

## Behind the numbers: Understanding how social inequalities in education and the labour market come about

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*Understanding the factors behind the persistence of social inequalities in education and the labour market is essential if we are to develop effective policies to tackle them. This Briefing presents key results from two ESRC-funded research programmes which used large-scale quantitative data to investigate the extent of social inequalities and the role of individual, family, school and area-level factors. The Briefing also points out how the current limited availability of data in Scotland is undermining researchers' capacity to provide a strong knowledge base to inform future policy decisions.*

- Educational attainment and the type of curriculum studied in secondary school are two important factors that explain social inequalities in education and labour market outcomes.
- The lower attainment and lower take-up of academic subjects by less advantaged pupils is a social justice issue, but it is also a pedagogic issue which has not had the attention it deserves. We should be asking how can we teach academic subjects to all young people, whatever their family background?
- The extent of inequalities stemming from family background is not fully captured either by area-level indicators (such as SIMD) used in official statistics or by the limited parental information in survey and administrative data. These data generally underestimate the family effect.
- Using data on siblings provides better estimates of the extent to which families matter for individuals' outcomes. Analysis of sibling data shows that in Scotland, family factors explain 40% of the variation in the chances of gaining a university degree and 36% of the variation in occupational outcomes.
- In Scotland social inequalities in the labour market are mainly explained by differences in educational attainment between more and less socially advantaged young people: tackling inequalities in education is essential to equalise outcomes in the labour market.
- Inequalities in graduates' labour market outcomes can be explained by their different labour market pathways. Compared with those from more advantaged backgrounds, graduates from disadvantaged backgrounds graduate later and from less selective universities, have more turbulent transitions with spells of unemployment and non-graduate jobs.
- Education policies and practices need to be guided by empirical evidence; this requires quantitative data based on large-scale data and nationally representative samples if we are to understand the mechanisms behind the reproduction of social inequalities.
- After many decades in which Scotland led the way in the collection and use of high-quality quantitative data on education and youth transitions, there are growing concerns about the current limited availability of data as well as the difficulties in accessing existing data.

**Introduction**

Scotland, like many other countries, has experienced a continuous expansion of education. Despite this expansion and the great emphasis the Scottish Government has put on closing the attainment gap and improving the life chances of all children, social inequalities in education have reduced only to a limited extent. This is for at least two reasons. The expansion of education has only postponed the point of selection: while in the past this occurred early, at compulsory level, nowadays it occurs at upper-secondary and tertiary levels. The second reason is linked to the institutional and curriculum differentiation of the education system. The increasing number of people from lower social classes who stay on in education tend to choose vocational subjects, sit a lower number of exams, and, when they enter higher education, they are concentrated in less prestigious institutions and sub-degree level programmes.

**Double disadvantage: lower attainment and lower take-up of academic subjects**

Data published by Audit Scotland (2021, Exhibit C) show the extent of the attainment gap in Scotland (below).

In 2018/19, the percentage of school leavers achieving 5 awards or more at SCQF level 5 (National 5 and equivalent qualifications) was 36.2 percentage points lower for school leavers from the most deprived neighbourhoods than for school leavers from the least deprived neighbourhoods (see figure 1). The gap between the same two groups was 38.9 percentage points when comparing the achievement of 3 awards or more at SCQF level 6 (Highers and

equivalent qualifications), which is usually considered the minimum requirement for entering university in Scotland.

An important issue which has been largely overlooked by policy makers is the stark differences between more and less advantaged pupils in the subjects studied in secondary school. Pupils from more advantaged social backgrounds study a larger number of academic subjects (such as languages, English, maths and science) which enhance their chances of entering university, in particular prestigious universities (Iannelli, Smyth and Klein,

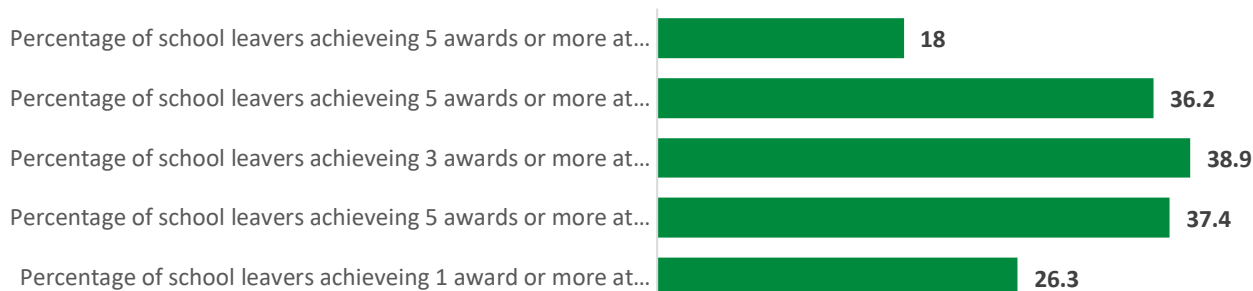
2016), and acquiring professional and managerial occupations (Iannelli, 2013). One justification often put forward for the lower propensity of pupils from more disadvantaged backgrounds to take academic subjects at school is that they are less interested and/or less likely to be academically successful in these subjects. In 2007, the OECD report *Quality and Equity of Scottish Schooling* questioned whether there was an ‘academic bias’ of Scottish schools.

Professor Raffe’s answer was:

‘There is little evidence that this ‘bias’ is responsible either for pupil disengagement or for inequalities in attainment; pedagogy is far more important’ (p. 99, Raffe, 2015).

We should ask: how can we teach academic subjects to young people who do not have familiarity with these subjects or cannot benefit from family support when studying these subjects? The lower attainment and lower take-up of academic subjects by less advantaged pupils is not only a social justice issue but also a pedagogic issue which has not received the attention it deserves.

**Figure 1: The attainment gap between pupils from the most and the least deprived areas (year 2018/19)**



All this points towards the importance of education policies and practices to combat social inequalities. As stressed by UNICEF (2018):

‘Education policies and practices can reduce or reinforce educational inequalities stemming from children's starting points and ongoing family circumstances.’

But good policy decisions require robust empirical evidence and reliable knowledge, to avoid being driven by personal opinions, anecdotal evidence and individual experiences.

### **The importance of quantitative evidence**

Quantitative research based on large-scale data and nationally representative samples is particularly important for informing policies aimed at reducing inequalities. A rigorous and careful analysis of these types of data can provide powerful and compelling explanations on how social inequalities in education and labour market come about as well as important evidence on what has and has not worked in the past and in other contexts to tackle inequalities.

This Briefing offers some examples of this quantitative evidence, drawing from the research conducted by an international group of researchers who worked together in two large ESRC-funded research programmes: the *Applied Quantitative Methods Network* (AQMeN) Research Centre (Grant No. ES/K006460/1) and the *Understanding Inequalities* project (Grant No. ES/P009301/1). In these two research programmes, longitudinal secondary data from multiple sources and from different countries were analysed using advanced statistical methods of data analysis. The aim was to uncover the complex nature of inequalities by analysing how individual, family, area-level factors and national institutional characteristics intersect with each other to reproduce inequalities.

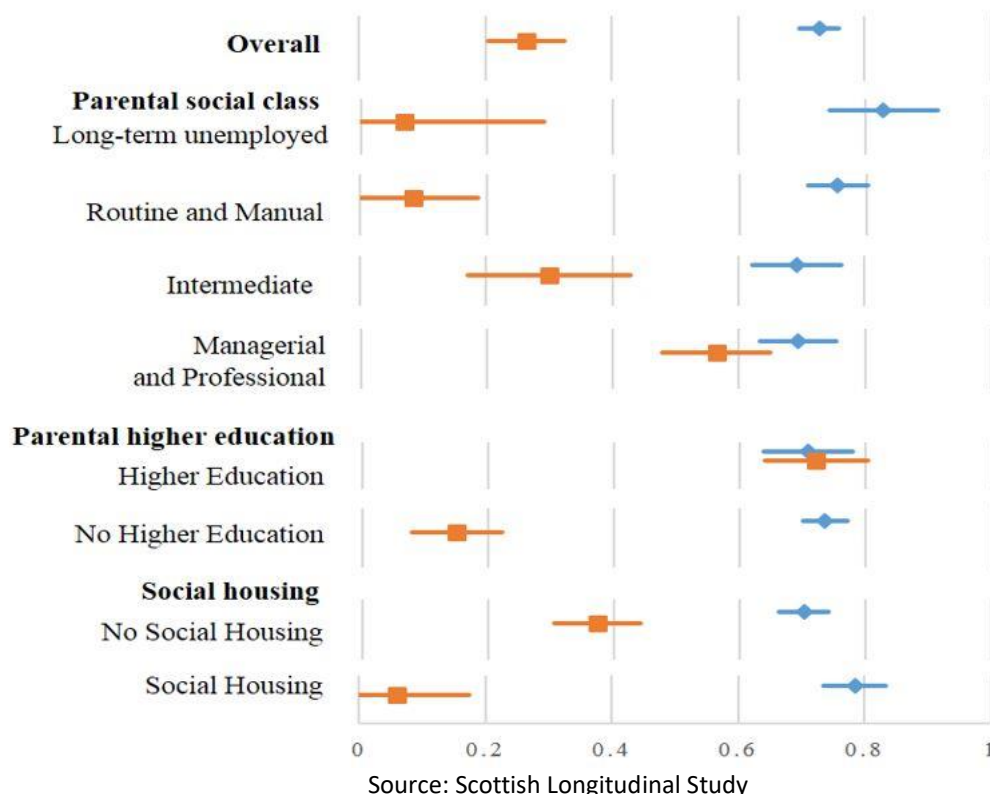
### **How much do family factors matter for pupils' educational outcomes?**

It is not easy to establish the extent to which family factors matter for people's outcomes. This is

because we often lack information about individual circumstances or this information is limited. Official statistics published by the Scottish Government on the attainment gap and inequalities in post-school destinations identify more or less advantaged pupils by the characteristics of their area of residence using the Scottish Index of Multiple Deprivation (SIMD). Such area-level data are crude and imperfect indicators of individual disadvantage because they do not capture a substantial number of disadvantaged individuals who do not live in deprived areas (see also CES briefing no.68). These statistics are likely to underestimate the full extent to which family background matters for young people's outcomes and are limited in their ability to identify students who are most in need of support. On the other hand, research based on individual-level data from surveys and administrative sources are not exempt from problems either. These data often contain limited information about family background characteristics and risk under-estimating the effect of family on young people's chances of attaining higher levels of education and good labour market outcomes.

The analysis of sibling data allows researchers to overcome some of these problems and provides better estimates of the extent to which family matters for students' educational outcomes. By measuring the extent of similarities or differences in the outcomes of siblings living in the same family, researchers are able to derive a summary indicator of the influence of all measured and unmeasured family characteristics shared by siblings since birth. This summary indicator thus takes into account not only the impact of the family factors that are measured in surveys and administrative data but also other family influences that are not captured in these data sources. Duta, Iannelli and Breen (2021) used sibling data from the Scottish Longitudinal Study, containing linked administrative data from three Censuses (1991, 2001 and 2011), to estimate the importance of family background for obtaining a higher education qualification in Scotland.

Figure 2: Proportions of sibling pairs having achieved the same outcome (*in blue*) and proportions of sibling pairs, among those who achieved the same outcome, who obtained a degree (*in orange*)



The results indicated that in Scotland about 40% of the variation in the chances of gaining a university degree could be attributed to shared family factors. However, only one-third of this family variation could be explained by the family information collected in the data, including parental occupation and education and living in social housing (proxy for economic disadvantage). This highlighted that other family factors which are not commonly available in administrative (but also survey) data are important in explaining the family effect and further research is needed to identify and include them in future data collections. Potential factors are: genetic endowment, parental rearing practices and parent-child relationship.

An interesting and surprising finding was that the degree of sibling similarity in gaining a university degree was very high across all sibling pairs, whatever their social origin: between 70% and 80% of siblings had the same outcome (Figure 2, in blue).

But the reason behind this strong sibling similarity was very different among respondents from different family backgrounds. Siblings of advantaged families were alike because they both had achieved a degree, while siblings from disadvantaged families were alike because neither of them had a degree.

Thus, while the majority of siblings with parents in managerial and professional occupations (56%) or highly educated parents (72%) both had a degree (Figure 2, in orange), only a small minority of siblings from the most disadvantaged families had both achieved a university degree (between 6% to 8% among those living in social housing or who had long-term unemployed parents or parents with routine manual jobs). This study highlighted the stark differences among Scottish families in the higher education opportunities available to their children.

### Social Inequalities in the labour market

Iannelli, Breen and Duta (2023, under review) used the same sibling data to establish the importance of family background for occupational outcomes and the role of education. The results of this study showed that 36% of the difference in siblings' occupational status is due to family background. However, siblings' educational attainment explained 70% of the social background effect on occupational attainment, indicating that the lower chances of obtaining high status occupations of siblings from disadvantaged families is mostly explained by their lower educational attainment.

Although these data might be seen as indicating that job allocation in Scotland is relatively meritocratic, it needs to be considered in conjunction with the other result reported above: that educational attainment in Scotland continues to be heavily dependent on social origin. Thus, social inequalities in education are the main mechanism through which the intergenerational transmission of social (dis)advantage occurs in the Scottish labour market.

### **Graduates' labour market outcomes**

Social inequalities in labour market outcomes also exist among higher education graduates, although to a lesser extent. Graduates from different social origins follow very different pathways in the labour market (Duta, Wielgoszewska and Iannelli, 2021). Less socially advantaged graduates tend to graduate later and to attend less selective higher education institutions and this reduces their chances of making more direct and smooth transitions to high professional and managerial occupations. They have more turbulent career paths, they spend a considerable amount of time in 'non-graduate' jobs and are more likely to experience spells of unemployment.

Job opportunities available in different areas are important too for maintaining or reducing social inequalities among graduates. In areas with higher employment opportunities and a higher percentage of professional and managerial jobs, social inequalities are narrower (Duta and Iannelli, 2018). In contrast, where professional and managerial jobs are scarce, inequalities are higher since graduates from more advantaged backgrounds are more likely to 'win the race' for gaining access to these jobs. Moving to areas with higher professional and managerial occupations then becomes a key factor for improving the job opportunities of graduates from lower social classes. Being spatially mobile is beneficial for all graduates, but it is particularly important for graduates from lower social classes.

### **The need for evidence to inform policy and practice**

The ability to provide the type of evidence presented in this briefing relies heavily on the collection of, and access to, large nationally representative data. In particular, data which combine individual, school and area information are needed to disentangle the importance of different factors operating at different levels. Moreover, longitudinal data which follow students during their educational career and in their transition to the labour market are essential to understand when and which policies are most needed to reduce inequalities.

Scotland had a long and strong tradition of collecting and making data available for research. In recent years, however, concern has grown about the limited availability of data. The Scottish Government has withdrawn from international surveys (TIMSS and PIRLS) and discontinued the Scottish School Leavers Surveys and the Scottish Survey of Literacy and Numeracy. Moreover, Scotland lacks linked education administrative records like the National Pupils Database in England which follow children as they progress through school. All of this has meant that the production of quantitative evidence to inform policies and practices aimed at reducing social inequalities in education and the labour market has been seriously hampered. Reflecting on the past fifty years of education in Scotland, Professor Raffe clearly highlighted this issue in one of his last pieces of writing:

'For a country that aims to encourage progression through the 3–18 curriculum, to encourage 'positive *sustained* destinations' (my emphasis), to promote 'flexible learner journeys', to improve pathways between school and employment, and to promote equity and social justice in all of these things, this absence of systematic evidence on policy processes and impacts is unfortunate.

The final lesson from the Scottish experience, therefore, is the importance of a strong knowledge base and an independent research capacity for any system that genuinely aspires to evidence-based improvement.' (p.107, Raffe, 2015).

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### About this Briefing

*This Briefing is based on the public lecture given by Professor Cristina Iannelli at Moray House School of Education and Sport, 15th November 2022. It was the fifth Memorial Lecture in honour of the late Professor David Raffe, former director of CES. The lecture is available at [https://media.ed.ac.uk/media/David+Raffe+Memorial+Lecture+2022/1\\_ge96y3rh](https://media.ed.ac.uk/media/David+Raffe+Memorial+Lecture+2022/1_ge96y3rh)*

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