Department for Education

Labour Market Outcomes: Chapter 3

Special Educational Needs

November 2024

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Chapter summary

The third and final chapter in this three-part series focuses on the impact of **special educational needs (SEN)** on labour market outcomes. Three classifications of SEN are used in this report:

No SEN – the individual was not identified has having special educational needs in the GCSE year

SEN without statement – the individual was identified as having SEN in the GCSE year but did not have a statement

Statement of SEN – the individual had a statement of special educational needs in the GCSE year

The analysis on special educational needs in this chapter uses the SEN Code of Practice[1] which came into effect on 1 January 2002, before the introduction of Education, Health and Care (EHC) plans. Under this Code of Practice, a child or young person could be identified in one of three categories: statement of SEN, School Action or School Action Plus. A statement of SEN is when a formal assessment has been made which sets out the child's need and the extra help they should receive. For this analysis, the SEN categories School Action and School Action Plus are combined into 'SEN without statement'.

The other chapters in this series look at ethnicity and socioeconomic status (SES).

Key findings

1. **Individuals with special educational needs are less likely to be in a good outcome and more likely to be in a poor outcome than those without**

Those with SEN without a statement are over 2.5 times less likely to be in a good outcome than those with no SEN, while those with a statement of SEN are more than eight times less likely.

Those with SEN without a statement are more than three times more likely to be in a poor outcome than those with no SEN, and those with a statement of SEN are more than 6 times more likely.

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/273877/special_educational_needs_code_of_practice.pdf

The gaps in outcomes between those with and without SEN persist across socioeconomic, demographic and educational achievement breakdowns.

2. **Females show a bigger disparity between those with and without SEN than males**

Males and females without SEN are equally likely to be in a good outcome (17 per cent), but females with SEN are less likely for both SEN categories: 7 per cent of males with SEN without a statement compared to 5 per cent of females, and 2 per cent of males with a statement of SEN compared to 1 per cent of females.

Overall, females are more likely to be in a poor outcome than males, and this is true for those with no SEN and both SEN groups. In addition, the gaps in poor outcome between those with and without SEN are much higher for females than they are for males. There is an 18 percentage point gap between females with no SEN and females with SEN without a statement (9 percentage point gap for males) and a 48 percentage point gap between females with no SEN and females with a statement of SEN (35 percentage point gap for males).

3. **Pre-16 attainment is the most important factor in explaining difference in good and poor labour market outcome between those with and without SEN**

For males and females, pre-16 attainment (achievements at key stage 2 (KS2) and key stage 4 (KS4)) is the most important factor in explaining the gap in good outcome between those with no SEN and those with SEN without a statement, and the gap between those with no SEN and those with a statement of SEN. The next most important factor in explaining the gap in good outcome is achievement at degree level or above, for both males and females and for the gaps between no SEN and SEN with and without a statement. Having a degree is more important for female than males in explaining the SEN gap in good outcome.

For poor outcome, pre-16 attainment is also the most important factor in explaining the gaps in outcomes between males and females with and without SEN, and degree level achievement is the next in importance. Again, having a degree is more important for females than males in explaining these gaps.

4. **Socioeconomic, demographic and education factors only partly explain the differences in outcomes**

For both males and females, the socioeconomic, demographic and education factors explain more of the gap in good outcome between those with no SEN and those with SEN without a statement (a little over 85 per cent) than between those with no SEN and those with a statement of SEN (around 60 per cent).

Similarly for poor outcome, the socioeconomic, demographic and education factors explain more of the gap between those with no SEN and those with SEN without a statement than between those with no SEN and those with a statement of SEN. However, these factors explain less of the gap between those with and without SEN for males than for females. For males, 81 per cent of the poor outcome gap between those with no SEN and those with SEN without a statement is explained, compared to 87 per cent of the gap for females. Likewise, for males, 67 per cent of the poor outcome gap between no SEN and those with a statement of SEN is explained (76 per cent for females).

This means that we understand less about what is driving the poorer labour market outcomes observed for those with statements of SEN than we do for those with SEN without a statement.

Methodology

Differences in the composition of the groups with and without SEN regarding socioeconomic, demographic and education variables mean that it is difficult to compare labour market outcomes fairly. This chapter continues to use probit regression methods to hold the socioeconomic, demographic and education factors associated with labour market outcomes constant so we can compare SEN groups on a like for like basis to determine how much of the differences in outcomes can be explained by these factors. The regression results show the chance of good or poor labour market outcome for those with SEN without a statement compared to those with no SEN, and for those with a statement of SEN compared to those with no SEN i.e. the gap, or difference, in outcomes between those with and without SEN.

Decomposition analysis is then used to apportion the explanatory power of each socioeconomic, demographic and education factor in explaining the gaps in good (and poor) labour market outcomes between males and females from SEN groups to shed light on the most important factor or factors.

Conclusions

The descriptive analysis in this chapter illustrates that those with SEN with or without a statement are much less likely to be an upper quartile earner in their early career (good outcome), and much more likely to be claiming out of work benefits for 6 months in this same period (poor outcome) than those who were not identified with SEN in their GCSE year. These differences persist across socioeconomic, demographic and education breakdowns. The regression analysis then shows that although a large proportion of the differences in good (and poor) outcome is explained by differences in socioeconomic, demographic, school and education factors between the SEN groups (for example, those

with SEN are more likely to be from a lower socioeconomic background, more likely to have a lower level of education and more likely to be from a more disadvantaged minority ethnic group), differences still remain. In other words, once the differences in the socioeconomic background, demographics, pre- and post-16 education and achievements are taken into account, those not identified with special educational needs are still more likely to be in a good outcome, and less likely to be in a poor outcome than those with SEN with or without a statement.

Whilst this analysis offers some insight into the drivers of labour market outcomes between SEN groups, the socioeconomic, demographic and education factors in the administrative data do not fully explain these. Further work would be required to shed light on what these factors are and their relative importance, by linking to other datasets or including labour market data as controls.

Introduction

This chapter is the final in the series of three exploring the early labour market outcomes of individuals from different backgrounds and how these outcomes differ across these groups. This chapter focuses on special educational needs (SEN); the others look at ethnicity and socioeconomic status (SES).

The Department for Education (DfE) previously published analysis[2] documenting the differences in post-16 education and labour market outcomes for a number of different socioeconomic, demographic and education sub-groups. This new series uses more sophisticated methods to build on the analysis for some of these groups in combination with other factors. Specifically, the analysis in this chapter aims to answer the following questions:

- How is SEN status linked with different early career labour market outcomes when socioeconomic, demographic and education factors are taken into account?
- Which of these socioeconomic, demographic and education factors are most important for explaining differences in early career labour market outcomes between those with different special educational needs?

The research uses the Longitudinal Education Outcomes (LEO) administrative data set which 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
- income and employment status
- claims for out of work benefits

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 LEO dataset can be found in the accompanying technical report, which includes information on the data quality and match rates.

This chapter is split into four sections:

1. context on socioeconomic, demographic and education characteristics by SEN status from published literature (Section 1)

[2] Post-16 education and labour market activities, pathways and outcomes (LEO) - GOV.UK (www.gov.uk). The accompanying dashboard is available here Longitudinal Education Outcomes (LEO): post-16 education and labour market activities and outcomes (shinyapps.io)

2. descriptive analysis on labour market outcomes by SEN status showing the association with socioeconomic, demographic and education factors (Section 2)
3. regression analysis to control for socioeconomic, demographic and education factors to determine how much these account for differences in labour market outcomes for those with and without special educational needs (Section 3)
4. analysis to shed light on the relative importance of these socioeconomic, demographic and education factors when comparing labour market outcomes of those with and without special educational needs (Section 4)

As with the previous chapters, these results are concerned with statistical measurement of the relationship between socioeconomic, demographic and education factors and measures of disadvantage and do not imply any causality.

Coverage

The analysis in this chapter looks at 4.5 million individuals who finished key stage 4 (KS4), i.e. took their GCSEs, in a state-funded[3] school in England between the 2001/02 to 2008/09 academic years. Their labour market outcomes are measured in the 2017-18 tax year[4]. For the oldest cohort, we therefore look at outcomes 15 years after GCSEs (age 31), and for the youngest, 8 years after GCSEs (age 24). See the accompanying technical report for further details.

All labour market figures are based on UK tax and out of work benefits[5] records only, further education data is from English institutions only, and higher education figures are from UK institutions.

The eight cohorts of individuals who completed KS4 in England between 2002 and 2009 have been combined to produce a more representative and robust picture of people's labour market outcomes. Combining several cohorts of individuals completing their GCSEs at the same age means any changes or patterns are more likely to be real differences and not reflective of variations between year groups. Although this means they are different ages when their outcomes are measured[6], this maximises the number of years in the labour market available for each cohort.

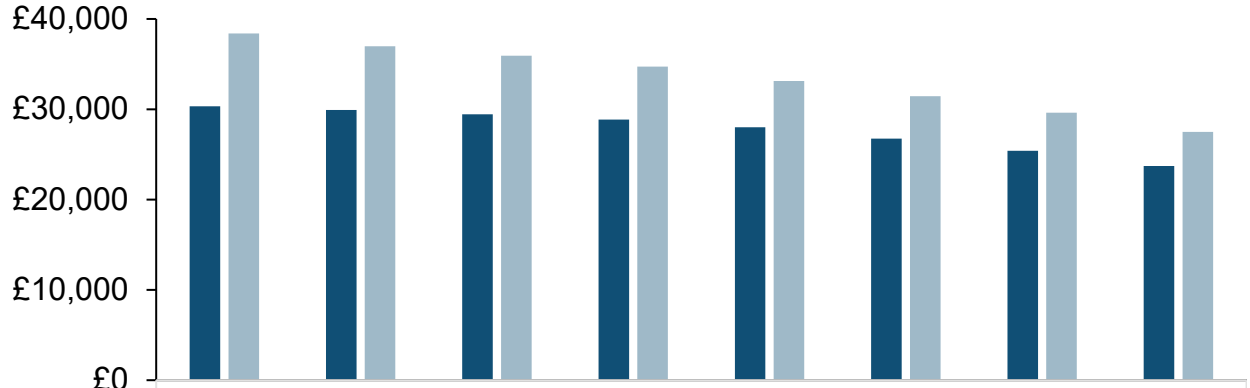
[3] State-funded schools in those academic years were: sponsor-led academies; city technology colleges; LA maintained mainstream; and LA maintained special schools.
[4] Although more recent employment, earnings and benefits data was available, 2017-18 tax year data was used for consistency with Post-16 education and labour market activities, pathways and outcomes (LEO) - GOV.UK (www.gov.uk).
[5] 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.
[6] Robustness checks performed on all eight cohorts at age 24, and three cohorts at age 29 produce very similar results to those produced using the 2017-18 tax year. See technical report for further information.

Definitions

Two different measures of labour market outcomes have been defined for the analysis in this report:

Good labour market outcome – the individual was in paid[7] employment for at least one day in each of the 12 months of the 2017-18 tax year **and** had upper quartile earnings. Earnings quartiles have been calculated separately for males and females[8] and for each GCSE cohort (to allow for different earnings profiles at different ages). The upper quartile earnings thresholds are shown in Figure 1. Around 60 per cent of males and females in each cohort meet the employment threshold above. Taking the top quartile earners means that those in good outcome represent around 15 per cent of each cohort and gender.

Figure 1: Upper quartile earnings thresholds in 2017-18 tax year: females and males by KS4 cohort



	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Females	£30,333	£29,915	£29,445	£28,866	£27,999	£26,744	£25,399	£23,722
Males	£38,400	£36,984	£35,928	£34,731	£33,138	£31,444	£29,627	£27,494

Source: Authors' analysis using Longitudinal Education Outcomes data

Poor labour market outcome – the individual was claiming out-of-work benefits[9] for at least one day in each of six or more consecutive months of the 2017-18 tax year. Details on the types of benefits included can be found in the technical report. This represents around 8 per cent of the males and around 12 per cent of the females in each cohort.

[7] Excludes earnings from self-employment.
[8] Information on hours worked is not available. Female earnings are likely to be affected by lower earnings due to part-time working.
[9] This includes some benefits available to those with disabilities or long-term health concerns that affect the ability to work. See technical report for full details.

The good outcome and poor outcome definitions are such that each outcome is mutually exclusive, where an individual cannot appear in multiple categories. However, the majority of individuals (around 75 per cent) sit within neither category.

These measures are used to categorise groups of individuals into those who are observed to have labour market outcomes which could be considered good in an **economic** sense (the individual has steady employment, is well paid and contributing to the exchequer) and those who may be reliant on the state with a low income, and therefore in a poor economic outcome.

This does not intend to negate any individual's labour market choices, contribution to society or personal well-being, or whose economic contribution may be lower due to no fault of their own.

Special educational needs (SEN) status - the definitions of special educational need in this chapter uses the SEN Code of Practice which came into effect on 1 January 2002, before the introduction of Education, Health and Care (EHC) plans. Under this Code of Practice, a child or young person could be identified in one of three categories: statement of SEN, School Action or School Action Plus. A statement of SEN is when a formal assessment has been made which sets out the child's need and the extra help they should receive. For this analysis, the SEN categories School Action and School Action Plus are combined into 'SEN without statement'. An individual's SEN category is taken from the School Census in the last year of compulsory schooling (end of key stage 4). SEN status can change throughout a child's schooling: any individuals identified with SEN in earlier school years but not in the GCSE year will be included in the 'No SEN' category.

Type of need is not available for all cohorts used in this report therefore is not included in the analysis.

Thus, the three categories of SEN used are:

No SEN – the individual was not identified has having special educational needs

SEN without statement – the individual was identified as having SEN but did not have a statement

Statement of SEN – the individual had a statement of special educational needs

The socioeconomic, demographic and education variables used in the descriptive analysis and as controls in the regression analysis in this chapter include:

- pupil characteristics as collected in the GCSE year[10]: ethnicity, first language
- socioeconomic status during GCSE year (indicator derived from an individual's free school meals (FSM) eligibility, combined with local area statistics (deprivation, occupation, education and housing tenure) to give a combined household income and place-based measure)
- school attainment: maths and English at key stage 2, key stage 4 performance points, A level total points and subjects studied
- higher education: classification of degree, subject studied, type of institution
- further education: subject of apprenticeship or classroom learning
- highest level of achievement[11] by tax year 2017-18
- local authority of residence in GCSE year and during tax year 2017-18

School measures included as controls in the ethnicity and socioeconomic status chapters (such as type of school attended in the GCSE year, school demographics, cohort attainment and school effectiveness) are not included in the analysis of SEN due to the nature of special educational needs and schools attended i.e. most mainstream schools have few pupils with statement of SEN and special schools do not have pupils without statements of SEN.

For further information on the sources and derivation of these variables, please see the technical report.

[10] Some missing characteristics have been backfilled using earlier School Censuses, the Individualised Learning Record (ILR) and Higher Education Statistics Agency (HESA) data. See technical report for more details.
[11] What qualification levels mean: England, Wales and Northern Ireland - GOV.UK (www.gov.uk)

Section 1: Review of SEN in the literature

The analysis in this chapter looks at differences in a number of education factors in combination with demographics to explore how they relate to different labour market outcomes for those with and without special educational needs. This section summarises some of the evidence base relating to SEN and socioeconomic status, demographics and education to help build a picture of this variation. This provides some background information which may aid understanding of some of the differences observed in the labour market.

The DfE publishes an annual compendium of official statistics and management information on children and young people with special educational needs or a disability in England[12] which include analysis of the headline trends across a large number of publications and a summary of key data sources. Some of this information is included in this section along with some additional sources and research.

Demographics

The individuals in this chapter represent the population completing education in English state-funded schools between 2002 and 2009. Table 1 shows the proportion of each SEN category based on the individuals in this analysis.

Table 1: SEN breakdown for analytical population

Gender	No SEN	SEN without statement	Statement of SEN
Male	76.9%	17.8%	5.4%
Female	86.2%	11.6%	2.3%
Total	81.4%	14.8%	3.9%

Source: Authors' analysis using Longitudinal Education Outcomes data

The SEN Code of Practice[13] has changed since these individuals were in school. Statements of special educational needs have been replaced by Education, Health and Care (EHC) plans and School Action and School Action Plus have been replaced by SEN support.

[12] Special educational needs: analysis and summary of data sources - GOV.UK (www.gov.uk)
[13] https://www.gov.uk/government/publications/send-code-of-practice-0-to-25

For context, the proportion of pupils in all schools in England with an Education, Health and Care (EHC) plan[14] in 2024 was 4.8 per cent in 2024. The proportion who are on SEN support (equivalent to SEN without a statement) was 13.6 per cent.

In 2024, around a third of those with EHC plans in state-funded schools were identified with a primary need of Autistic Spectrum Disorder, and around 20 per cent were identified with Speech, Language and Communications Needs. For those pupils on SEN support, Speech, Language and Communications Needs was the most common type of need at around 26 per cent, followed by Social, Emotional and Mental Health (22 per cent). The most common type of need varies depending on the age of the pupils. Primary type of need was not collected for all the KS4 cohorts in this analysis, so comparable proportions are not available.

Special educational needs are more prevalent in boys than girls. In 2024, 72 per cent of those with EHC plans and 62 per cent of pupils on SEN support were boys.

Socioeconomic status

Eligibility for free school meals can be used as a proxy for socioeconomic status. Pupils with special educational needs in state-funded schools in England are more likely to be eligible for free school meals than those without SEN. In 2024, 42 per cent of pupils with an EHC plan and 38 per cent of pupils on SEN support were eligible for free school meals, compared to 21 per cent of those not identified with SEN.

Location

The incidence of SEN varies across England. In 2024, the North West had the highest proportions of pupils with an EHC plan (5.3 per cent) and East Midlands had the lowest at 4.1 per cent. For those on SEN support, the North East had the highest proportions (14.6 per cent) and London had the lowest at 12.7 per cent. The ranking of regions by the proportions of pupils with EHC plans and on SEN support are different.

Ethnicity

Different ethnic groups have very different proportions with special educational needs. Generally, those with higher proportions of EHC plans also have higher proportions of SEN support and vice versa. In state-funded schools in England in 2024, 6.4 per cent of the black Caribbean ethnic group had an EHC plan, compared to 2.2 per cent of the Chinese ethnic group and 5.1 per cent of the white British group. Those on SEN Support

[14] Special educational needs in England, Academic year 2023/24 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)

make up 17.2 per cent of the black Caribbean group, 5.2 per cent of the Chinese ethnic group and 15.1 per cent of white British.[15]

Those whose first language is known or believed to be other than English are less likely to be identified with SEN: in 2024, 9.9 per cent had EHC plans and 3.5 per cent had SEN support.

Education

There are attainment gaps at all key stages between those with and without special educational needs. In the 2022/23 academic year, only 3.8 per cent of those with EHC plans had a 'good level of development' in early learning goals[16] at the end of Reception. This compares to 24.3 per cent of those on SEN support and 74 per cent of those with no identified SEN.

These gaps continue through primary education, with 20 per cent of those with an EHC plan meeting the expected standard in the year 1 phonics screening test[17], compared to 48 per cent of those with SEN support and 86 per cent with no identified SEN, in the 2022/23 academic year. In the same year at the end of key stage 2, 8 per cent of pupils with EHC plans achieved the expected level in reading, writing and maths, with 24 per cent of pupils with SEN support and 70 per cent of those with no identified SEN achieving the same standard.

At the end of key stage 4, pupils in state-funded schools in England with no identified SEN had an average attainment 8 score of 50.0 in 2022/23[18]. Those with an EHC plan had an average score of 14.0, and those on SEN support had an average attainment 8 score of 33.3.

After completing key stage 4, pupils with SEN were 5.7 percentage points less likely to have a sustained education, employment or apprenticeship destination than those with no identified SEN[19]. Although similar proportions of those with SEN support and EHC plans had a sustained destination, those with SEN support were more likely to go into a sustained employment or apprenticeship destination than those with EHC plans, and less likely to be in a sustained education destination.

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[15] Breakdowns for all ethnic groups can be found on gov.uk: Special educational needs in England, Academic year 2023/24 - Explore education statistics - GOV.UK

[16] Early years foundation stage profile results, Academic year 2022/23 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)

[17] Key stage 1 and phonics screening check attainment, Academic year 2022/23 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)

[18] Key stage 4 performance, Academic year 2022/23 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)

[19] Key stage 4 destination measures, Academic year 2021/22 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)

By age 25, gaps in attainment are still large[20]: 91 per cent of those with no identified SEN have achieved at least level 2 by this age, compared to 70 per cent of those with SEN support and 39 per cent of those with EHC plans.

Fewer individuals with special educational needs progress to higher education[21]. In the 2021/22 academic year, 8.9 per cent of pupils with an EHC plan at the end of key stage 4 had progressed to HE by age 19, 24.2 per cent of pupils with SEN support and 51.2 per cent of pupils with no identified SEN.

Labour market

The Department for Work and Pensions (DWP) publishes statistics on the employment of working-age disabled (physical or mental health conditions or illnesses lasting or expected to last 12 months or more) people[22]. Please note that this is a different definition from SEN. The data shows that the disability employment rate was 53.6 per cent compared to 82.5 per cent for non-disabled people. The disability economic inactivity rate (respondent self-reported that they are not in or looking for work) was 42.3 per cent, compared to 14.5 per cent for non-disabled people.

After leaving further education[23], in 2020/21 those with Learning Difficulties/Disability (self-reported) had a sustained employment rate of 53 per cent compared to 74 per cent of those with no Learning Difficulties/Disability. Those learners with Learning Difficulties/Disability who were employed also had lower earnings.

There is some research on the labour market outcomes of those identified with special educational needs in school.

The authors' earlier report on post-16 education and labour market pathways[24] provides descriptive analysis on employment, benefits uptake and earnings over 15 years after individuals finished key stage 4. This includes breakdowns for the those with and without SEN. The analysis shows a strong dependence on benefits and low employment rates straight after compulsory education, and earnings gaps which increase year on year from around age 20 for those with statements of SEN compared to those with no SEN and those with SEN without a statement. For those with SEN without a statement, benefits

[20] Level 2 and 3 attainment age 16 to 25, Academic year 2022/23 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)
[21] Widening participation in higher education, Academic year 2021/22 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)
[22] https://www.gov.uk/government/statistics/the-employment-of-disabled-people-2023/employment-of-disabled-people-2023
[23] Further education outcomes, Academic year 2020/21 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)
[24] Longitudinal Education Outcomes (LEO): post-16 education and labour market activities and outcomes (shinyapps.io)

uptake is lower, and employment rates and earnings are higher than for those with a statement of SEN, but lower than those with no SEN.

Using data from two British longitudinal studies (National Childhood Development Study and Next Steps), the Centre for Longitudinal Studies investigated labour market outcomes for those identified with a Special Education Need or disability (SEN(D)) when at secondary school in either the 1970s or 2000s[25]. By age 25, those identified with SEN(D) while at school were less likely to be employed and had lower earnings. However, the gaps in economic outcomes between those with and without SEN were smaller for the younger cohort.

Contribution of this series

The analysis presented in the three chapters of this report uses LEO administrative data. The completeness and size of this dataset allows for robust analysis, particularly for smaller characteristics groups that cannot be obtained using survey data. The Institute for Fiscal Studies (IFS) has previously used LEO data to show returns for graduates, but no studies cover the whole range of post-16 education and the relationship with earnings and employment for ethnic groups. In this analysis, labour market outcomes data has been linked to DfE's administrative data to utilise an unprecedented range of socioeconomic and demographic factors during GCSEs as well as prior attainment, achievements at age 16 and post-16. Individuals are tracked through from the end of compulsory education rather than examining the population as a whole. In addition, novel analysis of the relationship between education, socioeconomic and demographic factors and out-of-work benefits is presented. Together the three chapters (ethnicity, socioeconomic status and special educational needs) provide extensive insight into the outcomes across different aspects of disadvantage.

[25] CLS-Working-Paper-2022-4-Special-educational-needs-and-disability-a-lifetime-of-disadvantage-in-the-labour-market.pdf (ucl.ac.uk)

Section 2: Observed labour market differences

Section 1 shows that there are important differences in socioeconomic, demographic and education factors between those with different special educational needs and that their labour market outcomes are varied. This section presents descriptive statistics on how different labour market outcomes are related to some of these attributes by SEN status. See the Coverage section for more information on the individuals included and the Definitions section for details of the definitions and derivation of the data provided here.

Methodology

The percentage of individuals in each SEN group in the good labour market outcome category has been calculated for males, females, and males and females combined for each of the factors list in the Definitions section. A selection of these has been presented in this section of the chapter.

This process has been repeated for poor labour market outcome.

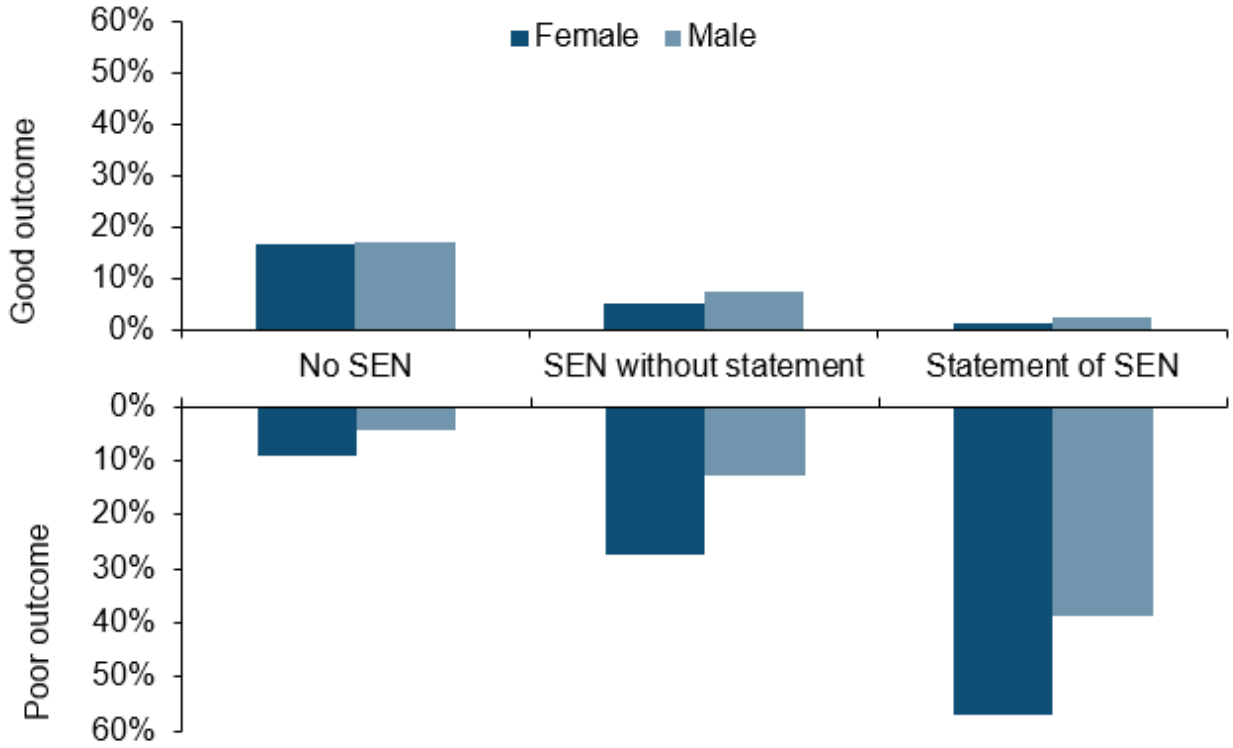
A good outcome has been defined as being in sustained employment and an upper quartile earner. A poor outcome has been defined as claiming out-of-work benefits for at least a six month period (see Definitions for more detail).

More detail on the three categories of SEN used throughout the chapter can be found in the box on page 13.

Gender

The top half of Figure 2 shows the proportion of males and females in each SEN group who are in good outcome, and the bottom half show the proportion in poor outcome.

Figure 2: Proportions in Good Outcome and in Poor Outcome by SEN status and gender



Source: Authors' analysis using Longitudinal Education Outcomes data

Those with no SEN at the end of KS4 are much more likely to be in a **good outcome** than those with SEN without a statement and those with a statement of SEN. Only around 2 per cent of males with a statement of SEN are in good outcome (1 per cent for females) compared to 17 per cent of those with no SEN (both males and females).

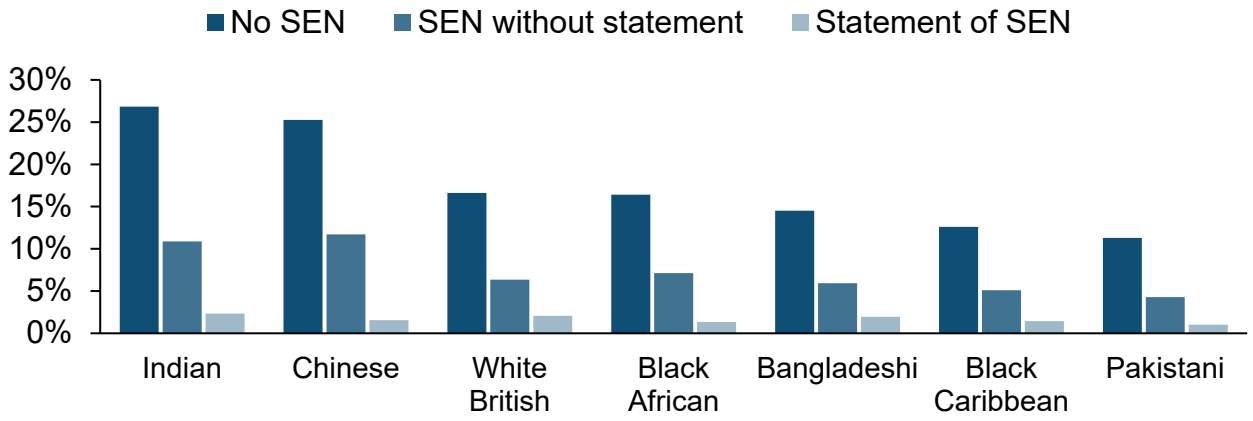
Similarly, those with no SEN are much less likely to be in a **poor outcome** than those with SEN without a statement and those with a statement of SEN. Indeed, 39 per cent of males with a statement of SEN are in a poor outcome compared to 13 per cent of males with SEN without a statement and 4 per cent of males with no SEN (57, 27 and 9 per cent of females, respectively).

Although females with no SEN are as likely as males to be in a good outcome, females with SEN (statement or no statement) are slightly less likely to be than males. More females than males are in a poor outcome: for those with no SEN there is a 5 percentage point gap between males and females, for those with a statement of SEN this increases to an 18 percentage point gap.

Ethnicity

This section shows good and poor outcome only for the seven ethnic groups used in the accompanying ethnicity chapter (Bangladeshi, Indian, Pakistani, black African, black Caribbean, Chinese and white British). These have been ordered throughout this section by decreasing proportions in good outcome for those not identified with SEN.

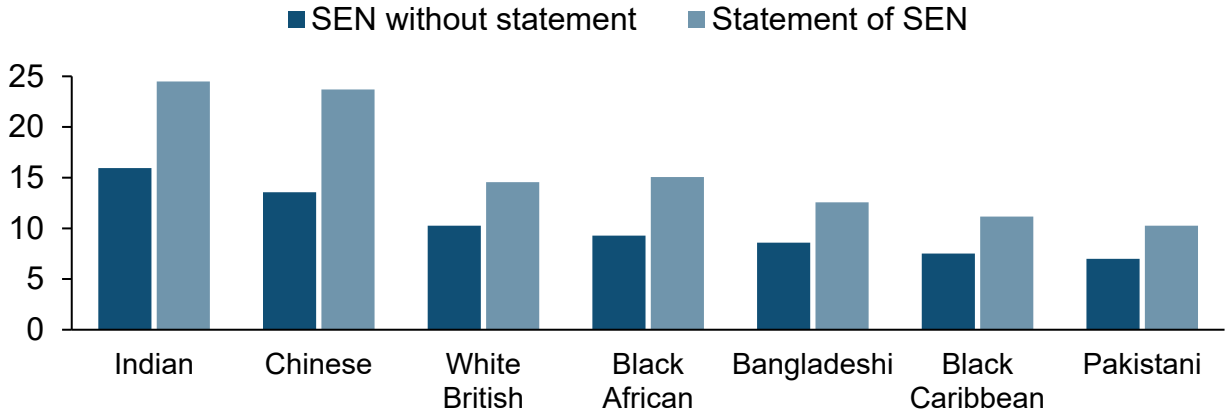
Figure 3: Proportions in Good Outcome by SEN status and ethnic group (selected)



Source: Authors' analysis using Longitudinal Education Outcomes data

For those with no SEN, ethnic groups have different proportions in good outcome (Figure 3) with the Chinese and Indian ethnic groups having the highest proportions (at 27 per cent and 25 per cent, respectively), down to the black Caribbean and Pakistani ethnic groups having the lowest (13 per cent and 11 per cent, respectively). This trend appears to follow for the most part for those with SEN without a statement, but the number of individuals with statements of SEN in good outcome when broken down by ethnic group are too low to be clear on differences between them.

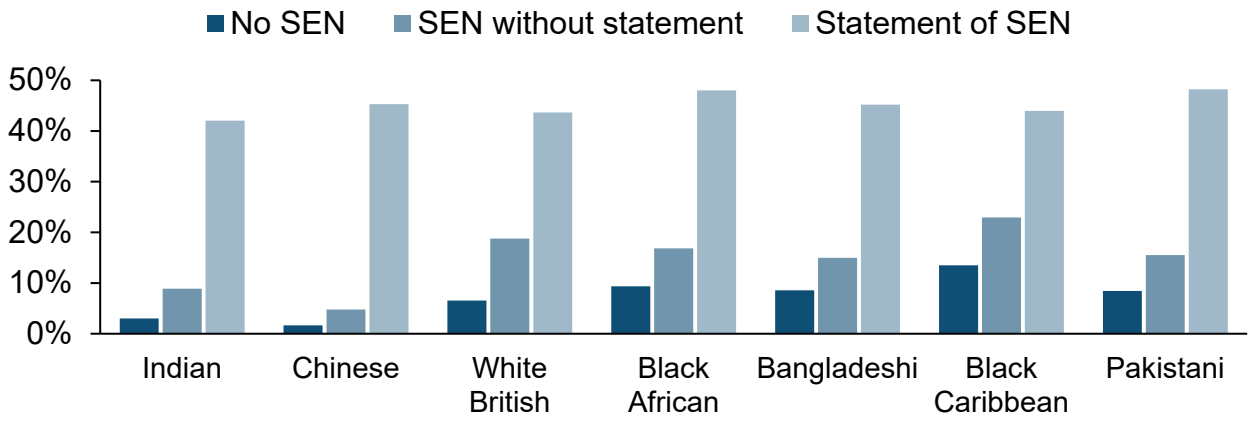
Figure 4: Percentage point gap in Good Outcome between No SEN and SEN groups by ethnic group (selected)



Source: Authors' analysis using Longitudinal Education Outcomes data

However, when we examine the gap, or difference, in good outcome between those with no SEN and those with SEN without a statement, and between those with no SEN and those with a statement of SEN within each ethnic group (Figure 4), we can see that although those with and without SEN from the Chinese and Indian ethnic groups are the most likely to be in a good outcome, the disparities between those with no SEN and those with SEN are largest for those ethnicities. Conversely for those ethnic groups least likely to be in a good labour market outcome, the gap between those with and without SEN are much smaller.

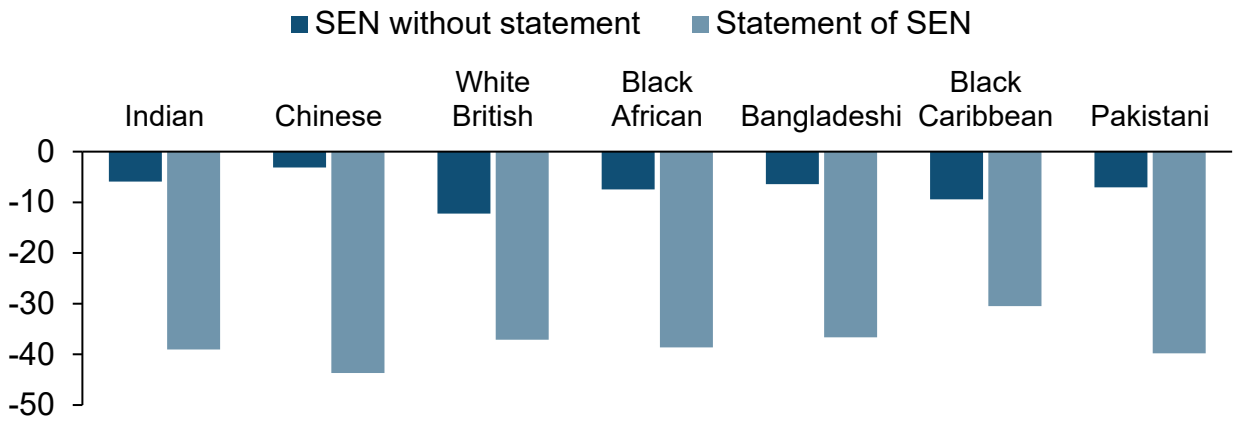
Figure 5: Proportions in Poor Outcome by SEN status and ethnic group (selected)



Source: Authors' analysis using Longitudinal Education Outcomes data

Ethnic groups also have different likelihoods of being in a poor labour market outcome, as shown in Figure 5, with the trends for those with no SEN broadly consistent with that seen for good outcome i.e. the Indian and Chinese ethnic groups having the lowest proportions in poor outcome and the black Caribbean and Pakistani ethnic groups having the highest. The ordering of ethnic groups by poor outcome for those with SEN without a statement is similar to those with no SEN. There are small numbers of individuals who had statements of SEN, particularly for the smaller ethnic groups, but the patterns do not appear dissimilar.

Figure 6: Percentage point gap in Poor Outcome between No SEN and SEN groups by ethnic group (selected)



Source: Authors' analysis using Longitudinal Education Outcomes data

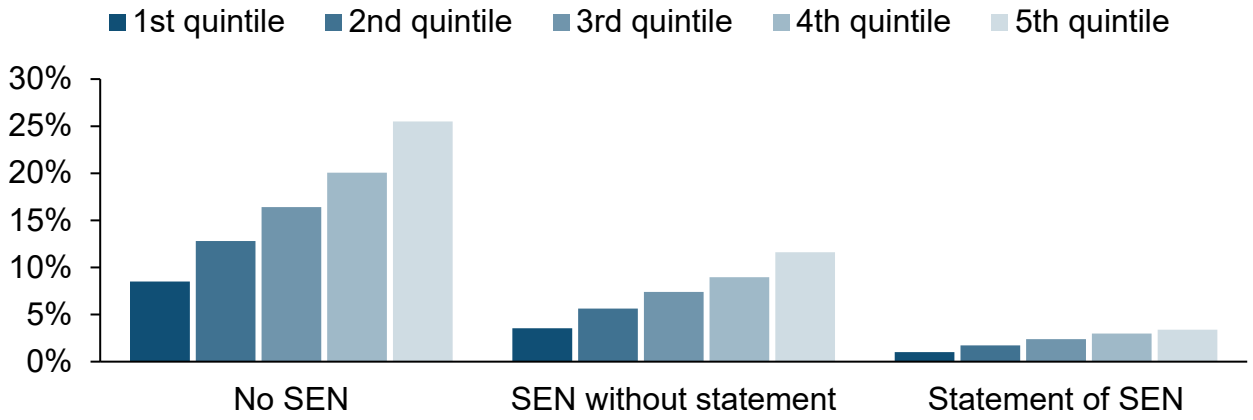
The gaps or differences in proportions in poor outcome between those with and without SEN within ethnic groups is shown in Figure 6. The patterns of gaps for ethnic groups between those with no SEN and the two SEN categories are different. The gaps in poor outcome between those with no SEN and those with SEN without a statement are smallest for those with the lowest levels of poor outcome (Indian and Chinese), and biggest for those with the highest levels of poor outcome (black Caribbean and Pakistani). The exception to this is white British which has a larger gap for those with SEN without a statement compared to those with no SEN.

In contrast, the gap in poor outcome between those with no SEN and those with a statement of SEN are biggest for Chinese (lowest levels of poor outcome) and smallest for black Caribbean (highest level of poor outcome).

Socioeconomic status

The first SES quintile includes those from the lowest socioeconomic backgrounds and the fifth quintile is those from the highest socioeconomic background. Higher socioeconomic status is strongly associated with better labour market outcomes and this is pattern is seen across SEN categories.

Figure 7: Proportions in Good Outcome by SEN status and socioeconomic status

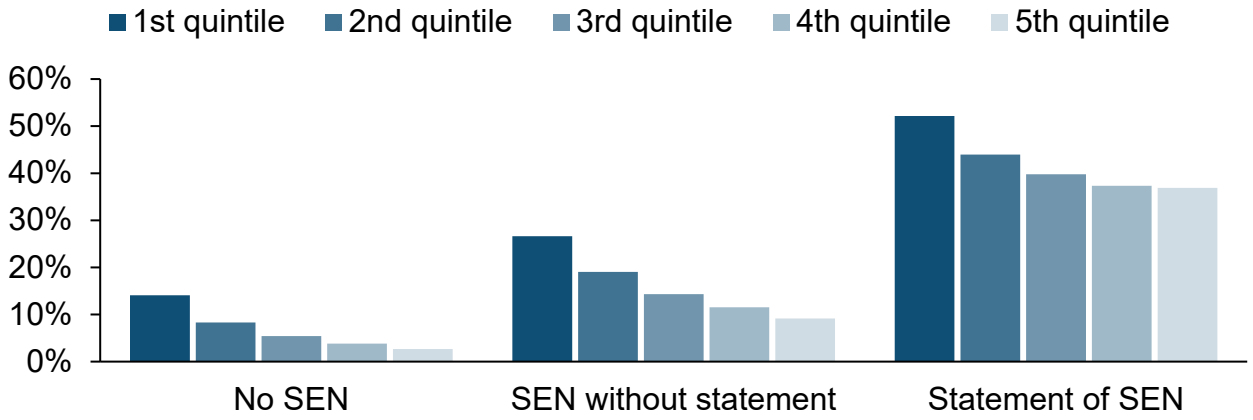


Source: Authors' analysis using Longitudinal Education Outcomes data

The proportion of each SEN group by socioeconomic status is shown in Figure 7. For the no SEN category, each increase in SES quintile results in higher proportions in good outcome: 9 per cent of the lowest SES quintile and 26 per cent of the highest SES quintile are in a good outcome. For both SES groups, we also see increased chances of good outcome with each higher quintile, but this increase is much smaller. This means that the gap between those with and without SEN is bigger for those from higher socioeconomic backgrounds (17 percentage points for those with SEN without a statement) than for those from lower socioeconomic backgrounds (8 percentage points for those with SEN without a statement).

Those from highest quintile with a statement of SEN are as likely to be in a good outcome as those with SEN without a statement from the bottom quintile.

Figure 8: Proportions in Poor Outcome by SEN status and socioeconomic status



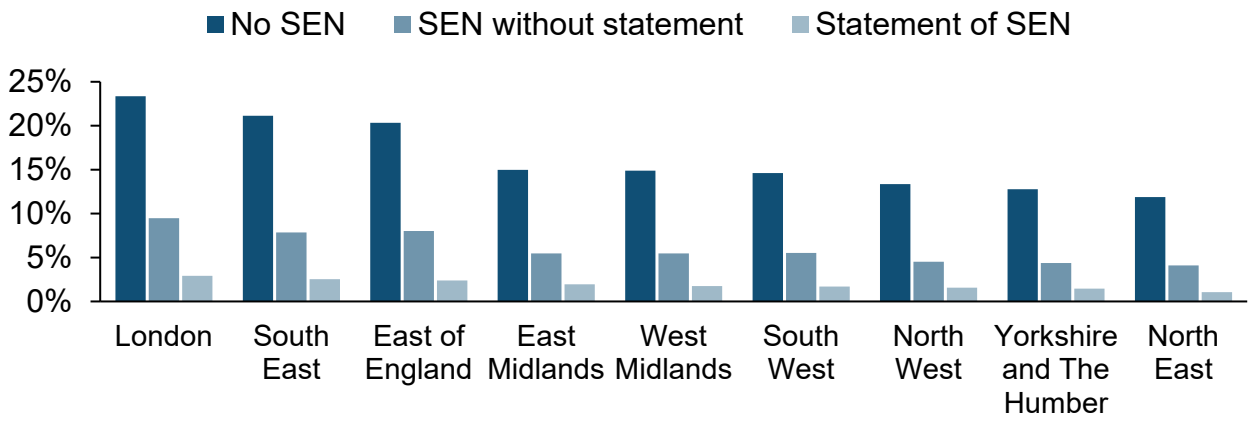
Source: Authors' analysis using Longitudinal Education Outcomes data

For poor outcome (Figure 8), across all SEN categories we see that those in higher SES quintiles are less likely to be in poor outcome. The gaps between quintiles are bigger at the lower SES end of the scale and this trend follows for those with SEN (statements and no statements). The impact of SES is such that those with SEN without a statement from the two least disadvantaged quintiles are **less likely** to be in a poor outcome than those with no SEN from the bottom quintile.

Location

The administrative data used in this report allows us to see which region of England the school attended during GCSEs was located in. For clarity, regions have been ordered by decreasing good outcome throughout this section.

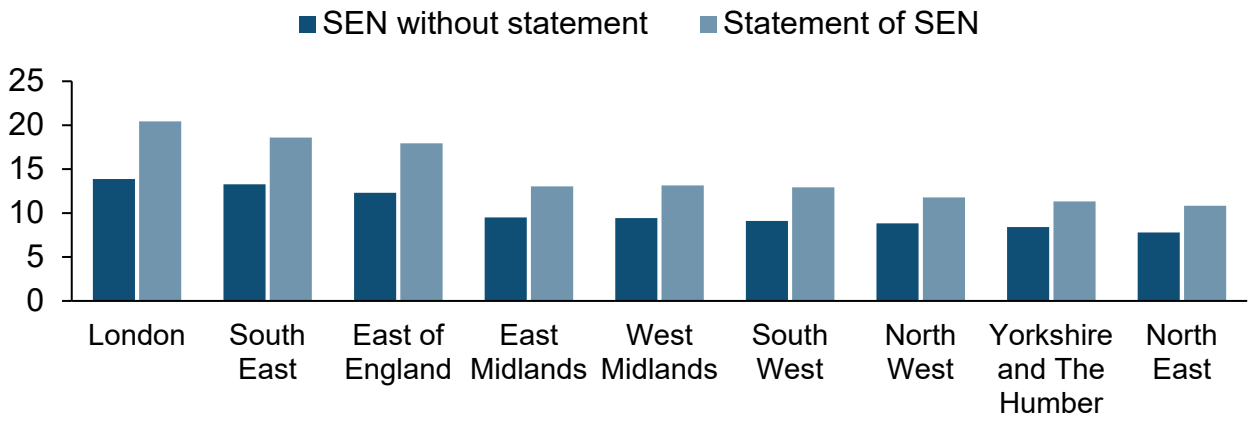
Figure 9: Proportions in Good Outcome by SEN status and region of school



Source: Authors' analysis using Longitudinal Education Outcomes data

Figure 9 shows that, within in each region, those with no SEN are the most likely to be in a good outcome. We see that those in the South and South East of England have the highest chance of good outcome, followed by those in the Midlands and South West, with the lowest proportions in the North. This trend appears largely consistent across all SEN categories.

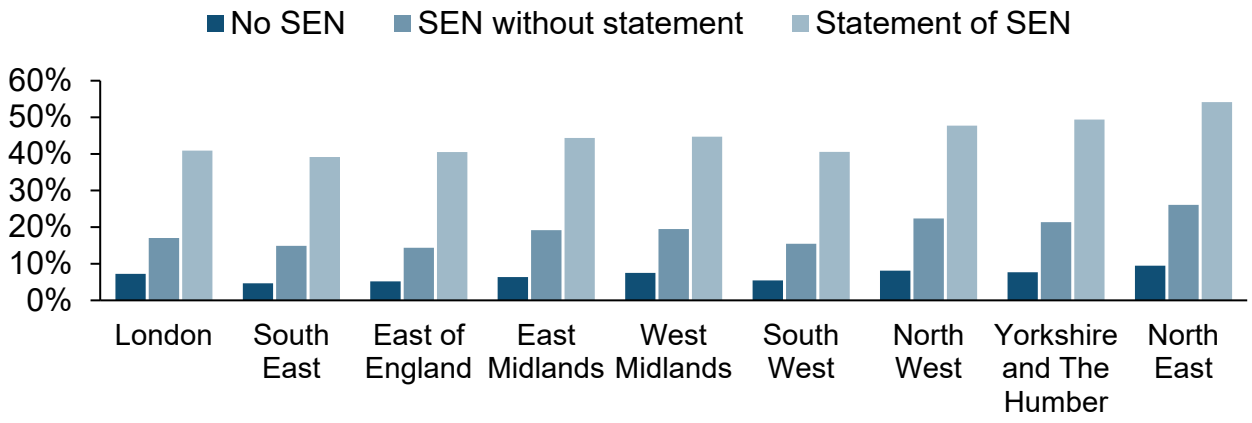
Figure 10: Percentage point gap in Good Outcome between No SEN and SEN groups by region of school



Source: Authors' analysis using Longitudinal Education Outcomes data

The gaps in good outcome between those with no SEN and those with SEN without a statement, and between those with no SEN those with a statement of SEN by region are shown in Figure 10. The biggest gaps are seen in those regions with the highest proportions in good outcome, and the smallest gaps are in those regions with the lowest proportions in good outcome. Although this might suggest that those with SEN who went to school in more affluent regions have relatively poorer outcomes than those with no SEN, the difference in the size of the gaps by region may be reflective of the poorer labour market outcomes generally seen in some parts of the country.

Figure 11: Proportions in Poor Outcome by SEN status and region of school

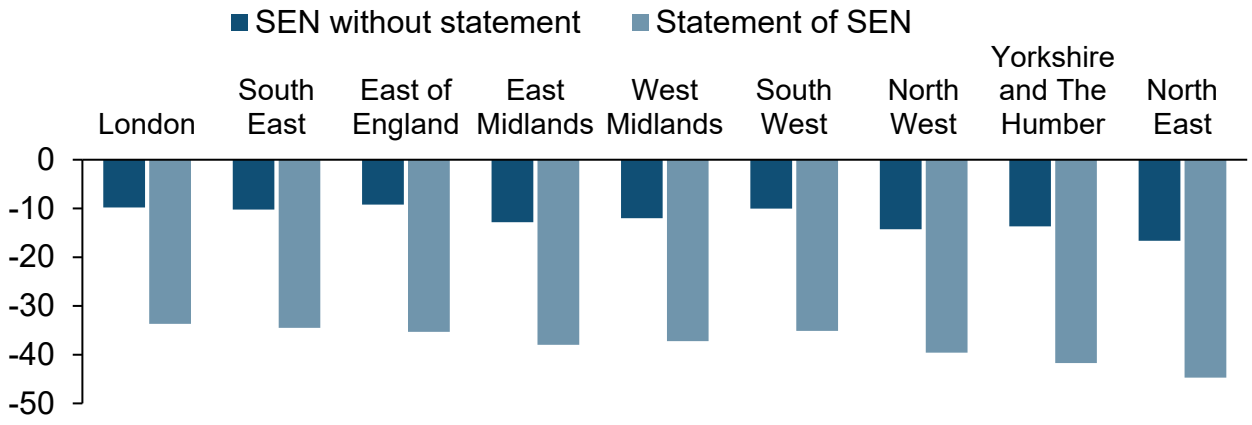


Source: Authors' analysis using Longitudinal Education Outcomes data

The proportions in poor outcome are more similar across regions (Figure 11) than for good outcome, although the ordering of regions by outcome is broadly similar (London and the South East have the lowest proportions in poor outcome, followed by the

Midlands, and the North has the highest proportions). This is the case for those without SEN and both categories of SEN.

Figure 12: Percentage point gap in Poor Outcome between No SEN and SEN groups by region of school



Source: Authors' analysis using Longitudinal Education Outcomes data

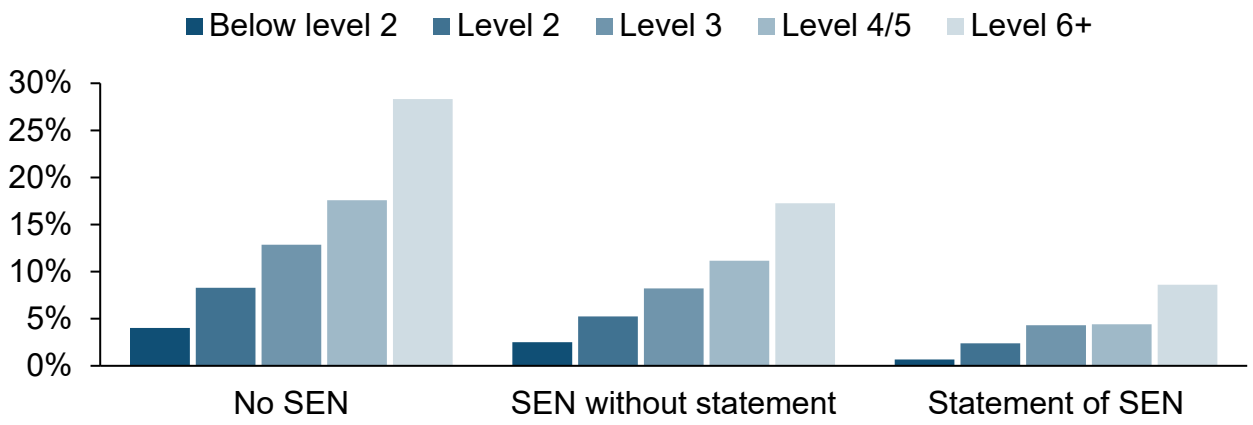
The gaps in poor outcome between those with no SEN and those with SEN without a statement, and between those with no SEN those with a statement of SEN by region are shown in Figure 12. The gap between those with and without SEN are similar in regions in the South and Midlands, but are bigger in the Northern regions where we see bigger disparities between SEN groups. This may be reflective of poorer labour market outcomes generally seen in these regions for all individuals.

Highest level of education

The highest level[26] of education is measured in the same year as labour market outcomes i.e. it is the cumulative highest level of achievement by the age of 24 to 31. Level 2 is the equivalent of five GCSEs at A*-C, level 3 is the equivalent of two A levels, and level 6 is a first degree.

[26] What qualification levels mean: England, Wales and Northern Ireland - GOV.UK (www.gov.uk)

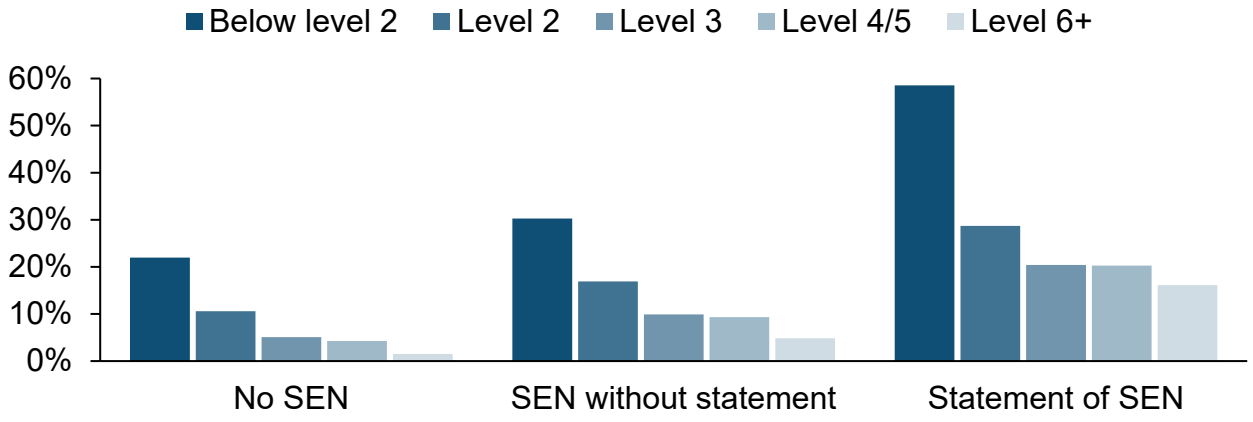
Figure 13: Proportions in Good Outcome by SEN status and highest level of education



Source: Authors' analysis using Longitudinal Education Outcomes data

Generally, higher levels of education are associated with a greater chance of good outcome and this is true for those with and without SEN (Figure 13), particularly for those educated to at least degree level. However, the impact of having special educational needs means that the chances of good outcome for those with a statement of SEN with a degree are only just higher than those with no SEN whose highest level is equivalent to GCSE.

Figure 14: Proportions in Poor Outcome by SEN status and highest level of education



Source: Authors' analysis using Longitudinal Education Outcomes data

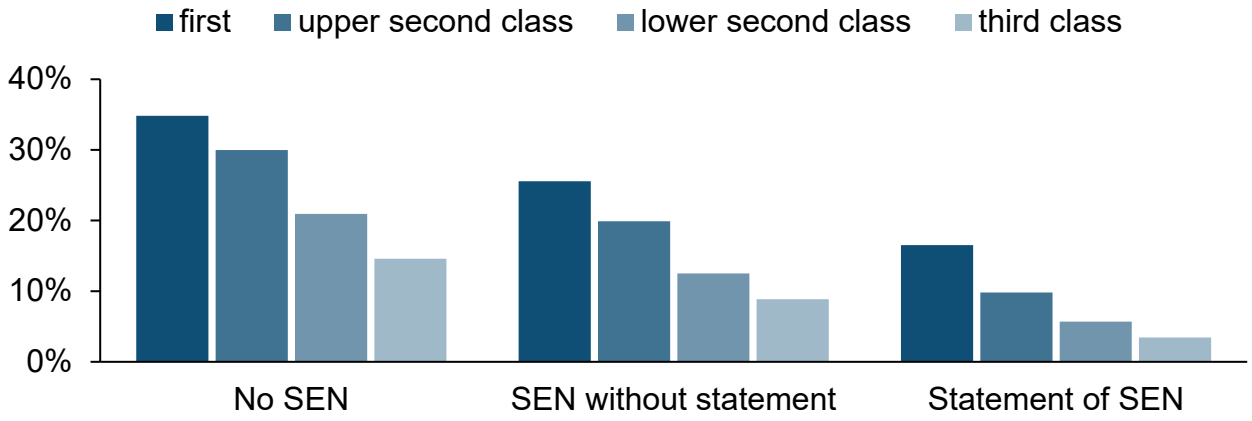
Higher levels of education are generally protective against poor outcome (Figure 14): for those with no SEN, having a level 3 or above is associated with very low chances of poor outcome. Again, we see similar patterns for those with SEN without a statement and those with a statement of SEN: that those with highest level below level 3 have the

highest chances of poor outcome. This is particularly true for those who have not achieved 5 GCSEs at A*-C as 59 per cent of below level 2 achievers with statements of SEN are in poor outcome.

Higher education: degree classification

Achieving a degree is associated with a much higher chance of good outcome for those with and without SEN as we saw in Figure 13.

Figure 15: Proportions in Good Outcome by SEN status and classification of first degree

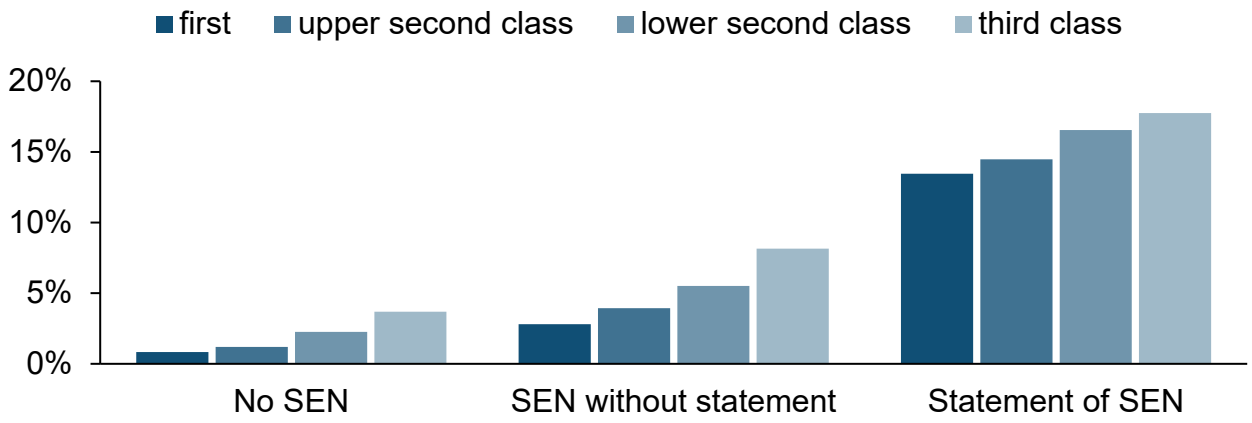


Source: Authors' analysis using Longitudinal Education Outcomes data

Figure 15 shows that within this, the classification of degree awarded is also important. The premium associated with a higher class of degree appear to exist for this with SEN as well as those without. However, those with a statement of SEN who achieved a first class honours degree are only just more likely to be in a good outcome than those with no SEN achieving a third class degree.

It is important to note that the numbers of those with a statement of SEN achieving a degree are low, particularly when split by degree classification.

Figure 16: Proportions in Poor Outcome by SEN status and classification of first degree



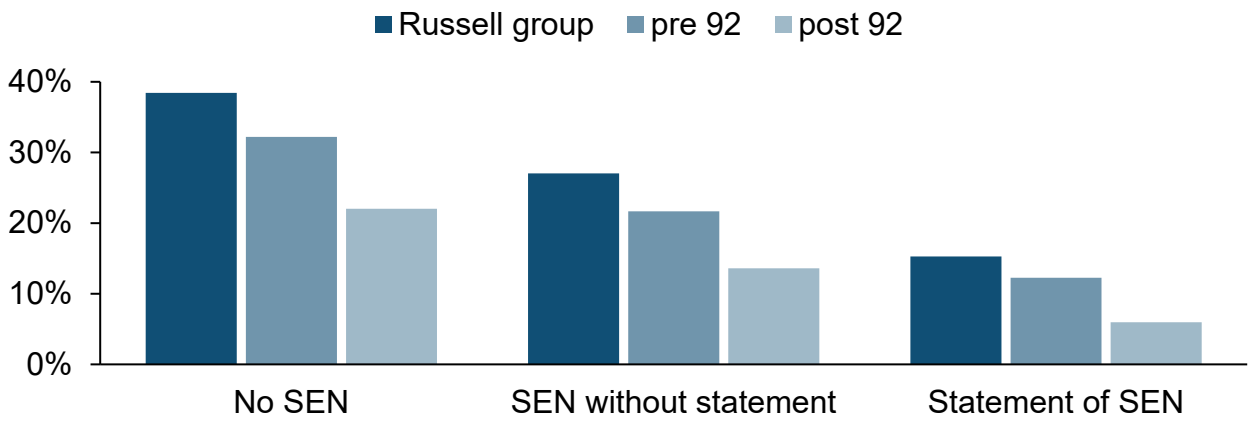
Source: Authors' analysis using Longitudinal Education Outcomes data

Having a degree is associated with much lower levels of poor outcome, as is being awarded a higher class of degree (Figure 16). This is true for those with and without SEN, however those with a statement of SEN with even a first class degree are more likely to be in a poor outcome than those with a SEN without a statement with a third class degree.

Higher education: type of institution

The type of institution attended to study a first degree is also associated with different chances of good outcome. This effect is seen in Figure 17.

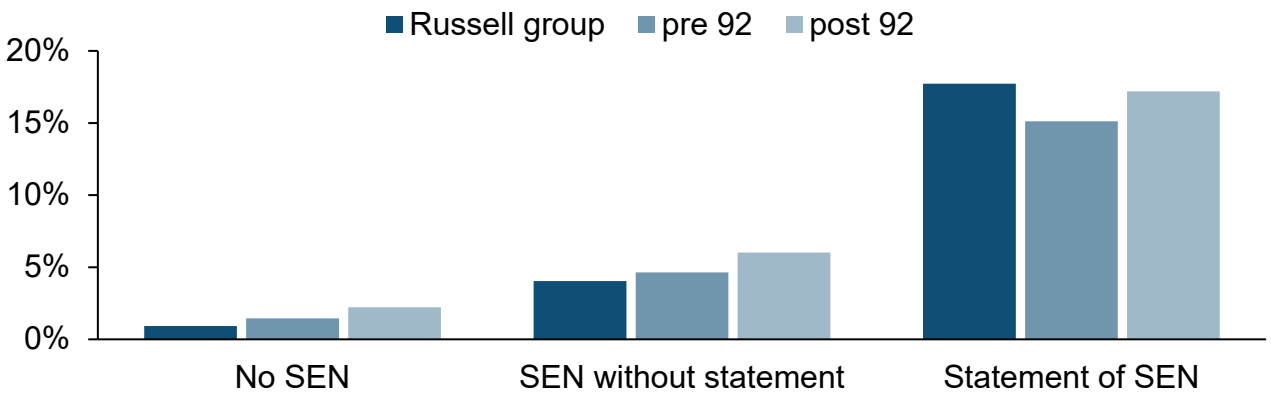
Figure 17: Proportions in Good Outcome by SEN status and type of higher education institution (first degree)



Source: Authors' analysis using Longitudinal Education Outcomes data

For those with no SEN, 38 per cent of those who attended a Russell Group institution were in a good outcome compared to 22 per cent of those who went to a post-92 institution. For those with SEN with and without a statement we see similar trends although those with a statement of SEN who attended a Russell Group institution were still less likely to be in a good outcome that those with no SEN who went to a post-92, and as likely as those with SEN without a statement who went to a post-92.

Figure 18: Proportions in Poor Outcome by SEN status and type of higher education institution (first degree)



Source: Authors' analysis using Longitudinal Education Outcomes data

The type of higher education institution attended is also associated with different chances of poor outcome as seen in Figure 18, although the differences between institution types are small for those with no SEN and those with SEN without a statement. For those with a statement of SEN, the numbers are small for Russell Group and pre-92, as the majority of students in these cohorts attended post-92 institutions.

Section 3: Effect of introducing controls

The analysis in Section 2 shows us that good labour market outcome is more likely for those who are not identified as having SEN, and poor labour market outcome more likely for those with SEN and that this is true across different socioeconomic, education and demographic characteristics. In Section 1 we saw that the proportions of these characteristics are different for the different SEN groups; in general, those with SEN participate less (in education) or have greater disadvantage. Regression analysis enables us to control for the factors found in the LEO administrative data to determine the extent to which the disparity between SEN groups is due to the differences in these factors. This approach allows us to hold these socioeconomic, demographic and education factors (covered in the previous section and described in the Definitions section) constant at once, so we can compare the outcomes of different SEN groups on a like for like basis and isolate the relationship between special educational needs and labour market outcomes.

Methodology

Probit regression methods have been used to estimate the probability that an individual with particular characteristics will fall into the measured outcome category (e.g. good outcome).

A brief description of the method used is provided in this section. Full details can be found in the technical report.

Different SEN groups are observed to have different labour market outcomes, but this could be driven by differences in underlying socioeconomic, demographic and educational factors which vary between groups and which we know influence labour market outcomes. Regression analysis allows us to hold these factors constant so we are comparing on a more like for like basis. This enables us to isolate the relationship between SEN and different labour market outcomes by calculating how much of the observed difference between SEN groups is due to the factors we can observe in the administrative data, and how much cannot be explained by these factors. When referring to controls, it is a reference to these socioeconomic, demographic and education factors that are held constant, allowing more like for like comparisons.

The dependent variable (good labour market outcome, or poor labour market outcome) is binary (an individual is either in a good outcome, or is not) so a binary regression model is used. Probit regression has been used which estimates the probability of an individual falling into the outcome category, for example having a good (or poor) labour market outcome.

The average marginal effect is then calculated: this is the average change in the probability of having a good or poor outcome compared to a baseline (or reference) group. For this chapter we measure the average difference in probability of good (or poor) outcome for SEN without a statement and SEN with a statement compared to those not having SEN. For example, if the average marginal effect for good outcome for males with a statement of SEN is -14.7, then the probability of achieving a good outcome for a male with a statement of SEN is 14.7 percentage points lower, on average, than for a male with no SEN.

The regression was run twice, once without any controls and once with all socioeconomic factors, demographics, and education controls. The first results show the raw differences between SEN groups in the labour market (i.e. the observed differences in outcomes between groups, before controlling for any other factors). The second results show the differences between SEN groups after controlling for the factors in the model. These differences are what you would see if you looked at the data and accounted for a wide range of other factors that could affect labour market outcomes and differ by special educational needs.

Results

The charts show the marginal effects of special educational needs on labour market outcomes, both with and without controls[27].

In all cases, the results for those with a statement of SEN and those with SEN without a statement are significantly different from those with no SEN (that is, the change in probability of being in the outcome groups between SEN groups is significantly different from zero).

Error bars show 95% confidence intervals. Confidence intervals provide an indication of the uncertainty of the estimates produced. Large intervals mean less precise estimates and smaller intervals indicate more certainty. There is a 95% chance that the true value for the population will fall between the upper and lower confidence limits. The error bars for these results are all very small, so we can be confident of the estimates produced.

Results of the regression are shown as a percentage point change in outcomes between those with SEN without and statement and those with no SEN, and between those with a statement of SEN and those with no SEN. For good labour market outcome, a negative margin means those in that SEN group are, on average, less likely to be in a good outcome than those with no SEN. The uncontrolled values are equivalent to the differences we observe in the previous section. Adding the controls to the regression

[27] See Figure 18 for an example

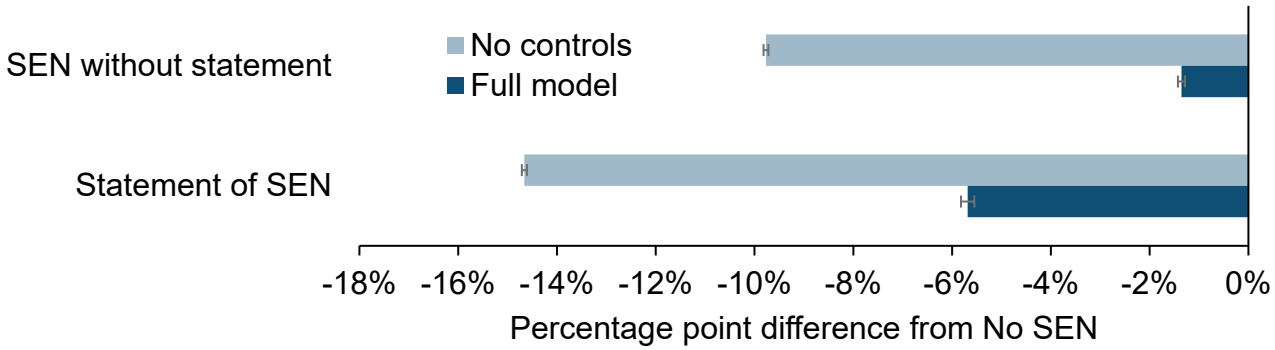
allows us to consider the differences in socioeconomic status, level of education, subjects studied, ethnicity, geography etc between the SEN groups.

Good outcome

Males

Results from the regression on males with and without SEN on good labour market outcome are shown in Figure 19. Before controlling for the aforementioned factors, we observe that males with SEN without a statement are around 9.8 percentage points less likely to achieve a good labour market outcome than those with no SEN. Those with a statement of SEN are around 14.7 percentage points less likely.

Figure 19: Males - Marginal effects of SEN on good labour market outcome



Error bars represent 95% confidence intervals

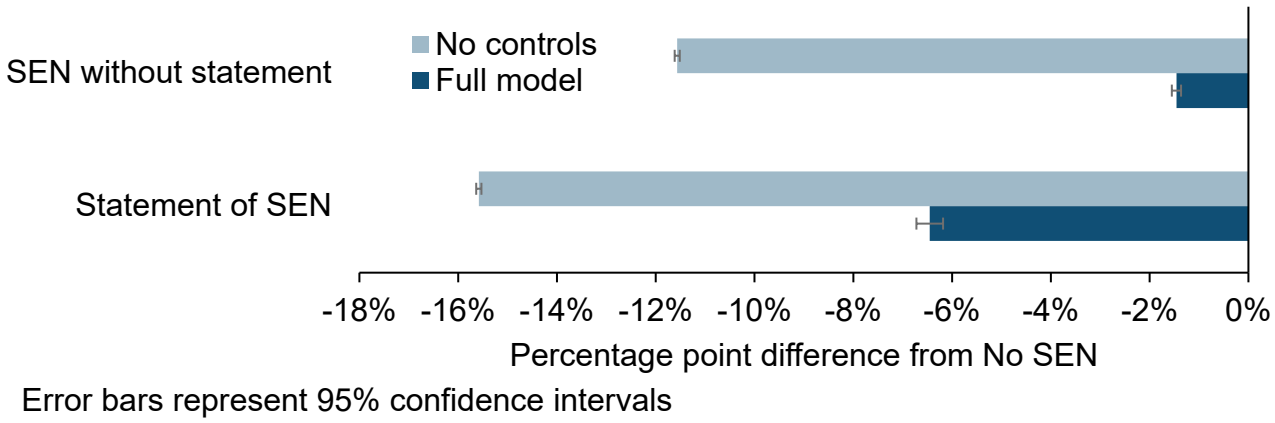
Source: Authors' analysis using Longitudinal Education Outcomes data

After controlling for the range of socioeconomic, demographic and education factors in the full model, we see that males with SEN (with or without a statement) are still less likely to be in a good outcome than those with no SEN, i.e. for men with similar characteristics and education profiles, having a special educational need during GCSEs means they are less likely to be employed and have earnings in the upper income quartile.

Females

For females and good outcome, the picture is similar to that for males (Figure 20). Again, we see that before we add the socioeconomic, demographic and education controls, women with special educational needs are less likely to be in a good outcome than those with no SEN, although the differences are bigger than for males. Females with SEN without a statement are observed to be around 11.6 percentage points less likely to be in a good outcome than those with no SEN, and females with a statement of SEN are around 15.6 percentage points less likely than those with no SEN.

Figure 20: Females - Marginal effects of SEN on good labour market outcome



Error bars represent 95% confidence intervals

Source: Authors' analysis using Longitudinal Education Outcomes data

As with men, after controlling for the full range of socioeconomic, demographic and education factors, females from with SEN are still less likely to be in a good outcome than those without. This means that women with SEN with or without a statement are less likely to be employed and upper quartile earners than similar women with no special educational needs.

Poor outcome

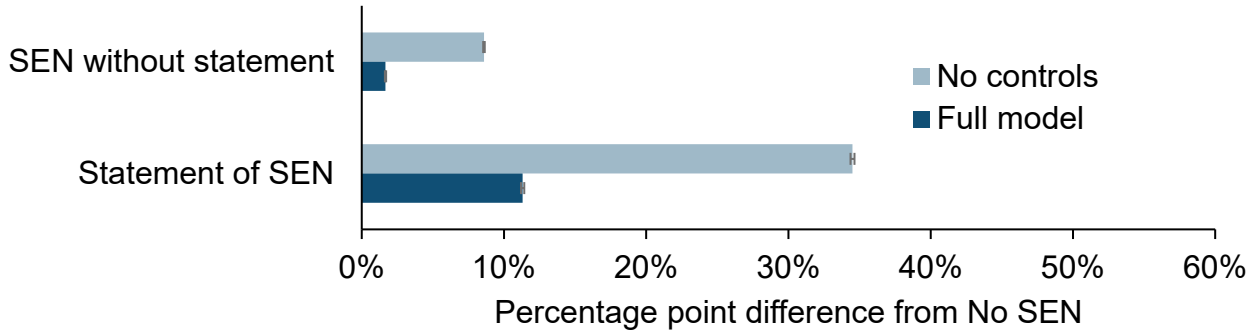
When looking at poor labour market outcome, a positive percentage difference indicates higher proportions claiming out of work benefits for six months in a year, which means worse labour market outcomes. The trend for poor outcome is broadly consistent with that for good outcome in that those with special educational needs are more likely to have a poor labour market outcome after controlling for socioeconomic, demographic and education factors.

Males

Males with SEN without a statement are more likely to be in a poor outcome than those with no SEN (Figure 21) by around 8.6 percentage points. Males with a statement of SEN are around 34.5 percentage points more likely to be in a poor outcome than males with no SEN.

When we add the socioeconomic, demographic and education controls the gaps between in poor outcome between SEN groups are reduced, but males with SEN are still more likely to be in a poor outcome than with no SEN (around 1.7 percentage points between those with SEN without a statement and those with no SEN, and around 11.3 percentage points between those with a statement of SEN and those with no SEN).

Figure 21: Males - Marginal effects of SEN on poor labour market outcome



Error bars represent 95% confidence intervals

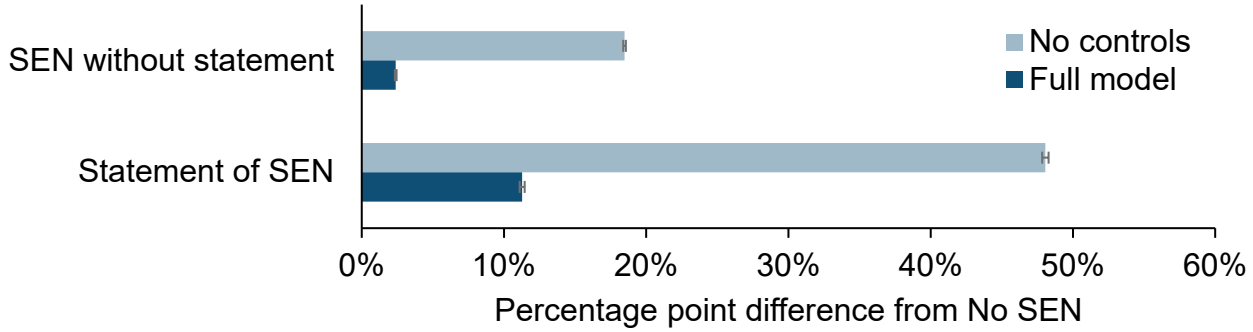
Source: Authors' analysis using Longitudinal Education Outcomes data

This means that when we compare males with similar characteristics and education levels, those with special educational needs are more likely to be claiming out of work benefits for at least 6 months than males without.

Females

The gap in poor labour market outcome for females with and without SEN is much larger than for males, with the observed gap between those with SEN without a statement and those with no SEN around 18.5 percentage points (Figure 22). The observed gap between females with a statement of SEN and those with no SEN is very large, at 48.1 percentage points.

Figure 22: Females - Marginal effects of SEN on poor labour market outcome



Error bars represent 95% confidence intervals

Source: Authors' analysis using Longitudinal Education Outcomes data

After controlling for demographic and education factors, the gap between females with no SEN and those with SEN is much reduced, but between those with SEN without a

statement and those with no SEN there is still a gap of around 2.4 percentage points, and 11.3 percentage points between those with no SEN and those with a statement of SEN.

In summary, for both men and women and for good and poor labour market outcomes, we observe better outcomes in the labour market with no special educational needs than those with SEN. Labour market outcomes are better for those with SEN without a statement than they are for those with a statement of SEN. Holding socioeconomic, demographic and education factors constant explain a large proportion of these gaps but they are still present.

Section 4: Relative importance of controls

The regression results in Section 3 illustrate that there are gaps in good and poor labour market outcomes between males and females with and without SEN and that only part of these gaps can be explained by the socioeconomic, demographic and education controls. These gaps are bigger for females, and for those with a statement of SEN.

These factors all play a part in determining the probability of whether someone is employed, how much they earn, and whether they claim benefits, and the information in Sections 1 and 2 shows us that SEN groups differ for many of these: there are variations in the composition of these, and how good and poor outcome are affected varies too. This raises questions as to whether some of these factors are more important than others, and how much of a contribution each makes in explaining outcomes gaps.

This section presents the use of decomposition methodology to attempt to quantify the contribution each socioeconomic, demographic and education factor makes towards the gaps in outcomes between those with SEN and those with no SEN.

Decomposition analysis is a way of isolating the importance of each factor: to determine how much of the gap between the SEN groups is explained by each factor (or group of factors). A discussion follows on the multivariate decomposition methodology used and interpretation of results to provide further insight into this.

Methodology

Multivariate decomposition analysis is used to give insight into the importance of factors explaining the difference in average outcomes between two groups. For this analysis, it is used to look at the difference in probability of a good labour market outcome (or poor labour market outcome) between those with **no SEN and those with SEN without a statement** and between those with **no SEN and those with a statement of SEN**, and to quantify the contribution of each of the factors that may be driving the difference within each pair.

A brief description of the method used is provided in this section. Full details can be found in the technical report.

The *mvdcmp*[28] command in STATA was used to run a probit regression model and then 'decompose' or split the raw difference in outcomes between the groups into two parts:

- **Characteristics**: the proportion of difference due to the different compositional makeup (demographic and education) of the two groups
- **Returns**: the proportion of difference which cannot be explained by accounting for the differences in characteristics, i.e. due to the different behaviours, experiences and returns to those behaviours, of individuals in these two groups with the same characteristics

Each of these parts is then further broken down to show the proportion of the difference explained by **each factor** in the model. The **Returns** component also includes the contribution from the constant term: this is the difference in outcomes which cannot be explained by the factors in the model. This will be referred to as the **Unexplained** component in this chapter.

The decomposition analysis was carried out using good labour market outcome as the dependent variable for males and for females separately. The explanatory variables (or factors) used in the model are based on those used as controls in the full probit regression model discussed in Section 3 (as we want to ascertain the importance of each of these in explaining the differences between SEN status groups). For ease of presentation and interpretation, some of the factors have been grouped together in the results charts to indicate the total contribution from related factors.

The groups of variables presented in the charts are (see Definitions):

- Ethnicity
- Socioeconomic status – total contribution from differences in all SES quintiles
- English as an additional language (EAL)
- Region of key stage 4 school - local authority is used as a control in the probit regression, however the breakdowns for some ethnic groups are too small for local authority to be used
- Pre-16 attainment – key stage 2 maths level, key stage 4 performance points
- Variables on level and type of educational achievement, as well as institution type, classification and subject studied at degree or above have been combined to give

[28] Mvdcmp: Multivariate Decomposition for Nonlinear Response Models (sagepub.com)

the following post-16 education factors (presented separately). Below level 2 learning is the reference value for these:

- Level 2
- Level 3
- Levels 4 and 5
- Levels 6 or above

As with the probit regression methodology, school factors (school type, progress, demographics and attainment) were not included in the decomposition model due to differences in schools attended by different SEN groups.

This process was then repeated using poor labour market outcome as the outcome variable of interest.

The assumptions and methodology for the probit regression and decomposition differ, and the explanatory variables in the decomposition differ slightly from the controls used in the probit regression (such as using region rather than local authority). This results in slight differences in the explanatory power of these models.

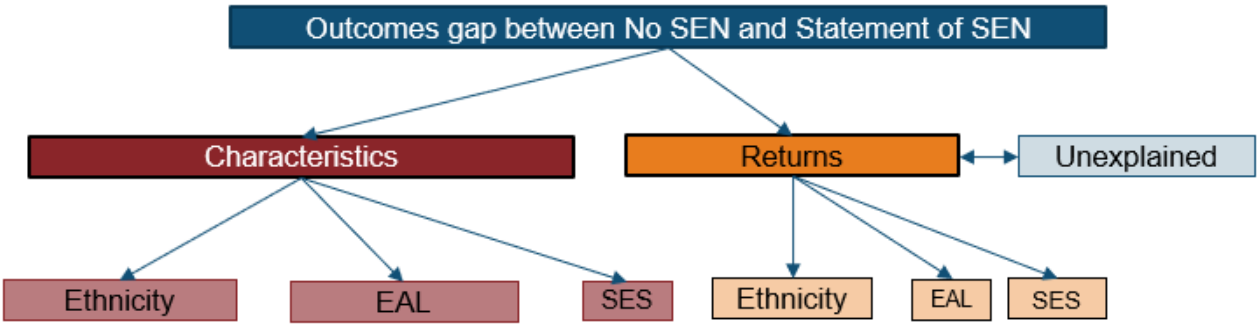
Full results for individual variables are also shown in the accompanying data tables. Further details on the explanatory variables and more detail on the decomposition methodology can be found in the technical report.

Interpretation

The gap in outcomes between the two groups of interest (e.g. the difference in probability of good outcome between males with no SEN and males with SEN without a statement) is broken down to show the relative contribution of each factor.

To illustrate this, Figure 23 shows a simplified representation of a model with three explanatory variables.

Figure 23: Representation of decomposition analysis



Each factor in the **Characteristics** component, the **Returns** component and the **Unexplained** term makes up a percentage of the total gap (100 per cent) in outcomes between these two groups. The percentage contribution from a factor can be either positive or negative depending on its association with the outcome variable.

Results

The decomposition results examine the gaps in good and poor outcome between those with no SEN and each of the SEN groups, for males and females separately. In total this is eight sets of pairwise results. The first part of this section will look at the contributions of the components at a summary level, and the second part will examine more closely the contributions of the individual factors or groups of factors. We find that the factors which are important in explaining the gaps in both good outcome and poor outcome for males and females with SEN with or without a statement compared to those with no SEN are very similar. For this reason, this chapter will look in depth at males with SEN without a statement compared to males with no SEN as an exemplar. Results for all 8 combinations are available in tables in these sections. The interpretation of the results is explained in the context of the example and can then be applied to comparisons of other SEN groups.

Good outcome summary decompositions

The chance of being in a good outcome is around 9.8 percentage points lower for males with SEN without a statement than for males with no SEN (Figure 19). The decomposition methodology assigns a high outcome group and compares this to the low outcome (reference) group. As the no SEN group has a higher chance of good outcome than the SEN without a statement group, the no SEN group is treated as the high outcome group and SEN without a statement as the reference.

The summary results from the decomposition can be seen in Figure 24, which shows the total percentage contribution from the **Unexplained**, **Characteristics** and **Returns** components.

Figure 24: Gaps in Good Outcome for males between no SEN and SEN without a statement – component totals

Components with a positive percentage are associated with an increase in the gap; those with a negative percentage are associated with a decrease in the gap.

Source: Authors' analysis using Longitudinal Education Outcomes data

For this comparison, the **Unexplained** component (similar to a constant term in a regression) accounts for that part of the gap in the outcomes of the two groups which cannot be explained by the socioeconomic, demographic and education data included in the model. This can have either a positive or negative percentage, dependent on whether (overall) unmeasured factors have a positive or negative effect on outcomes (or, associated with an increase or decrease in the gap between groups).

The **Unexplained** component makes up 34 per cent of the gap i.e. 66 per cent of the difference in good outcome between these two groups is explained by the socioeconomic, demographic and education variables in the model. This is a positive percentage and provides a substantial contribution to the higher outcomes seen for males with no SEN.

The **Characteristics** component accounts for a large proportion of the gap between males with no SEN and males with SEN without a statement. At 90 per cent, this suggests that the composition of the socioeconomic, demographic and education characteristics of the two groups is contributing to the much higher chance of good outcome observed for males with no SEN. The negative percentage for the **Returns** component, however, suggests that the behaviours or returns to behaviours for those with the same characteristics are, overall, less likely to result in good outcome for males

with no SEN. So even though the characteristics of males with no SEN are typically more favourable for labour market success, the difference in outcomes between these two groups is not as large as we might expect.

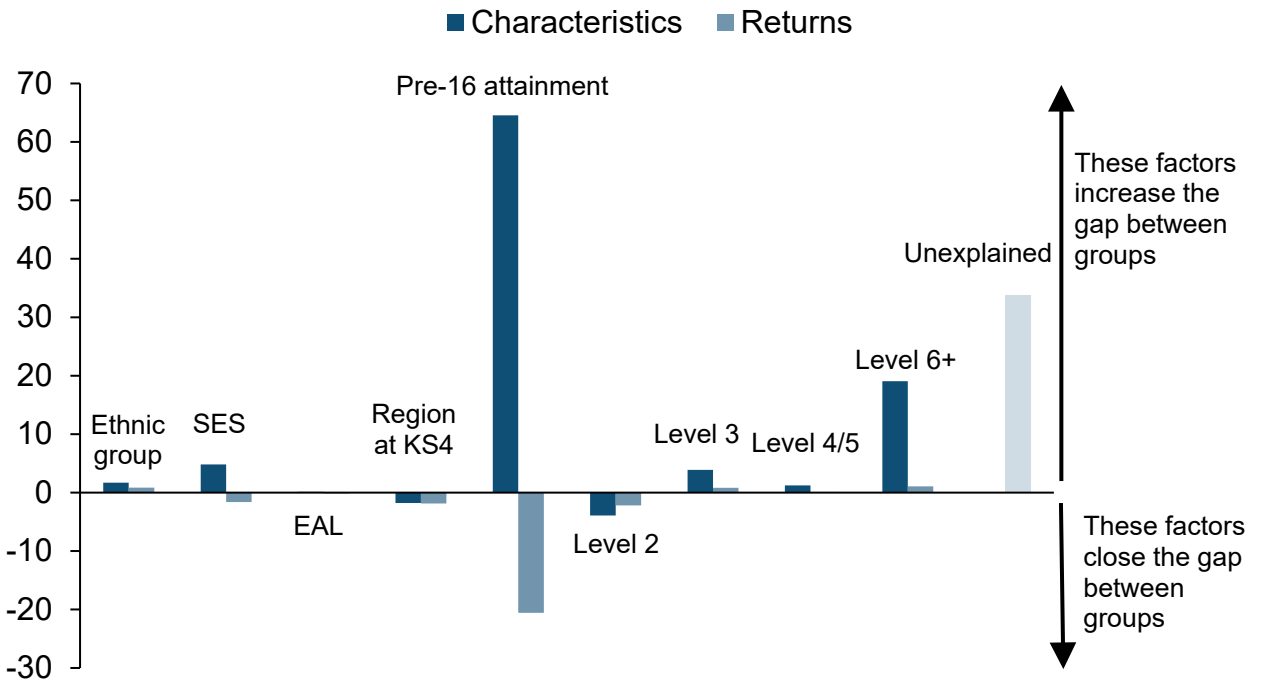
Good outcome detailed decompositions

Males: no SEN and SEN without a statement

The results of the detailed decomposition for males with no SEN and with SEN without a statement and good outcome are shown in Figure 25 with contributions towards the gap for each factor or group of factors. The further breakdown of the **Characteristics** and **Returns** components allows us to better understand which of these are driving observed differences in outcomes.

We saw from the summary decomposition in Figure 24 that the differences in **Characteristics** for these two groups accounts for most of the gap in good outcome. Further decomposition shows us that much of this disparity is explained by differences in education levels between the two groups. The percentage contribution from a factor can be either positive or negative depending on its association with the outcome variable.

Figure 25: Decomposition analysis of Good Outcome for no SEN compared to SEN without statement males: percentage of gap explained by each factor or group of factors



Source: Authors' analysis using Longitudinal Education Outcomes data

The factor group with the highest percentage contribution in the **Characteristics** component is Pre-16 attainment (KS2 maths level and KS4 attainment). This has a high positive value and suggests that the distribution of school attainment positively contributes to the differences between these two groups. Specifically, it implies that if males with no SEN were given the same distribution of KS2 and KS4 results as males with SEN without a statement have, this would lower no SEN males' outcomes – resulting in a decrease in the gap between the two groups.

The contribution from the 'Level 6+' factor is the next biggest contribution in the **Characteristics** component. Socioeconomic status also makes a positive contribution to the gap, but the demographic factors have little importance.

The **Returns** component (which, overall, reduces the good outcome gap between males with no SEN and those with SEN without a statement as we saw in Figure 24) is mostly comprised of the pre-16 attainment factors. The large negative percentage for this groups of factors indicates that, overall, the behaviours or returns to behaviours of those achieving similar levels in school, while taking into account later educational achievements, reduce the gap in good outcome. Specifically, if males with SEN without a statement had the same behaviours or returns to behaviours as males with no SEN with the same KS2 and KS4 attainment, the gap would between the groups would become bigger, as males with SEN would have lower outcomes.

Males: all comparisons

The previous section examined the detailed decomposition results for good outcome for males with no SEN and with SEN without a statement and used this example to explain the interpretation of the results. Table 2 shows these results in table form, along with the equivalent results for males with no SEN compared to males with a statement of SEN.

A positive percentage for a factor represents a factor which is associated with increasing the gap between the high outcome and low outcome group. The high outcome group is those with no SEN and the low outcome group is the relevant group with SEN. To aid interpretation, conditional formatting is used to help draw attention to the most important factors for each pairwise comparison and to help enable comparisons to be made between pairwise decompositions.

Blue shading is used for a factor which is driving increased outcomes for those with no SEN i.e. increasing the gap between those with no SEN and those with SEN. These can be thought of as drivers of good outcome for those with no SEN. **Red** shading is used for a factor which is driving increased outcome for the group with SEN i.e. decreasing the gap between those with no SEN and those with SEN. These can be thought of as drivers of good outcome for those with SEN. Darker shading indicates a larger percentage contribution.

There are two columns for each pairwise comparison: the first relates to the **Characteristics** component and the second relates to the **Returns** component. Component totals and the Unexplained percentage are shown in the bottom row.

As an example to illustrate this, the columns headed 'Statement of SEN' give the characteristics and returns components for the decomposition of the good outcome gap between males with no SEN and with a statement of SEN. Those with no SEN are the high outcome group because they have higher proportions in the good outcome category. The characteristics components for 'Pre-16 attainment' increases the gap between males with no SEN and with a statement of SEN by 62.4 percentage points, but males with a statement of SEN experience stronger returns to possessing those qualifications, reducing the gap by 6.0 percentage points.

Table 2: Decomposition analysis of Good Outcome for males: percentage of gap explained by each factor or group of factors

Blue shading (positive percentages) - factor is driving increased **good** outcome for the no SEN group

Red shading (negative percentages) - factor is driving increased **good** outcome for the group with SEN

SEN group	SEN without statement: Characteristics	SEN without statement: Returns	Statement of SEN: Characteristics	Statement of SEN: Returns
Ethnic group	1.7	0.9	-0.2	0.2
SES	4.8	-1.6	2.9	0.4
EAL	0.2	-0.1	-0.2	0.1
Region at KS4	-1.8	-1.9	-0.2	-0.7
Pre-16 attainment	64.6	-20.6	62.4	-6.0
Level 2	-3.9	-2.2	-0.8	-1.6
Level 3	3.9	0.8	5.3	-0.1
Level 4/5	1.2	0.1	1.0	0.1
Level 6+	19.1	1.1	12.7	0.2
Component total	90	-23	83	-7
Unexplained		34		25

Source: Authors' analysis using Longitudinal Education Outcomes data

The table clearly shows that although the percentage contributions have slightly different magnitudes, that it is the same factors for the comparisons of both SEN categories that have the biggest contributions: pre-16 attainment, level 6+ and the **Unexplained** component.

Females: all comparisons

The results of the detailed decomposition for females with and without SEN and good outcome are shown in Table 3 with contributions towards the gap for each factor or group of factors (see the previous section Males: all combinations for a description of this table).

Table 3: Decomposition analysis of Good Outcome for females: percentage of gap explained by each factor or group of factors

Blue shading (positive percentages) - factor is driving increased **good** outcome for the no SEN group

Red shading (negative percentages) - factor is driving increased **good** outcome for the group with SEN

SEN group	SEN without statement: Characteristics	SEN without statement: Returns	Statement of SEN: Characteristics	Statement of SEN: Returns
Ethnic group	1.2	-0.8	0.2	-0.3
SES	5.3	0.2	2.6	-0.6
EAL	0.2	-0.4	0.0	0.2
Region at KS4	-3.1	1.2	-0.4	0.5
Pre-16 attainment	51.8	-8.3	57.0	-3.6
Level 2	0.6	-2.2	1.2	-0.5
Level 3	3.2	-1.4	4.1	-0.3
Level 4/5	1.5	0.0	1.7	0.0
Level 6+	31.6	0.3	24.1	0.0
Component total	92	-11	90	-5
Unexplained		19		14

Source: Authors' analysis using Longitudinal Education Outcomes data

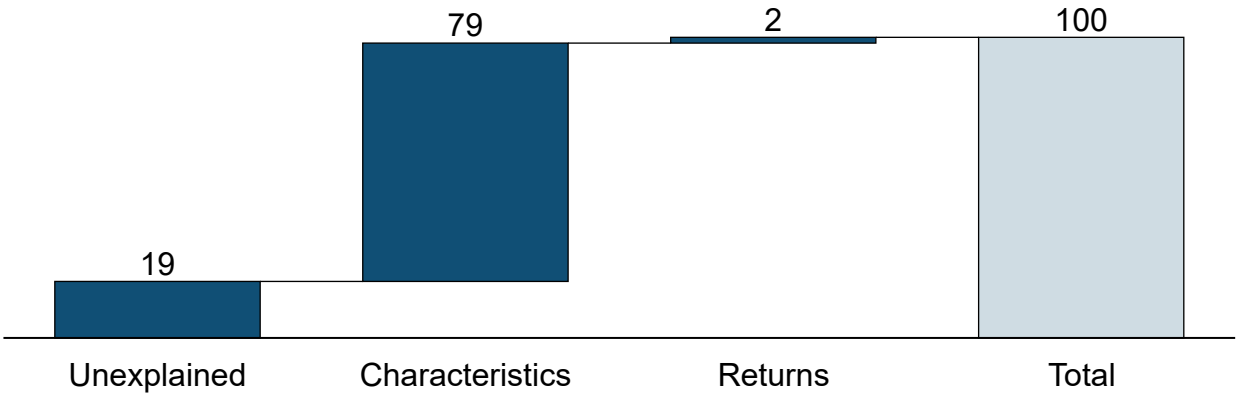
The largest contributor to the gap in good outcome between females with no SEN and females with SEN is the same as it is for males: pre-16 attainment in the Characteristics component. For females, however, Level 6+ achievement has more importance than it does for males. The unexplained component is also smaller than for males: socioeconomic, demographic and education factors explain a larger proportion of the gap between females with and without SEN than for males.

Poor outcome summary decompositions

The previous sections examined the differences in good outcome between those with and without SEN and the importance of socioeconomic, demographic and education factors in explaining this gap. This section looks at the summary and detailed decompositions for the gap in poor outcome between SEN groups. The decomposition results for poor outcome for males comparing those with no SEN and those with SEN without a statement are described in detail, followed by the results for males and females for both SEN groups in table form.

The chance of being in a poor outcome is around 8.6 percentage points lower for males with no SEN compared to males with SEN without a statement (Figure 21). The decomposition methodology assigns a high outcome group and compares this to the low outcome (reference) group. As males with SEN without a statement have a higher chance of poor outcome than those with no SEN, in this case those with SEN are treated as the high outcome group and those with no SEN as the reference.

Figure 26: Gaps in Poor Outcome for males between no SEN and SEN without a statement – component totals



Components with a positive percentage are associated with an increase in the gap; those with a negative percentage are associated with a decrease in the gap.

Source: Authors' analysis using Longitudinal Education Outcomes data

The summary results from the decomposition can be seen in Figure 26, which shows the total percentage contribution from the **Unexplained**, **Characteristics** and **Returns**.

The **Unexplained** component for males is 19 per cent, suggesting that 81 per cent of the poor outcome gap is explained by the socioeconomic, demographic and education factors in the model. The Unexplained component has a positive percentage so is contributing to the higher chance of poor outcome seen for those with SEN without a statement compared to those with no SEN.

The **Characteristics** component is 79 per cent indicating that the composition of each SEN group is contributing most of the gap in poor outcome.

In contrast to good outcome, the **Returns** component is a very small **positive** percentage. This means that the behaviours or returns to behaviours for those with the same characteristics are, overall, only slightly more likely to result in poor outcome for males with SEN without a statement. In other words, the characteristics of those with SEN without a statement are typically less favourable for labour market success than those with no SEN, but the returns to these characteristics are similar.

Poor outcome detailed decompositions

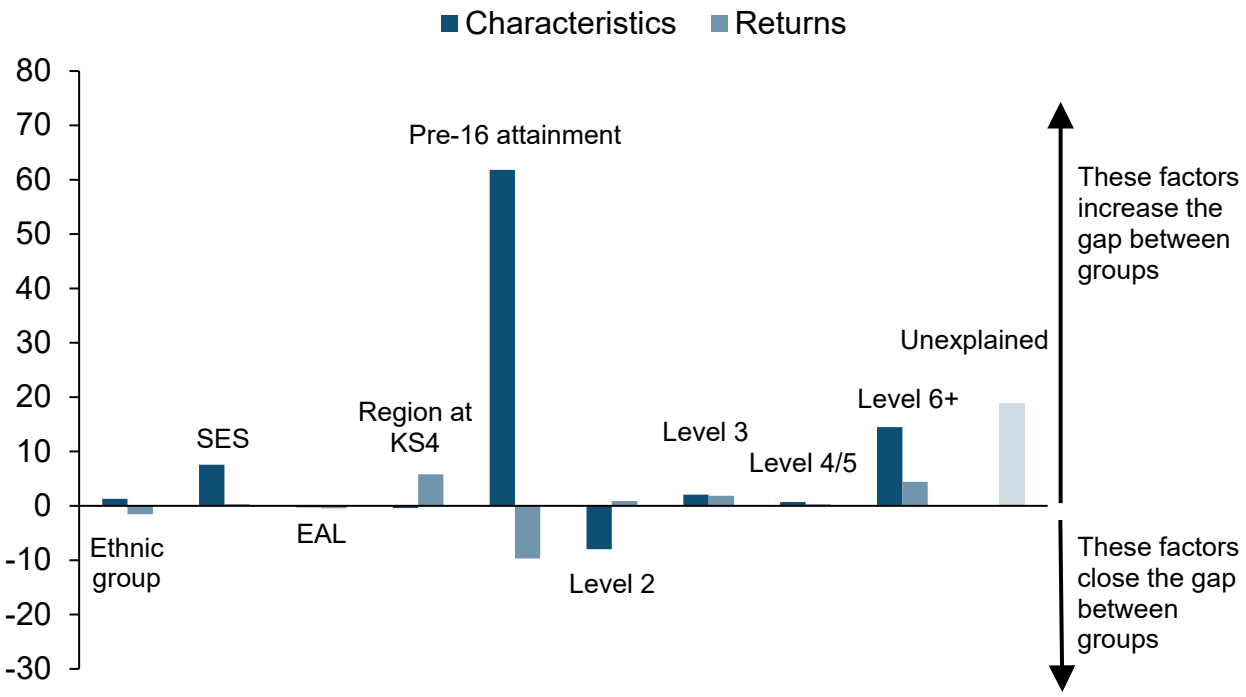
Males: no SEN and SEN without a statement

The results of the detailed decomposition for males with no SEN and males with SEN without a statement and **poor outcome** are shown in Figure 27 with contributions towards the gap for each factor or group of factors. The further breakdown of the Characteristics and Returns components allows us to better understand which of these are driving observed differences in poor outcome.

We saw from the summary decomposition in Figure 26 that the differences in **Characteristics** for these two groups accounts for a large proportion of the gap in poor outcome. Further decomposition shows us that much of this disparity is explained by differences in education levels across the two groups. The percentage contribution from a factor can be either positive or negative depending on its association with the outcome variable.

A positive percentage for a factor represents one which is associated with increasing the gap between the high outcome and low outcome group. **Note that for poor outcome, the high outcome group has a higher chance of poor outcome, therefore this group has poorer labour market outcomes.** As those with SEN without a statement have a higher chance of poor outcome than those with no SEN, those with SEN are treated as the high outcome group and those with no SEN as the reference.

Figure 27: Decomposition analysis of Poor Outcome for no SEN compared to SEN without a statement males: percentage of gap explained by each factor or group of factors



Source: Authors' analysis using Longitudinal Education Outcomes data

It can be clearly seen in Figure 27 that the factor group with the highest percentage contribution in the **Characteristics** component is Pre-16 attainment (KS2 maths level and KS4 attainment). This has a positive value and suggests that the distribution of school attainment positively contributes to the gap between these two groups. Specifically, it implies that if males with SEN without a statement were given the same distribution of KS2 and KS4 results as males with no SEN, this would decrease SEN males' chance of poor outcome – resulting in a decrease in the gap between the two groups.

The positive contribution from the Level 6+ factor is the next biggest contribution in the Characteristics component. Level 2 as highest achievement is also important, but this has negative value which suggests that the distribution of this factor provides a small negative contribution to the gap between the two groups. Specifically, it implies that giving males with SEN without a statement the distribution of Level 2 achievements as no SEN males would slightly increase the chance of poor outcome of males with SEN and hence increase the gap between the two groups.

As we saw in Figure 26, the contribution from the **Returns** component is a very positive percentage and is therefore, overall, making a positive contribution to the gap in poor

outcome for males from these two SEN groups. There are positive contributions from Level 6+ and Region at KS4 (contributing positively to the gap in poor outcome) which are effectively cancelled out by the Returns contributions from Pre-16 attainment. This suggests that, in total, the behaviours or returns to the behaviours of those with SEN without a statement and those with no SEN with the same characteristics have little effect on the gap in poor outcome.

Males: all comparisons

The previous section examined the detailed decomposition results for poor outcome for males with no SEN and with SEN without a statement and used this example to explain the interpretation of the results. Table 4 shows these results in table form, along with the equivalent results for males with no SEN compared to males with a statement of SEN.

To aid interpretation, conditional formatting is used to help draw attention to the most important factors for each pairwise comparison and to help enable comparisons to be made between pairwise decompositions.

Blue shading is used for a factor which is driving increased outcomes for those with no SEN i.e. increasing the gap between those with no SEN and those with SEN. These can be thought of as drivers of poor outcome for those with no SEN. **Red** shading is used for a factor which is driving increased outcome for the group with SEN i.e. decreasing the gap between those with no SEN and those with SEN. These can be thought of as drivers of poor outcome for those with SEN. Darker shading indicates a larger percentage contribution.

There are two columns for each pairwise comparison: the first relates to the **Characteristics** component and the second relates to the **Returns** component. Component totals and the **Unexplained** percentage are shown in the bottom row.

To illustrate this, the columns headed ‘Statement of SEN’ give the characteristics and returns components for the decomposition of the poor outcome gap between males with a statement of SEN and males with no SEN. Those with a statement of SEN are the high outcome group because they have higher proportions in the poor outcome category. The characteristics components for ‘Pre-16 attainment’ increases the gap between males with a statement of SEN and males with no SEN by 70.1 percentage points, but males with a statement of SEN experience stronger returns to possessing those qualifications, reducing the gap by 15.2 percentage points.

Table 4: Decomposition analysis of Poor Outcome for males: percentage of gap explained by each factor or group of factors

Blue shading (negative percentages) - factor is driving increased **poor** outcome for the no SEN group

Red shading (positive percentages) - factor is driving increased **poor** outcome for the group with SEN

SEN group	SEN without statement: Characteristics	SEN without statement: Returns	Statement of SEN: Characteristics	Statement of SEN: Returns
Ethnic group	1.3	-1.5	-0.4	-0.5
SES	7.6	0.3	1.3	4.2
EAL	-0.3	-0.4	0.2	0.0
Region at KS4	-0.4	5.8	0.0	3.4
Pre-16 attainment	61.8	-9.7	70.1	-15.2
Level 2	-8.0	0.9	-4.8	-0.8
Level 3	2.0	1.9	2.8	0.9
Level 4/5	0.7	0.3	0.5	0.1
Level 6+	14.5	4.4	5.4	3.3
Component total	79	2	75	-5
Unexplained		19		30

Source: Authors' analysis using Longitudinal Education Outcomes data

The table clearly shows that although the percentage contributions have slightly different magnitudes, that it is the same factors for both pairs that have the biggest contributions: pre-16 attainment, level 6+ and the **Unexplained** component. For males with a statement of SEN compared to no SEN, the difference in Level 6+ attainment is less important in explaining the gap in poor outcome compared to the gap between those with SEN without a statement and no SEN. For socioeconomic status, in total this factor has similar importance in explaining the gaps for both comparisons, but for those with SEN without a statement, it is the distribution of this factor that is important, whereas for those with a statement of SEN, it is the returns to socioeconomic differences that are important.

Females: all comparisons

The results of the detailed decomposition for females with and without SEN and poor outcome are shown in Table 5 with contributions towards the gap for each factor or group of factors (see the previous section Males: all combinations for a description of this table).

Table 5: Decomposition analysis of Poor Outcome for females: percentage of gap explained by each factor or group of factors

Blue shading - (negative percentages) factor is driving increased **poor** outcome for the no SEN group

Red shading - (positive percentages) factor is driving increased **poor** outcome for the group with SEN

SEN group	SEN without statement: Characteristics	SEN without statement: Returns	Statement of SEN: Characteristics	Statement of SEN: Returns
Ethnic group	0.9	-1.3	0.0	-0.3
SES	6.5	2.2	1.1	5.0
EAL	-0.4	-0.4	0.0	-0.1
Region at KS4	0.6	0.4	0.1	4.3
Pre-16 attainment	49.9	-5.4	57.1	-10.3
Level 2	-5.9	0.0	-3.4	-0.7
Level 3	1.5	-0.2	6.5	-0.5
Level 4/5	1.5	0.0	1.6	0.0
Level 6+	30.0	3.9	13.5	6.3
Component total	85	-1	77	4
Unexplained		16		20

Source: Authors' analysis using Longitudinal Education Outcomes data

The largest contributor to the gap in poor outcome between females with no SEN and females with SEN is the same as it is for males: pre-16 attainment in the Characteristics component. For females, however, Level 6+ achievement has more importance than it does for males. As for good outcome, more of the gap in poor outcome for females is explained by the socioeconomic, demographic and education factors than for males.

Discussion

Summary of key findings

The information presented in Section 1 summarises how those with a statement of SEN, those with SEN without a statement and those not identified with SEN differ in socioeconomic status, demographics and educational participation and achievements; factors which are known to affect labour market outcomes. The descriptive analysis in Section 2 shows that labour market outcomes are considerably better (higher chance of good outcome and lower chance of poor outcome) for those with no SEN compared to those with SEN without a statement even when accounting for factors such as ethnicity, socioeconomic status and highest level of educational achievement. The gaps in labour market outcomes are even larger when comparing those with no SEN to those with a statement of SEN.

This suggests that no single factor drives these labour market differences and that multiple factors compound them so that the observed outcomes between those with SEN and those without are not directly comparable. The regression analysis seeks to address this by comparing SEN groups on a like for like basis, taking into account socioeconomic, demographic and education differences so we are comparing similar individuals who otherwise differ only in the identification of SEN.

We find that males and females with no SEN still have a higher chance of good outcome and lower chance of poor outcome than either SEN group after controlling for socioeconomic, demographic and education factors. The gaps between no SEN and those with SEN without a statement are much reduced, but there are still substantial differences in the probability of both good and poor outcome between those with no SEN and those with a statement of SEN.

Although the observed gaps in good outcome between those with no SEN and those with a statement of SEN are bigger for females than they are for males, controlling for all socioeconomic, demographic and education factors reduces this down so there is an equal gap for both genders i.e. the observed differences in good outcome between males and females is solely driven by these factors.

The decomposition analysis provides further insight into this, showing that most of the gaps in both good and poor outcome between those with SEN and those without is explained by the different compositional makeup (the Characteristics component) of the groups. The returns to each of these socioeconomic, demographic and educational characteristics (the Returns component) has little importance in explaining the differences in good and poor outcome between those with and without SEN.

Irrespective of gender or SEN category, it is clear that differences in pre-16 (KS2 and KS4) attainment explains the majority of these gaps, with the proportions achieving at least degree level adding to this. Socioeconomic status has some importance for those with SEN without a statement (compared to those with no SEN), but the other demographic factors have very little importance.

The regression and decomposition analyses show that although difference in pre-16 attainment make up a large proportion of the outcome gaps between those with and without SEN, there is a residual component not measurable in the administrative data and this works against those with SEN, or in favour of those with no SEN. This means that the unmeasured differences are explained by other factors such as sociocultural factors (e.g. family/social or societal circumstances, aspirations and expectations, networks, personal choice), discrimination in the labour market or factors more directly related to individuals' special educational needs.

The definition of good outcome used in this analysis includes steady employment and upper quartile earnings. This may not be a reasonable objective for some individuals identified with SEN, particularly those with the most severe needs. For this reason, we would expect there to be at least some gap in good outcome between those with no SEN and (particularly) those with a statement of SEN. Similarly, those identified with SEN may be more likely to be in a poor outcome than those with no SEN as the out-of-work benefits used include some which are available to those with disabilities or long-term health concerns that affect the ability to work.

Primary type of need is not examined in this chapter, and it may be that there are large differences in the probability of good or poor outcome for different types of need within the two SEN categories. Also, while the highest cumulative level of education by the outcome year is used in this analysis, the point at which the education was achieved is not measured. It may be that some individuals in the SEN categories have achieved the same level of education as those with no SEN but at a later age and this may not yet be reflected in their labour market outcomes.

There are several caveats as to which individuals are included in each category: an individual's SEN category is not static throughout their schooling and is only used in the GCSE year for this chapter; the SEN categories used in the SEN Code of Practice 2002 relate to educational needs and there may be cases of, for example, disabilities which could affect labour market outcomes, or educational needs which do not affect interaction with the labour market, or needs which were not identified at school.

This chapter highlights the socioeconomic, demographic and education factors which are most important in understanding the labour market outcomes of those with SEN. The analysis in this series provides valuable insight into the labour market outcomes of

different groups, which is a fundamental part of delivering the government's mission to break down barriers of opportunity for all.

Next steps

Further work is needed to try to understand what some of these remaining factors are in order to fully understand the differences leading to unequal outcomes in the labour market. The analysis could be repeated examining labour market outcomes for primary SEN needs, but this would necessitate using later KS4 cohorts resulting in a trade of with when outcomes can be measured. Including more detailed labour market information, for example experience and occupation, would be one way to investigate labour market discrimination further. Employment spells and earnings (capturing experience) and sector worked is available in LEO, but not occupation data. There may be other opportunities as more administrative datasets are linked together. In terms of investigating the importance of sociocultural factors, linking to survey and cohort study data would be the best approach. For example, the annual survey of hours and earnings (ASHE) contains information on working patterns which could be important, especially when looking at gender differences. Equally, the Longitudinal Study of Young People in England (and other cohort studies) or PISA have information on family circumstances, motivations, wellbeing, parental aspirations etc.

Other follow up analysis such as heterogeneity analysis could be used to investigate whether the patterns hold for differ for sub-groups, for example different locations, different ethnic groups or other demographic variables, or different education outcomes.

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