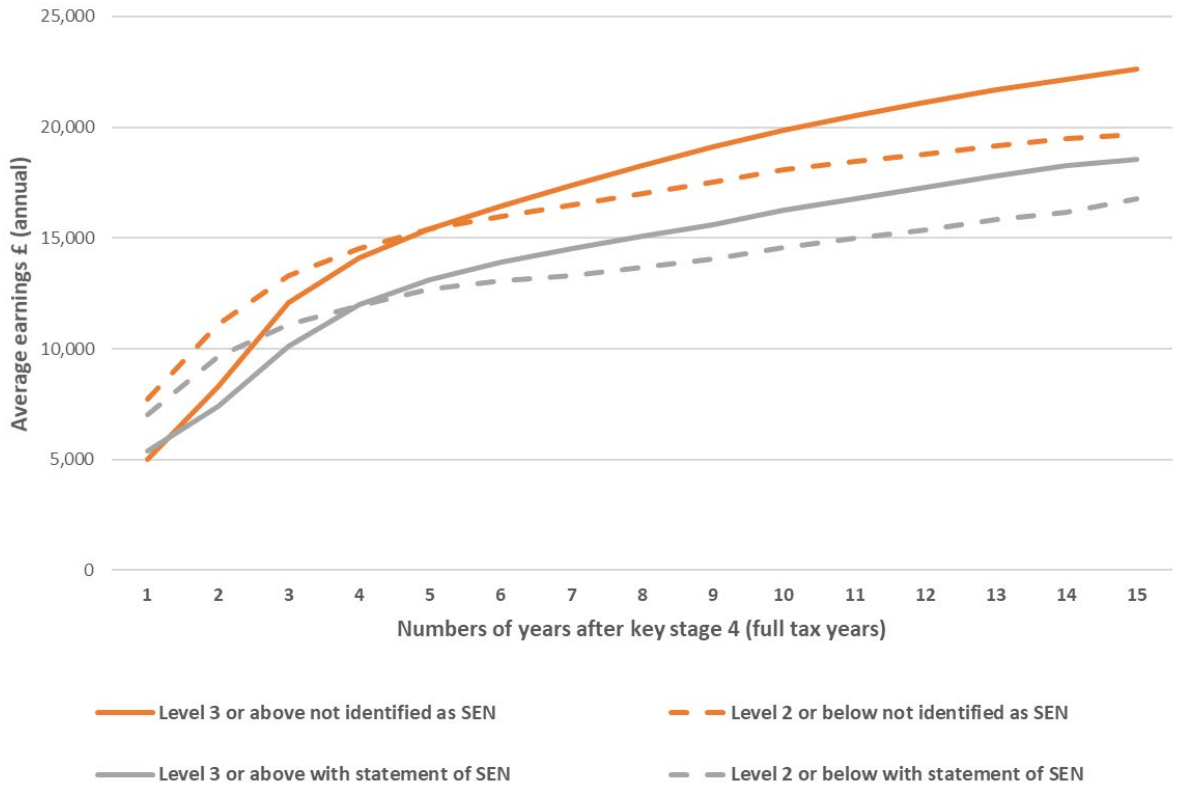
Source: Longitudinal Education Outcomes dataset

136. In Figure 25 we observe that for the non-graduates in employment, individuals not identified with SEN have higher average earnings regardless of whether they achieve level 3 (or above) or not. Thus, individuals not identified with SEN (non-

graduates) with level 2 or below highest level earn more than individuals with statement of SEN (non-graduate) who achieve a level 3 or above: over £1,000 per annum 15 years after completing GCSEs.

137. On the face of it these findings suggest that having a more severe form of SEN is a stronger influence than achieving level 3 on labour market outcomes (i.e. level 3 does not overcome the lower starting point those with statement of SEN have in terms of average earnings and employment levels). There could be a combination of factors that explain these results, of which SEN is only one, for example prior attainment and subject and type of study at level 3.

Figure 25: Average earnings of individuals with statement of SEN and not identified with SEN in employment (without a degree) who have achieved level 3 or above and who have achieved level 2 or below for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

138. In addition to the example explored in this sub-section, there are some other sub-groups where this is the case (shown in Table 17). As shown earlier in the report, this is not the case for most sub-groups and generally achieving a level 3 or above qualification leads to better labour market outcomes than peers with level 2 or below qualifications.

Table 17: Proportion of non-graduates level 3 and above and level 2 or below in employment, claiming out of work benefits and average earnings for selected sub-group comparisons - KS4 cohort 2001/02

Tax years: 2003-04 to 2017-18

Sub-group (characteristic)	Proportion in employment	Proportion claiming out of work benefits	Average earnings
FSM eligibility			
Eligible non-graduates level 3 or above	56%	11%	£19,000
Not eligible level 2 or below	53%	13%	£20,000
KS4 attainment			
Did not achieve five GCSEs A* to C (or equivalents) level 3 or above	59%	7%	£20,000
Achieved five GCSEs A* to C (or equivalents) level 2 or below	60%	6%	£22,000

Source: Longitudinal Education Outcomes dataset

For both region and gender, there is a slightly more complex relationship (than other sub-groups) when observing labour market outcomes at similar education levels.

139. This sub-section discusses education and labour market activities and outcomes at similar education levels by region and gender. There are similarities across these two 'characteristics'. Within these sub-groups, at higher education levels, proportions in employment and claiming out of work benefits are similar, but there is more variance at lower education levels. For average earnings, there are strong patterns in favour of men and London and the South East.

Completing GCSEs in different regions

140. No evidence exists on level 3 achievement and related outcomes by region. However, employment and earnings outcomes for graduates and non-graduates in their *current* region has been explored.

141. Table 18 shows that the proportion in employment and claiming out of work benefits for graduates is similar across regions. There is, however, more variation for non-graduates. London has the lowest proportions in employment and one of the highest proportions claiming out of work benefits for graduates and non-graduates. Figure 26 shows a very different story. The earnings premium for completing a degree is clear across all regions, but the starting point is different. Graduates and non-graduates from London, the South East and East of England have the highest average earnings (comparatively), whilst those from the North East, North West and Yorkshire and Humber have the lowest.

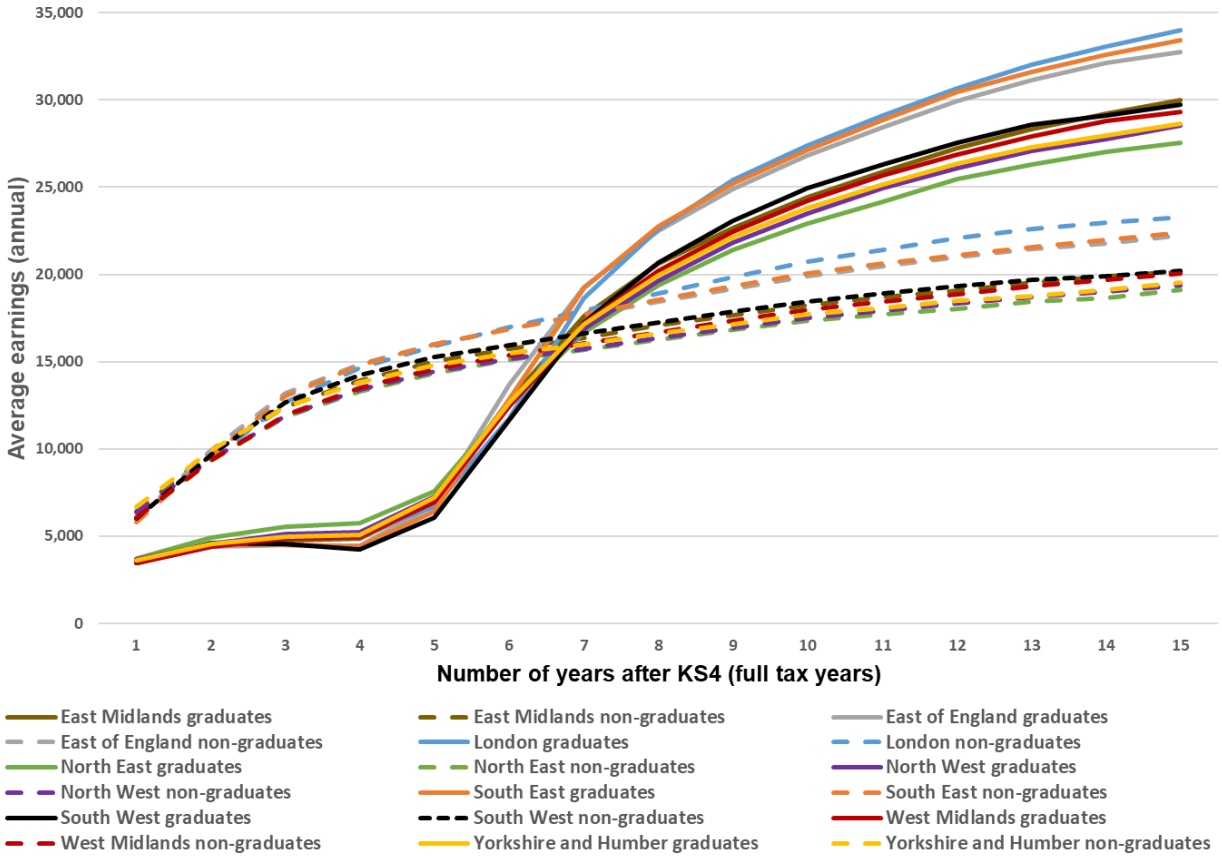
Table 18: Percentage of graduates and non-graduates in employment and claiming out of work benefits for selected sub-group comparisons (2) for the 2001/02 KS4 cohort

Tax year: 2017-18

Sub-group (characteristic)	Proportion in employment	Proportion claiming out of work benefits
East Midlands graduates	70%	1%
East of England graduates	70%	1%
London graduates	65%	2%
North East graduates	70%	2%
North West graduates	70%	2%
South East graduates	68%	1%
South West graduates	68%	1%
West Midlands graduates	71%	2%
Yorkshire and Humber graduates	71%	1%
East Midlands non-graduates	57%	11%
East of England non-graduates	57%	9%
London non-graduates	51%	14%
North East non-graduates	54%	15%
North West non-graduates	55%	13%
South East non-graduates	56%	9%
South West non-graduates	56%	9%
West Midlands non-graduates	56%	12%
Yorkshire and Humber non-graduates	55%	12%

Source: Longitudinal Education Outcomes dataset

Figure 26: Average earnings of graduates and non-graduates completing their GCSEs in different regions for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

142. The level 3 achievement split (see Table 19) tells a similar story to graduates and non-graduates, with those (non-graduates) achieving a level 3 or above qualification having similar proportions in employment and claiming out of work benefits across regions. However, there is more variance for those with a level 2 or below highest education level, particularly for out of work benefits claims. London has the poorest outcomes yet is a bit of an anomaly for reasons shown below, but the North East is a close second.

143. Average earnings show similar patterns to analysis earlier in the report with those doing their GCSEs in London, South East and East of England having the highest average earnings for both level 3 or above and level 2 or below attainment splits. In fact, those with a level 2 or below from these regions earn as much or more than non-graduates with a level 3 or above from the North East.

Table 19: Labour market outcomes of individuals doing GCSEs in different regions 15 years after KS4, level 3 achievement split for the 2001/02 KS4 cohort
Tax year: 2017-18

Sub-group (characteristic)	Proportion in employment	Proportion claiming out of work benefits	Average earnings
East Midlands level 3 or above	65%	4%	£22,000
East of England level 3 or above	65%	4%	£25,000
London level 3 or above	58%	7%	£25,000
North East level 3 or above	62%	6%	£20,000
North West level 3 or above	63%	5%	£21,000
South East level 3 or above	64%	4%	£25,000
South West level 3 or above	63%	4%	£22,000
West Midlands level 3 or above	64%	5%	£22,000
Yorkshire and Humber level 3 or above	63%	4%	£21,000
East Midlands level 2 or below	52%	16%	£19,000
East of England level 2 or below	52%	13%	£20,000
London level 2 or below	47%	17%	£22,000
North East level 2 or below	49%	21%	£18,000
North West level 2 or below	49%	19%	£18,000
South East level 2 or below	50%	13%	£21,000
South West level 2 or below	52%	13%	£19,000
West Midlands level 2 or below	50%	17%	£19,000
Yorkshire and Humber level 2 or below	50%	17%	£18,000

Source: Longitudinal Education Outcomes dataset

Gender

144. Figures 27 and Figure 29 illustrate that male and female graduates have very similar proportions in employment and claiming out of work benefits, however there are large differences in earnings (of those employed). Non-graduate women are less likely to be in employment and more likely to be claiming out of work benefits than men without a degree (see Figure 28), in addition to having lower average earnings. Another notable difference is that women tend to have higher post 16 education levels than men. For example, Table 20 shows that almost two fifths of women graduated from university compared with less than a third of men.

145. These findings are very similar to those reported in the IFS report ‘The impact of undergraduate degrees on early years earnings’.

Table 20: Percentage of men and women completing a degree for KS4 cohorts 2001/02 to 2006/07

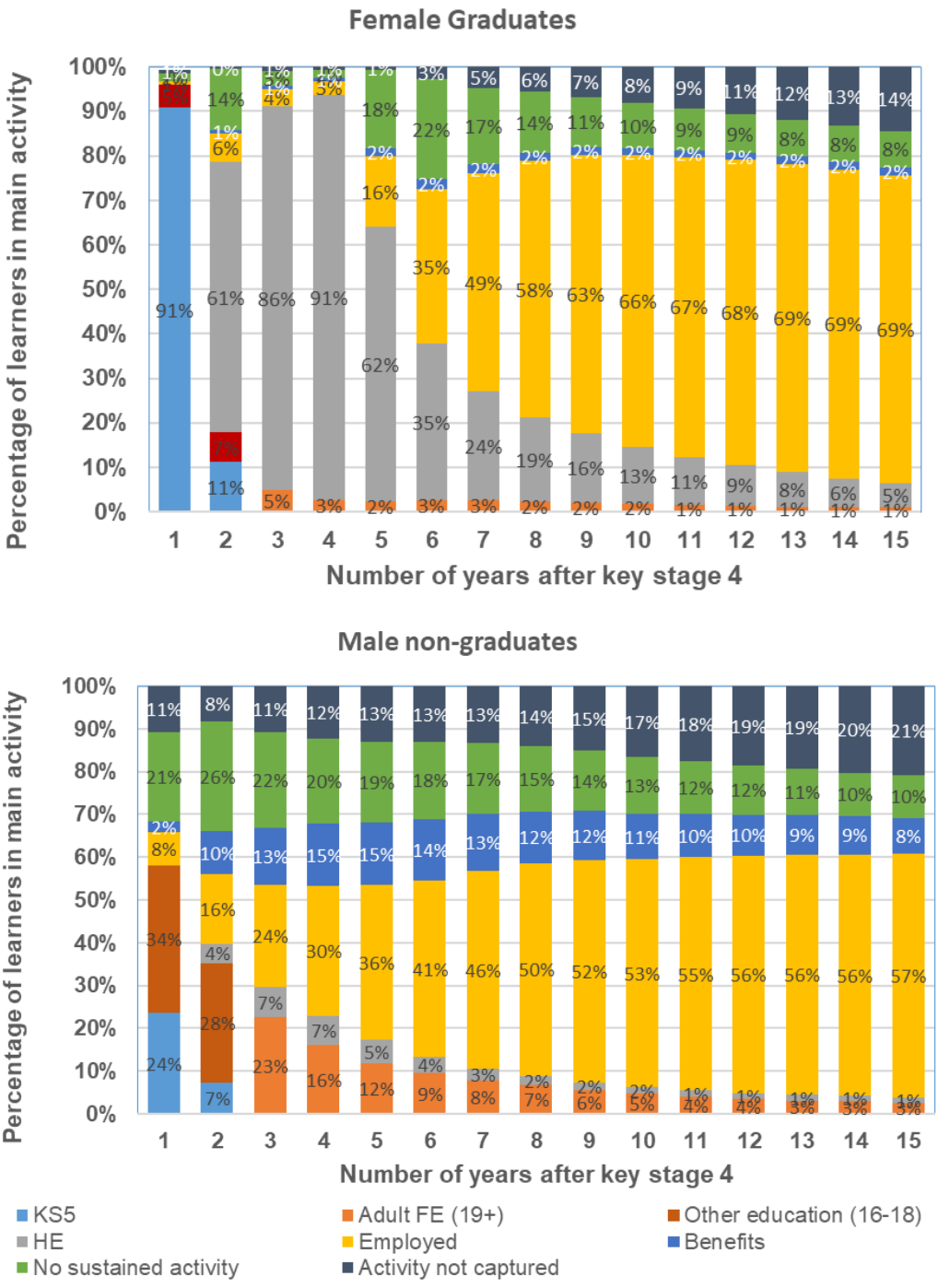
Tax years: 2003-04 to 2017-18

Group	Percentage of individuals from sub-group completing a degree
Female	39%
Male	29%

Source: Longitudinal Education Outcomes dataset

Figure 27: Main activities of men and women with a degree for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18

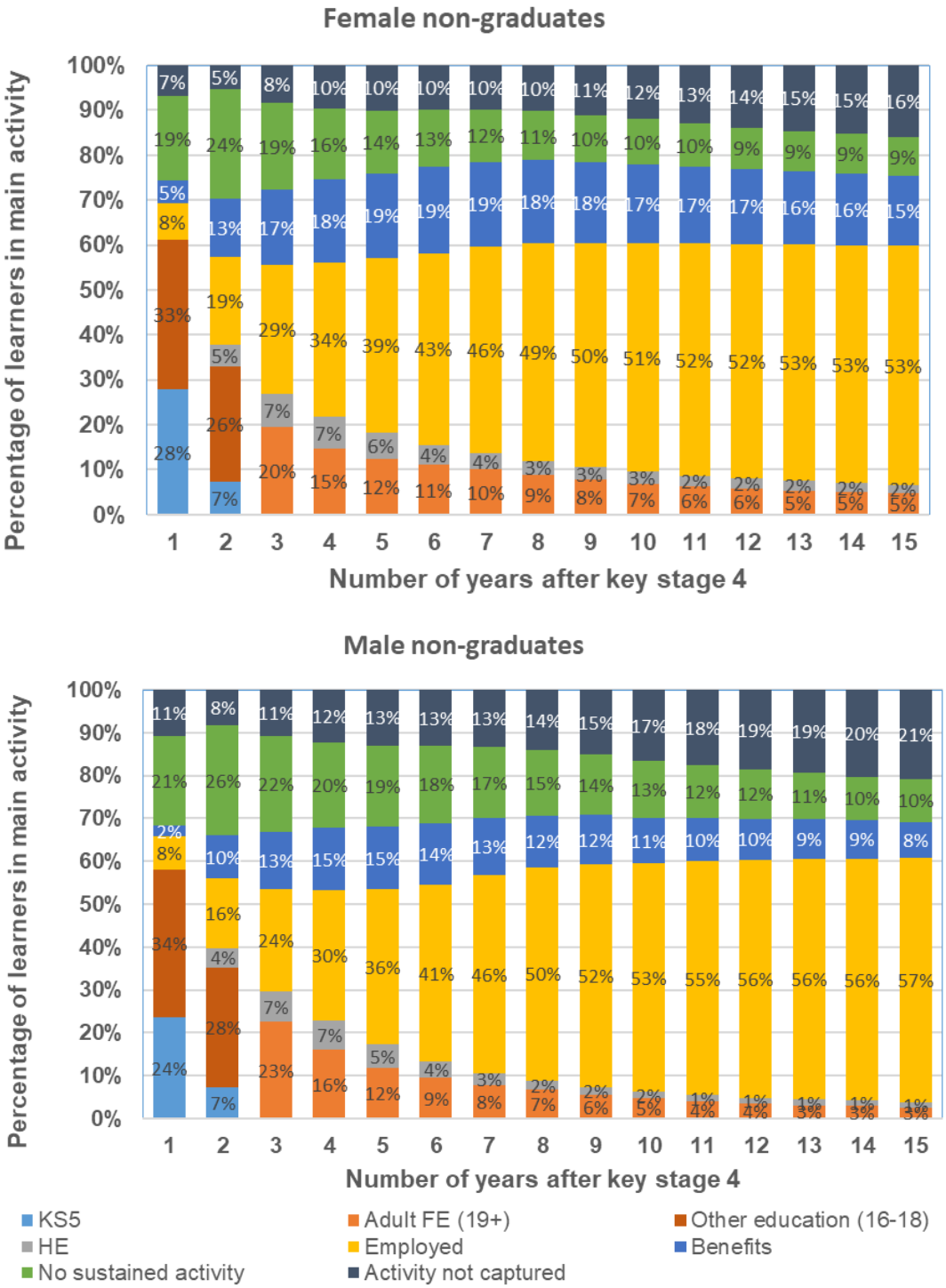


Source: Longitudinal Education Outcomes dataset

146. As shown in Figure 28, non-graduate women appear to have poorer labour market outcomes than non-graduate men, with lower proportions in employment (53% versus 57%) and higher proportions claiming out of work benefits (15% versus 8%)

in year 15. However, it should be noted that more women are still in education (7% versus 4%) 15 years after completing GCSEs.

Figure 28: Main activities of men and women without a degree for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

147. Whilst the proportions in employment and claiming out of work benefits are similar for male and female graduates and non-graduates, a very different picture emerges for earnings. Figure 29 illustrates that male graduate and non-graduate average earnings are higher than for women, but there is only a relatively small gap between female graduates and male non-graduates (and the curves appear to be converging).

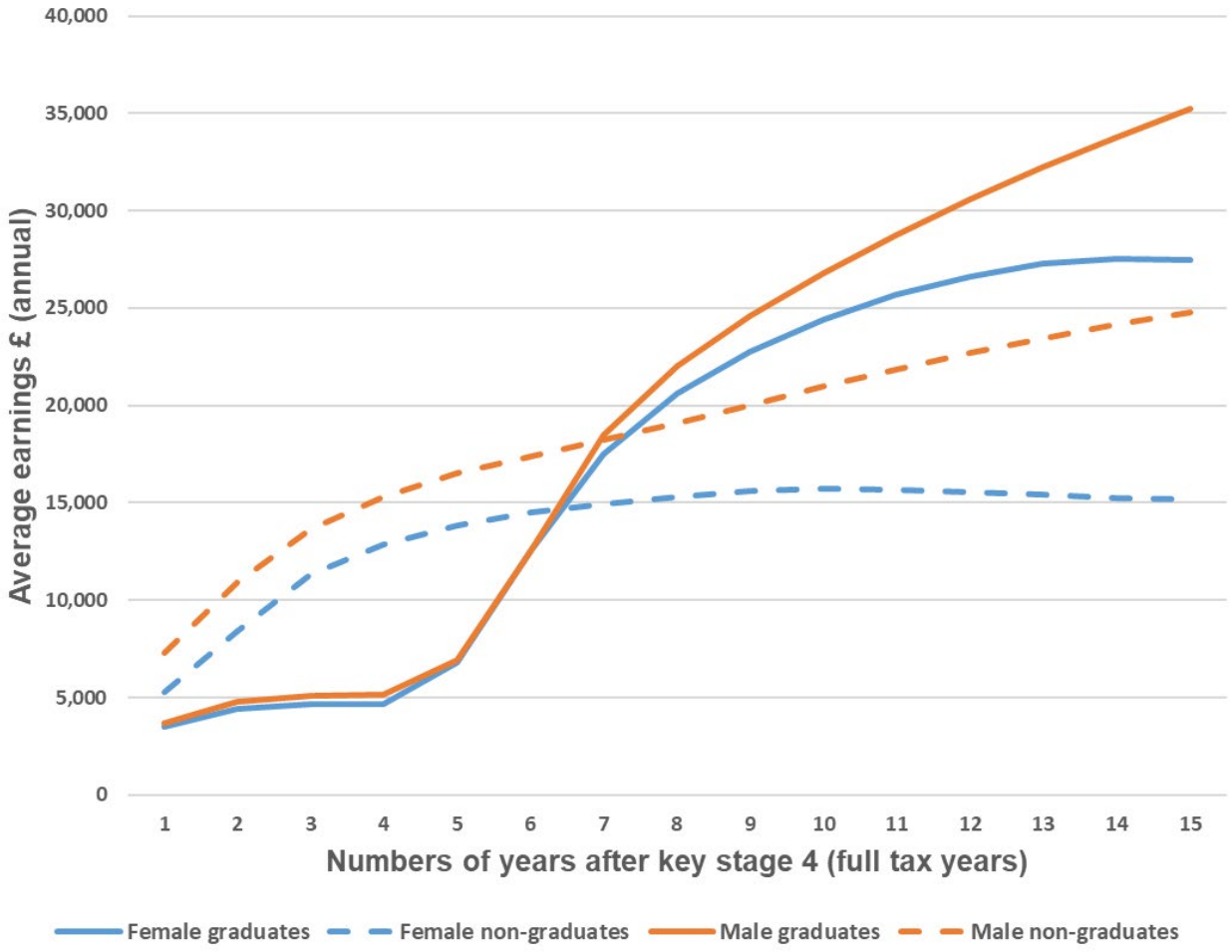
Caution when interpreting males and female findings

It is important to note that LEO data does not include hours worked, and earnings could be from full or part time work and this cannot be distinguished. As women are more likely to work part time (and fewer hours) than men[29], particularly in their mid to late 20s and early 30s[30], comparisons should be treated with caution.

[29] https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/allemployeesashetable1

[30] https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/agegroupashetable6

Figure 29: Average earnings of men and women in employment with and without a degree for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

148. The graduate curves for men and women are quite different, with the curves diverging from each other from year 8 onwards. The difference in year 15 is almost £8,000. The flattening of the female curve *could* be due to women working part time though it may also be due to other factors.

149. The earnings difference for male and female non-graduates is even bigger. Male non-graduates earn significantly more than female counterparts do (on average). The difference in year 15 is almost £10,000. Whilst part time working could explain some of the difference (and the flattening and even downwards turn of curve for women from year 10), other factors are also likely to be driving this.

150. As before, it is important to remember that this analysis is descriptive and does not control for other factors (such as subject of study, quality of institution, degree classification etc). In addition to not having hours worked the LEO data does not (currently) show sector, occupation or any other details on the position held. Sector information should become available in 2021 thus allowing more detailed analysis.

151. As mentioned previously, the male non-graduates average earnings curve increases at a steady rate throughout and appears to be converging on the curve for female graduates (which has flattened somewhat). In year 15, there is less than £3,000 difference in average earnings between the two.

152. Differences between men and women's labour market outcomes diverge even further at lower education levels. As with degree achievement, more non-graduate females achieve a level 3 or above qualification (see Table 21). However, table 22 shows that for non-graduates males with a level 3 or above have a higher proportion in employment and lower proportion claiming out of work benefits than females with a similar education level. This also holds for level 2 or below, with the gap being slightly wider.

153. Whilst the CVER have shown males tend to have higher earnings and employment returns to vocational qualifications, the findings from descriptive statistics in this section are novel.

Table 21: Percentage of (non-graduate) men and women achieving a level 3 or above qualification for KS4 cohorts 2001/02 to 2006/07
Tax years: 2003-04 to 2017-18

Group	Percentage of non-graduates from sub-group achieving a level 3 or above qualification
Female	48%
Male	38%

Source: Longitudinal Education Outcomes dataset

Table 22: Percentage of graduates and non-graduates in employment and out of work benefits for selected sub-group comparisons (2) for the 2001/02 KS4 cohort
Tax year: 2017-18

Sub-group (characteristic)	Percentage in employment	Claiming out of work benefits
Male non-graduates level 3 or above	65%	3%
Female non-graduates level 3 or above	61%	7%
Male level 2 or above	53%	11%
Female level 2 or above	46%	23%

Source: Longitudinal Education Outcomes dataset

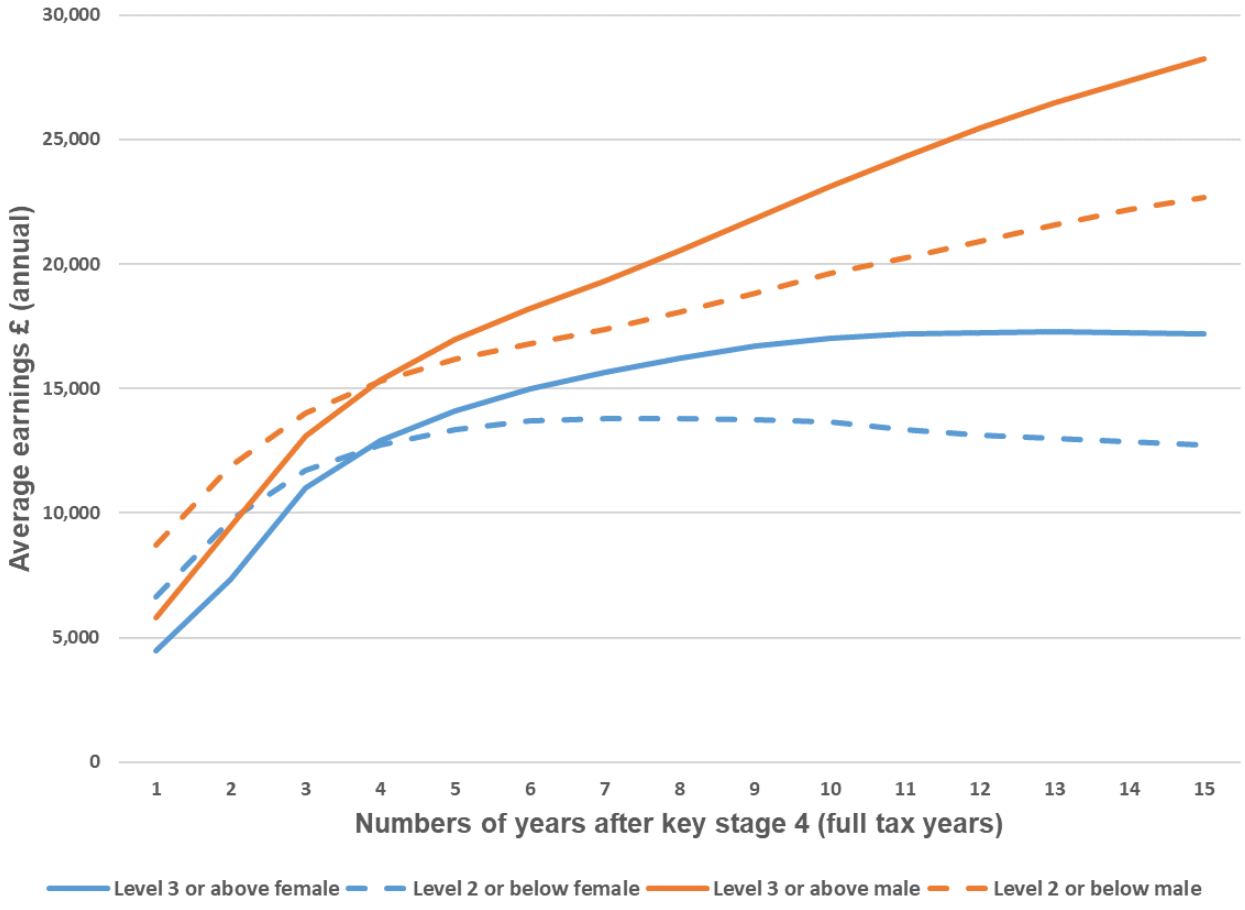
154. Perhaps the most interesting feature is average earnings where we see that men with a level 2 or below highest education level earn more than women with a level 3 or above. The trajectories are very different, as shown in Figure 30.

155. As stated above, **it is important to note that LEO data does not include hours worked, and earnings could be from full or part time work and this cannot be distinguished. As women are more likely to work part time (and fewer hours) than men, particularly in their mid to late 20s and early 30s then comparisons**

should be treated with caution. Additionally, women with lower education levels are more likely to work part time[31].

Figure 30: Average earnings of male and female non-graduates in employment with level 3 or above and level 2 or below highest education level for KS4 cohorts 2001/02 to 2006/07

Tax years: 2003-04 to 2017-18



Source: Longitudinal Education Outcomes dataset

[31] Evidence from the Labour Force Survey suggests that around 40% of non-graduate working women work part-time in their late 20s, compared with only 20% of the graduate women in work - https://www.ifs.org.uk/uploads/publications/comms/DFE_returnsHE.pdf

Conclusions and next steps

Conclusions

Setting the scene: new evidence on post 16 education and labour market outcomes

156. The analysis shown in this report is aimed to 'set the scene' in terms of showing transition from school, through education and into the labour market. It uses a 'whole system' approach, i.e. not just those completing HE or FE, and tracks groups of individuals completing their GCSEs at the same time. The reason for doing this is because little analysis using the LEO dataset has analysed everyone completing KS4 at the same age and what happens afterwards.

157. Though analysis of longitudinal and cohort studies has generated a wealth of evidence on the link between socioeconomic, demographic and education factors and their link with labour market outcomes, LEO offers new opportunities due to its size and coverage. This analysis aimed to fully utilise this by taking a range of variables from the administrative data and showing education and labour market activities, pathways and outcomes differ based on these factors. Developing the main activities and pathways methodological approaches was a significant investment (in time and resources) but is deemed worthwhile as it produced robust evidence in an area where there are many evidence gaps.

Stimulating interest, debate and follow up analysis

158. Another objective of the report and its underlying analysis was to stimulate interest, debate and ideas. Crucially to encourage analysts, internal and external to the DfE, to follow up on the analysis. As the LEO data becomes available to the wider academic and research community we hope that others will follow up and investigate further. This report poses a series of questions as to 'why' this is the case and we hope that others will use the data to investigate.

Key findings: contribution to evidence base and limitations

159. This report has several important findings, but the key ones for the reader to take home are:

- Individuals that were FSM eligible, identified as SEN, from certain minor ethnic groups, from certain regions, attended a state-funded (non-selective) school and did poorer in their GCSEs, and to a lesser extent women and those not speaking English as a first language, all have poorer outcomes than their peers.

- Education improves outcomes for all of the aforementioned groups, however they seem to start from a lower base in terms of employment and earnings. For most sub-groups achieving a higher education leads to better labour market outcomes than their peers with a lower education level. This holds for degrees and level 3 (or above) qualifications. However, for both proportions in employment and average earnings these groups have a lower starting point than their peers (in terms of proportions in employment and average earnings).
- Put another way, despite similar levels of education, different sub-groups have different labour market outcomes. Whilst higher education levels lead to better labour market outcomes, there is a large variance based on individual characteristics. Dependent on socioeconomic status, ethnicity, special educational need, gender, region, first language and school type, employment (and benefits) and earnings can differ greatly for graduates and non-graduates with a level 3 (or above) qualification.

160. Some of this was previously known, however this report summarises into themes and adds new evidence. Previous findings on FSM eligibility, attainment and gender are corroborated using a different cut of data and new methodology. New evidence on ethnicity, school type, first language, SEN and region fill in some of the evidence gaps. Thus, whilst it is already known that education has a different impact for different groups, this report adds additional robust evidence to support this and adds the depth and breadth of which socioeconomic, demographic and education factors it applies to. This is in addition to the pathways analysis which is completely novel.

161. The findings in this report cover descriptive analysis of the variations observed in the data. They show ‘what’ is happening at a higher level, but do not explain ‘why’. Other socioeconomic, demographic and education factors could be explaining why these things are happening. Taking differences amongst ethnic groups for instance, factors such as gender, region, first language and types of education (as well as level) could be explaining some of the differences. In reality, it is likely to be a combination of these factors, which are all interlinked.

162. There are also a host of other factors that may be more difficult to capture (as they are not in the LEO data) such as motivation, parental aspirations, innate ability, mental health and wellbeing, home learning environment etc that would undoubtedly be important.

Next steps

163. We are undertaking some more technical and in-depth analysis to investigate some of the issues highlighted above more thoroughly. Regression analysis is

being used to look at the association of different factors on labour market outcomes. This kind of analysis will enable us to control for different factors (such as gender, location, first language, education level, etc.) and isolate the relationship between ethnicity/disadvantage and labour market outcomes.

164. Data on sector area should become available in 2021 allowing a range of new analysis. This would allow the definition of labour market outcomes (proportions in employment, proportions claiming out of work benefits and average salary) to be broadened or changed for example. It also offers the opportunity to do some 'backwards looking' analysis, that is focusing in on the type of individuals employed in particular sectors (their socioeconomic and demographic characteristics as well as education and labour market activities and pathways).

165. We are also considering linking surveys and cohort studies, such as the Longitudinal Study of Young People in England[32] (LSYPE), to the LEO data. LSYPE, and similar surveys and cohort studies, contain much richer information such as those mentioned in paragraph 162 above.

[32] CLS | Next Steps (ucl.ac.uk)

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For any enquiries regarding this publication, contact us at:
oliver.anderson@education.gov.uk or www.education.gov.uk/contactus

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