

Choice, Attainment and Positive Destinations: Working Paper No. 5

DO FAMILIES MATTER? AN EXPLORATION OF THE
DETERMINANTS OF LOWER SECONDARY SCHOOL SUBJECT
CHOICES UNDER THE SCOTTISH CURRICULUM FOR
EXCELLENCE

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1. Introduction

Scotland's *Curriculum for Excellence* (CfE) has been widely acknowledged as the most significant educational development in a generation (Priestley & Humes, 2010), with the potential to transform learning and teaching in Scottish schools. CfE, implemented in 2010, is a holistic, competency-based curriculum for children and young people aged 3-18 years. In common with recent international developments in education, CfE seeks to provide a broad, competency-based education suited to the demands of the 21st century and is underpinned by strong values relating to social equity. CfE aims to improve the breadth and depth of learning for young people in Scotland. Yet, evidence obtained from the analysis of data aggregated at school level shows that subject choice in the senior stages of secondary education in Scotland narrowed under CfE (e.g., Shapira & Priestley, 2018).

In Scotland, as in the rest of the UK, there is no standardised certification system in which students need to take a certain number of compulsory subjects to complete secondary education and qualify for entry to Higher Education. There is also no formal selection and tracking into academic versus vocational subjects. Young people are offered a university place based on a combination of their achievements and subject choices (e.g., Iannelli et al., 2016). Thus, subject choice effectively replaces formal tracking into academic and vocational subjects and becomes an important factor in the reproduction of socio-economic inequality (Iannelli & Smyth, 2017). Existing research evidence on the curriculum choices of young people shows that, prior to the implantation of CfE, these choices were socially patterned by family background. There are differences in subject uptake by parental social class and the social inequalities in subject choice in S3/S4 are also reproduced in S5/S6 (Iannelli et al., 2016; Playford et al., 2016). Therefore, the emerging evidence is that the narrowing of subject choice under CfE could be particularly detrimental for young people from less advantaged socio-economic backgrounds and affect their prospects of making a successful school-to-work transition and entering Higher Education.

Recent research at aggregate school level finds that more deprived schools, in terms of School SIMD, have been more impacted by curriculum narrowing under the CFE (Shapira & Priestley 2020). However, until now research has not been conducted at the individual pupil level. The aim of this paper is to explore the relationship between the students' socio-economic background, and the number of subjects they select at age 15 for National 3, 4 and 5 level qualifications, over the period of the implementation of CfE (2011-2014), thus examining whether the reduction in subject choice in the fourth year under CfE is socially stratified.

2. Literature Review

2.1. Curriculum For Excellence and subject choices

Prior to the introduction of CfE, students in the first phase of senior NQs (third and fourth years of secondary schooling – S3 and S4) were enrolled for two qualifications at Standard Grade (across the Scottish Credit and Qualifications Framework (SCQF) levels 3, 4 and 5). Since the 1980s, the majority of schools have enrolled S3/4 students into 79 Standard Grade qualifications, at SCQF levels 3 (Foundation), 4 (General) and 5 (Credit). Generally, students were enrolled for dual entry (Foundation/General or General/Credit). Unfortunately, statistics from the Scottish Qualifications Authority (SQA) do not reflect this dual enrolment. Instead, the data displays the qualification level for which the student received accreditation. For example, if a student was registered for Foundation and General levels, but failed General and passed Foundation, the enrolment statistic would report Foundation only. This tiered system offered borderline level students a safety net as it enabled them to try for the highest possible level within their ability, while providing the safety net of a lower level of qualification. At this stage students typically studied for 8 courses (8 subjects). These courses comprised 160 hours of study. In 1994 the Higher Still programme created another, separate pathway for NQ, Intermediate courses. These Intermediate levels were at SCQF levels 4 (Intermediate 1, at the equivalent SCQF level as Standard Grade General) and 5 (Intermediate 2, at the equivalent SCQF level as Standard Grade Credit). In the school year 2013/14, the implementation of new qualifications under the CfE led to the gradual disappearance of the dual pathway encountered at Standard Grade. The new qualifications provided a single pathway, a ladder of qualifications, with new NQs at levels 4 and 5 (National 4 and National 5, respectively). Access level 3 qualifications (National 3) and Higher (SCQF level) qualifications were relatively unchanged.

Prior to CfE, learners would typically sit eight subjects in S3-4. Under CfE, schools and students now have greater choice over the number, configuration, and levels of subject offered and enrolled in. Indeed, it is now more common for five or six subjects to be sat (e.g., Priestley & Shapira 2018). The only compulsory subjects at this stage are Mathematics and English and there are no compulsory subjects in S5 and S6. This enhanced choice and

flexibility was an explicit aim of CfE. However, this increase in individualisation may have had unintended consequences relating to social equity.

2.2. Subject choice and school characteristics

The introduction of CfE has increased variation across the Senior Phase in Scottish secondary schools in terms of subject enrolment and in the composition of subject entries made by students (i.e. a choice of academic vs applied/vocational subjects). The Senior Phase curriculum has become more differentiated by characteristics of schools (number of students on free meals, number of students with additional learning support needs, teacher–student ratio and overall number of subjects available in school), than prior to the introduction of new qualifications under CfE (Shapira & Priestley 2019). The primary reduction in the number of subject entries and the number of subject choices in the Senior Phase took place during 2013–2014, when new National 3–5 level qualifications were introduced. Yet, the size of this reduction was not uniform. There was variation between schools of different characteristics, between areas with different level of deprivation and between local authorities.

The research evidence shows (ibid) such characteristics of schools as the proportion of students on free meals, proportion of students with additional learning support needs, teacher–student ratio and overall number of subjects available in school – provides significant predictors of the number of subject choices. Furthermore, the level of deprivation of a school’s postcode area (measured by the SIMD decile) has an additional effect on the number subject entered by students and on the composition of their subject choices, after accounting for the above school level characteristics (ibid).

Moreover, analysis of Scottish Government administrative education data (Shapira et al 2022) revealed that prior to 2013, the entries to the equivalent of National 5 qualifications in S5 and Higher qualifications in S6 weren’t associated with measures of the socio-economic disadvantage of the school area or with the characteristics the school’s student population. However, after 2013 the uptake of Higher qualifications in S6 have been more associated with disadvantageous characteristics of schools and the student population, than before. The findings indicate that since 2014, a higher uptake of National 5 qualifications (or the equivalent) in S4 was linked to a higher uptake of Higher qualifications in S5 and to a higher uptake of Advanced Higher qualifications in S6. At the same time the uptake of National 5 qualifications in S4 was negatively associated with the uptake of National 5 qualifications in S5 (ibid). Thus, not taking up enough National 5 qualifications in S4 meant that students

continued taking up National 5 qualifications in S5 and postpone taking some of their Higher qualifications until S6.

These findings offer an indirect indication that schools located in advantageous socio-economic areas and schools with more socially and economically strong body of students are following the 'traditional' (i.e., pre-CfE) patterns of qualifications uptake, where students were taking up most of their SCQF level 5 (National 5 or their equivalent) qualifications in S4; this facilitates taking more Higher qualifications in S5 and more Advanced Higher qualifications in S6 and thus allows student to more readily meet the expectations of Higher education entry requirements, where many Universities expect that qualifications at a certain level are being obtained in one year (or in one sitting).

2.3. Family level determinants of subject choice

The selection of school subjects under the previous Scottish secondary systems, and elsewhere in the UK, is found to be socially patterned; there are differences in subject uptake by parental social class and social inequalities in subject choice in S3/S4 are further reproduced in S5/S6 (Playford et al., 2016).

While students from more advantageous backgrounds might receive informed advice at home on subject choices, students from disadvantaged backgrounds tend to rely on schools for such advice (Vidal Rodeiro, 2019). Young people can be deliberately steered by teachers into choosing fewer subjects and less academic subjects, based on the teacher's subjective perceptions about their abilities and potential to pass exams and, for young people from disadvantaged backgrounds, such steering would be less likely to be counterbalanced by an alternative opinion from their family (Playford & Gayle, 2016; Hashim & Embong, 2015). Findings from existing research show that individual and family level characteristics of young people, such as their aptitude (approximated by prior attainment), their family socio-economic background, and their gender are all associated with the subjects they study at age 14-16 (Henderson et al. 2018). For example, prior attainment is positively associated with taking academic or 'facilitating' subjects and is negatively associated with taking applied or vocational subjects. The strong link between prior attainment and subject choices suggests that students are channelled into certain subjects based on their prior academic achievements. Yet, parental socio-economic background is linked strongly to the choice of subjects at age 14-15 and this association remains strong even when prior attainment is accounted for. For example, although the impact of social class on choosing STEM subjects decreases after

accounting for the impact of prior attainment, young people from more disadvantaged socio-economic backgrounds are still less likely to select STEM subjects and more likely to select vocational subjects than their peers from more advantaged socio-economic backgrounds (Henderson et al. 2018).

2.4. Research aim

CfE aims to improve the breadth and depth of learning for young people in Scotland. Yet, evidence obtained from the analysis of data aggregated at school level shows that subject choice in the senior stages of secondary education in Scotland narrowed under CfE (e.g., Shapira & Priestley, 2018). Existing research evidence on the curriculum choices of young people shows that, prior to the implementation of CfE, subject choices were socially patterned by family background (Iannelli et al., 2016; Playford et al., 2016). Therefore, emerging evidence of the narrowing of subject choice under CfE could be particularly detrimental for young people from less advantaged socio-economic backgrounds and affect their prospects of making a successful school-to-work transition and entering Higher Education.

The aim of this paper is to explore the relationship between 4th year students' socio-economic background, and the number of subjects they select at age 15 for National 3, 4 and 5 level qualifications, over the period of the implementation of CfE (2011-2014), thus examining whether the reduction in subject choice under CfE is socially stratified.

3. Methodology

3.1. Data

The SLS sample is made up of 5.3% of the Scottish population selected using 20 dates of birth. The dataset provided from the SLS comprises young people who were born between 1996 and 2000, and who went through the upper stages of secondary education (S3-S6) in years 2011-2014(15). Family background information was available from the 2011 census and subject choices from administrative education data. SLS linked datasets have no identifiable individual level data and are derived from linkages that are anonymised prior to handover to the research team.

This dataset allows us to obtain longitudinal information on subject choices, attainment and transition from school and early destinations of cohorts of young people aged 15 to 19 and

the impact of parental socio-economic background on these. Further, the dataset holds data on young people who completed qualifications under the pre-CfE curriculum and those who completed NQs under CfE. This allows us to make comparisons between the number of subjects taken by students under the two systems. Our preliminary investigation of the SLS data, after the consultation with the SLS research support unit, shows that there are 20,000 members in the SLS sample who were born between 1994 and 2002 and, for 16,000 of these, attainment data and School Census data is linked. The linkage rate therefore is 80%, and the SLS clarified that the majority of cases for which the data were not linked were either those who did not stay in secondary education in Scotland or those who migrated to Scotland after 2011. Therefore, the subsample of those for whom education data was linked is representative for young people from the respective birth cohorts who lived in Scotland before 2011 and went through the secondary education in Scotland during years 2009-2019. These data provide us with a sufficiently large representative sample overall and for each cohort.

3.2. Variables

Subject choices: we counted all subjects selected at SCQF levels 3,4 and 5. Subjects were counted even if the student did not obtain a pass in that subject as we are interested in the number of subjects selected by the student. This helps us to explore if there has been any changes to the number of studies selected to study by students following curriculum change.

Subject passes: To compare subject choices at different levels we must then use subject passes. This is because under the standard grade system students typically sat two levels simultaneously (either General and Foundation, or General and Credit). As a result, we cannot directly compare choices at different levels. So, the comparisons between each level focus on the number of subjects attained by students at each SCQF level. To make comparisons between the two systems at different qualification levels we use SCFQ levels. Table 1 highlights the SCQF level for awards (the difficulty of learning involved in achieving a qualification) under both the pre-CfE and CfE system. Although it has been argued that the awards under the two systems cannot be directly compared. We have accommodated for this by focusing on passes rather than the grade of a qualification (e.g. analysing the proportion of those who attained A-C at National 5 compared with those who attained a 1 or 2 at Standard Grade Credit).

Table 1: SCQF qualifications and levels

SCQF Level	Pre-CfE	CfE
SCQF Level 3	Standard grade Foundation, Access 3, SCQF Level 3	National 3, Access 3, SCQF Level 3
SCQF Level 4	Standard grade General, Intermediate 1, SCQF Level 4	National 4, Intermediate 1, SCQF Level 4
SCQF Level 5	Standard Grade Credit, Intermediate 2, SCQF Level 5	National 5, Intermediate 2, SCQF Level 5

Independent variables:

At the student level, we have variables on:

- Gender
- Siblings
- Born in the UK
- Free School Meal registration
- Additional Support Needs
- Long-term illness or disability

At the family level we have variables on:

- Deprivation dimensions of the household
- Parental marital status
- Parental highest education qualification
- Parental highest NS-SEC

At the school level, we have variables on:

- the SIMD decile

3.3. Method

The analysis focuses on a comparison between two cohorts of young people – those who went through the S4 in the 2011-2012 school year, prior to the introduction of CfE, and those who went through S4 in the 2014-2015 school year. The data was analysis in a secure data centre and results then went through statistical disclosure checks before being released. We

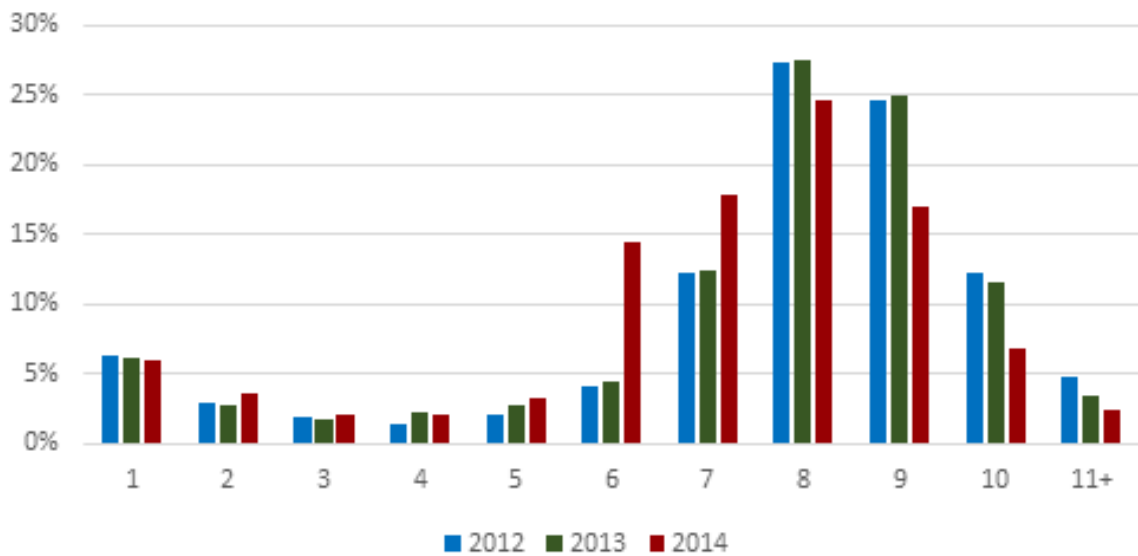
used descriptive methods of statistical data analysis and regression modelling in order to explore the relationships between family background and the number of subjects studied, and whether this relationship changes over time with the introduction of the new NQs system under CfE. As our dependent variables are a count we use Poisson regression. Poisson regression is a generalised linear model form of regression analysis used to model count data. Interaction effects with year are used to examine whether the relationship between the independent variables and number of subjects changes after the implementation of CfE. Interaction effects occur when the effect of one variable (e.g. socioeconomic status) varies based on the value of another variable (e.g. year).

4. Findings

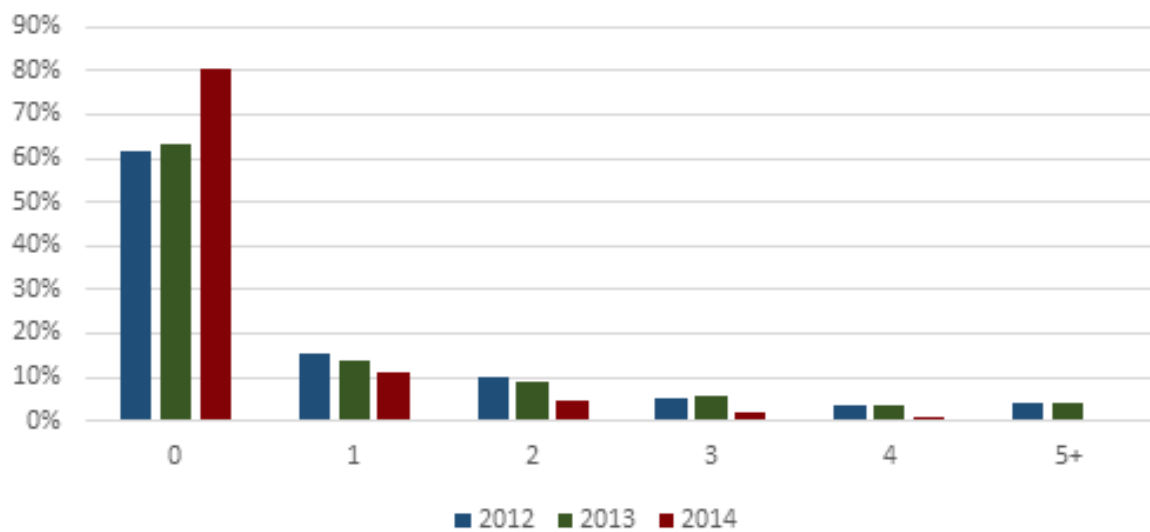
4.1. Number of subjects over time

Figure 1 shows the proportions of fourth year students taking subjects at SCQF levels 3, 4 and 5 combined and separately in each year between 2012-2014. To meet the statistical discourse guidelines of the SLS, the highest categories in the outcome variables have been merged so that no group has fewer than 5 cases; because of the different distributions of the outcome variables, the highest category is different across the variables. The upper panel shows the subject choices at levels 3, 4 and 5 combined; there is a clear spike in the proportion of students taking 6 and 7 subjects in 2014, with fewer students taking 8 or more subjects. This reduction in subject choices is in line with the previous literature, using aggregate data, that found a reduction in subject choices after CfE implementation (Secondary School Survey 2017; Shapira & Priestley, 2018, 2019). The count of subjects attained at the different SCQF level show that, after the introduction of CfE at the senior phase, a higher proportion of students are attaining no level 3s and 4s and a smaller proportion are attaining no level 5s.

Number of subject entries per fourth year student
(SCQF levels 3, 4 and 5)



Number of SCQF level 3 subjects passed per fourth year student



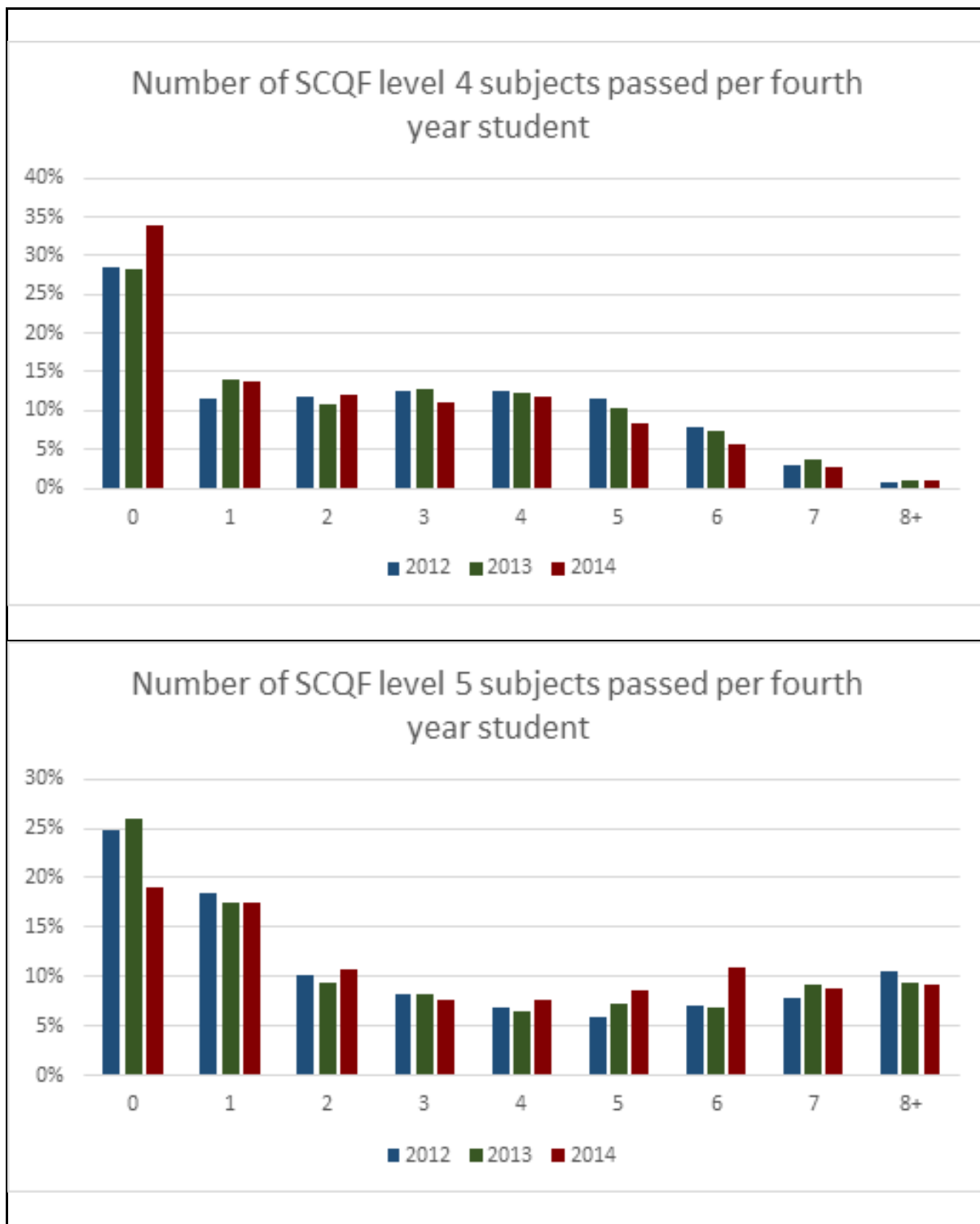


Figure 1: Proportion of students taking each number of subjects at SCQF level 3, 4 and 5 over time (Source: Scottish Longitudinal Study)

4.2. Average number of subjects at different levels by key demographics

When considering the average number of subjects attained by fourth year students over time, as shown in **Figure 2**, we see a slight decrease in the average overall number of subjects, which seems to be led by average decreases in numbers of level 3 and 4 subjects; by contrast,

there is a slight increase in the average number of level 5 subjects. This suggests that, under CfE, students and schools may be focusing on attaining a narrower range of subjects at a more advanced level.

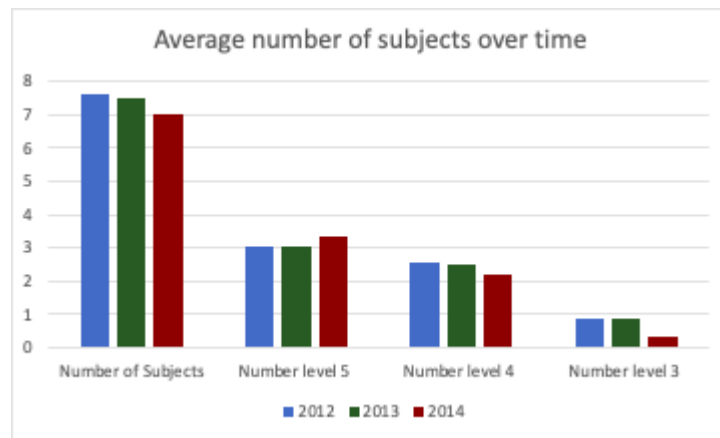


Figure 2: Average number of subjects taken by students at SCQF levels 3, 4 and 5 over time (Source: Scottish Longitudinal Study)

We then examine the average number of subjects over some key demographic variables (see **Figure 3**). We find that the total number of subjects at levels 3, 4 and 5 combined remains relatively stable within each year across the demographics; however, there is some evidence that those from the most advantaged National Statistics Socio-economic Classifications (NS-SEC) are taking slightly fewer subjects over all in all years. We can also see a notable drop between the years, with students in 2014 taking fewer total subjects on average. In each year, those who do not receive free school meals attain more level 5s and fewer level 3 and 4s. However, over time we see that the balance of level 3 four and 5 subjects has shifted for those who receive free school meals, with the average number of level 5s increasing, while the average number of level 3s and 4s drops. This shifting balance of subject levels is also true of those who have ASN. However, over time those students with ASN on average still pass more level 3s and 4s and fewer level 5s than their classmates without ASN. Looking at socio economic background, we again see more of a shift in subject configurations for those in the less advantaged groups, as a result of more level 5s and fewer level 3s being passed.

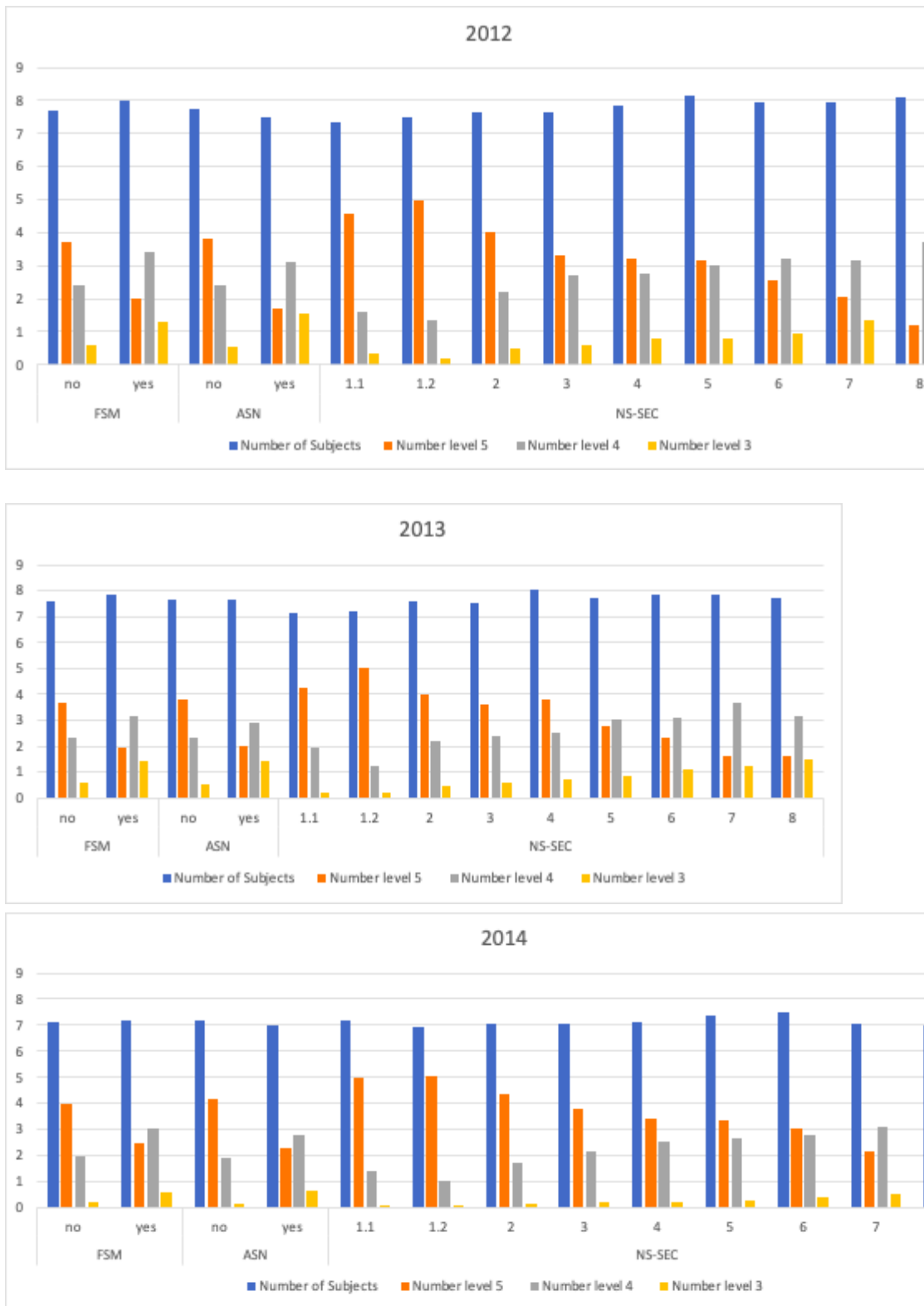


Figure 3: Average Number of Subjects taken by students at SCQF levels 3, 4 and 5 by Key Demographics Over Time (Source: Scottish Longitudinal Study)

As shown in **Figure 4**, when we look at the average number of subjects by schools SIMD, we find that, in all years, students in schools in more advantaged areas pass more level 5s and

fewer level 3s. Over time we see that changes in subject level configurations are more noticeable in less advantaged schools, particularly in SIMD 4 and 5, with more level 5 being passed on average in 2014. Overall, we see that across all groups, within the context of an overall reduction in the number of subject choices, more level 5s and fewer level 3 subjects are passed and this change seems to most affect less advantaged students.



Figure 4: Average Number of Subjects taken by students at SCQF levels 3, 4 and 5 by SIMD decile Over Time (Source: Scottish Longitudinal Study)

4.3. Regression Analysis

The descriptive graphs above indicate, and regression analysis (not shown) confirms that there is no significant difference in the number of subjects between 2013/14 and 2012/13. But there is a difference between 2014/15 and 2012/13. Possibly to do with the curriculum changeover not being fully implemented in its first year and its rollout not being uniform across schools (BBC News, 2013). We therefore now turn to compare 2012/13 (year before implementation) and 2014/15 (year after implementation, dropping 2013/14 (the implementation year)). **Table 2** shows a series of regression models where the outcome variable is number of subjects studied by S4 students at SCQF levels 3, 4 and 5 combined, with different combinations of explanatory variables. In all models, being in year 2014/15 as opposed to 2012/13 has a statistically significant negative effect. This supports previous analysis of aggregated administrative data sets that show curriculum narrowing in S4 under CfE. Model 4 shows that those who attend schools in the most deprived SIMD deciles take more subjects overall; however, interactions between year and SIMD are not significant, suggesting that the effect of school SIMD does not vary over time. There are no other statistically significant main effects of the other student or family level variables, or interaction effects between these variables and year. This suggests, overall, that curriculum narrowing in S4 was experienced by students from all backgrounds. We then considered curriculum narrowing at different levels by repeating the analysis separately for the number of subjects passed at SCQF level 3, SCQF level 4 and SCQF level 5.

Table 2: Poisson Regression Number of subjects at SCQF level 3, 4 and 5 (Source: Scottish Longitudinal Study)

	1	2	3	4
<i>Student level</i>				
Year 2014	-0.08***	-0.08**	-0.10*	-0.11*
FSM		0.04	0.01	0
ASN		-0.01	-0.01	-0.01
FSM_14		0	0.01	0.01
ASN_14		0	0.01	0.01
Female		0	-0.01	-0.01
COB UK		-0.26	-0.23	-0.23
Siblings		0.01	0.02	0.02
LTID		0.01	0.02	0.02
Female_14		0.02	0.02	0.03
COB UK_14		0.08	0.05	0.06
Siblings_14		-0.01	-0.01	-0.01
LTID_14		-0.04	-0.06	-0.06
<i>Social stratification</i>				
Deprivation			-0.02	-0.02
Parent Uni			-0.03	-0.02
Parent Couple			-0.01	-0.01
NSSEC 1.1/1.2			-0.03	-0.02
NSSEC 4			0.04	0.05
NSSEC 5			0.06	0.06
NSSEC 6			0.03	0.02
NSSEC 7			0.04	0.03
NSSEC 8/unc			0.05	0.04
Deprivation_14			0.03	0.03
Parent Uni_14			0.02	0.01
Parent Couple_14			0	0
NSSEC 1.1/1.2_14			0.02	0.01
NSSEC 4_14			-0.05	-0.05
NSSEC 5_14			-0.01	-0.02
NSSEC 6_14			0.01	0.02
NSSEC 7_14			-0.07	-0.07
NSSEC 8/unc_14			-0.08	-0.08
<i>School level</i>				
SIMD				-0.01*
SIMD_14				0
_cons	2.05***	2.04***	2.05***	2.09***
N	3817	3817	3817	3817
ll	-9092	-9088	-9075	-9072
aic	18188	18203	18214	18211
bic	18201	18291	18414	18424

legend: * p<.05; **p<.01; *** p<.001

At SCQF level 3 we found that, in all models, year had a significant negative effect (see Appendix for full models), meaning that students are passing fewer level 3 subjects post the introduction of CfE. The main effects of receiving free school meals and having additional support needs were positively significant, meaning that students in these groups pass more

level 3s than those not in these groups. Household deprivation, parental social class and education were also significant predictors, with less advantaged students passing more level 3s. Those whose parents lived as a couple also passed significantly fewer level 3s. Gender was also a significant predictor with girls passing fewer level 3s than boys.

The interactions between year and other selected variables are depicted (using margins plots) in **Figure 5**. The lines for 2012 are steeper than those for 2014, suggesting that, prior to the introduction of CfE, social stratification position was a stronger predictor of the number of level 3 qualifications passed. However, the Poisson regression models (see Appendix) found these interactions to be non-significant.

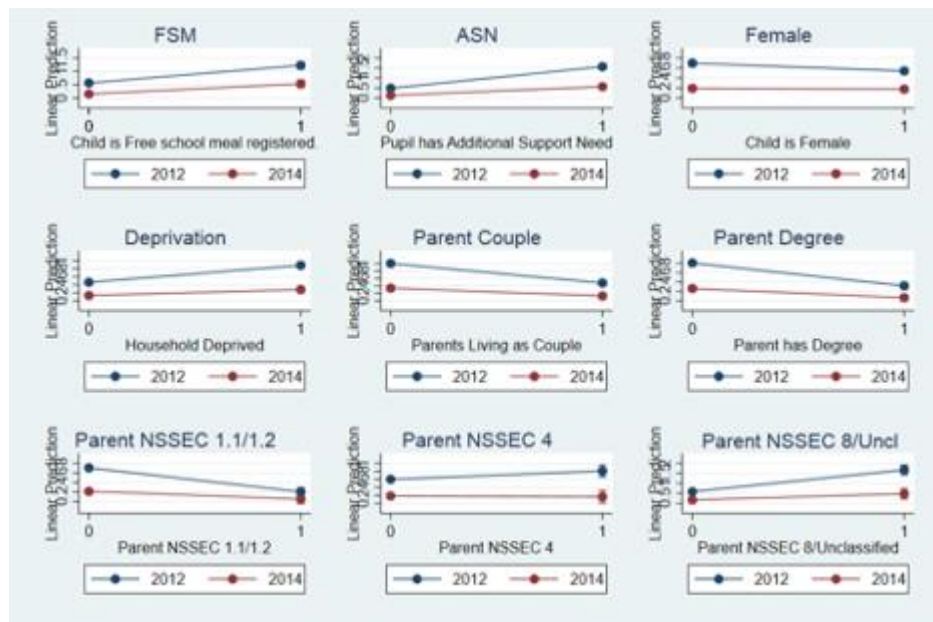


Figure 5: Predictive margins for selected interaction effects with outcome variable number of SCQF level 3s passed (Source: Scottish Longitudinal Study)

Regression modelling also showed that schools' SIMD was a significant predictor of the number of level 3s passed, with students attending schools in more deprived areas taking more level 3s. We also found some evidence that the impact of SIMD on number of level 3s passed increased post the introduction of CfE; however, this interaction became non-significant when individual level stratification position was controlled for.

At SCQF level 4, year also had a significant negative effect in the Poisson regression models (see Appendix), suggesting that the introduction of CfE led to fewer level 4s being passed overall. Similar to the level 3 regressions, the main effects of receiving free school meals and having additional support needs were positively significant meaning that students in these groups pass more level 4s than those not in these groups. Again, in line with the level 3

findings, more deprived students in terms of household deprivation, parental education, and social class take significantly more level 4s and girls and those whose parents live as a couple take significantly fewer.

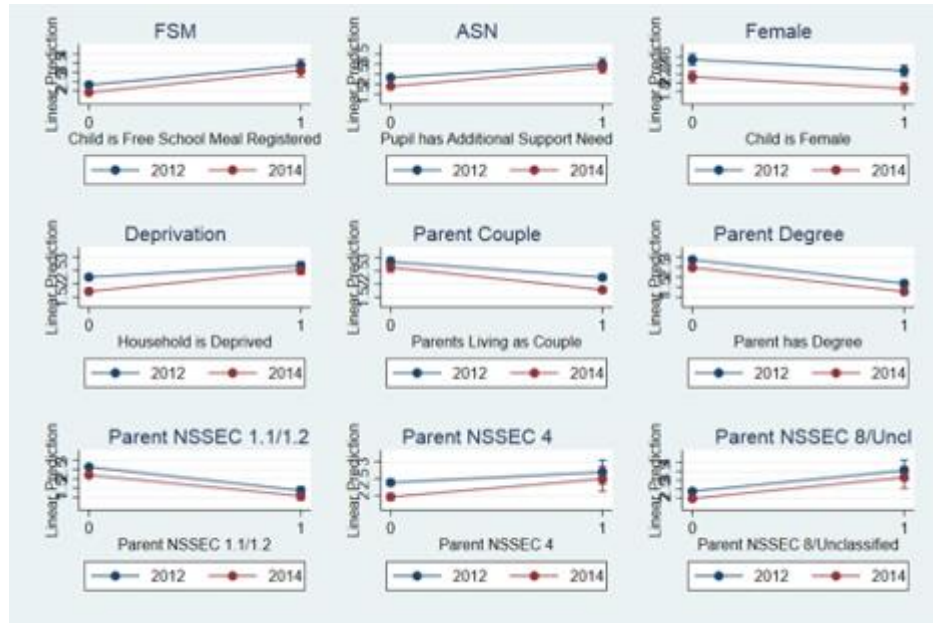


Figure 6: Predictive margins for selected interaction effects with outcome variable number of SCQF level 4s passed (Source: Scottish Longitudinal Study)

The interactions between year and other selected variables are depicted (using margins plots) in **Figure 6**. Poisson regression models (see Appendix) find the majority of these interactions are non-significant, with the exception of household deprivation and parents being a couple. In 2014 these factors have a larger influence on the number of level 4s passed.

Regression modelling again showed that schools' SIMD was a significant predictor of the number of level 4s passed, with students attending schools in more deprived areas taking more level 4s. We also found evidence that the impact of SIMD on number of level 4s passed increased post the introduction of CfE, even when individual level stratification position was controlled for.

The regression analysis for SCQF level 5 (see Appendix) shows that year has a significant positive effect, suggesting that, post the introduction of CfE, students are passing more level 5s. The main effects of receiving free school meals and having additional support needs were negatively significant, meaning students in these groups pass fewer level 5s than those not in these groups. However positive significant interaction effects with year suggest that the influence of these categories on the number of level 5s passed has reduced after the

introduction of CfE. Less advantaged students in terms of parental social class, education and household deprivation pass significantly fewer level 5s, whereas girls and those whose parents live as a couple pass significantly more level 5s. These variables do not have significant interactions with year (see **Figure 7**). Schools SIMD has a significant positive main effect showing those in schools in more advantaged areas pass more level 5s but the interaction between school SIMD and year is not significant suggesting this effect does not vary over time.

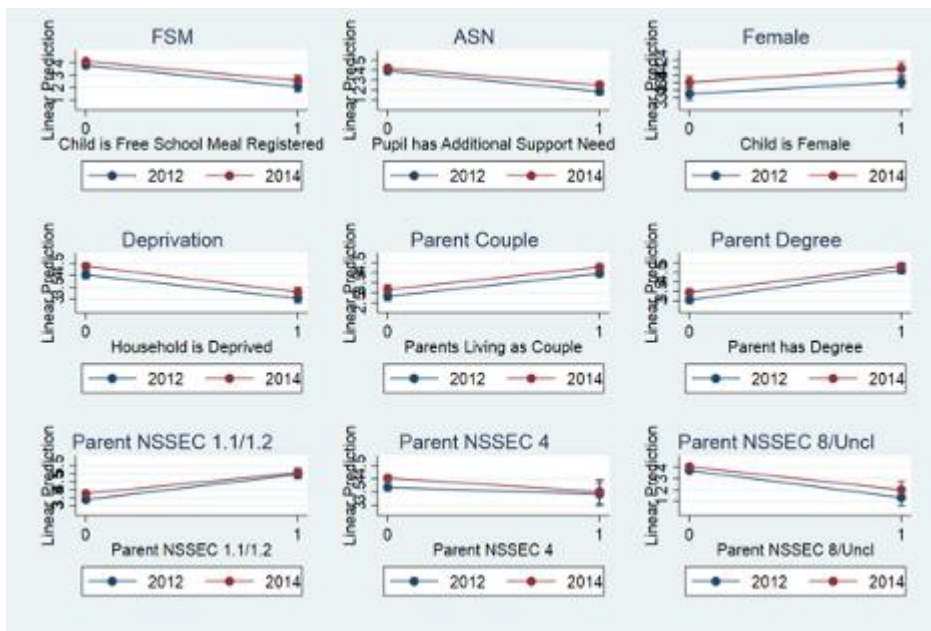


Figure 7: Predictive margins for selected interaction effects with outcome variable number of SCQF level 5s passed (Source: Scottish Longitudinal Study)

Finally, we undertook regression analysis to explore if there is evidence that students are focusing on a smaller number of subjects at more advanced levels under CfE. The main effects for the number of level 3, 4, and 5 subjects passed were positively significant, showing that more passed subjects is associated with more subjects taken. The interaction effect with year for level 4 was not significant but for level 3 it was positively significant and for level 5 it was negatively significant (depicted in **Figure 8**). The interactions support a conclusion that post-CfE students may be focusing on attaining fewer subjects at higher levels.

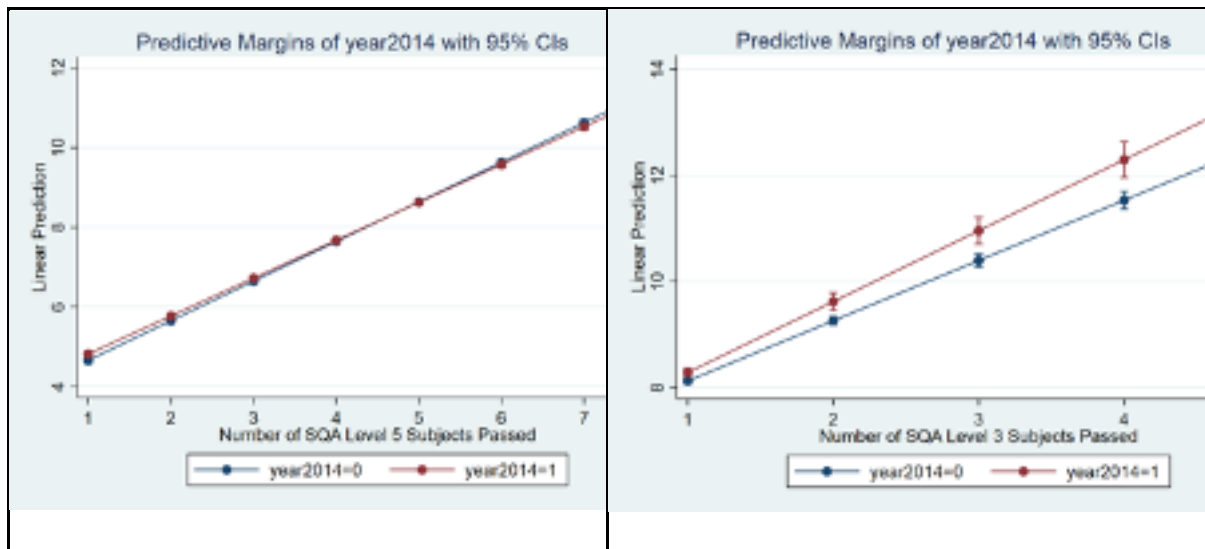


Figure 8: Predictive margins for interaction effects between year and Number of SCQF level 3 and 5s with outcome variable number of total number of subjects (Source: Scottish Longitudinal Study)

5. Conclusions

In summary, our findings support previous findings that under CfE the curriculum is narrowed for fourth-year students. When we considered this narrowing by SCQF level descriptive analysis showed that the reduction in overall number of subjects seemed to be related to a drop in the number of level 3 and 4 subjects take rather than level 5s, with the number of qualifications at SCQF level 5 passed slightly increasing over time. These findings were then confirmed by the regression analysis. This suggests that, under CfE, students may be focusing on a smaller range of subjects at higher levels. Further evidence of this was found using regression analysis, which showed a negative significant interaction between year and number of SCQF level 5s passed, when predicting overall number of subjects.

Our qualitative data (Priestley et. al. 2022) suggest that students studying levels below level 5 were disadvantaged because limited resources were assigned to those studying National 5 level or above because schools continue to be judged according to their '5 at' attainment statistics (i.e. number of students attaining 5 National 5's and 5 Highers). Headteachers from high attaining schools reported that provision of lower-level courses was impacted by financial constraints, for example, their schools could run discrete National 5 and Higher courses but were unable to timetable National Progression Awards because of financial constraints.

This paper set out to investigate whether curriculum narrowing was socially stratified by students' family characteristics. Regression analysis predicting the total number of subjects taken in S4 showed a significant negative effect of year, again confirming curriculum narrowing under CfE. It also showed a significant negative effect of school SIMD, again confirming previous findings that school-level deprivation influences the number of subjects taken in S4. However, we did not find evidence of student level socio-economic status influencing the overall number of subjects taken. This suggests that the overall reduction in subjects is more related to school-level than student level characteristics.

Indeed, descriptive analysis showed that, across all groups within the context of an overall reduction in the number of subject choices, more SCQF level 5 and fewer SCQF level 3 subjects are passed, but this change has had the most impact on less advantaged students.

Thus, the focus on a smaller number of subjects may allow for students and schools to focus on achieving at higher levels, and this may be particularly consequential for those from less advantaged backgrounds, who previously took more lower-level subjects.

Less advantaged students are still passing more SCQF level 3 and 4 than their more advantaged peers. Regressions, predicting number of SCQF level 3s passed and the number of SCQF level 4s passed, showed receiving free school meals and having additional support needs were positively significant, meaning that students in these groups pass more SCQF level 4s than those not in these groups. The reverse was found when predicting number of SCQF level 5s passed. More deprived students, in terms of household deprivation, parental education and social class, pass significantly more SCQF level 3s and 4s and fewer SCQF level 5s. Girls and those whose parents live as a couple pass significantly fewer SCQF level 3 and 4s and more SCQF level 5s.

Interaction effects with year were non-significant at SCQF level 3. At SCQF level 4, household deprivation and parents being a couple were found to have a larger impact in 2014, with those whose parents being in a couple and those who were not in a deprived household taking even fewer SCQF level 4s than pre-CfE. At SCQF level 5, the interactions showed that the negative impact of having ASN and Free school meals on the number of SCQF level 5s passed reduced slightly over time.

School-level SIMD was a significant predictor of SCQF level 3s, 4s and 5s passed, and this had a significant interaction with year for SCQF levels 3 and 4, which suggests that school level SIMD has become a more important predictor post-CfE introduction. From this, we can conclude that school-level characteristics are driving the reduction in subjects more than individual student situations under CfE.

6. Appendix

Table 1: Poisson regression models: Count of subject passes at SCQF level 3

	1	2	3	4	5	6	7	8	9	10	11	12	13
Year 2014	-1.17***	-1.26***	-1.28***	-1.23***	-1.39***	-1.15***	-1.08***	-1.23***	-1.34***	-1.18***	-0.91***	-1.24***	-1.26***
FSM		0.81***	0.76***	0.84***	0.79***			0.20*	0.12			0.12	0.03
ASN		0.59***	0.60***	0.59***	0.59***			0.53***	0.52***			0.51***	0.49***
FSM_14			0.24		0.21				0.28				0.28
ASN_14			-0.05		0.01				0.03				0.04
Female				-0.13**	-0.17**			-0.19***	-0.22***			-0.21***	-0.24***
COB UK				0.47	0.68			0.71	1.11**			0.62	1.00*
Siblings				-0.28***	-0.30***			-0.16**	-0.18**			-0.14*	-0.17**
LTID				-0.1	-0.03			-0.23*	-0.2			-0.26*	-0.23
Female_14					0.16				0.15				0.14
COB UK_14					-12.28				-18.78				-14.94
Siblings_14					0.1				0.16				0.19
LTID_14					-0.32				-0.17				-0.17
Deprivation						0.41***	0.39***	0.32***	0.34***			0.26***	0.28***
Parent Uni						-0.59***	-0.51***	-0.54***	-0.49***			-0.43***	-0.38***
Parent Couple						-0.43***	-0.40***	-0.38***	-0.36***			-0.35***	-0.35***
NSSEC 1.1/1.2						-0.69***	-0.72***	-0.63***	-0.66***			-0.55***	-0.58***
NSSEC 4						0.19	0.24*	0.17	0.22*			0.21*	0.25*
NSSEC 5						0.26*	0.23	0.32**	0.35**			0.28**	0.32**
NSSEC 6						0.19*	0.17	0.20**	0.18*			0.12	0.1
NSSEC 7						0.44***	0.37***	0.41***	0.36**			0.36***	0.32**
NSSEC 8/unc						0.44***	0.52***	0.37**	0.48***			0.29*	0.41**
Deprivation_14							0.08		-0.06				-0.08
Parent Uni_14							-0.37*		-0.33				-0.31
Parent Couple_14							-0.12		-0.06				-0.01
NSSEC 1.1/1.2_14							0.13		0.14				0.19
NSSEC 4_14							-0.29		-0.23				-0.18
NSSEC 5_14							0.09		-0.14				-0.2
NSSEC 6_14							0.1		0.13				0.12
NSSEC 7_14							0.25		0.27				0.19
NSSEC 8/unc_14							-0.37		-0.4				-0.47
SIMD										-0.17***	-0.16***	-0.09***	-0.09***
SIMD_14											-0.06**		-0.03
_cons	-0.49***	-0.71***	-0.70***	-0.46***	-0.44***	-0.27***	-0.29***	-0.21**	-0.20*	0.38***	0.31***	0.26**	0.25*
N	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817
ll	-3420.27	-3199.52	-3198.13	-3181.64	-3177.54	-3120.88	-3113.88	-2988.98	-2976.98	-3234.28	-3230.19	-2946.76	-2933.97
aic	6844.53	6407.03	6408.27	6379.28	6383.08	6263.75	6267.76	6011.96	6017.96	6474.56	6468.39	5929.52	5935.95
bic	6857.03	6432.02	6445.75	6429.26	6470.54	6332.47	6392.7	6118.16	6217.87	6493.3	6493.37	6041.97	6148.35

legend: * p<.05; **p<.01; *** p<.001

Source: Scottish Longitudinal Study

Table 2: Poisson regression models: Count of subject passes at SCQF level 4

	1	2	3	4	5	6	7	8	9	10	11	12	13
Year 2014	-0.19***	-0.20***	-0.22***	-0.18***	-0.18***	-0.18***	-0.15**	-0.19***	-0.17*	-0.20***	-0.01	-0.19***	-0.05
FSM		0.40***	0.36***	0.41***	0.38***			0.12**	0.13*			0.07	0.09
ASN		0.16***	0.13***	0.15***	0.11**			0.10***	0.06			0.09***	0.05
FSM_14			0.07		0.06				-0.02				-0.04
ASN_14			0.06		0.07				0.06				0.06
Female				-0.11***	-0.10***			-0.14***	-0.12***			-0.15***	-0.13***
COB UK				-0.16	-0.2			-0.08	0.06			-0.1	0.04
Siblings				-0.17***	-0.16***			-0.10***	-0.11***			-0.09***	-0.10***
LTID				0.04	0.05			0.01	0.07			0.01	0.08
Female_14					-0.02				-0.03				-0.04
COB UK_14					0.1				-0.36				-0.36
Siblings_14					-0.02				0.03				0.04
LTID_14					-0.04				-0.13				-0.13
Deprivation						0.14***	0.06	0.11***	0.03			0.08**	0.01
Parent Uni						-0.39***	-0.36***	-0.38***	-0.35***			-0.33***	-0.31***
Parent Couple						-0.10***	-0.03	-0.08**	-0.01			-0.06*	-0.01
NSSEC 1.1/1.2						-0.39***	-0.41***	-0.39***	-0.40***			-0.35***	-0.38***
NSSEC 4						0.11*	0.05	0.11**	0.06			0.12**	0.06
NSSEC 5						0.17***	0.14*	0.18***	0.16**			0.16***	0.15*
NSSEC 6						0.15***	0.17***	0.14***	0.16***			0.10**	0.12**
NSSEC 7						0.18***	0.17*	0.16**	0.14*			0.12*	0.12
NSSEC 8/unc						0.17**	0.25**	0.14*	0.20*			0.09	0.17
Deprivation_14							0.18***		0.19***				0.15**
Parent Uni_14							-0.08		-0.08				-0.06
Parent Couple_14							-0.14**		-0.14**				-0.11*
NSSEC 1.1/1.2_14							0.03		0.03				0.07
NSSEC 4_14							0.13		0.13				0.14
NSSEC 5_14							0.06		0.03				-0.01
NSSEC 6_14							-0.04		-0.04				-0.05
NSSEC 7_14							0.03		0.05				0.01
NSSEC 8/unc_14							-0.17		-0.15				-0.19
SIMD										-0.09***	-0.07***	-0.05***	-0.03***
SIMD_14											-0.04***		-0.03**
_cons	0.88***	0.82***	0.83***	0.99***	0.99***	1.02***	1.00***	1.12***	1.11***	1.35***	1.26***	1.37**	1.30***
N	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817
ll	-8538.99	-8437.08	-8435.32	-8399.07	-8397.04	-8085.46	-8067.71	-8035.34	-8016.32	-8278.47	-8266.82	-7972.16	-7949.78
aic	17081.98	16882.17	16882.64	16814.14	16822.08	16192.93	16175.42	16104.67	16096.64	16562.94	16541.64	15980.32	15967.55
bic	17094.47	16907.15	16920.12	16864.12	16909.54	16261.65	16300.37	16210.87	16296.55	16581.69	16566.62	16092.77	16179.96

legend: * p<.05; **p<.01; *** p<.001

Source: Scottish Longitudinal Study

Table 3: Poisson regression models: Count of subject passes at SCQF level 5

	1	2	3	4	5	6	7	8	9	10	11	12	13
Year 2014	0.09***	0.11***	0.08***	0.09***	0.12**	0.08***	0.12*	0.09***	0.16**	0.09***	0.10*	0.09***	0.14*
FSM		-0.49***	-0.58***	-0.50***	-0.59***			-0.16***	-0.21***			-0.12**	-0.17**
ASN		-0.47***	-0.59***	-0.44***	-0.56***			-0.40***	-0.51***			-0.40***	-0.50***
FSM_14			0.17*		0.19*				0.09				0.1
ASN_14			0.19***		0.18**				0.17**				0.16**
Female				0.06***	0.06**			0.08***	0.08***			0.09***	0.09***
COB UK				-0.23	-0.25			-0.25	-0.4			-0.26	-0.4
Siblings				0.16***	0.19***			0.11***	0.14***			0.10***	0.13***
LTID				-0.1	-0.12			-0.05	-0.09			-0.05	-0.09
Female_14					0				0				0
COB UK_14					0.05				0.35				0.34
Siblings_14					-0.07				-0.08*				-0.08*
LTID_14					0.04				0.09				0.1
Deprivation						-0.17***	-0.15***	-0.12***	-0.09***			-0.09***	-0.08**
Parent Uni						0.22***	0.25***	0.22***	0.25***			0.18***	0.21***
Parent Couple						0.13***	0.12***	0.10***	0.09**			0.09***	0.08*
NSSEC 1.1/1.2						0.14***	0.17***	0.12***	0.15***			0.10***	0.13***
NSSEC 4						-0.07	-0.02	-0.06	-0.02			-0.06	-0.03
NSSEC 5						-0.08*	-0.05	-0.08*	-0.08			-0.06	-0.07
NSSEC 6						-0.16***	-0.22***	-0.14***	-0.20***			-0.11***	-0.16***
NSSEC 7						-0.41***	-0.34***	-0.36***	-0.28***			-0.33***	-0.25**
NSSEC 8/unc						-0.59***	-0.81***	-0.51***	-0.67***			-0.48***	-0.65***
Deprivation_14								-0.04	-0.05				-0.03
Parent Uni_14								-0.06	-0.06				-0.05
Parent Couple_14								0.02	0.02				0.01
NSSEC 1.1/1.2_14								-0.06	-0.06				-0.06
NSSEC 4_14								-0.11	-0.08				-0.07
NSSEC 5_14								-0.05	-0.01				0.01
NSSEC 6_14								0.11	0.11				0.11
NSSEC 7_14								-0.13	-0.16				-0.14
NSSEC 8/unc_14								0.41*	0.31				0.33
SIMD										0.07***	0.07***	0.03***	0.03***
SIMD_14											0		0
_cons	1.29***	1.37***	1.38***	1.22***	1.22***	1.18***	1.16***	1.12***	1.09***	0.90***	0.90***	0.94***	0.93***
N	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817
ll	-9860.3	-9539.9	-9531.06	-9494.32	-9483.7	-9386.58	-9375.81	-9187.11	-9168.05	-9605.25	-9605.21	-9138.52	-9119.71
aic	19724.6	19087.8	19074.12	19004.64	18995.39	18795.15	18791.62	18408.22	18400.1	19216.5	19218.42	18313.04	18307.43
bic	19737.1	19112.79	19111.61	19054.62	19082.85	18863.87	18916.56	18514.42	18600.01	19235.24	19243.4	18425.49	18519.83

legend: * p<.05; **p<.01; *** p<.001

Source: Scottish Longitudinal Study

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