COVID-19 and Disadvantage Gaps in England 2021

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Foreword: Education Policy Institute

One of the biggest challenges in English education is closing the gap in attainment between children with varying forms of vulnerability and the rest of the pupil population. Until recently, the disadvantaged attainment gap was closing in most phases of education, but progress ground to a halt before the pandemic.

The pandemic had a significant impact on the time most students were able to spend in school, and much evidence suggested that the impact was worse for children with vulnerabilities, including economic disadvantage and special needs.

In summer 2020 and 2021, the usual public examinations were cancelled, and students were awarded "centre assessed" or "teacher assessed" grades. A key issue has been to establish what happened to outcomes and attainment gaps in these years. Were gaps widened by the uneven impact of COVID-19? Or did the new systems of grading help "protect" qualification outcomes from the impacts of the pandemic? How do these effects vary by education phase, and in particular is the impact in 16-19 education different from that at key stage 4? These are some of the key questions which our Nuffield Foundation funded research in 2021 and 2022 has sought to address. We are very grateful to Nuffield for supporting this work, and to all those who have engaged with our advisory group.

This year's report contains results which should concern policy makers and all those interested in more equitable education outcomes. It should cause us to carefully consider what more needs to be done to support children and schools in recovering from the pandemic and its effects.

Rt. Hon. David Laws, Executive Chairman, Education Policy Institute

Executive Summary

In 2021, summer exams were cancelled for the second year in a row due to the COVID-19 pandemic. Instead, students were awarded grades assessed by their teachers. In this report, we examine the grades awarded in 2021 relative to 2020 and 2019. We examine the resulting gaps between students with different characteristics and consider the implications of this for education policy.

On average, grades were higher successively in both 2020 and 2021 across all qualification types. Unlike in 2020, teachers were aware in 2021 that (subject to moderation) their assessments would form students' final grades. Students sitting final exams in summer 2021 will also have faced greater disruption to their learning and face to face study time than the 2020 cohort. In a more usual year, we might interpret changes in results or widening of gaps primarily as indicative of differences in underlying ability or learning. However, in the analysis we present in this report, it is not possible to disentangle this effect from that of the grading processes unique to 2021.

In 2022, grade distributions were set between 2019 and 2021 levels, and will be returned to pre-pandemic levels in 2023. Upcoming key stage 4 and 16-19 cohorts will also have experienced different levels of learning loss for years to come. Our estimates of gaps in grades in 2021 presented in this report cannot therefore be considered indicative of the disadvantage gap trajectory in 2022 and beyond.

Although we have now returned to exam-based assessment for most qualifications, cohorts finishing their study programmes for years to come will have faced disrupted learning in earlier phases of their education, so continuing to support education recovery must remain a key priority for policy makers.

Key stage 4

In our previous report, we set out the GCSE grade gap for disadvantaged pupils and other vulnerable groups in 2020 relative to their peers. [i] In this report, we update this descriptive analysis to consider how these gaps have changed in 2021. As before, we position these gaps against longer-term trends to highlight where progress is being made and where there is more work to do in addressing educational inequalities. Our regression analysis allows us to go a step further in this report and highlight which groups fared less well during the pandemic, beyond the differences that could be explained by their prior attainment or other characteristics. Overall we find:

- Under teacher assessments, average GCSE grades in English and maths increased by 0.06 grades (or 1.3 per cent) in 2021 compared to 2020. This increase was much lower than the 2020 rise in GCSE grades under centre assessments (of 7.9 per cent).

- Our headline GCSE disadvantage gap widened in 2021 by 0.10 grades (or 8 per cent), with disadvantaged pupils around 1.34 grades behind their peers, averaged across GCSE English and maths. 2021 marks the largest annual increase in the disadvantage gap since 2011 and contrasts with 2020, when the gap was little changed. Since 2015, progress in narrowing the gap had stalled, and following the pandemic, has gone into reverse. The widening gap in

2021 is consistent with other evidence that learning losses during the pandemic were more acute for disadvantaged pupils.

- The GCSE gap for persistently disadvantaged pupils – those who are disadvantaged for at least 80 per cent of their school lifetimes – widened by 0.10 grades (or 6 per cent) in 2021 to 1.70 grades. Comparing 2021 to 2011, there has been no progress in closing the gap for persistently disadvantaged pupils over the last decade. The gap for persistently disadvantaged pupils is over twice the size of the gap for those who experience poverty more fleetingly.

- There has been a marked increase in persistent poverty among disadvantaged pupils in recent years. Among disadvantaged pupils at the end of key stage 4, the share of pupils who have always been eligible for free school meals has increased from 22.1 per cent (or 29,600 pupils) in 2019 to 27.6 per cent (38,900 pupils) – a rise of over 9,000 pupils in two years. Even when we allow for the effects of Univeral Credit altering the composition of disadvantaged pupils, we still find rising persistence of poverty and worsening educational outcomes for persistently disadvantaged pupils in 2021 compared to their peers – both of which are likely contributing to the widening headline disadvantage gap.

- Girls generally outperform boys in their GCSEs and this continued during the pandemic. In 2020 and 2021, both girls' and boys' average grade increased similarly leaving the overall gap little changed (at 0.47 grades in 2021 in favour of girls). Once we adjust for other characteristics including prior attainment, we still find a small female advantage in 2020, suggesting girls may have benefited from the initial switch from exams to centre assessments. However, this reversed in 2021, which is consistent with wider evidence that girls experienced slightly larger learning losses than boys during the 2020/21 academic year[ii].

- Special educational needs (SEND) pupils with an education, health and care plan (EHCP) continue to have the largest gap of all the characteristics we consider, at 3.64 grades in 2021 – little changed from 2020. For SEND pupils without an EHCP, the gap in 2021 widened to 1.71 grades, from 1.65 grades in 2020. Over the last decade, SEND gaps have narrowed but even prior to the pandemic, progress had slowed. The pandemic widened educational inequalities for pupils with SEND, especially for those with more severe and complex needs, beyond the differences that could be explained by their prior attainment or other characteristics.

- In 2020, grade increases were widespread for all ethnic groups. With the more modest grade increases in 2021, the same groups tended to be ahead or behind White British pupils. However once we adjust for other characteristics, most minority ethnic pupils fared similarly to White British pupils. One exception is Black Caribbean pupils – a historically underperforming group – who narrowed their grade gap during the pandemic by 0.10 grades. Conversely Gypsy/Roma pupils fell further behind in 2021. This additional grade penalty is notable because Gypsy/Roma pupils are a vulnerable group with generally very

low levels of attainment. Gypsy/Roma pupils may have faced particular challenging in accessing online learning during school closures.

16-19 education

Using students' free school meal status during their last six years of school as an indicator of disadvantage, and a 16-19 point score measure based on the best three qualifications they achieved during this phase, we consider how grade gaps according to disadvantage and other characteristics changed in 2021. In addition, we consider how students taking vocational or applied qualifications fared in 2021 relative to previous years, and how this differed from students taking academic qualifications.

In 2020, most of the teaching for 16-19 courses would have been complete before the impact of the pandemic took hold in March, but assessment for academic qualifications was more disrupted than assessment for applied or vocational qualifications. This is because in addition to final exams, these qualifications are likely to include more project work and continuous assessment, much of which would have gone ahead as usual in 2019/20. In contrast, there was greater disruption to learning in 2021, and assessments across all 16-19 pathways were affected severely. The different structure of qualifications and our approach to constructing metrics means that the grade gaps presented are not comparable between key stage 4 and the 16-19 phase.

- A level results were around 0.6 grades higher per qualification in 2021 than in 2019. Conversely, applied general grades only increased by 0.4 grades. Students completing applied general qualifications fell 0.9 grades behind students taking A levels across their best three qualifications in 2021, beyond the differences that could be explained by prior attainment or other characteristics. This could have put these students at a relative disadvantage when competing for higher education places.

- The 16-19 disadvantage grade gap widened in both 2020 and 2021 under teacher assessed grades, having remained at a similar level between 2017 and 2019. The gap was 0.4 grades wider across students best three qualifications in 2021, with students from a disadvantaged background on average 3.1 grades behind their non-disadvantaged peers, compared to 2.7 grades in 2019. The equivalent gap for students identified as persistently disadvantaged widened by over half a grade to more than 4 grades over students best three qualifications in the 16-19 phase.

- Beyond the differences that could be explained by prior attainment and other characteristics, persistently disadvantaged students fell 0.2 grades further behind otherwise similar non-disadvantaged students, across their best three qualifications between 2019 and 2021. Other disadvantaged students fell 0.1 grades further behind. The widening of the disadvantage gap in 2021 relative to 2019 was significant, even having adjusted for qualification type. This implies that unlike in 2020, the widening of the gap in 2021 could not be explained entirely by the fact that disadvantaged students were less likely to take the qualifications with greater grade increases, such as A levels.

- In 2021, average grades for female students increased by a 0.3 of a grade more than for male students across their best three qualifications. Even when controlling for other student characteristics, female students saw greater grade increases than those of male students, with the gap again equivalent to around 0.3 of a grade. These findings are consistent with other evidence that teachers generally award higher grades to girls than boys, relative to externally marked test results.

- Between 2019 and 2021, Students of Chinese, Black – African, White and Asian, and any other mixed background ethnicities saw increases that were below those of White British students, beyond differences that could be explained by prior attainment and other characteristics. These increases were between 0.1 and 0.3 grades below White British students over their best three qualifications. Gypsy/Roma students fell 1.1 grades behind White British students.

- In 2021, average grades increased across all institution types. For most institution types, increases in 2021 were less pronounced or similar to increases in 2020, but this was not the case for FE colleges, which had amongst the largest grade increases in 2021, after only modest increases in 2020. Once differences in qualification type and institution size are controlled for, the differences between institution types reduce significantly. Students in FE colleges, in contrast to our descriptive findings, are estimated to have increases 0.3 grades greater than otherwise similar students in LA maintained school sixth forms, over their best three qualifications. Increases for sixth form colleges were 0.2 grades higher.

Policy implications

Our findings show that whilst most student groups saw higher grades in 2020 and 2021, not all groups benefited equally. Disadvantaged pupils – including those in long-term poverty – at key stage 4 and in the 16-19 phase fell further behind in 2021.

The grades awarded in 2021 will continue to have real world consequences for these students. As many students achieved higher grades than they might have done in previous years, some may have opted for more challenging courses. In many cases this will be a positive progression, but in some cases they may be more likely to drop out if it their courses were too difficult, and they are not adequately supported.

The fact that grades have not increased equally for all students also means some may have been at a disadvantage when applying for more competitive 16-19 or higher education courses, or when seeking employment. Indeed, UCAS data confirm that students from wealthier areas benefited most in terms of access to higher education in 2021. Similarly, students who took A levels saw bigger increases in access than students who took BTECs[iii].

It is not possible to accurately disentangle the impact of learning losses from the grading processes unique to 2021. Nevertheless, our research, coupled with previous EPI research on learning loss and emerging results for the 2022 cohort, show that disadvantaged students in cohorts yet to take their exams will need greater support to prevent disadvantage gaps widening further.

Recommendation 1: Increased funding for disadvantaged students across both phases

- At GCSE, more support is needed for disadvantaged pupils in the years leading up to their qualifications, but especially for those who are persistently disadvantaged. Despite their additional challenges, persistently disadvantaged pupils receive no extra focus or support beyond the pupil premium. We recommend higher levels of funding for disadvantage which is weighted more heavily towards persistently disadvantaged pupils.

- In the 16-19 phase, we recommend the introduction of a student premium based on previous free school meal status, akin to the pupil premium for school age pupils. If any serious progress is to be made in closing the 16-19 disadvantage gap, additional, well-targeted and ongoing support is required.

Recommendation 2: Improve identification of disadvantaged students for schools, colleges and researchers

- To better understand outcomes for persistently disadvantaged students and target support to where it is most needed, the Department for Education (DfE) should ensure these learners can be easily identified by schools, colleges and researchers. This will be possible within existing data collections as it can be derived from the National Pupil Database. Given that Universal Credit protections will continue to affect who is considered disadvantaged based on free school meal eligibility, there is a growing need to make available to researchers centrally held data that links family income to pupil-level attainment in the National Pupil Database.

We also see widening educational inequalities for pupils with SEND, particularly those with more severe and complex needs at key stage 4. Whilst our analysis has not been able to disentangle the effects of learning losses from the grading processes, the uniquely disruptive events of the pandemic appear to have caused these already more vulnerable groups to fall further behind in 2021.

Recommendation 3: Further research to understand drivers of gaps for vulnerable groups

- There is a pressing need for a fuller understanding of the drivers of poor outcomes for disadvantaged and SEND students, who have fallen even further behind during the pandemic. Further research should consider the role of student absence – and wider links with students' wellbeing – as a driver of gaps.

The return to exams for the 2022 and subsequent cohorts will have further implications for educational inequalities. The latest DfE data indicated that the GCSE disadvantage gap widened further still in 2022, to its highest level since 2012[iv], and the 16-19 disadvantage gap within qualificatons widened to the highest levels recorded[v]. However, even prior to the pandemic, there had been a stalling of progress in closing the headline key stage 4 disadvantage gap since around 2015. Likewise for pupils with SEND, progress in narrowing the gap had been slowing for those with less severe needs and had stalled altogether for those with an EHCP. There is a need for focussed support for these groups to address these long-standing educational inequalities.

Recommendation 4: Create a cross-government child poverty strategy

- If the government is serious about addressing educational inequalities, its efforts must include tackling the social determinants of educational outcomes, such as poverty. As a first step, the government should urgently put in place a credible cross-government child poverty strategy.

Introduction

With the first national lockdown in England beginning in March 2020, the COVID-19 pandemic affected only the last few months of the 2019/20 academic year. Whilst summer exams had to be cancelled and replaced with centre assessed grades, students taking their exams in the summer of 2020 had completed most of their study programmes without disruption. Fears that the switch to centre assessed grades for GCSEs would penalise students from disadvantaged backgrounds were largely unfounded. However, for students in college and sixth form, the gap in grades between poorer students and their better off peers widened, driven by A level students gaining larger increases from teacher assessments than those who studied qualifications such as BTECs.[vi]

The second academic year of the pandemic, 2020/21, appeared to get off to a positive start, with the return of all students to the classroom. However, with new strains of the virus increasing in prevalence, schools and colleges were closed again to most students from January to March 2021. Whilst vulnerable students and critical workers' children had the option to continue with face-to-face provision, others returned to remote learning. Even during the periods when schools and colleges remained open, student and staff absence rates remained well above their pre-pandemic levels, driven by a combination of illness and self-isolation.[vii]

To tackle the resulting lost learning the government announced an education recovery plan funded with £3.1bn over four years, equivalent to £310 per pupil.[viii] This plan included a universal catch-up premium, the National Tutoring Programme for primary and secondary schools, and a tuition fund for students aged 16-19. Despite these programmes and other efforts from educators, by the summer term secondary school students were around 1.2 months behind in their reading at key stage 3 compared to a 'regular' year.[ix]

In February 2021 the Department for Education (DfE) announced that once again grades would be determined by teachers. These teacher assessed grades (TAGs) were to draw on a range of evidence, including the optional use of questions provided by exam boards, as well as mock exams, coursework, essays or in-class tests.[x] TAGs were to assess students only on what they had learnt, to recognise the gaps in provision. This was the approach for academic qualifications as well as vocational and technical qualifications, except where exams or assessments were needed for students to demonstrate occupational proficiency.

A key difference from 2020 was that in 2021 teachers were aware in advance that their provided grades would be final (after being moderated within the school or college). When teachers made their assessment in 2020, they still believed that students' grades would be based on an algorithm and not their assessments.

On results day in 2021 it became clear that the approach had led to increases in grades compared with both 2019 and 2020, at least in academic qualifications. For A levels, 44 per cent of grades were at A or A*, compared with 38 per cent in 2020, and 25 per cent in 2019.[xi] For GCSEs, 72 per cent of pupils achieved a grade 4 or above in English and mathematics, compared with 71 per cent in 2020, and 65 per cent in 2019.[xii] However, these increases don't appear to have benefited all groups of students equally. Analysis published by the DfE and Ofqual suggests that, unlike in 2020, disadvantage grade gaps appeared to have widened in 2021.[xiii] However, as in 2020, for 16-19 year

olds this analysis examines gaps for different qualifications separately, and does not consider how they interact at a student level.

In this report, we aim to improve understanding of how the grade gaps between different groups of students changed in 2021, in the context of the learning loss and changes to assessment that took place. Our analysis includes groups of students who are not captured in the DfE and Ofqual data such as students who are in long-term poverty and those who arrive late to the English state school system with English as an additional language. We first present descriptive gaps, looking at the difference in grades achieved between different characteristic groups. We go onto employ a modelled approach, examining the gap change in 2021 that remains having controlled for prior attainment and other characteristics. This analysis builds on our report analysing 2020 results data, to consider the 2021 specifc effects and how these impacted on different student groups. As before, we use the National Pupil Database throughout our analysis.

Trends in key stage 4 attainment and disadvantage gaps

GCSE attainment

In this section we present our headline findings on educational inequalities at the end of secondary school (key stage 4) in England in 2021 and position these alongside longer-term trends over the previous decade.

To assess overall attainment at secondary level we measure pupils' average GCSE grade across English and maths. We use this as our headline measure rather than averaging across all GCSEs, as this is not influenced by changes in subject entry that may distort results over time. We use the 9 to 1 grading system, which was introduced in 2017 for English and maths. Grade 4 is considered a 'standard pass' and a similar achievement to the old GCSE grade C. It is often the minimum level that pupils need to reach in English and maths to continue to study post-16.

In 2021, the average GCSE grade across English and maths was 5.0. This was an increase of 1.3 per cent (or 0.06 grades) from the previous year and followed much higher grade increases (of 7.9 per cent) in 2020. The difference in assessment arrangements during the pandemic years of 2020 and 2021 (when exams were replaced with alternative grading processes) means that pupil attainment is not comparable with pre-pandemic years.

For this reason, we estimate the headline GCSE disadvantage gap in two different way reflecting these distinct periods, set out in more detail below.

We also present new regression-based analysis to explore in more depth how disadvantaged pupils and other vulnerable groups fared during the pandemic years of 2020 and 2021. Using our model set out below, we are interested in understanding whether these uniquely disruptive years of 2020 and 2021 led to additional educational penalties for pupils with certain characteristics, such as being disadvantaged or having special educational needs, beyond the gaps we see in more 'normal' pre-pandemic years that could be explained by these groups' prior attainment or other characteristics.

The GCSE disadvantage gap

In this section we consider whether disadvantaged pupils fared less well relative to their peers under teacher assessed grades (TAGs) in 2021, compared with 2020 when pupils received centre assessed grades (CAGs), and 2019 when pupils last sat exams.

We estimate the disadvantage gap at the end of secondary school in two different ways: a 'months of learning' measure for the period 2011-2019 and a GCSE grade gap measure for 2020-2021, with 2017-2019 as 'bridging years' spanning both measures. We measure the disadvantage gap by comparing the GCSE grades of disadvantaged pupils and their peers. We define a pupil as disadvantaged if they have been eligible for free school meals (FSM) at any point in the preceding six years, and non-disadvantaged if they have not, using the same definition as the DfE.[1]

For the earlier period, 2011-2019, we estimate a disadvantage gap based on months of learning. Specifically, taking pupils' GCSE results at the end of key stage 4, we order pupils by their results and

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[1] The Department for Education allocates the deprivation component of the pupil premium on this basis.

assign them a rank. We calculate the average rank of the disadvantaged and non-disadvantaged pupil groups, and then subtract the latter from the former. Finally, we convert this mean rank difference into months of learning, enabling us to reach an intuitive measure of how far behind disadvantaged pupils are from their non-disadvantaged peers.

For 2020 and 2021, we calculate a grade gap based on the average GCSE grades awarded to disadvantaged pupils compared to non-disadvantaged pupils; we also do this for 2017-2019 as 'bridging years'. We use this grade gap instead of months of learning gap in 2020 and 2021, because the grades awarded in the absence of exams may be a less reliable guide to some pupils' underlying learning in that year. This means that even where grade gaps narrowed during the pandemic, it is possible that underlying learning gaps did not.

As Figure 1.1 shows, following almost two years of disruption to education as a result of the pandemic, the headline GCSE disadvantage gap increased significantly in 2021 by 8 per cent to 1.34 grades, averaged across GCSE English and maths. 2021 marks the largest annual increase in the gap since 2011 and compares to a gap of 1.24 grades in 2020.

Taking a longer-term perspective, the disadvantage gap reduced between 2011 and 2019 by 1.6 months (or 8 per cent). However, this reduction was consolidated during the earlier period (2011-2015). Since 2015, even prior to the onset of the pandemic, progress in narrowing the GCSE disadvantage gap had stalled, and following the pandemic, has gone into reverse.

The relative stability of the disadvantage gap in 2020 is in stark contrast to the gap-widening in 2021 and likely reflects how learning losses differentially affected successive cohorts. For the 2020 cohort, most of the teaching would have been completed before the impact of the pandemic took hold. But for the 2021 cohort, wider evidence indicates that learning losses were sizeable due to the lack of in-person teaching during the 2020/21 academic year and these losses were particularly severe for disadvantaged pupils.

Looking ahead to 2022, it is also clear that the effects of the pandemic continue to be felt among pupils whose learning was affected at an earlier age. DfE data[xiv] indicate that educational inequalities continued to widen for the 2022 cohort, with the GCSE disadvantage gap reaching its highest level since 2012.

Figure 1.1: Trends in the GCSE English and maths disadvantage gap at secondary school
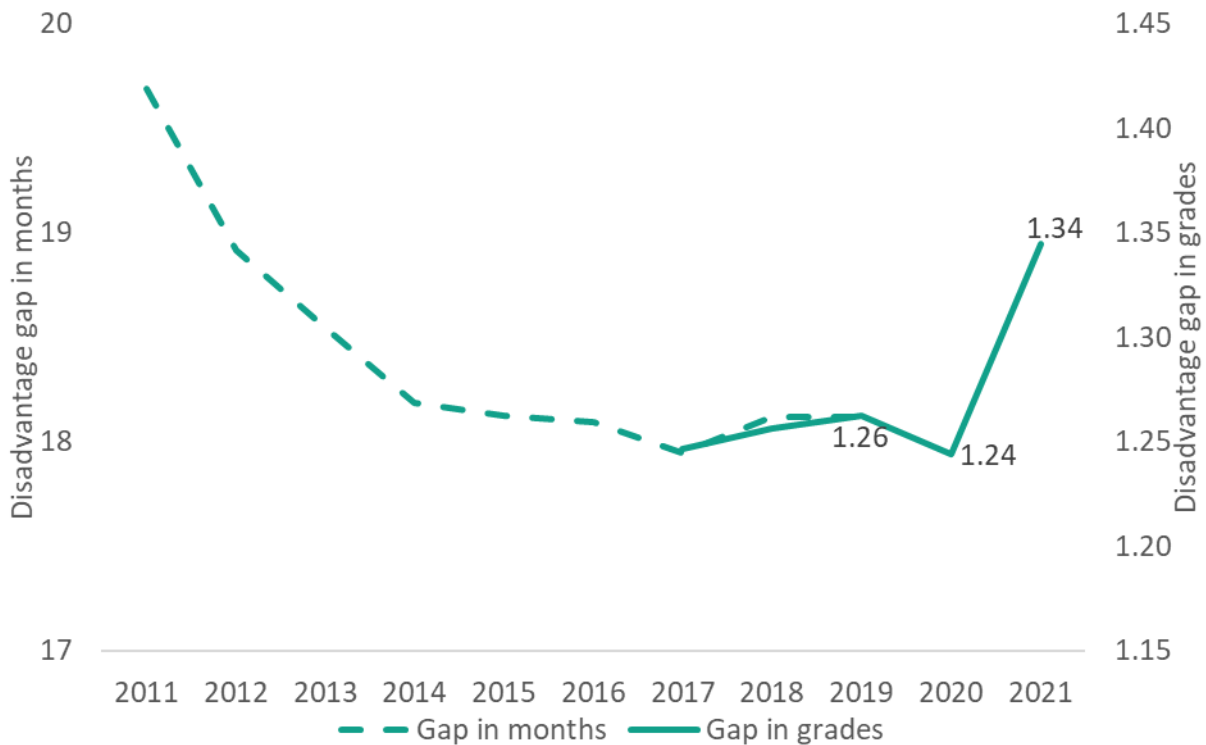
Distributional shifts in the GCSE grade distribution

In this section we take a closer look at the GCSE grade distribution to get a better understanding of how the grades awarded to disadvantaged pupils and their peers changed between 2020 and 2021. Specifically, we consider how grade increases in 2021 affected the likelihood of achieving key GCSE thresholds for disadvantaged and non-disadvantaged pupils respectively.

Figure 1.2 shows a simple bell curve for the numbers of disadvantaged and non-disadvantaged pupils at different points on the GCSE English and maths grade distribution in 2020 and 2021. In each year – as expected – the grade distribution for non-disadvantaged pupils sits to the right of the distribution for disadvantaged pupils. Looking at the mean grade differences between years shows that non-disadvantaged pupils shifted slightly to the right by 0.1 grades, while disadvantaged pupils remained largely static.

This means that, on average, non-disadvantaged pupils' grades increased under teacher assessed grades (TAGs) in 2021, while their disadvantaged counterparts did not, causing the overall grade gap to widen to 1.34 grades.

Figure 1.2: GCSE English and maths grade distribution for disadvantaged and non-disadvantaged pupils in 2020 and 2021
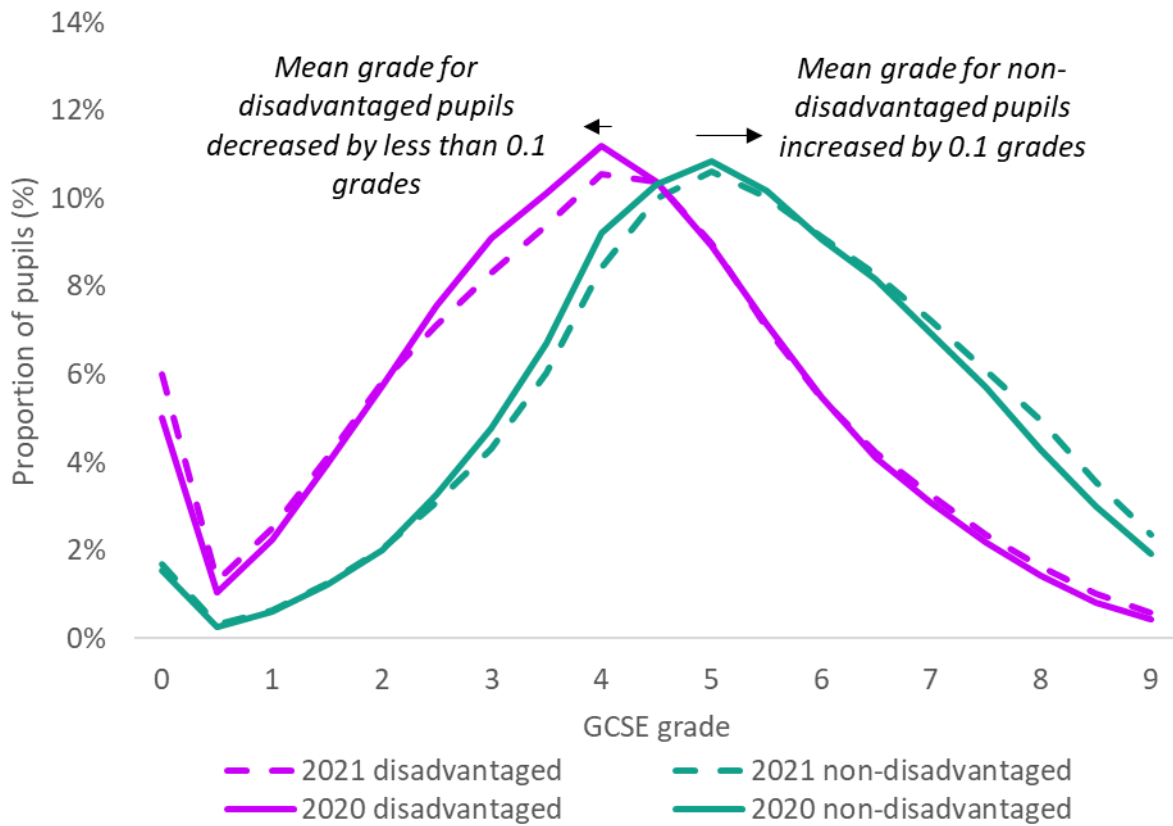

Figure 1.3 looks more closely at distributional shifts between 2020 and 2021 by disadvantage background. In 2021, all pupils were less likely to receive grades between 2 and 5 and more likely to receive grades at the top and bottom ends of the distribution than in 2020. However, compared to their non-disadvantaged peers, disadvantaged pupils were less likely to shift into the higher grades of 7-9 and more likely to receive grades of 1 or 0.

Whilst these differences simply reflect these groups' differing underlying distributions, the implication is that disadvantaged pupils are now less well represented at key intermediate GCSE grades. Grades 4 and above – particularly in English and maths – often act as a passport to future study and have strong currency with employers. This may mean disadvantaged students among the 2020/21 cohort stand a poorer chance of progressing to level 3 courses which require GCSE grade 4 as a passport qualification.

Figure 1.3: Change in the proportion of pupils at different grades for GCSE English and maths among disadvantaged and non-disadvantaged pupils, between 2020-2021
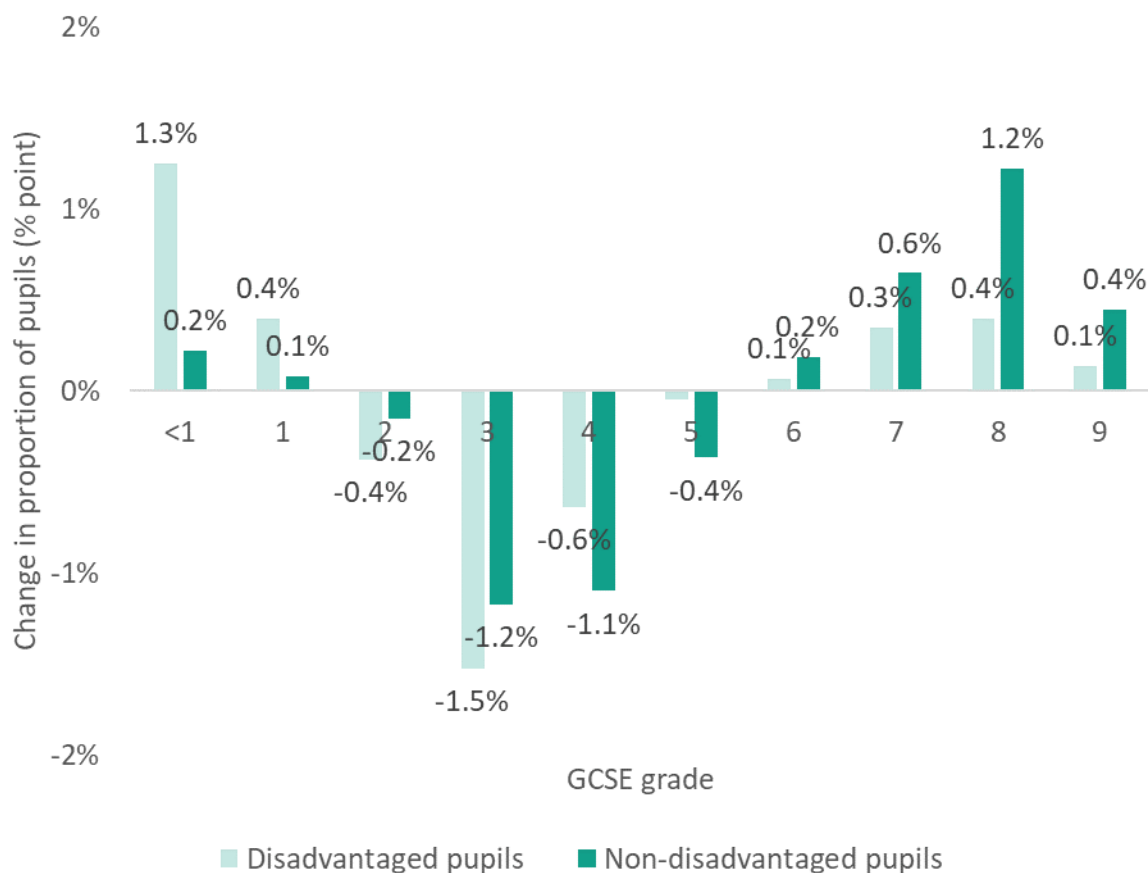
## The GCSE gap for persistently disadvantaged pupils

We also consider the gap for pupils who are persistently disadvantaged. Whilst there is no official definition of pupils in long-term poverty, we define this group as pupils who are eligible for free school meals for 80 per cent or more of their school lives extending back to year 2 – the earliest year available in our timeseries. These pupils are not predefined in the National Pupil Database but we are able to identify them by using school census data to create a longitudinal picture of the length of time pupils are eligible for FSM over the course of their school lives.

Overall, around one-quarter (24.5 per cent) of pupils at the end of key stage 4 were disadvantaged in 2021 – the first increase in this share since 2016 – and over one-in-ten were persistently disadvantaged (10.2 per cent). These figures are based on data collected in the January of each year. For 2020, this preceded the onset of the pandemic and in 2021, it means the snapshot was taken during the middle of the pandemic, so may not reflect any further increases in persistent disadvantage throughout 2021.

Figure 1.4 sets out the trends in the grade gap for persistently disadvantaged pupils. As for the headline gap, the persistent disadvantage gap markedly widened in 2021 to around 1.70 grades. This means, as for disadvantaged pupils as a whole, persistently disadvantaged pupils fell further behind in 2021. The grade gap for persistently disadvantaged pupils is now at its highest recorded level

since the new GCSEs in English and maths were introduced in 2017. And using an alternative ('mean-rank difference' – see Annex D for further details) measure which allows for a consistent time series over the last decade, the persistent disadvantage gap in 2021 is essentially unchanged since 2011. This means that whilst the headline disadvantage gap has shown some progress in narrowing (at least for the period 2011-2015), there has been no progress overall in closing the persistent disadvantage gap in the last decade.

Figure 1.4: Trends in the GCSE English and maths persistent disadvantage gap at secondary school
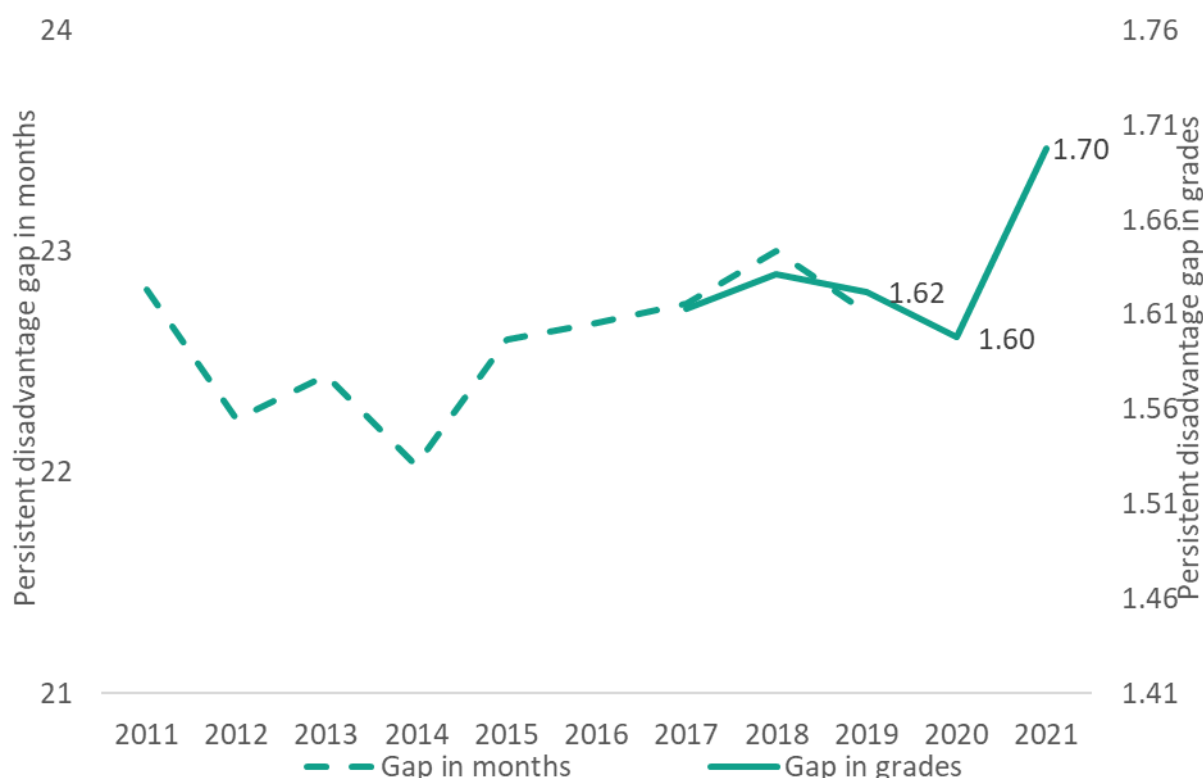

Changes in the overall size of the persistent disadvantage gap since 2011 reflect changes *within* the group of disadvantaged pupils. Over the last four years, persistence of poverty appears to have increased for disadvantaged pupils. In Figure 1.5 we demonstrate this in three ways. Firstly, we look at the proportion of disadvantaged pupils who are persistently disadvantaged – that is, pupils who are eligible for FSM for at least 80 per cent of their time at school. From 2011 to 2017, this proportion decreased year-on-year, but in 2018 it started increasing for the first time in the time series.

Secondly, we look at the proportion of disadvantaged pupils who have always been eligible for free school meals (for the period that we hold spring census FSM records extending back to year 2). The share of the 'always disadvantaged' group declined until 2015 but then rose consistently thereafter, with a sharp increase from around one-fifth of disadvantaged pupils in 2018 to over one-quarter by 2021.

Thirdly, we look at the average proportion of disadvantaged pupils' school lives spent being eligible for FSM. This shows a similar pattern: from 2011 to 2015, disadvantaged pupils were disadvantaged for a decreasing proportion of their school lives each year. But by 2016 it started increasing. And by 2021, all three measures reached their highest levels since at least 2011.

Figure 1.5: Persistence of disadvantage among disadvantaged pupils at the end of secondary school since 2011
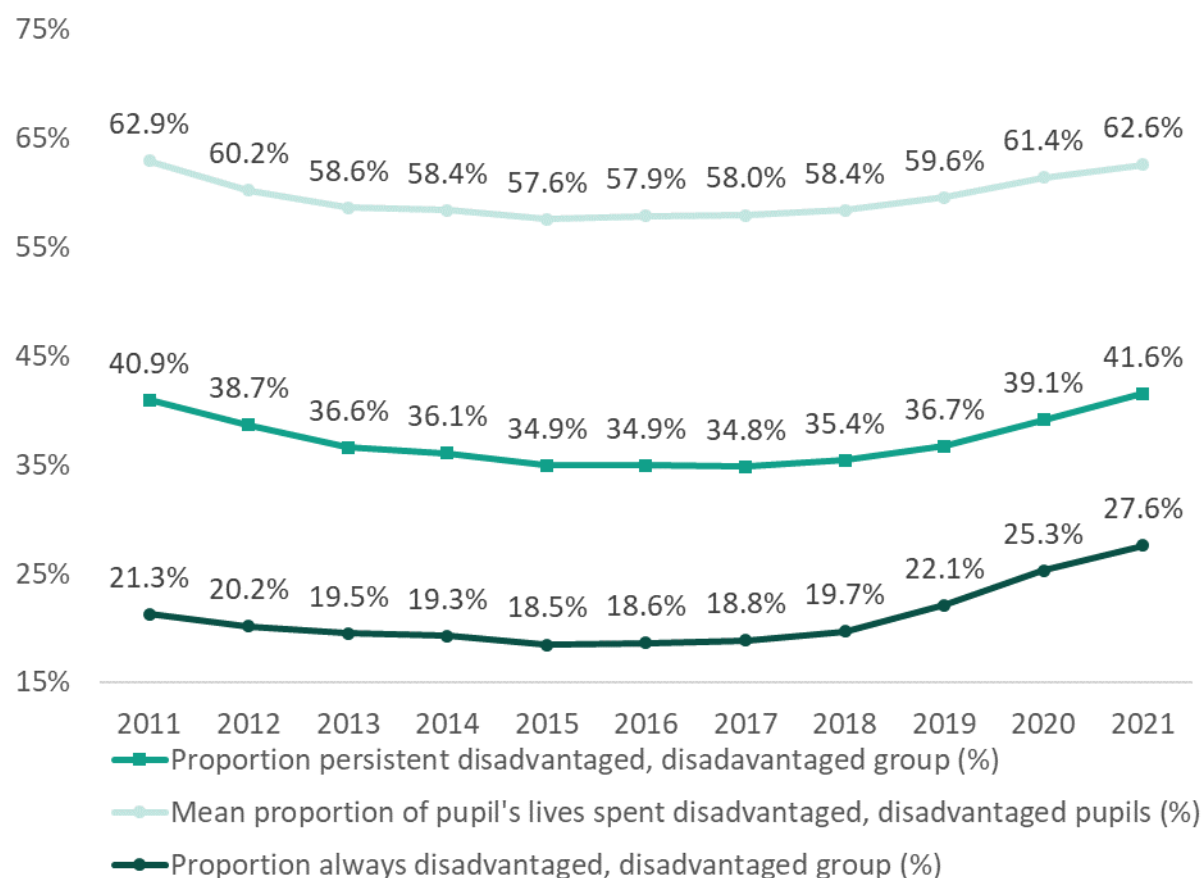
Together these measures all point to the poverty becoming more entrenched within the group of disadvantaged pupils. This is consistent with wider evidence showing rising poverty among young children even prior to the pandemic and particularly among children in families with three or more children.[xv] [xvi]

However the picture is complicated by changes in criteria for claiming FSM with the introduction of Universal Credit (UC). Protections put in place with the roll out of UC mean that any child eligible for FSM in 2018 (and subsequently eligible) will retain this until at least 2022. This potentially affects the persistently disadvantaged group who, over time, capture more of those who are eligible for FSM due to protections rather than their financial circumstances.[xvii]

As in previous years, our headline measures use pupils' FSM eligibility as it appears in DfE data – that is, we do not seek to adjust for UC protections. This will not affect our share of disadvantaged pupils (or associated headline gap measure) until 2024 because these are based on being eligible for FSM in the last six years which creates a six year lag. However it will mean that that our share of persistently (and 'always') disadvantaged pupils is likely higher than it would have been in the absence of UC protections and is potentially capturing a more transient FSM group.

To address the reliability with which we can identify persistently disadvantaged pupils beyond 2018 due to UC rollout, we also examine two alternative measures to investigate the prevalence of persistent disadvantage and corresponding grade gaps. These are set out in Annex A. The common pattern across these three gap measures is an indication of worsening educational outcomes for

persistently disadvantaged pupils relative to their non-disadvantaged peers, unrelated to UC protections affecting the composition of disadvantaged pupils.

Given the changing composition of the disadvantaged group, we consider the size of the gap *within* the group of disadvantaged pupils based on their FSM persistence. Specifically, we calculate GCSE disadvantage gaps for six pupil groups based on being disadvantaged and eligible for FSM for:

- Up to 19 per cent of their school life (low persistence)
- 20-39 per cent of their school life (low-medium persistence)
- 40-59 per cent of their school life (medium persistence)
- 60-79 per cent of their school life (medium-high persistence)
- 80-100 per cent of their school life of their school life (high persistence i.e. persistently disadvantaged)
- 100 per cent of their school life ('always disadvantaged' – these are a subset of the persistently disadvantaged group).

All of these pupil groups experience disadvantage but the lower persistence groups have experienced disadvantage more fleetingly than those in the higher persistence groups; they may be eligible for FSM for one or two years, but they are not claiming FSM for the majority of their school life. The 'always disadvantaged' group is the most disadvantaged of all.

Figure 1.6 shows the proportions of these persistence groups over time. In 2021, 42 per cent of disadvantaged pupils experienced high persistence (including those with 100 per cent FSM eligibility); 14 per cent experienced medium-high persistence; 20 per cent experienced medium persistence; 15 per cent experienced low-medium persistence and 9 per cent experienced low persistence.

Since 2016, the high persistence (or 'persistently disadvantaged') group has grown by 16 per cent – and within this, the 'always disadvantaged' group (not shown separately in Figure 1.6) has grown by 44 per cent – while the low persistence group has shrunk by 21 per cent.

Figure 1.6: Levels of persistent disadvantage among disadvantaged pupils at secondary school since 2011
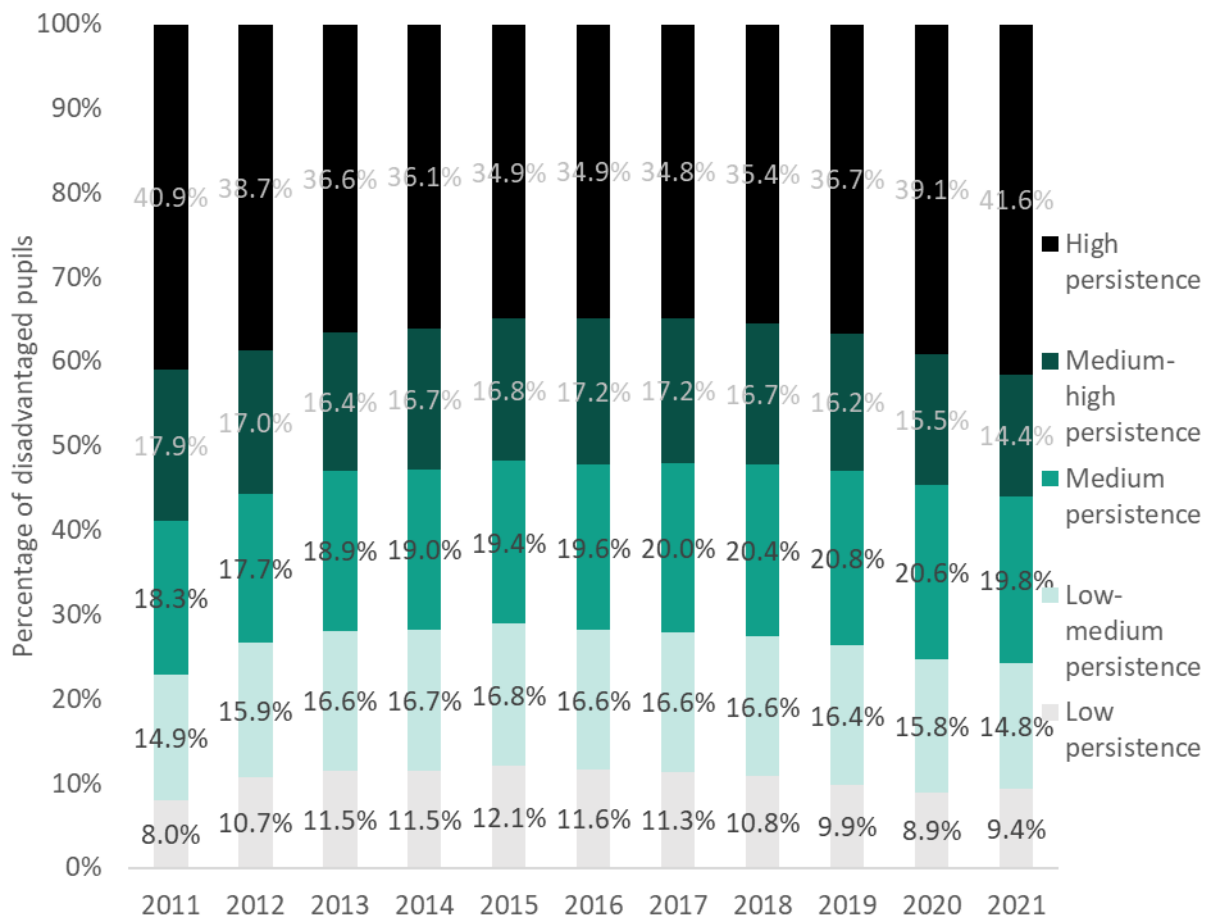
Figure 1.7 shows the disadvantage gap for each of these persistence groups in GCSE grades for the period 2017-2021. There is a clear relationship between the degree of persistence and the size of the gap: the more persistent the disadvantage, the larger the gap. The 2021 gap for the high persistence group (those who have been disadvantaged for 80 per cent or more of their school life) was over twice the size of the gap for the low persistence group (those who have been disadvantaged for less than 20 per cent of their school life).

Over the period 2017 to 2021, the grade gap has widened for all of these persistence groups (though with only minimal increases for the medium and low groups). It is striking that this is entirely driven by the gap-widening in 2021, including for the low-medium persistence group, whose gap had narrowed the most under centre assessments in 2020.

Figure 1.7: Disadvantage gap in grades between 2017-2021 at secondary school by persistence of disadvantage (GCSE English and maths)
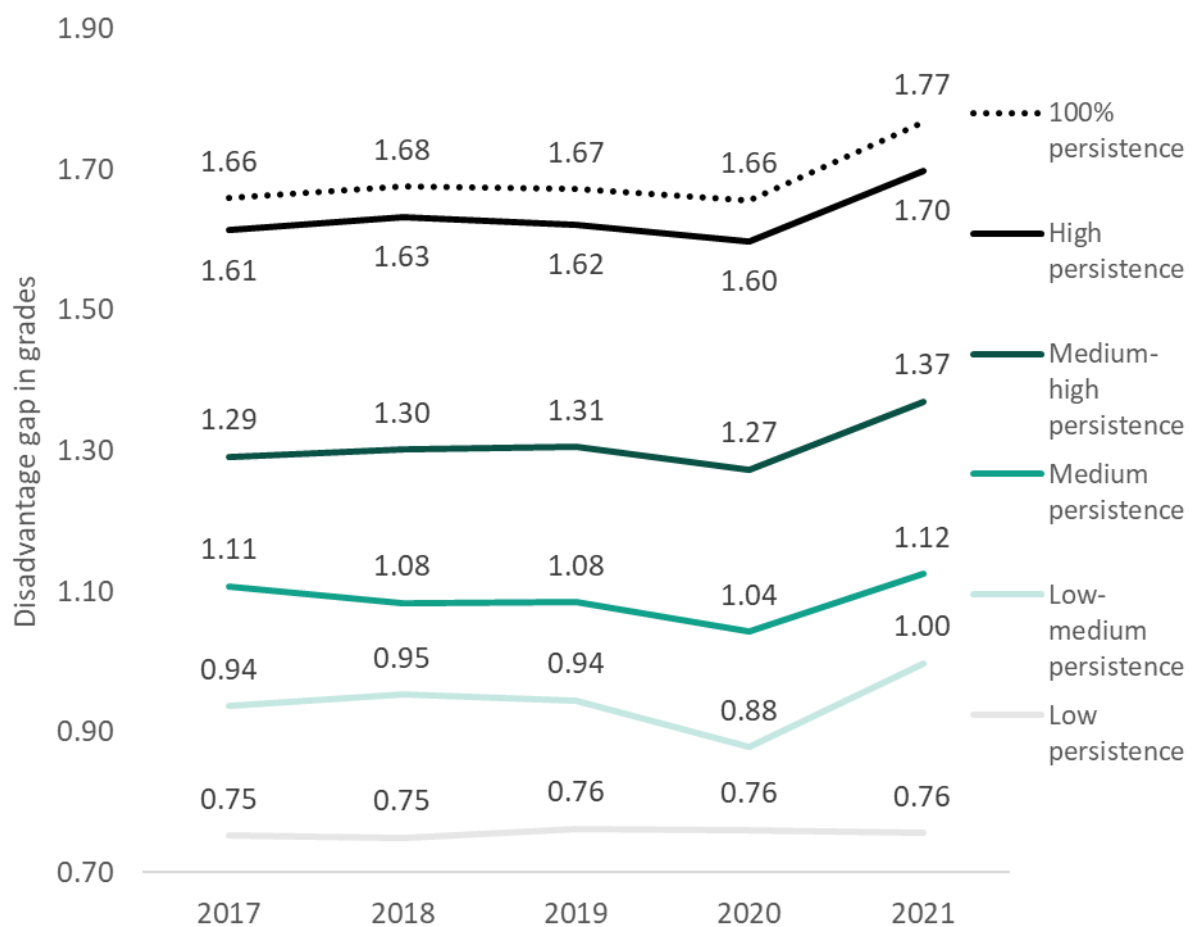
That the high persistence ('persistently disadvantaged') group has occupied a growing share of the disadvantaged group since 2017 (see Figure 1.6) suggests that the halting of progress in closing the headline gap is partly (but not entirely) associated with a compositional rise in persistent poverty among disadvantaged pupils. These are the pupils for whom the gap is widest (see figure 1.7). However there is also a clear pattern of gap-widening *within* disadvantaged groups for given levels of persistence, suggesting this is also contributing to the widening headline gap in 2021.

To better understand how different pupils fared in their GCSEs in the pandemic years of 2020 and 2021, we created a series of regression models. These explore whether GCSE grade increases in 2020 and 2021 were spread evenly across all pupil groups, beyond the differences that could be explained by their prior attainment or other characteristics. These models use pupil-level data pooled over the five years from 2017 to 2021. This gives us a three year pre-pandemic period (2017-2019, with 2019 as our base year) and a two year period affected by the pandemic (2020 and 2021).

We use each pupil's average GCSE grade across English and maths as our dependent variable. For our independent variables we include a pupil's demographic characteristics, prior attainment at age 11, the year the pupil completed their GCSEs, school characteristics and geography. We build up our models sequentially such that in our most preferred, fully specified model, all of these factors are included as controls. Full model outputs can be found in Annex B.

To understand how the GCSE grades of different groups of pupils changed between 2019 and the pandemic years of 2020 and 2021, we include interaction terms between the characteristic of interest (e.g. disadvantage) and the year in which the pupil completed their GCSEs. This is the key coefficient of interest as it indicates whether the pandemic had a differential (or additional) impact on the GCSE results of certain groups.

A coefficient on the interaction term between being disadvantaged and the year 2020 of, say, -1.0 can be interpreted as the additional grade penalty of 1 GCSE grade averaged across English and maths for disadvantaged pupils who sat their GCSEs in 2020, relative to the equivalent gap between disadvantaged pupils and similar non-disadvantaged pupils in 2019. To put this in context, if this gap was mirrored across a bundle of 8 GCSE subjects, a typical disadvantaged pupil in 2020 would get, say, 8 GCSE passes at grade 4 whereas a similar non-disadvantaged pupil would get 8 GCSEs at grade 5.

Unless stated otherwise stated statistical significance tests are performed at the 5 per cent level, and confidence intervals on charts are at the 95 per cent level.

Our model confirms that overall, disadvantaged pupils – particularly those who are persistently disadvantaged – performed less well in their GCSEs over the five year period to 2017 than non-disadvantaged pupils. Figure 1.8 shows the association between disadvantage (and persistent disadvantage) and GCSE attainment in 2020 and 2021 (relative to 2019), taking into account other characteristics. This is based on our preferred specification with the full set of controls for pupil, school and geographic characteristics - we later show how these effects change when we vary these wider set of controls.

Figure 1.8: Estimates of 2020 and 2021 increases in GCSE grades (relative to 2019) for disadvantaged and persistently disadvantaged pupils, compared to otherwise similar students
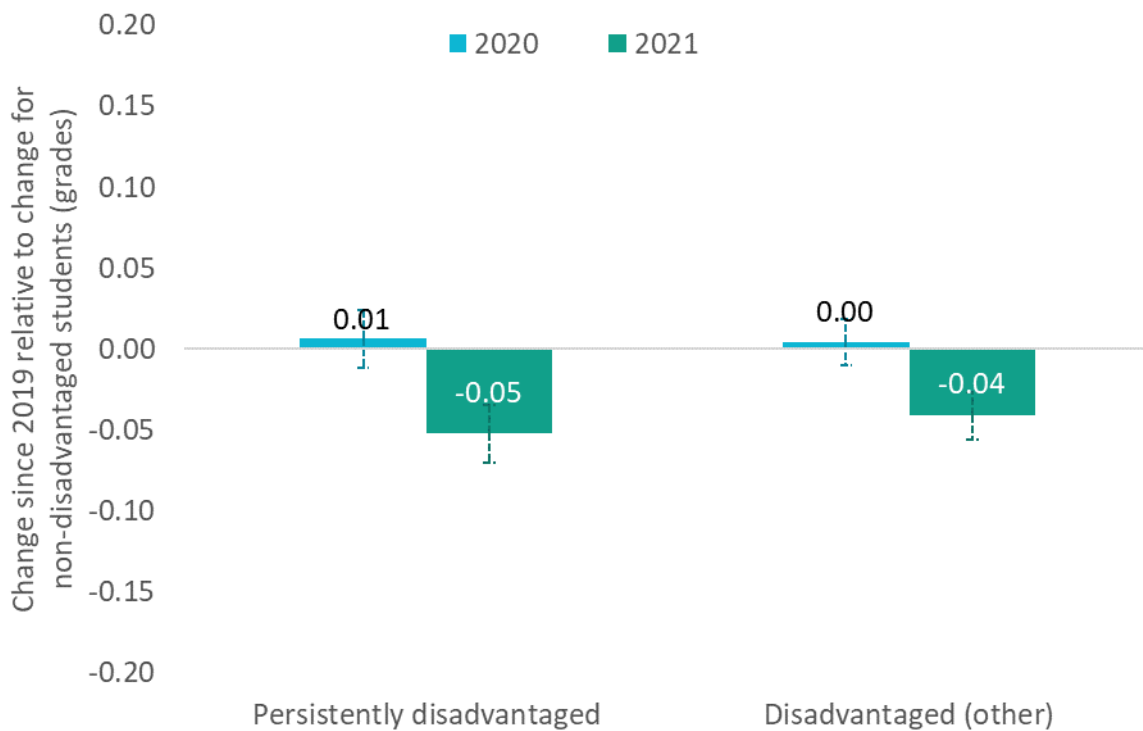
We can see that being disadvantaged or persistently disadvantaged was not associated with an additional GCSE grade penalty in 2020. This is consistent with what we saw earlier based on the descriptive data and indicates that disadvantaged pupils did not lose out under centre assessments. But by 2021, a grade gap emerges of 0.04 grades for disadvantaged pupils and 0.05 grades for persistently disadvantaged pupils, beyond the differences that could be explained by their prior attainment or other characteristics. Whilst we cannot separate out specific drivers, this additional GCSE penalty is capturing the combined effects of teacher assessments, alongside pandemic-related learning losses (and any other 2021 effects). It is consistent with wider evidence showing that disadvantaged pupils fell even further behind during the 2020/2021 academic year due to disproportionate learning losses.

Figure 1.9 shows the regression coefficients for the interaction term between disadvantaged status and completing GCSEs in 2021 for four different versions of our model. The interaction term can be interpreted as the difference between the growth in GCSE grades for disadvantaged pupils and their non-disadvantaged peers, once we sequentially control for other factors in our model. It demonstrates the relative importance of prior attainment, school characteristics and geography in explaining the growth of the gap. This indicates that the 2021 disadvantage penalty is slightly larger once we account for these pupils' prior attainment and school characteristics (though it does not increase further in our fully specified model which additionally controls for geography).

Figure 1.9: Estimates for the change in average GCSE grade in English and maths between 2019 and 2021 for disadvantaged relative to similar non-disadvantaged pupils, for four sequential models
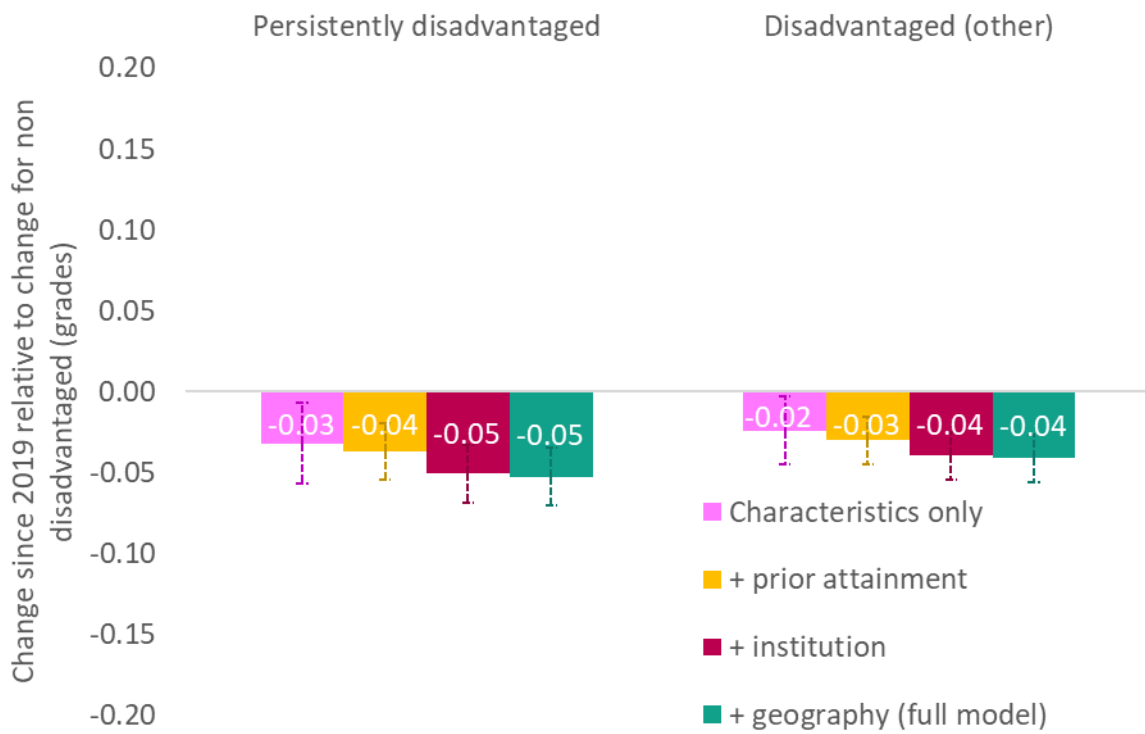
The GCSE gender gap

We now look at GCSE grades and disadvantaged gaps by gender.

Figure 1.10 shows the average grades in GCSE English and maths for male and female pupils from 2017-2021. Female pupils have historically scored around 0.5 grades higher in English and maths than males, and this gender gap remained unchanged during the pandemic years of 2020 and 2021.

Figure 1.10: Average grades in GCSE English and maths by gender, 2017-2021
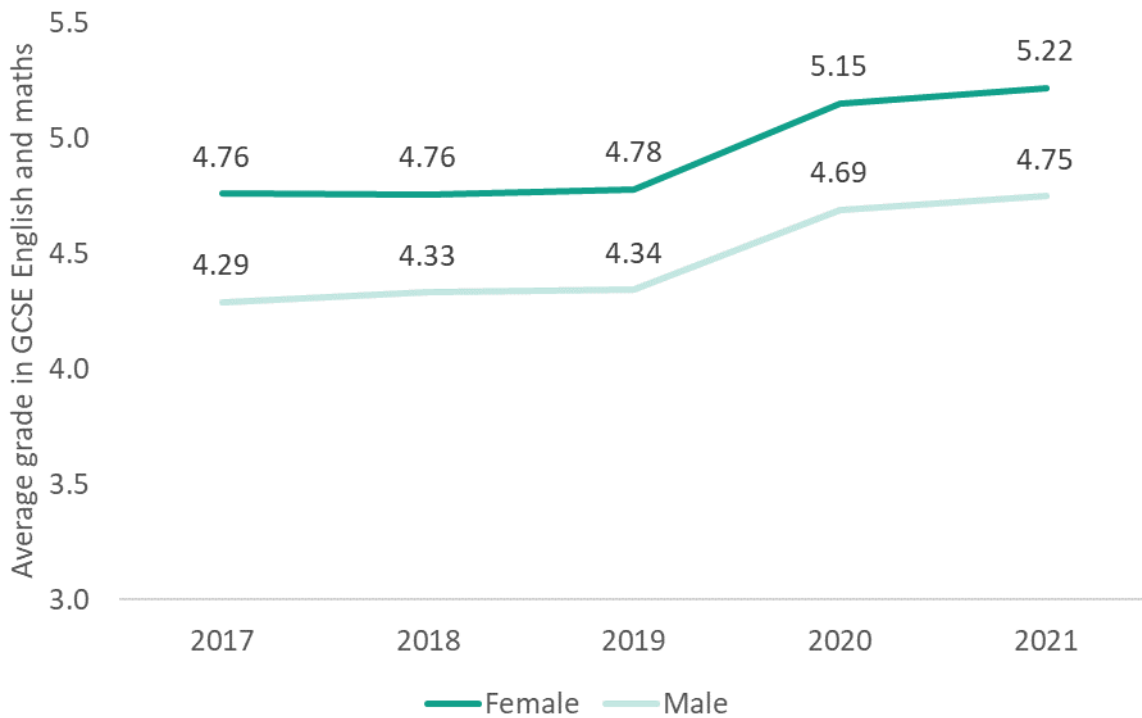
The effect of disadvantage on gender shows a different story. Figure 1.11 shows the within-gender disadvantage gap from 2017-2021; that is, the gap in grades in GCSE English and maths between disadvantaged boys and non-disadvantaged boys, and the same gap between disadvantaged girls and non-disadvantaged girls.

For girls, this gap remained largely static between 2017 and 2020 at around 1.23 grades. For boys the gap was slightly higher and a bit more erratic, increasing from 1.27 grades in 2017 to 1.30 grades in 2019, before dropping slightly to 1.28 in 2020 under centre assessments. In 2021 however, the disadvantage gap for both boys and girls increased to 1.35 grades. In effect, this means that in 2021, both disadvantaged boys and disadvantaged girls were subject to the same grade penalty when compared to their non-disadvantaged counterparts. The change in their underlying grades between 2021 and 2020 mirror those we saw earlier in the overall population at the end of key stage 4 – with grade increases for non-disadvantaged girls and boys but broadly stagnant grades for disadvantaged girls and boys.

Figure 1.11: Disadvantage grade gap in GCSE English and maths by gender, 2017-2021
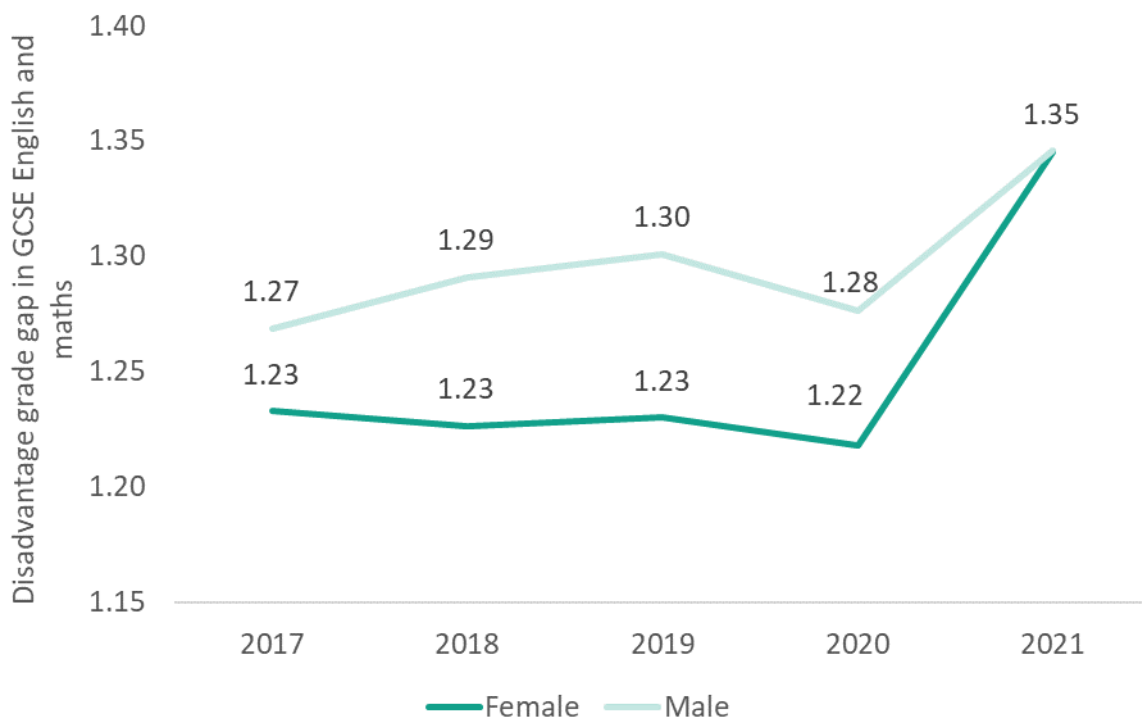
Looking at the effects of persistent disadvantage, Figure 1.12 shows the within-gender persistent disadvantage gap for the same period. While this gap rose in 2021 for both boys and girls (to 1.72 and 1.68 grades respectively), the gap remains higher for boys than girls. This again reflects the underlying distributional shifts between 2020 and 2021, with similar grade increases for non-disadvantaged boys and girls alike but stagnant grades for their persistently disadvantaged counterparts – with persistently disadvantaged boys having the lowest average grades of all.

Figure 1.12: Persistent disadvantage grade gap in GCSE English and maths by gender, 2017-2021
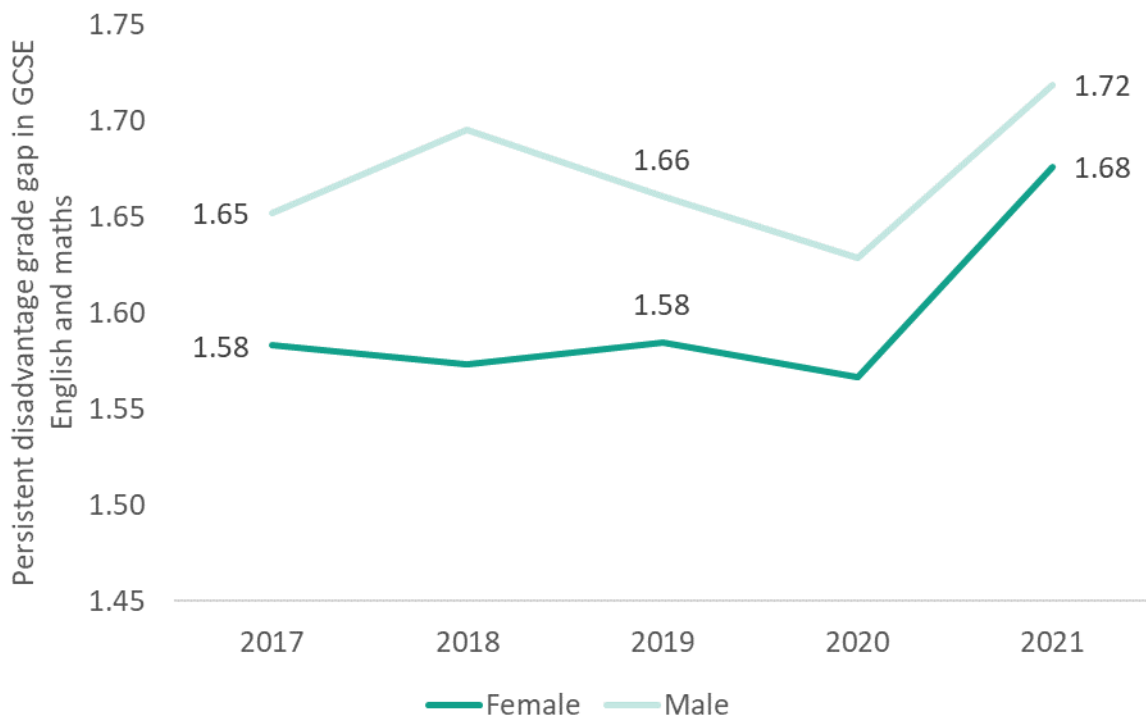
In the following section we consider the association between gender and GCSE grades during the pandemic, beyond the differences that could be explained by girls' and boys' prior attainment or other characteristics.

Our model confirms that girls generally outperformed boys in their GCSEs over the five year period to 2021. Turning specifically to the gender gap during the pandemic years, we see in Figure 1.13 that GCSE grades increased more for girls in 2020, with a gap of 0.05 grades. The initial switch from exams to centre assessments therefore appears to have benefited girls. However the further switch to teacher assessments in 2021, combined with learning losses incurred during that academic year causes this pattern to then reverse. Relative to 2019, there is a grade gap of 0.11 grades in 2021 in favour of boys.

Estimates of learning loss have tended to focus on younger pupils and caution should be exercised in translating what they mean for the GCSE cohort. However, there is some evidence that girls experienced slightly larger learning loss than boys during the pandemic. In analysis of reading outcomes in the summer term 2021, secondary aged (primarily in years 7 and 8) girls showed average learning loss equivalent to 1.9 months of learning, while secondary aged boys showed average learning loss equivalent to 1.6 months. [xviii] These differences between girls and boys were however smaller than the differences seen amongst primary aged pupils.

Figure 1.13: Estimates of 2020 and 2021 change in average GCSE grade in English and maths since 2019, for girls relative to otherwise similar boys
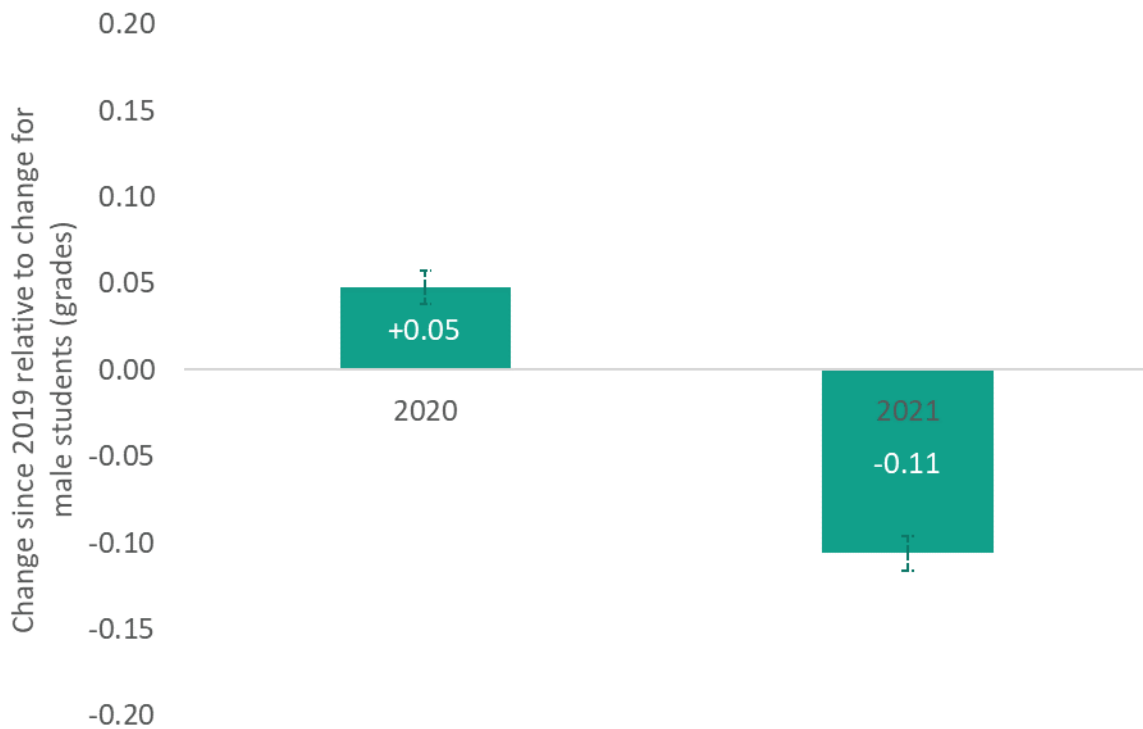
Figure 1.14 shows how the interaction term between gender and completing GCSEs in 2021 varies once we sequentially control for other factors in our model. In our most basic regression model which only includes controls for pupils' demographic characteristics, there is no significant difference in the GCSE grades awarded to girls and boys. However, once prior attainment is taken into account, the grade gap in favour of boys emerges and this female penalty is unaffected by including further controls for school or geographic characteristics. This indicates that whilst overall grades increased similarly among girls and boys in 2021, girls nevertheless lost out in that year once we take into account the prior attainment of this cohort relative to other years. It is possible that this reflects the key stage 2 reforms that were first implemented in 2016 – the relevant year for this cohort – if these affected girls and boys differentially.

Figure 1.14: Estimates for the change in average GCSE grade in English and maths between 2019 and 2021 for girls relative to otherwise similar boys, for four sequential models
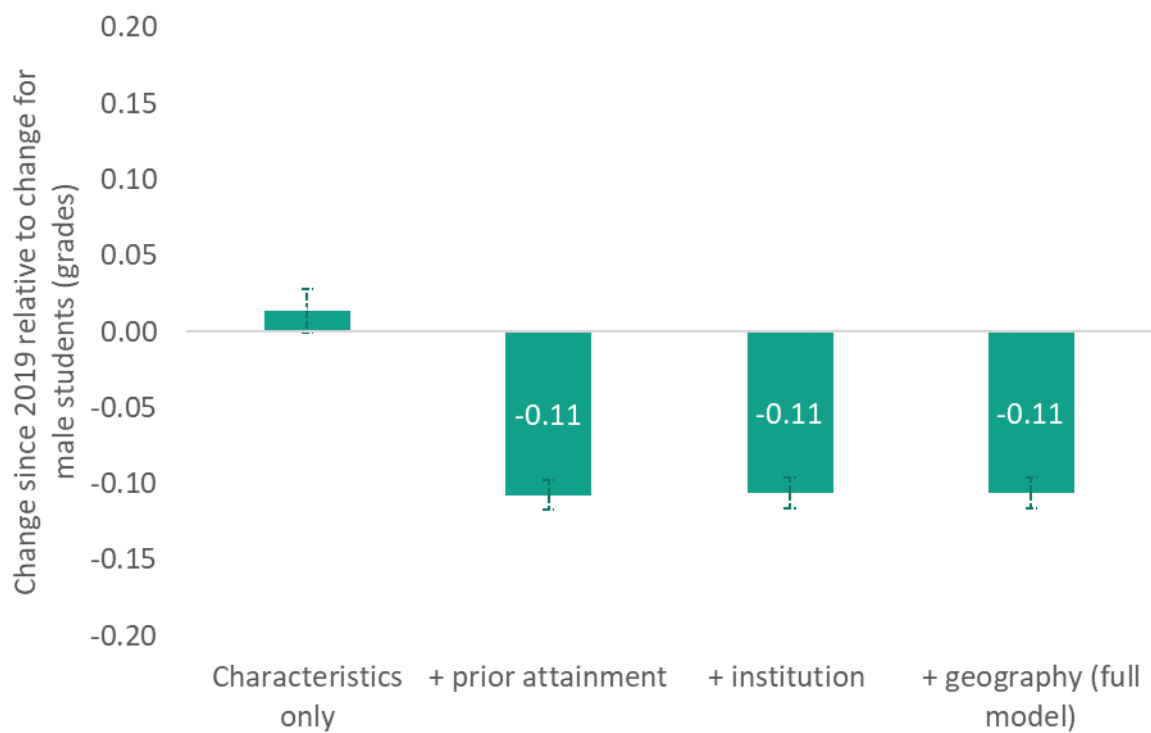
The GCSE ethnicity gap

We now look at the grade gap by ethnic background, comparing the grades of pupils from ethnic minorities with their White British peers who comprise over two-thirds of the pupil population at the end of secondary school.

Figure 1.15 shows that there are notable variations in grades by ethnic background but the same groups tend to be ahead or behind white British pupils in 2021 as 2020. Pupils from Gypsy/Roma, traveller of Irish Heritage, Black Caribbean, and White and Black Caribbean, other black backgrounds, and Pakistani backgrounds were all awarded lower GCSE grades on average than their White British peers in 2021. The gap is particularly large for Gypsy/Roma pupils at 2.71 grades, and also among travellers of Irish Heritage at 1.78 grades. Meanwhile, other ethnic groups that do better on average than White British pupils include Chinese pupils (who scored 1.82 GCSE grades higher) and Indian pupils (1.08 grade higher).

We also look at the grades of pupils who are recent entrants to state secondary schools in England and speak English as an additional language (EAL) in the two years prior to being assessed at the end of secondary school.[2] This is because research shows that the stage at which EAL pupils enter the English education system is key: the later they enter, the more educationally disadvantaged they are, and this is related to their proficiency in English.[xix] Around 5 per cent of pupils at the end of secondary school arrive late to the English state school system with EAL. These pupils were 1.64 grades behind those with English as a first language in 2021, little changed from 2020.

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[2] We define late-arriving EAL pupils as those who are recorded as having EAL, and who have entered the English state school system in year 10 or year 11 for key stage 4. The reference group is the group of pupils who are recorded with English as their first language in the current year, and who have never in the past been recorded as having EAL.

Figure 1.15: The ethnicity gap in grades (relative to White British pupils) 2019 - 2021 (GCSE English and maths)
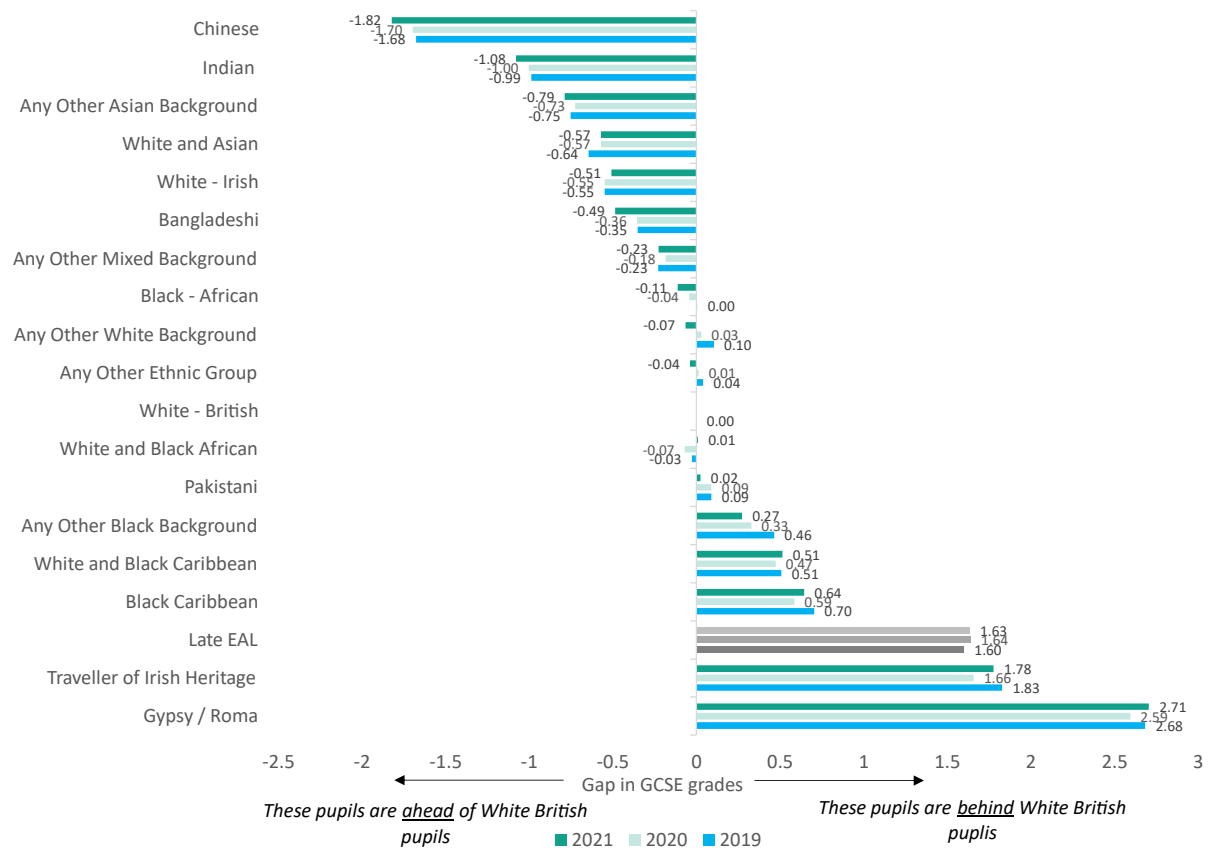
Looking at changes over time, in 2020 grade increases were widespread and all minor ethnic groups saw GCSE grade increases in English and maths compared to 2019. But in 2021, grade rises were more moderate and some minority groups actually saw their average GCSE results decline. We see a general pattern of gap-widening in 2021: those groups who were already ahead of White British pupils have mostly pulled further ahead, whilst those behind have generally fallen further behind.

Among those pupils who were behind White British pupils in 2021 (i.e. with positive GCSE grade gap scores), the only groups that substantively narrowed the gap under teacher assessed grades were Pakistani pupils (by 0.07 grades) and pupils from any other black background (by 0.06 grades). All other groups behind White British pupils either saw no change in the gap, or the gap widen in 2021.

Of these groups, travellers of Irish Heritage and Gypsy/Roma pupils saw the most significant increases in the gap, with their gaps widening by 0.12 and 0.11 grades respectively.

Turning to groups who were ahead of White British pupils in 2021 (i.e. with negative GCSE grade gap scores), just White Irish pupils saw their gap narrow significantly, while Chinese, Indian, and Bangladeshi pupils all saw their gaps increase.

The ethnic gaps discussed above will be affected by differential rates of disadvantage between ethnic groups, as well as their other characteristics. In this section, we explore whether GCSE grade increases since 2019 were larger or smaller for minority ethnic groups compared to White British pupils, even when we adjust for other observable characteristics.

Figure 1.16 shows that in 2020 the GCSE grade increases for most minority ethnic groups were not statistically significantly different from White British pupils. One exception was Black Caribbean pupils. Despite having lower grades in general, these pupils had higher grade increases in 2020 than similar White British pupils (by 0.11 grades). Conversely White Irish pupils who generally outperform white British pupils, lagged behind in 2020 by 0.09 grades. This points to a picture of broad stability in ethnic minority gaps in 2020 for most groups and suggests the earlier patterns in the descriptive gaps were driven by other characteristics associated with different ethnic backgrounds.

Turning to 2021, patterns are fairly similar. We do, however, see positive grade gaps emerge for Indian pupils (0.11 grades) who are generally higher-attaining groups, whilst Gypsy/Roma pupils trail similar White British pupils by 0.14 grades. Whilst the results for Gypsy/Roma pupils are borderline in their statistical significance, the additional grade penalty is notable because Gypsy/Roma comprises a highly vulnerable group with generally lower grades and who may have faced particular challenges in accessing online learning during school closures.

Figure 1.16: Estimates of 2019-2020 and 2019-2021 change in average GCSE grade in English and maths by ethnicity, relative to otherwise similar White British pupils

Change since 2019 relative to change for White British students (grades)
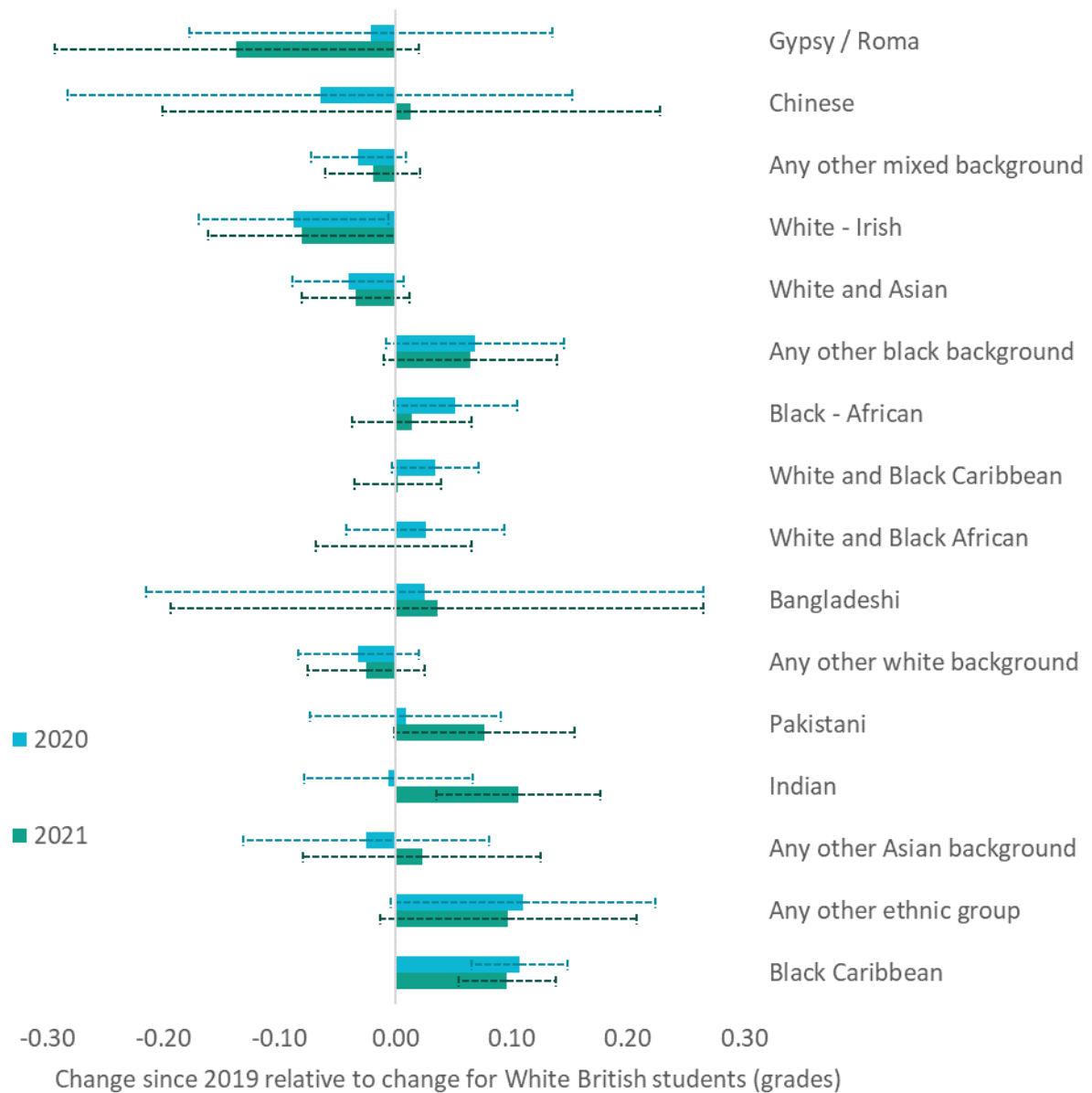
Gypsy/Roma pupils may also be more affected by patterns of GCSE non-entries and fails which result in some pupils not being awarded a GCSE grade at all (and consequently unable to benefit from any grade increases that occurred under the centre or teacher assessments). We find that when we remove these pupils from our model, this makes little difference to the findings for most ethnicities, though there is no longer a statically significant GCSE grade penalty for Gypsy/Roma pupils (at any significance level). That is, among Gypsy/Roma pupils who were awarded a grade, they did similarly to other pupils in 2021.

We previously saw that the GCSE grade gap for pupils with English as an additional language widened in 2020, before stabilising in 2021. Here we explore if these patterns hold when we control for other observable characteristics. It is worth noting that – unlike our other models for pupil characteristics (such as for ethnicity) – these results do not include prior attainment at age 11

because this data is not available for these pupils who only entered the English state school system in years 10 or 11.

Our model confirms that overall, late-arriving pupils with EAL did considerably worse in their GCSEs than their peers for the five year period to 2021. These pupils did not, however, fall significantly further behind during 2020 or 2021 (Figure 1.17).

Figure 1.18 confirms that the insignificant result for EAL pupils in 2021 is not sensitive to our model specification when we compare our most basic and fully specified versions.

Figure 1.17: Estimates of 2019-2020 and 2019-2021 change in average GCSE grade in English and maths for late-arriving pupils with English as an additional language (EAL), relative to otherwise similar non-EAL pupils
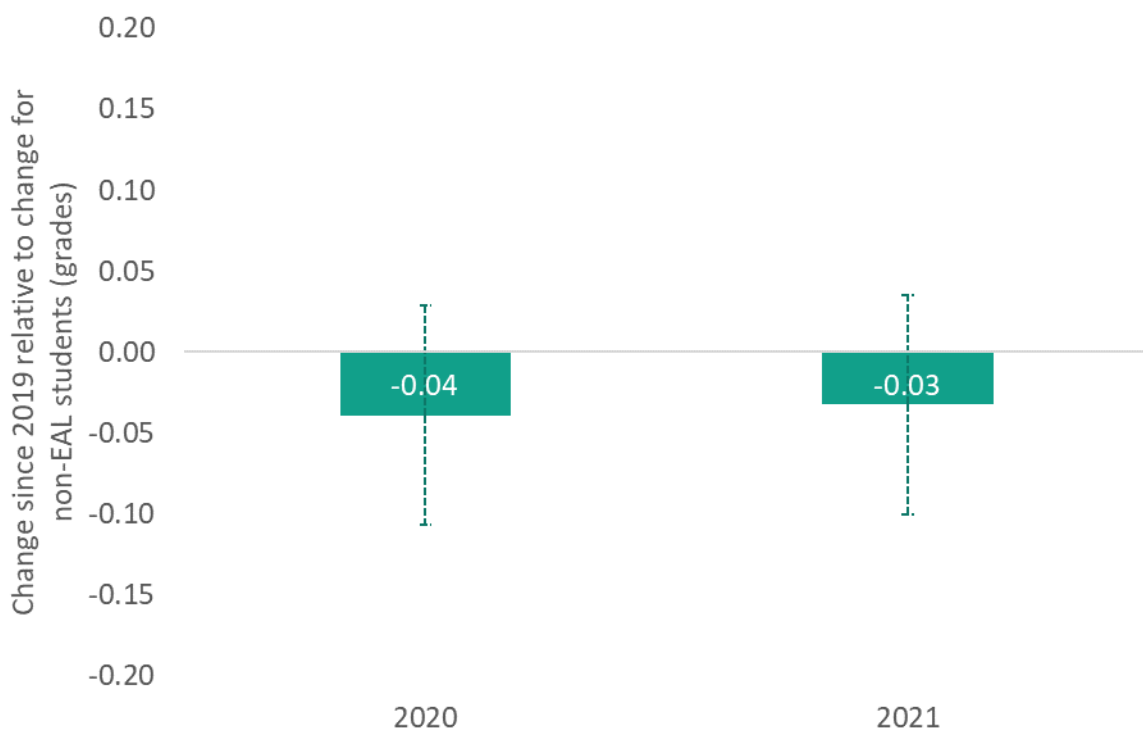
Figure 1.18: Estimates for the change in average GCSE grade in English and maths between 2019 and 2021 for late-arriving pupils with English as an additional language (EAL), relative to otherwise similar non-EAL pupils, for four sequential models

As for Gypsy/Roma pupils, those arriving late with EAL may be differentially affected by patterns of GCSE non-entries and fails. When we remove from our model those late-arriving EAL pupils who were not awarded a GCSE grade at all, the picture changes. We do now see a significant grade penalty (of 0.19 grades in 2020 and 0.12 grades in 2021) for late-arriving pupils with EAL compared to their peers.

The GCSE gap for Special Educational Needs and Disabilities (SEND) pupils

Pupils with special educational needs and disabilities (SEND) have learning difficulties or disabilities that make it harder for them to learn than most children of the same age. Overall around 15 per cent of pupils at the end of key stage 4 have some form of SEND. There are two main categories of SEND pupils: those with an Education, Health and Care Plan (ECHP) (or, prior to 2014, a statement of SEN support) and those without.

Figure 1.19 sets out the size of the SEND grade gap for these two groups for the period we have consistent data, 2017-2021. Pupils with SEND – particularly those with an EHCP – have far lower GCSE grades than their non-SEND peers. By the end of secondary school, SEND pupils with an EHCP scored 3.64 grades behind their peers in 2021 – the single largest gap of any pupil characteristic that we consider. SEND pupils without an EHCP were 1.71 grades behind.

These two groups have not benefited from the overall grade increases in 2021. Compared to 2020, the gap for SEND pupils without an EHCP widened by 0.06 grades in 2021, whilst those with an EHCP saw a marginal increase of 0.02 grades. It follows a longer-term trend of slowing progress in closing the gap for the non-EHCP group, and progress stalling altogether for those with an ECHP even prior to the pandemic.

Figure 1.19: Trends in the size of the secondary SEND gap in English and maths GCSE, 2011-2021
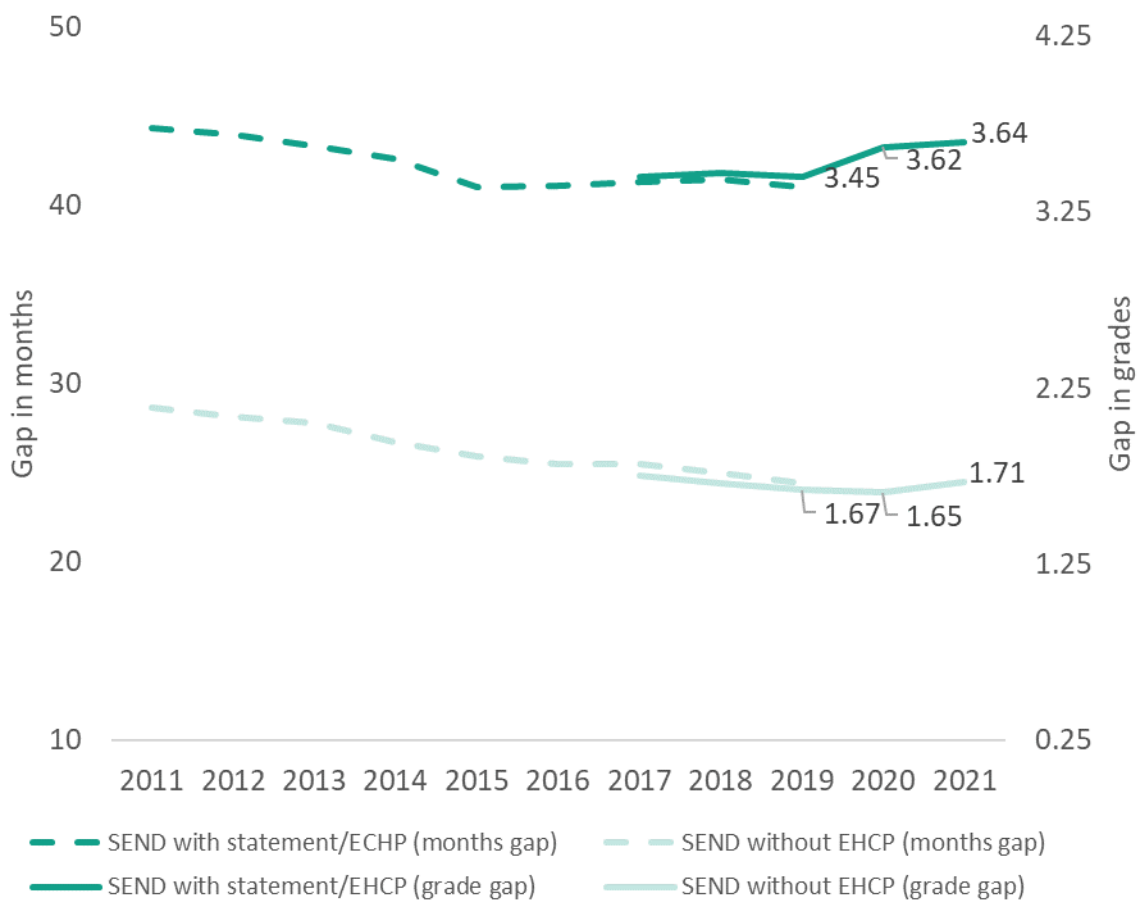
In this section, we specifically investigate whether pupils with SEND benefited less from GCSE grade increases during 2020 and 2021 than otherwise similar students without additional needs.

Figure 1.20 shows that in 2020, SEND pupils with more severe and complex needs fell further behind non-SEND pupils by 0.13 GCSE grades, whilst the gap widened by 0.03 grades for SEND pupils without an EHCP (beyond the differences that could be explained by their prior attainment or other characteristics). By 2021, the SEND penalty had grown slightly for both groups: for those with an EHCP to 0.15 grades, and to 0.06 grades for those without. These patterns suggest that the pandemic widened educational inequalities for pupils with SEND, especially among those with more severe and complex needs.

Previous estimates of learning loss using assessment data in reading and maths have presented a mixed picture in terms of pupils with SEND. Analysis for the Department for Education concluded that during the academic year 2020/21, pupils with an identified SEND did not appear to have been affected by the pandemic to a greater extent in reading and maths than the average pupil, though by the summer term there were some differences in secondary reading.[xx] Further studies specifically looking at the experiences in special schools have found that pupils experienced developmental losses in their communication and social skills, independence and self-care, and physical development.[xxi]

Figure 1.20: Estimates of 2020 and 2021 change in average GCSE grade in English and maths for pupils with SEND, relative to otherwise similar pupils without SEND
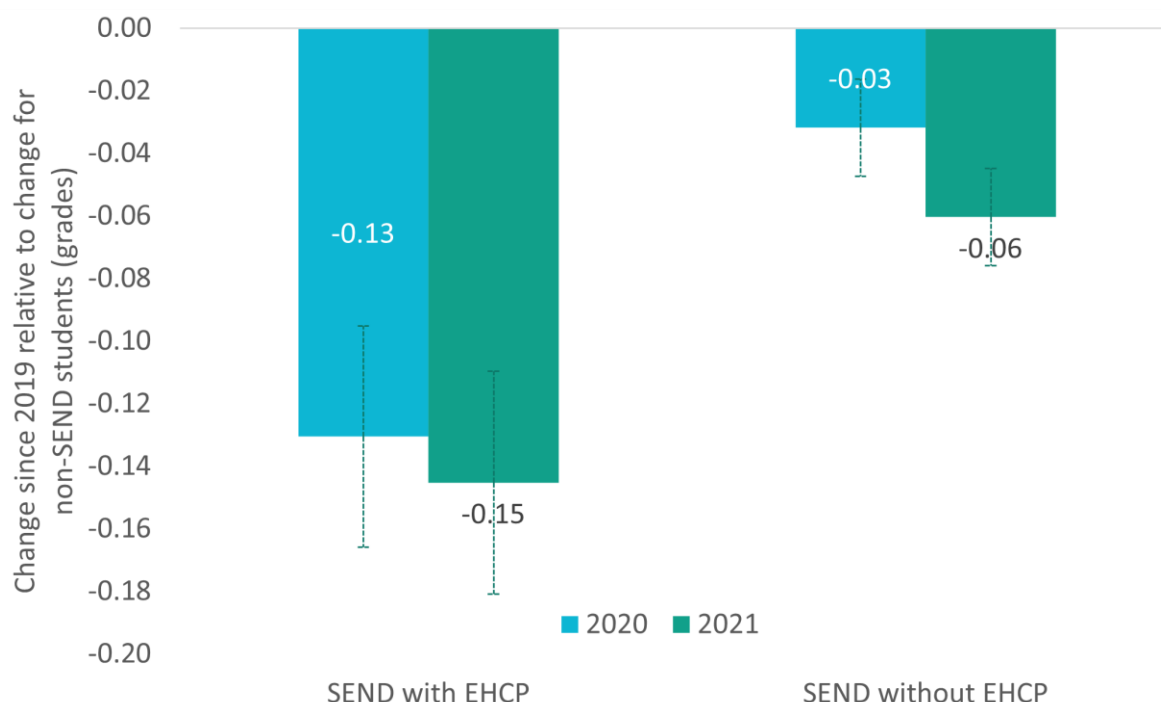
Figure 1.21 shows the regression coefficients for the interaction term between SEND status and GCSEs awarded in 2021 for four different versions of our model. For pupils with an EHCP, the SEND penalty in 2021 is similar across most specifications, though is somewhat larger once we control for prior attainment compared to our most basic model. Similarly it is the inclusion of controls for prior attainment that makes the most difference for SEND pupils without an EHCP. This indicates that the

2021 SEND penalty is larger still once take into account the prior attainment of this cohort relative to other years.

Figure 1.21: Estimates for the change in average GCSE grade in English and maths between 2019 and 2021 for pupils with SEND, relative to otherwise similar pupils without SEND, for four sequential models
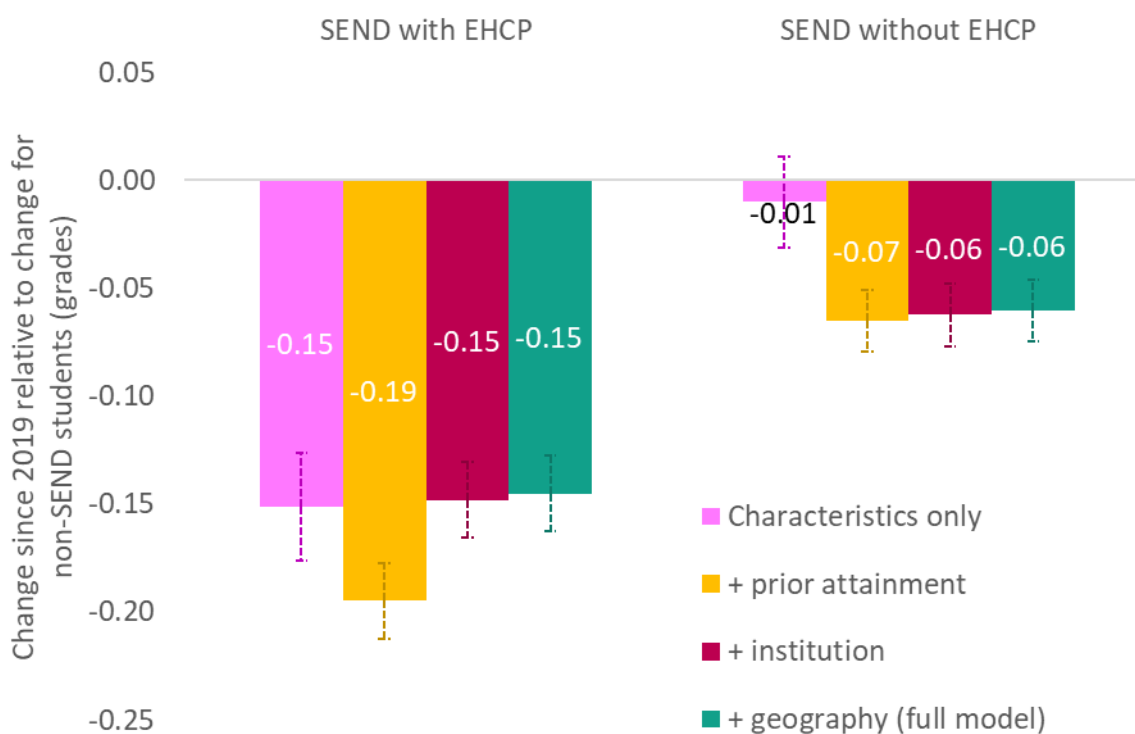
Pupils with an EHCP were able to access face-to-face learning whilst most other pupils were accessing only online learning.[xxii] However, young people with SEND became even less likely to be attending schools than their peers during the pandemic. In 2020/21 the absence rate of pupils with an EHCP in school was 50 per cent higher than in 2018/19.[xxiii] These absences appear to have been driven by a number of additional barriers that these young people have faced including:

- medical needs that required them to shield;
- anxieties about the pandemic felt by parents and carers, and the children and young people themselves; and
- problems accessing transport.

Furthermore, of those who did not attend many may have struggled with online learning where it was available.

The GCSE gap by school type

In 2020 and 2021, average grades increased across most school types (except special schools in 2021), with increases in 2021 less pronounced than in 2020. Here we explore the specific impact of school type – over and above the effects of other characteristics – in more depth.

Figure 1.22: Average GCSE grade in English and maths by school type, 2017-2021
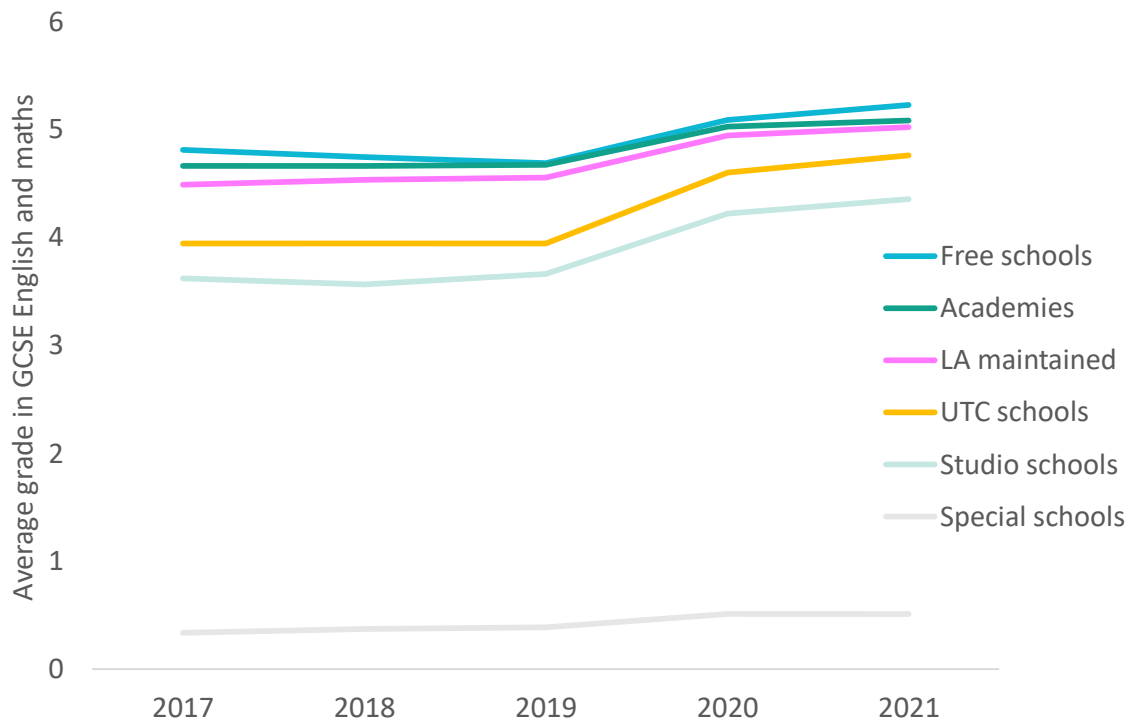
Figure 1.23 shows the GCSE grade increases since 2019 in different school types compared to local authority maintained schools, which is our reference category. It is based on our fully specified model so we are comparing schools that are otherwise similar in their pupil characteristics, other institutional characteristics and geography.

Relative to the GCSE grade increases for local authority schools, we see that in 2020 and 2021, converter academies had lower grade increases, free schools and sponsored academies had similar increases, and university technical colleges (UTCs) and studio schools had considerably higher increases. Meanwhile special schools had markedly lower increases relative to local authority schools.

Figure 1.23: Estimates of 2020 and 2021 changes in average GCSE grade in English and maths for different school types, relative to the change for LA maintained schools
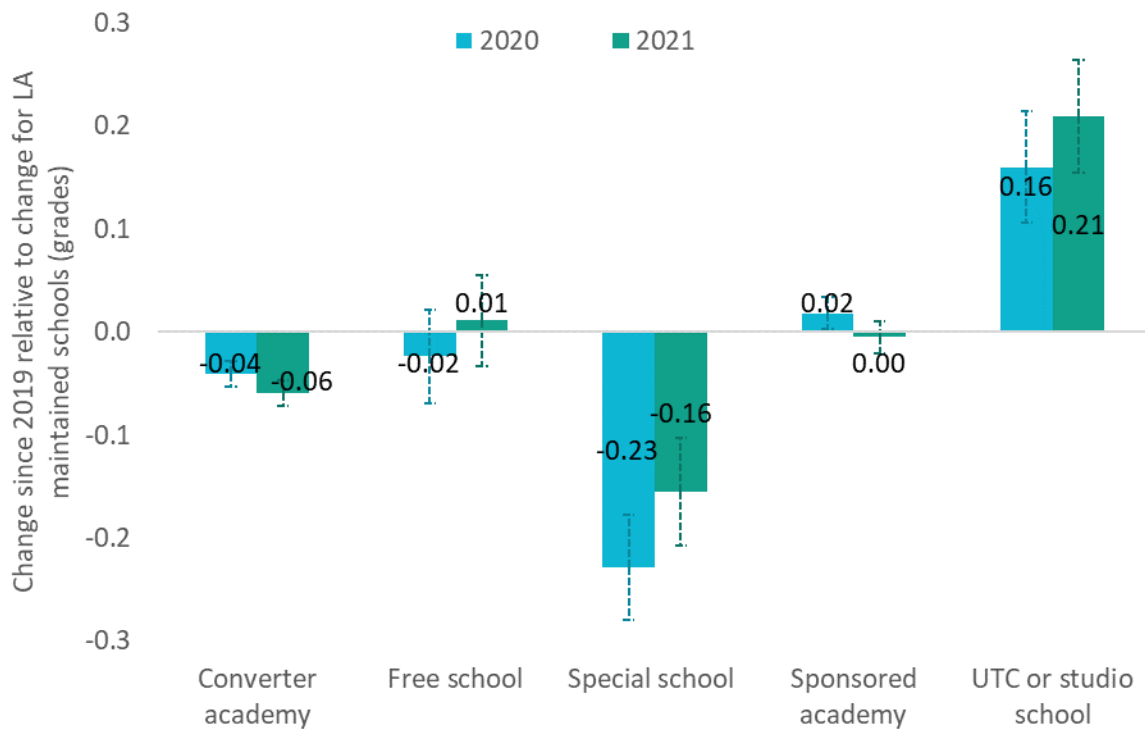
We can see in Figure 1.24 that these general patterns associated with school type in 2021 hold even when we vary our other controls at a school, geographic and pupil level (though the results for special schools are more sensitive to what other characteristics are taken into account).

Figure 1.24: Estimates for the change in average GCSE grade in English and maths between 2019 and 2021 for different school types relative to the change for LA maintained schools, for four sequential models
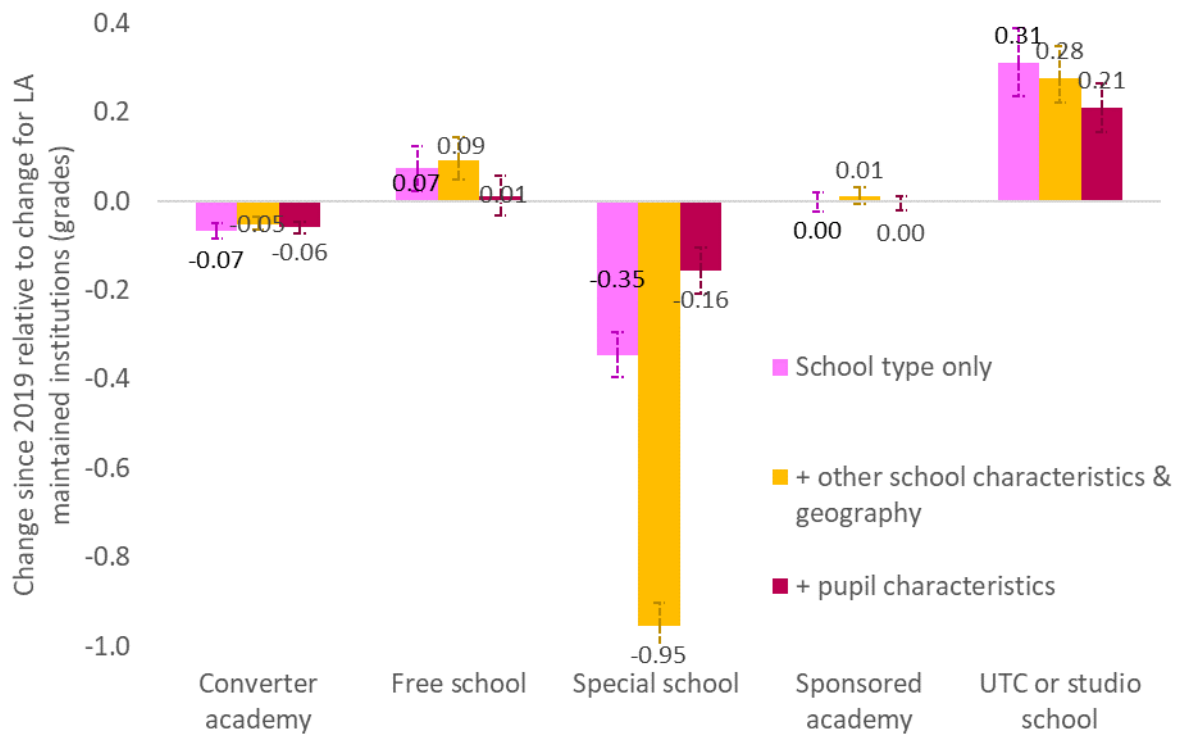
One possible explanation of the differential grade inflation by school type is the pattern of GCSE non-entries and fails which meant that some pupils were not awarded a GCSE grade at all. For these pupils, they simply were not in a position to benefit from any grade increases that occurred under centre or teacher assessments during the pandemic. We therefore consider whether differential rates of pupils with zero grades for either reason could help explain the grade gaps we see above.

We find that when we strip out pupils with no GCSE results in English or maths from our model, the grade gaps are essentially unchanged or slightly narrower for most school types. The notable exception is special schools. We find there is now a positive grade gap for special schools in both 2020 and 2021 meaning that these schools actually saw greater grade increases than otherwise similar local authority schools, once we account for their higher share of pupils who do not get awarded a grade at all.

On this basis, the lower grade increases in special schools during the pandemic appears to be entirely explained by these schools having higher numbers of pupils who were not awarded any GCSE grades in English or maths (who by definition, could not benefit under centre or teacher assessments). And among pupils who did pass their GCSEs, those in special schools actually did somewhat better than similar pupils in other schools during the pandemic. However, in this analysis we cannot distinguish between those pupils who were not entered for GCSE qualifications and those that were entered but then were not awarded a grade. Therefore, this analysis may mask some learning loss effects.

Trends in grades awarded and disadvantage gaps in 16-19 education

In 2020, the COVID-19 pandemic caused widespread disruption to the qualification grading process, and EPI research showed that the 16-19 disadvantage gap grew wider as a result[xxiv]. The research established that the widening of the gap was associated primarily with differences in the qualification types taken by disadvantaged and non-disadvantaged students. Specifically, disadvantaged students were less likely to enter A levels, and as A level grades increased by more than other qualification types between 2019 and 2020, this was one factor which caused the 16-19 disadvantage gap to widen.

Statistics from the DfE suggest that A level and applied general qualification grades increased again in 2021, and that within qualification disadvantage gaps got wider. Our analysis in this section provides an update of our student level 16-19 disadvantage measures to include 2021 results data and provides breakdowns of students' grades by key characteristic groups.

Methodology

Descriptive statistics

Our initial descriptive analysis examines student grades with no adjustment for prior attainment or other characteristics. This allows us to assess in absolute terms, the grade gap between disadvantaged and non-disadvantaged students, and how this changed in 2021. Our regression modelling presented alongside make further adjustments such that the impact of qualification type and other factors can be examined between otherwise 'similar' students, in terms of their prior attainment and demographic characteristics.

We present our headline 16-19 measures under two separate methodologies. Under method 1, equal weighting is applied to qualifications at the same level with a similar number of guided study hours. Method 2 gives extra weighting to academic compared to applied or vocational qualifications proportionate to the economic returns seen to these qualifications in later life.[xxv] For example, under method 1, a level 3 BTEC with the same number of guided learning hours as an A level will receive broadly the same point scores as an A level; it would receive exactly the same points if they had the same number of distinct pass grades. Under method 2, the point score allocated to academic qualifications such as A levels is inflated relative to applied or vocational qualifications.

All level 1-3 qualifications students were awarded during the 16-19 phase are in scope to be included in our best three-point score measure. Where many level 1 and 2 qualifications do not already have '16-19 style' points allocated by the DfE, we populate points based on the size and guided learning hours of the qualification relative to a GCSE. We then map these 'GCSE style' points onto our 16-19 points structure using a mapping derived from AS levels, given AS qualifications have an established points structure relative to both GCSEs and A levels.

Throughout the 16-19 sections of this report, we define disadvantaged students as those that had claimed a free school meal in any of the 6 years prior to finishing key stage 4. We define persistent disadvantage as students that were claiming a free school meal for over 80 per cent of their time in

education up to the age of 16. This approach identifies students that have experienced more sustained periods of disadvantage than the wider group of students included in our standard disadvantage measure.

As mentioned in the key stage 4 sections of this report, there have been changes to the free school meal eligibility criteria in recent years. This change, alongside free school meal protections offered by the DfE during the roll out of Universal Credit, has caused some inconsistencies through time when using free school meal-based measures. For students finishing 16-19 study in 2021, we are using free school meal data from 2018 and 2019. Free school meal protections began in 2018, this means that in the 16-19 phase, our measure of whether students claimed a free meal in at least one of the 6 years up to the end of key stage 4 is unaffected. When we consider persistent disadvantage, the impact will be minimal, affecting only those that lost eligibility in 2019, but retained their free meal as a result of DfE protections. However, with each year the impact on our persistent disadvantage measure will increase, and in several years time our 'ever 6' measure will begin to be affected too. As with key stage 4 analysis, we are considering alternate measures we may be able to use during the affected periods.

Differences in coverage

In a usual year, the DfE identify students considered to be at the end of their 16-19 study programme, and therefore to be included in published results, according to three rules. To be included, students must have met one of the following criteria:

- Attended the same post 16 institution for two years

- Have entered level 3 qualifications of size equivalent to at least two A levels (and each individual qualification equivalent to at least one A level)

- Have reached aged 18 by the start of the academic year

There is then a checking exercise through which institutions can make changes to their data, for example if a student aged 17 meets one of the above criteria, but has not yet completed their study programme, they can be removed and reported in the following year's results.

In 2020 and 2021 when grading processes were disrupted by the pandemic, no institution level data were published by the DfE, so the checking exercise did not go ahead. However, in 2021 the DfE removed the first of the above three inclusion rules to avoid reporting students that had not yet finished their study programme, as far as is possible.

This adjustment removed more students that would normally be removed in the checking exercise, and was made only in 2021, although similar issues were present in 2020 data.

As a result of these processes, the datasets we conducted our analysis on were not directly comparable between years. We have further restricted the coverage in years prior to 2021 to create more consistent datasets and present our best estimates of a comparable time series throughout this report. Further detail on this adjustment is provided in Annex D.

Methodology – models adjusting for prior attainment and other characteristics

To understand how different students fared in 2021, we created a series of regression models pooling students from 2018, 2019, 2020 and 2021.

We calculated students' grade outcomes by adding together their top three level 3 qualification results during the 16-19 phase, to create a total point score for each student. The qualifications could be any combination of academic, applied general or vocational qualifications. However, this measure differs from that used in our headline disadvantage gap measures as it focuses on a subset of level 3 qualifications and does not include level 1 or 2 qualifications.

As mentioned in the previous section, there were differences in the rules used to allocate students to a particular cohort in both 2020 and 2021, and we are not able to make quite the same adjustments to the datasets feeding into our modelled analysis. To reduce the effect of these differences on our modelling, we restricted our analysis to students completing at least 2 A level sized qualifications, and we include a year-age interaction term to reduce the impact of these administrative changes. It should be noted that because of these adjustments, the results for 2020 presented here are not directly comparable with those from our previous report.[xxvi]

Because we include qualifications taken at any point during their 16-19 study, the total point scores for the cohort finishing in 2021 and 2020 may include some results from earlier years, if that was one of the students' best qualifications. It is more likely that this will affect applied or vocational students as their assessments and results may be spread out over the course of their study programme, in comparison to academic qualifications where students predominately take one final exam and are awarded the qualifications at the end of the course.

We produced models with the total point score over three qualifications as our dependent variable, and students' demographic characteristics, prior attainment, the proportion of applied general or vocational qualifications studied, the year the student completed their study, and institution characteristics as the independent variables. To understand how the grades of different groups of students changed between 2019 and 2020 or 2021, we included interaction terms between the characteristic in question and the year in which the student completed their study.

Within the following analysis, we will refer to "otherwise similar students" e.g. "This leaves persistently disadvantaged students almost 0.6 grades behind otherwise similar non-disadvantaged students". This should be interpreted as the estimates from our model for the comparison group, once the full range of other student and institution characteristics have been controlled for. So in the example above, we are comparing the estimates for persistently disadvantage students with the reference group of non-disadvantaged students in our full model. We have not used any form of direct matching of comparison groups for this analysis.

For all the regression coefficients, a value of +10 is the equivalent of an increase of roughly one A level grade. Although for some qualifications 10 points is not equivalent to one grade, for simplicity throughout this report we equate 10 points to one grade.

Unless stated otherwise stated statistical significance tests are performed at the 5 per cent level, and confidence intervals on charts are at the 95 per cent level.

Fuller model outputs can be found in Annex B.

Entry patterns in 16-19 education

In this section of the report, we update our previous analysis to examine how 16-19 entry patterns, disadvantage gaps, and grades for students with different characteristics changed in 2021.

Figure 2.1 shows that across all years examined, disadvantaged students on average entered fewer qualifications during the 16-19 phase. The flattening in the AS level entry numbers seen in recent years continued into 2021, and confirms that the effect of decoupling AS levels and A levels has concluded.

We also see that a greater proportion of the level 3 qualifications held by disadvantaged students are applied general and other non-academic level 3, rather than A levels. The opposite is true for non-disadvantaged students, though the proportion of entries accounted for by applied and vocational qualifications has been increasing in recent years for all students. Finally, we also see a larger number of GCSEs (including resit qualifications) and other level 1 & 2 qualifications amongst disadvantaged students.

Figure 2.1: Average number of qualifications held per student by type and disadvantage status, 2018-2021
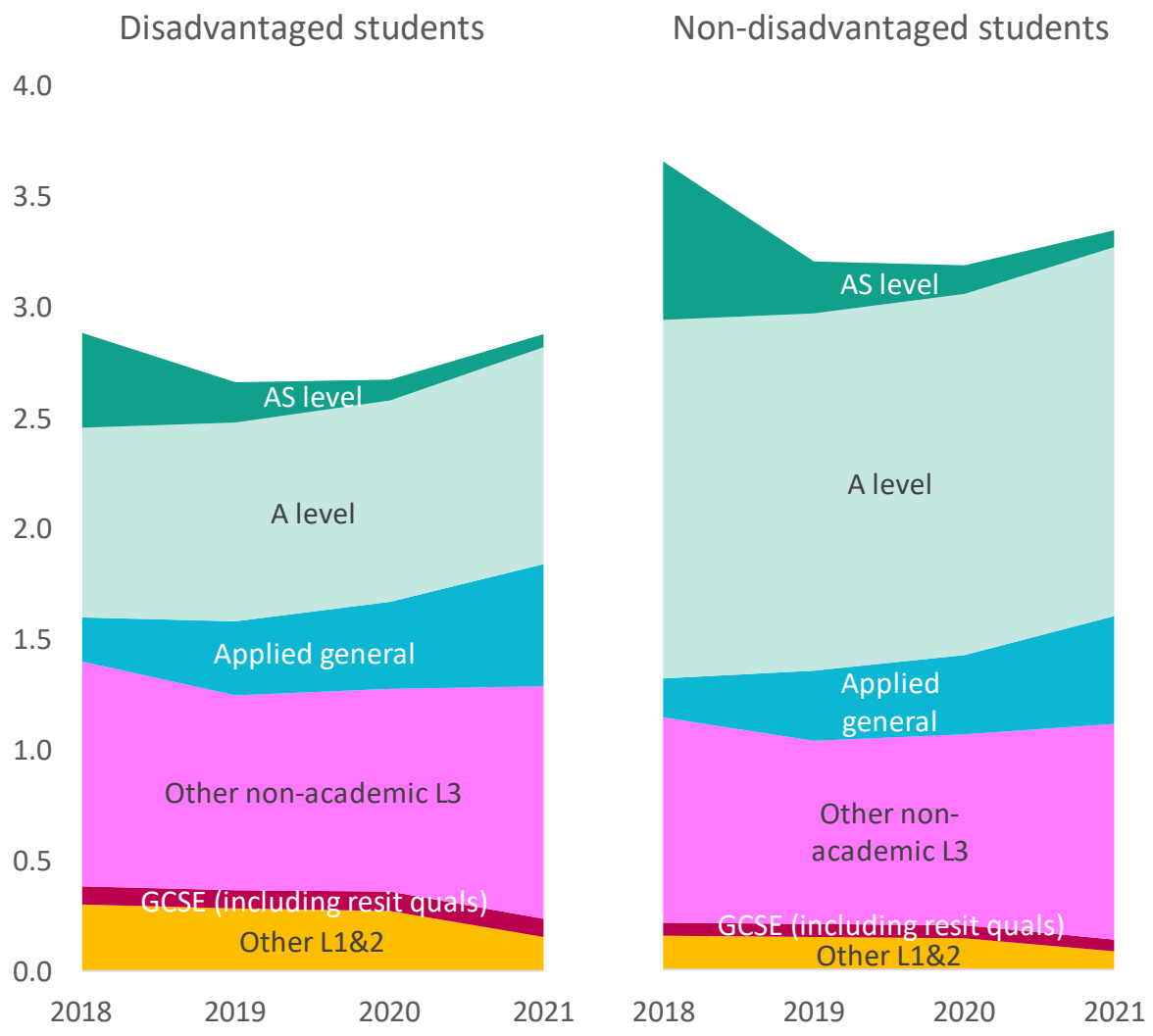
The 16-19 qualification type gap

Figure 2.2 shows the total point score in students' best 3 qualifications under both method 1 (academic and other qualifications of the same size and level allocated the same points) and method 2 (greater weight given to qualifications with greater returns to income).The dashed line on the right-hand side demonstrates that we have indexed the 2020-2021 time series (with one set of coverage rules) to the 2020 figure from the 2017-2020 times series (with another set of coverage rules).[3]

The figure shows that for all students, the point score over their best 3 qualifications decreased between 2017 and 2019 on average. This is likely to be in part down to the reforms to A levels and AS levels which took effect over this period. In 2020 under the disrupted awarding process, there was an increase in grades compared to 2019, this increase continued at a broadly steady rate in 2021 when lost learning was more widespread.

The increases in 2020 and 2021 seen in Figure 2.2 were more pronounced under method 2, again suggesting that grade increases were more significant for academic qualifications in both of these disrupted years. Indeed, Figure 2.3, which shows the change in average point score per qualification split by level 3 qualification type, confirms this to be the case.

Figure 2.2: Total point score in best 3 qualifications 2017-2021
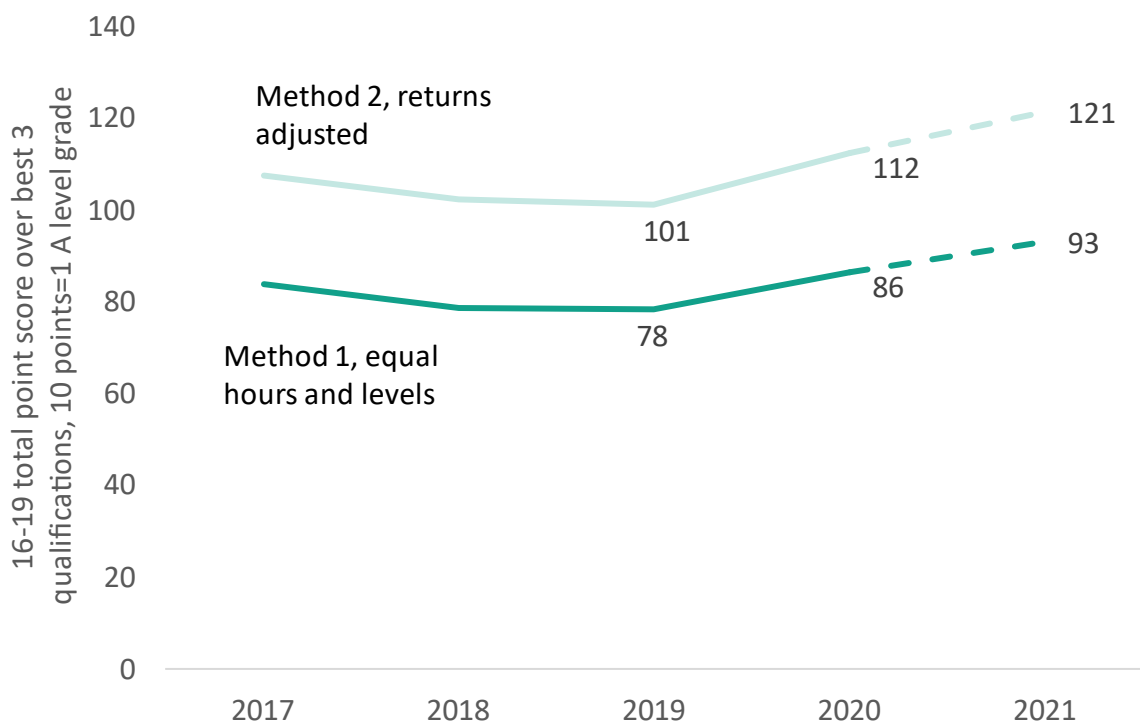
Figure 2.3 shows that between 2018 and 2019, the average point score per applied general qualification remained at a similar level, before increasing by around a quarter of a grade in 2020, when the grading process was disrupted by COVID-19. In 2021, with different grading processes again, and more widely disrupted learning, applied general grades increased by a further two fifths of a grade, a total increase of around two thirds of a grade since 2019.

Conversely when considering A levels, the average point score per qualification decreased slightly between 2018 and 2019 (likely to be as a result of the 'decoupling' reform to AS and A levels, the impact of which was still affecting entry choices in the first year of A level study). However, between 2019 and 2020, A level grades increased substantially by half a grade, and by a further two thirds of a grade in 2021. This means that since 2019, A level grades increased at 1.7 times the rate of applied general qualification grades.

For other level 3 qualifications (non-academic excluding applied general) there was little increase at all between 2019 and 2020, and a slight decrease in average grades in 2021.

Figure 2.3: Average point score per qualification in A levels and applied general and other level 3 qualifications, 2018-2021[4,5]
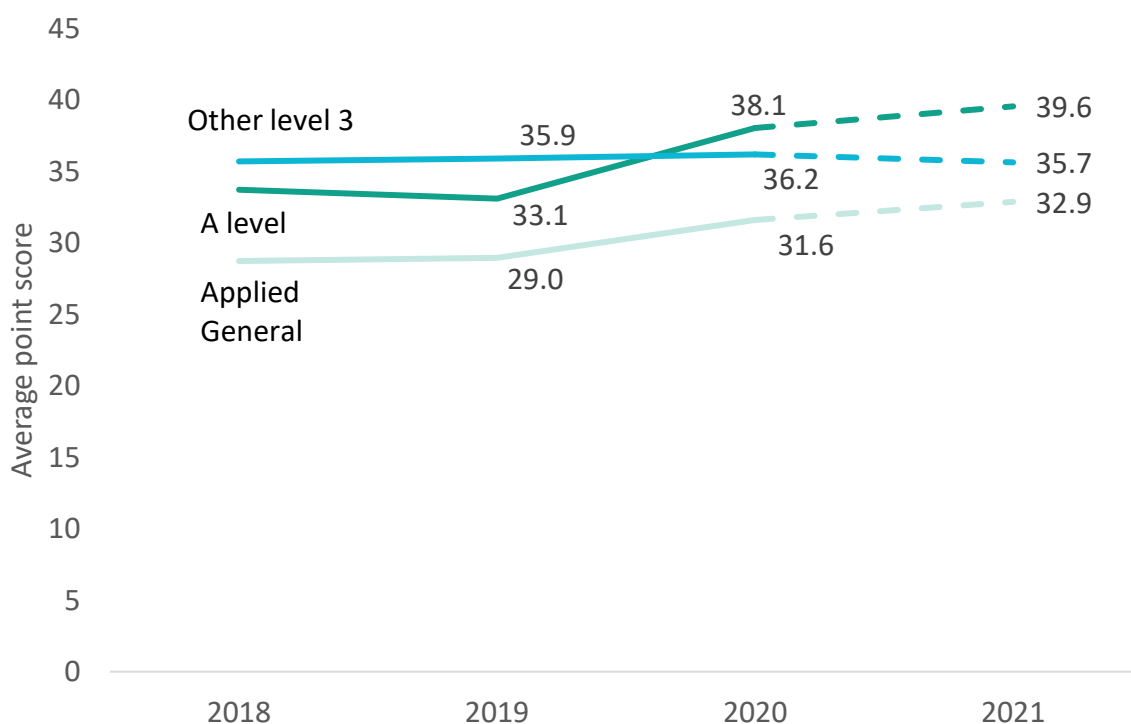
As we can see in Figure 2.4, after controlling for student and institution characteristics, the picture is similar. Our modelled estimates demonstrate that there were large increases to the grades awarded in 2020 and 2021 for both academic students and applied general students. However, between 2019 and 2021, students taking only academic qualifications experienced an average increase of 2.2

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[4] Per 'qualification' in this context is based on qualification size rather than number, so that a student holding a non-academic qualification equivalent in size to 3 A levels would have the point score for this qualification divided by 3.

[5] This chart and following outputs are based on methodology one unless stated otherwise, that is the method that gives equal weighting to qualifications of the same level and with similar guided learning hours.

grades over their best three qualifications, whereas applied general students only saw an increase of 1.4 grades. As such, academic students saw their point score increase by 0.9 grades more than otherwise similar applied general students in 2021.

Figure 2.4: Estimates of the conditional change to level 3 grade score for academic and applied general students in 2020 and 2021 in comparison to their respective values in 2019
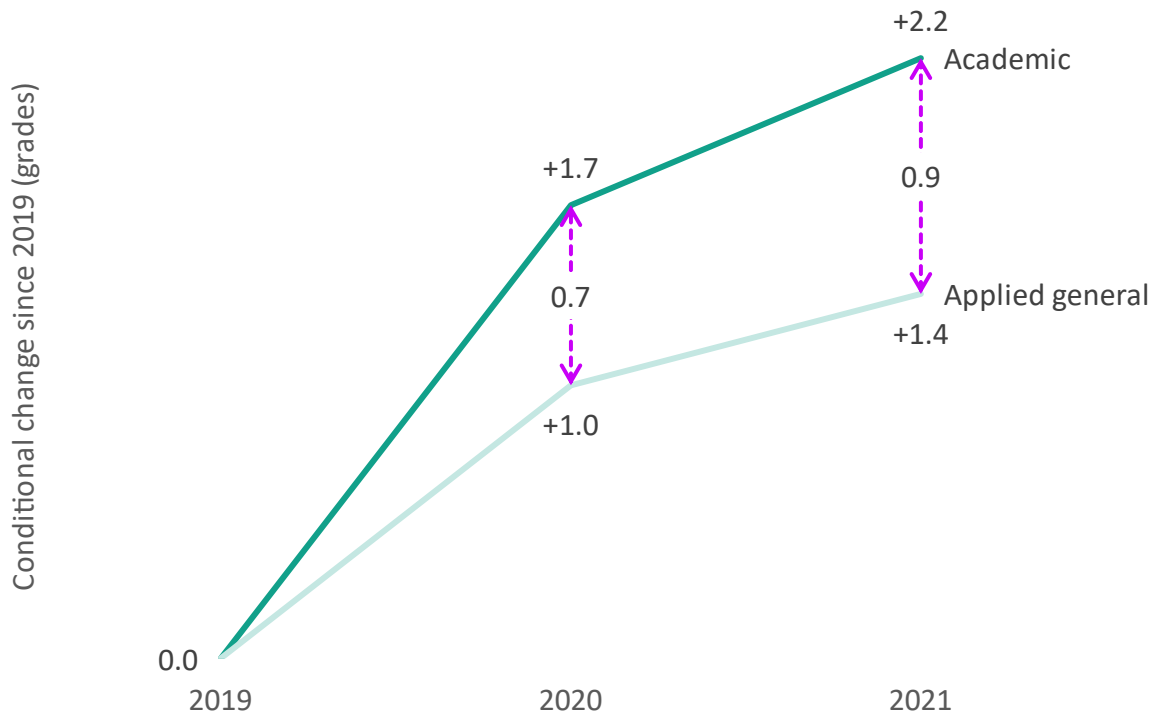
It should be noted that whilst in 2020 this qualification gap would have been largely driven by differences in assessment, in 2021 it will have been driven by some combination of differences in assessment and differential learning loss. For example, whilst academic courses could continue online, there may have been greater difficulties in delivering qualifications with a hands-on element during school or college closures. **Error! Reference source not found.**Figure 2.5 shows our model estimates for the change in grade score between 2019 and 2021 for applied general students, relative to the change for A level students, for four different versions of our model, each with more controls than the last. The negative figures show that irrespective of the controls in our model, A level students saw around a grade's greater increase than applied general students in 2021. i.e., student and institution characteristics explain little of the differences in grade increases between A level and applied general students.

Figure 2.5: Estimates of the change in level 3 grade scores between 2019 and 2021 for students taking applied general qualifications relative to students taking A levels, for four sequential models
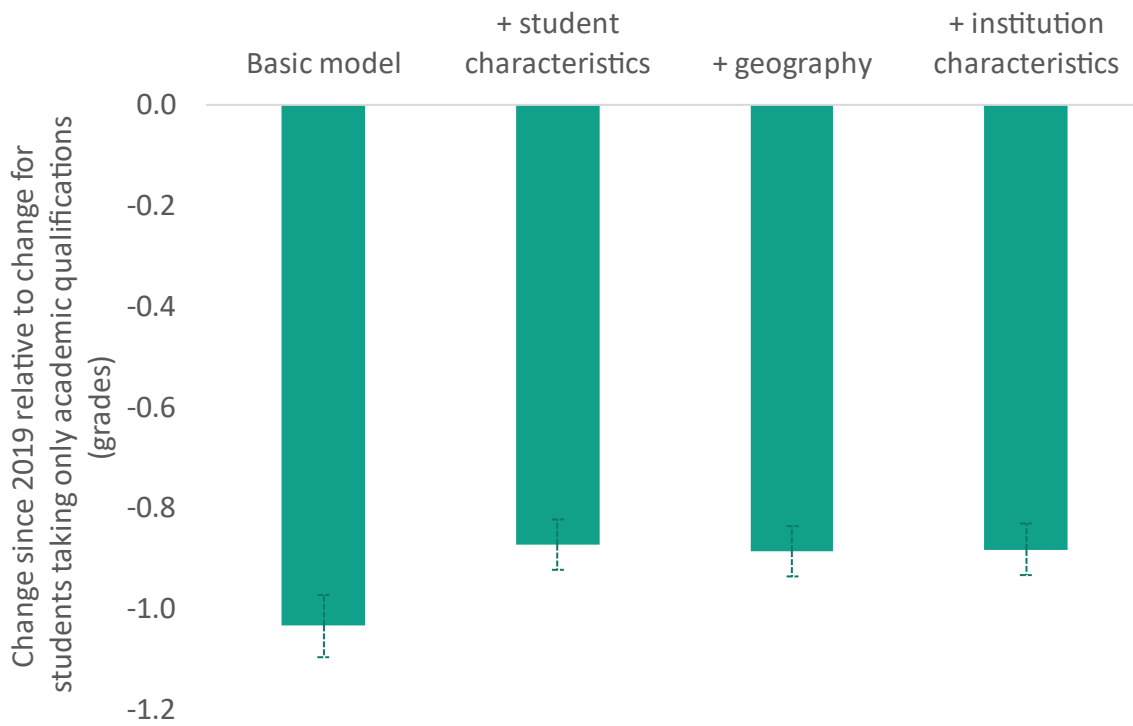
The 16-19 disadvantage gap

Figure 2.6 below shows the disadvantage grade gap over students' best three qualifications in the 16-19 phase since 2017.

Although there was a very slight narrowing between 2017 and 2019, the gap stayed broadly stable between 2.6 and 2.7 grades under method 1. One of the main reasons for this fall is likely to be the recent reforms to A levels and AS levels.[xxvii] These reforms led to fewer students entering AS levels, and many of those who did not complete the full two-year A level no longer left 16-19 education with a qualification reflecting their first year of study. As non-disadvantaged students were more likely to take these academic qualifications in the first place, this is likely to have resulted in a narrowing of the gap.

In 2020, the minor narrowing of the gap since 2017 was reversed and the gap widened to 2.9 grades. This widening continued into 2021, when we estimate the gap to have been over 3 grades under method 1.

Under method 2, the widening of the gap between 2019 and 2021 was even more pronounced. Given this measure gives a greater weighting to academic qualifications, a higher proportion of which are taken by non-disadvantaged students, this suggests that in 2021, the effects of learning loss and differing grading processes between academic and applied or vocational students were not equal. Our modelled results in the previous figure reinforces this conclusion and examines this effect in more detail.

It should be noted that the gap in grades awarded in 2021 will reflect differences in underlying learning loss caused by the disruption of the pandemic, and the different grading processes in 2021. These two effects will be above and beyond the effect of any usual year-on-year variations in results, and it is not possible to disentangle the relative impact of these two factors.

Figure 2.6: 16-19 disadvantage grade gap over best three qualifications – method 1&2, 2017-2021
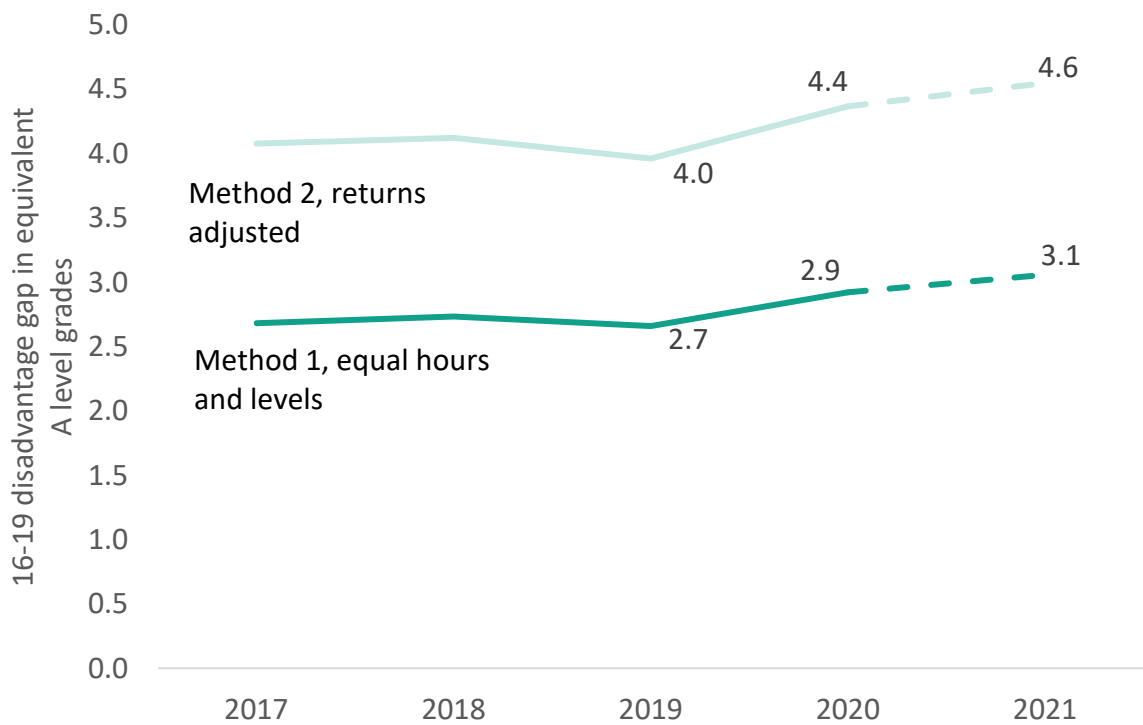
As with key stage 4, we see an even wider disadvantage gap when we consider the 16-19 grades of persistently disadvantaged students, compared to those of non-disadvantaged students. Figure 2.7 shows similar trends to the overall 16-19 disadvantage grade gap up to 2019. However, the widening of the gap in 2020 was more prominent than in our standard disadvantage gap measures. The persistent disadvantage gap widened again in 2021, but the extent of this was more modest than in 2020.

Figure 2.7: 16-19 persistent disadvantage grade gap – method 1 and 2, 2017-2021
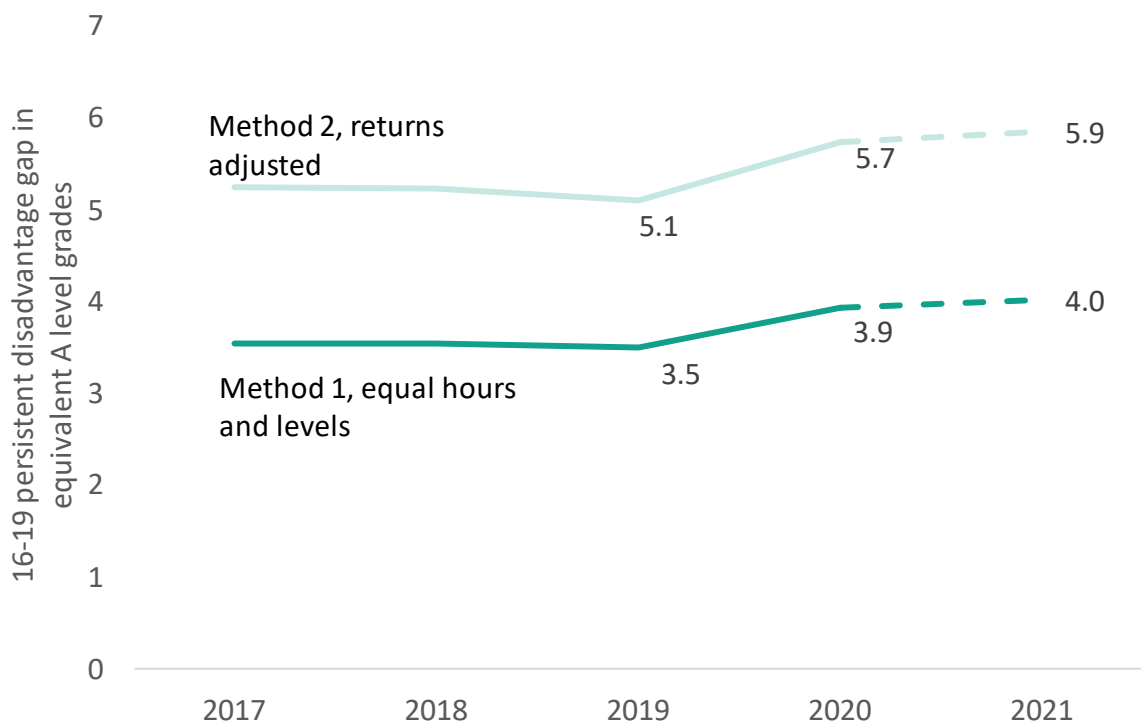
Figure 2.8 shows that the disadvantage gap per entry by qualification type decreased between 2019 and 2020, for both A levels and non-academic level 3 qualifications (not including applied generals). However, these differences were reversed entirely in 2021 such that the disadvantage gap for these qualification types now stands at a similar level to 2019.

Notably different, is the trend for applied general qualifications. The gap was relatively stable between 2018 and 2019, before widening in 2020, and widening again by a far greater amount in 2021. Although the gap is still wider for A levels than it is for applied general qualifications, the difference between these two gaps is the narrowest it has been in our time series to date.

Figure 2.8: The 16-19 per qualification disadvantage gap, 2018-2021
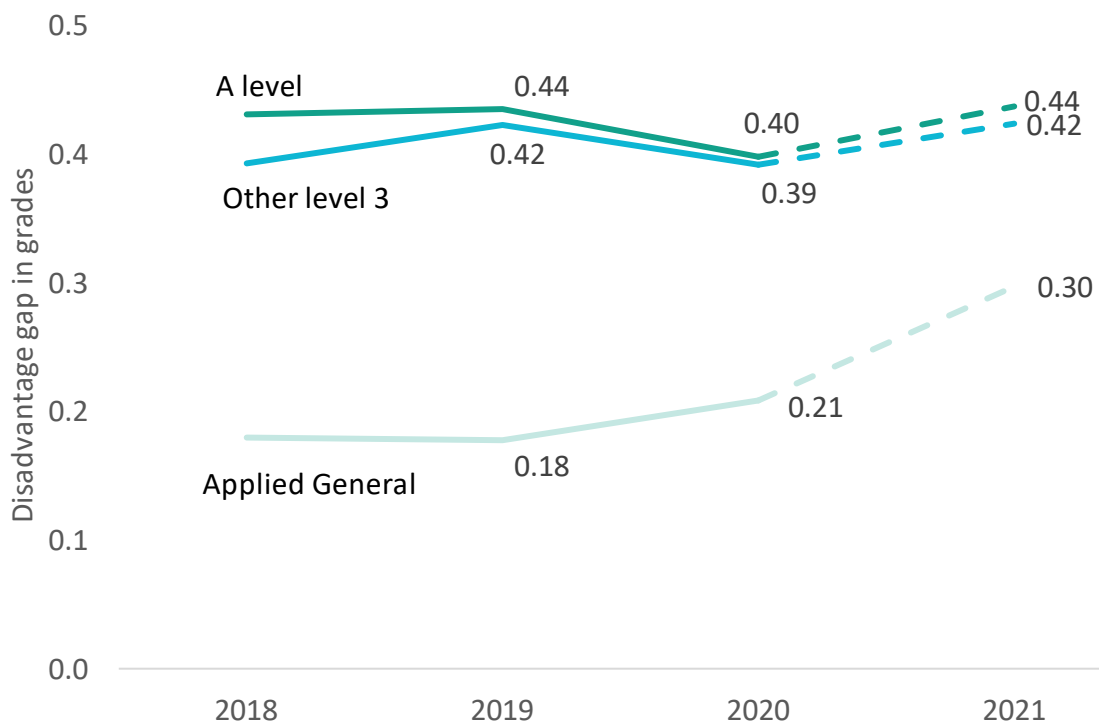
Figure 2.9 shows our full model's estimates for the increase in grades since 2019 for disadvantaged students, relative to the increase for non-disadvantaged students i.e. after controlling for student and institution characteristics. We can see that in 2020, there was no statistically significant change in the gap, for either persistently disadvantaged students, or other disadvantaged students (the confidence intervals overlaps zero). But in 2021 the gap widened by around a fifth of a grade for persistently disadvantage students and one tenth of a grade for other disadvantaged students. This leaves persistently disadvantaged students almost 0.6 grades behind otherwise similar non-disadvantaged students, and other disadvantaged students 0.5 grades behind.

Figure 2.91: Estimates of 2020 and 2021 changes in level 3 grade score for disadvantaged students, relative to otherwise similar non-disadvantaged students in 2019
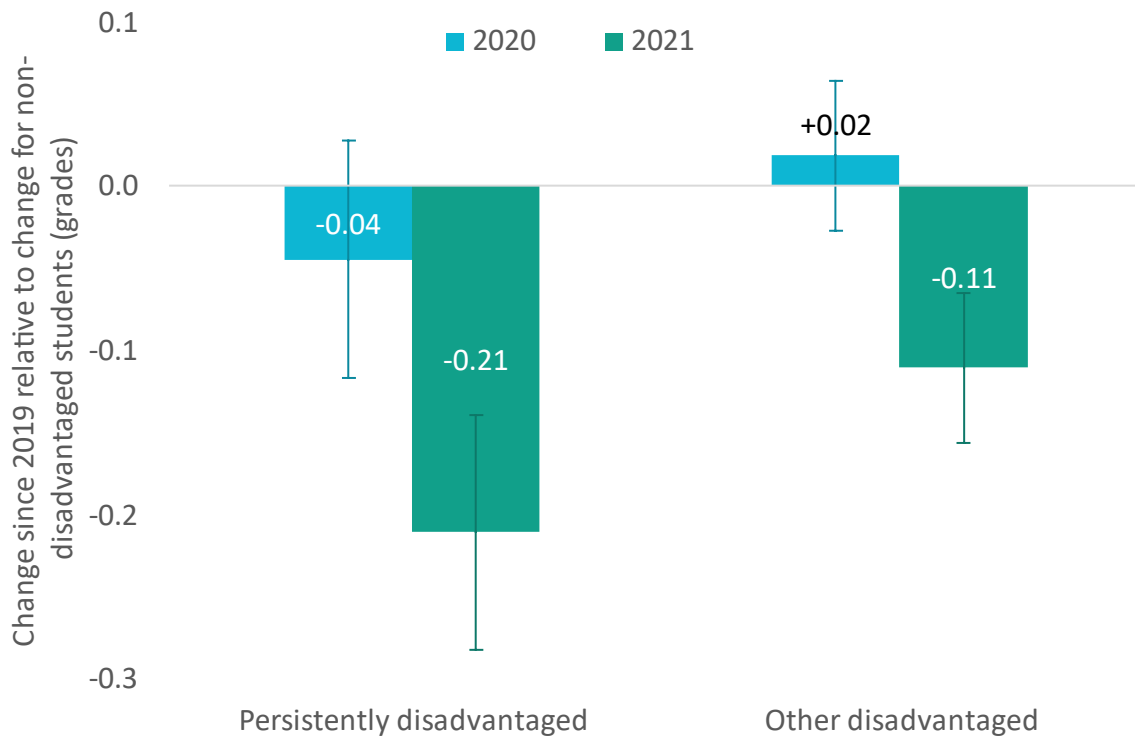
Figure 2.10 shows the same estimates for four different versions of our model. This figure demonstrates the importance of prior attainment, institution characteristics and geographical factors in explaining the growth of the disadvantage gap. Notably, including the qualification types taken by students in our (otherwise full) model results in the gap shrinking by 36 per cent for persistently disadvantaged student and by 42 per cent for other disadvantaged students. Without controlling for qualification choice the gap between persistently disadvantaged and non-disadvantaged students grew by 0.33 grades between 2019 and 2021, and by 0.19 grades for other disadvantaged students. A key difference between 2020 and 2021 is that in 2020, the inclusion of qualification type in our model resulted in the non-significant result shown in Figure 2.9, whereas it does not eliminate the gap in 2021.

Figure 2.102: Estimates of the change in level 3 grade scores between 2019 and 2021 for disadvantaged students relative to non-disadvantaged students, for four sequential models
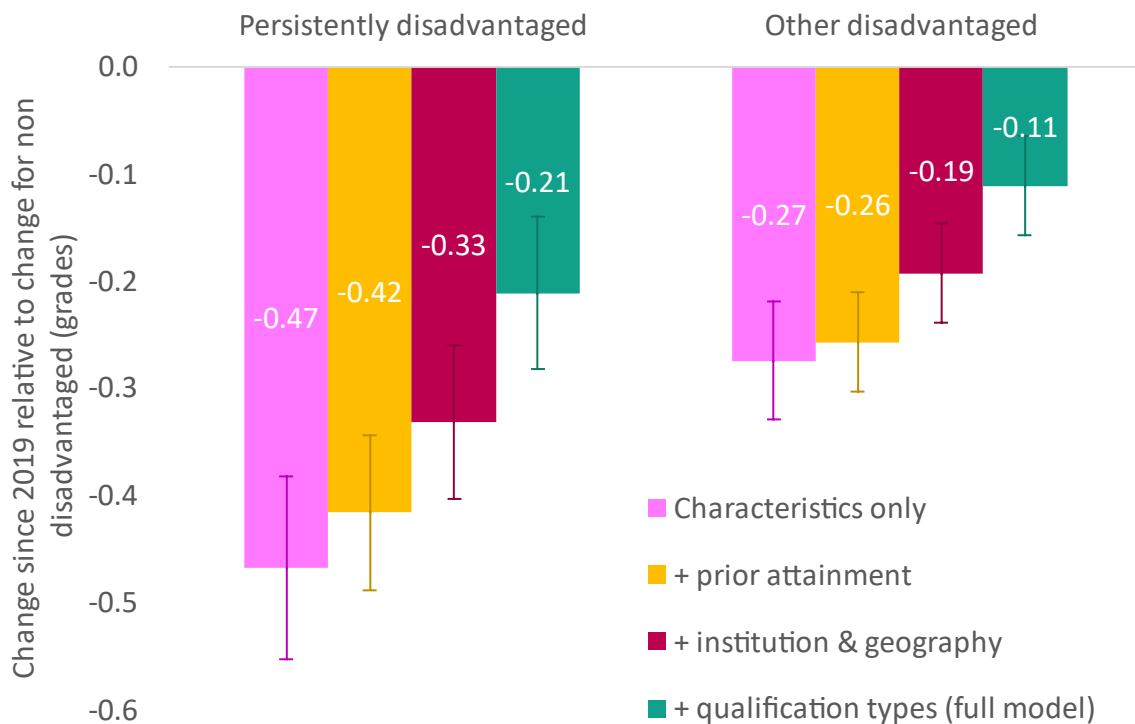
This highlights a key difference between 2020 and 2021:

1. In both years disadvantaged students were less likely to take A levels and more likely to take alternative qualifications, such as applied generals (Figure 2.1).

2. In both years there were greater grade increases for A levels than for applied general qualifications (Figure 2.4).

3. In 2020, there **were not** increases in gaps within all qualification types e.g. disadvantaged A level students did not fall further behind non-disadvantaged A level students (Figure 2.8).

4. In 2021, there **were** increases in gaps within qualification types e.g. disadvantaged A level students fell further behind non-disadvantaged A level students (Figure 2.8, again).

So in 2020 the key driver of the increase in the grade gap was the difference in grade increases between A levels and other qualifications i.e. between-qualification differences arising from differences in assessment methods. Whereas in 2021 differences between qualifications could no longer explain the growth in the gap; there were within-qualification drivers. These drivers may have been differences in learning loss between disadvantaged and other students. It is also possible that 2021 TAGs were biased towards non-disadvantaged students in a way that 2020 CAGs were not.

When we compare students who are similar in terms of characteristics (e.g. gender and ethnicity) and prior attainment, but do not control for institution factors or qualification types, the growth in the gap between 2019 and 2021 increases again, to a 0.42 grade increase for persistently disadvantaged students and 0.26 grades for other disadvantaged students.

The 16-19 gender gap

Figure 2.11 shows that for both male and female students, the point score over their best 3 qualifications decreased between 2017 and 2019, and that the gender grade gap remained stable over this period. In 2020 and 2021 this gap widened to 1.4 and 1.5 grades respectively.

Although learning losses and other factors will have played a part, in the context of the 2020 and 2021 grading processes, Figure 2.11 suggests that teacher assessed grades may have been more favourable to female than male students.

Figure 2.11: Total point score over best 3 qualifications taken during 16-19 study by gender, 2017-2021
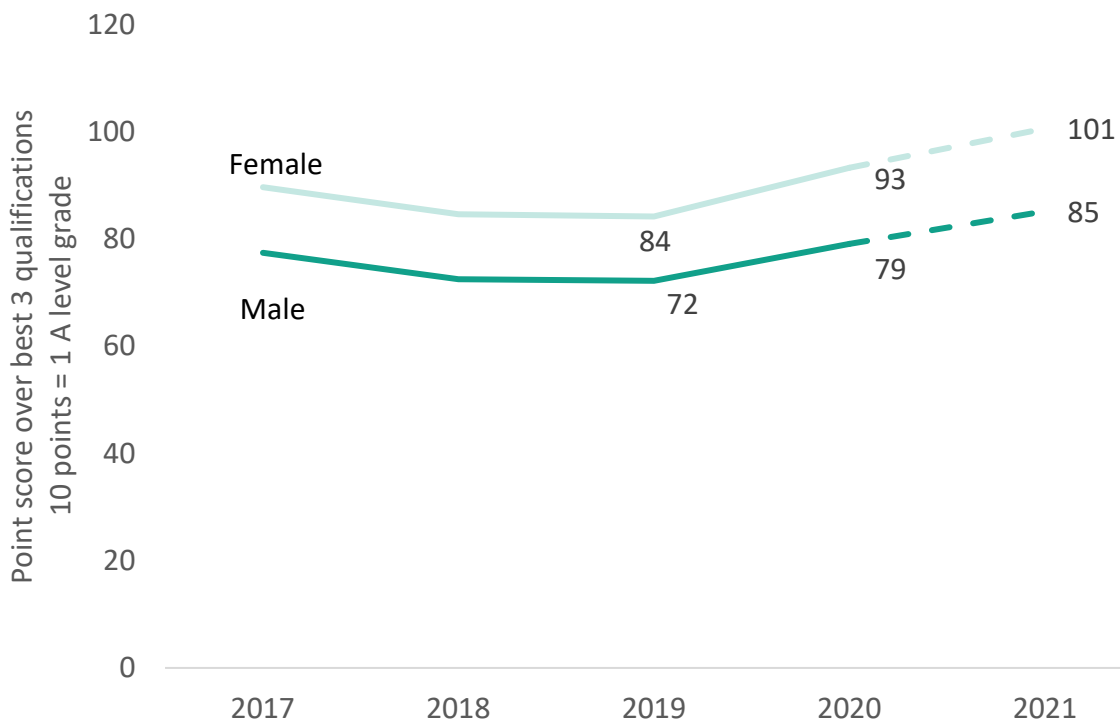
Figure 2.12 shows how the overall disadvantage gap (under method 1) varies by gender. For instance, the green line demonstrates how many grades disadvantaged, male students were behind non-disadvantaged, male students. It shows, that the disadvantage gap amongst male students is consistently wider than the corresponding gap for female students. In 2020, the overall disadvantage gap widened, but the widening was slightly greater for female students than it was for males. In 2021, the disadvantage gap for both genders widened further, but at a greater rate for male students.

Figure 2.123: 16-19 disadvantage grade gap by gender, 2017-2021
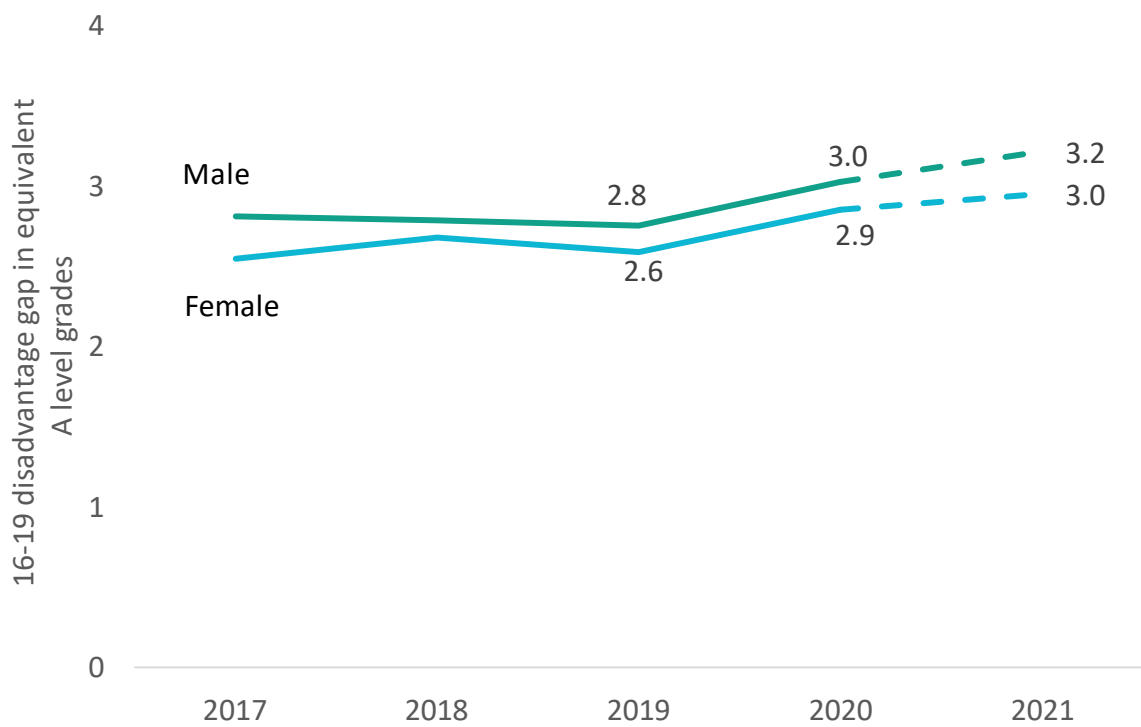
Figure 2.13 shows our full model's estimates for the increase in grades since 2019 for female students, relative to the increase for male students. We can see that in 2020, female students saw an increase of just over a fifth of a grade more than the increase for male students. In 2021 the gap widened again, by around another 0.13 grades, resulting in a gap a third of a grade wider than in 2019.

Figure 2.13: Estimates of the 2020 and 2021 change in level 3 grade score for female students, relative to otherwise similar male students
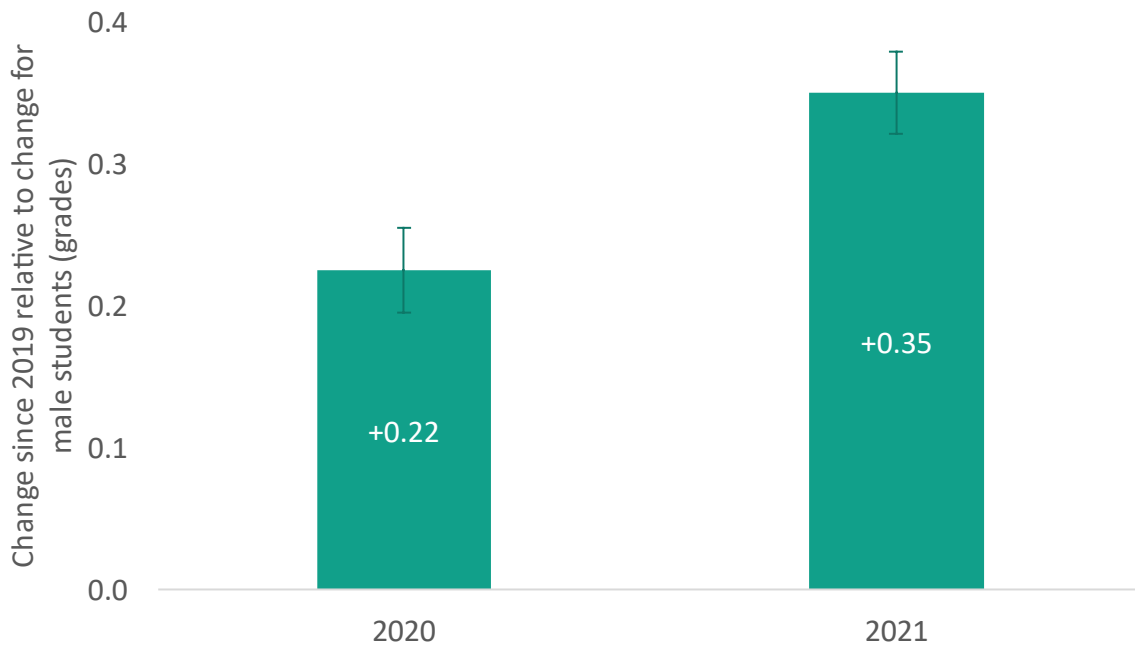
Figure 2.14 shows the same estimates for four different versions of our model. It demonstrates that the gender gap (in the growth in grades since 2019) remains irrespective of the controls in our model suggesting that other student and institution characteristics explain little of the differences in grade increases between male and female students.

These findings are consistent with evidence from the OECD which indicates that teachers generally award higher grades to girls than boys, relative to externally marked assessments. i.e. female students may have benefited more from the move from exams to teacher assessments in 2020 and 2021.[xxviii] An alternative interpretation would be that male students experience greater learning loss in 2021. However, previous EPI research on learning loss suggested that, if anything, female students were more likely to experience higher levels of learning loss.[xxix]

Figure 2.14: Estimates of the change in level 3 grade scores between 2019 and 2021 for female students relative to otherwise similar male students, for four sequential models
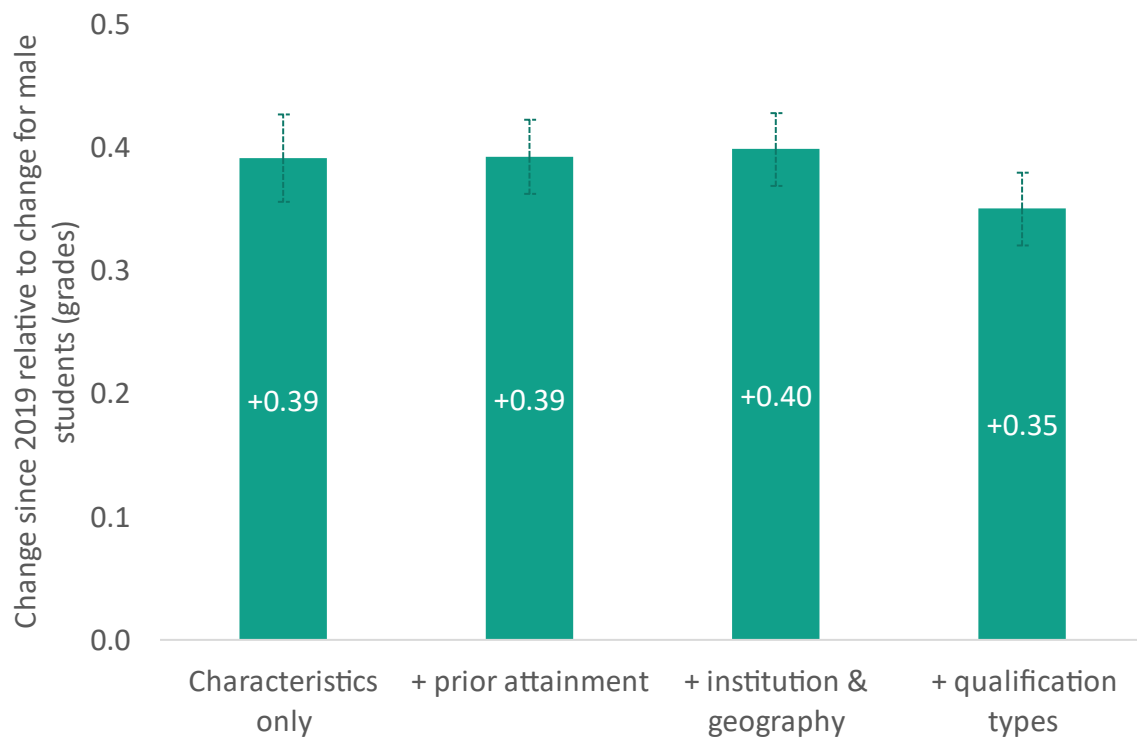
The 16-19 ethnicity gap

Figure 2.15 shows that there is substantial variation by ethnicity in the total point score measure over students' best 3 qualifications. The relative ranks of the average point score for each ethnicity are broadly consistent between 2019 and 2021. The largest group, 'White – British' has a total point score in line with the overall national average, with some (for example students of Chinese and Indian ethnicity) achieving significantly higher grades, and some (for example Gypsy/Roma, Traveller of Irish Heritage or Black Caribbean ethnicity) achieving lower grades. Further breakdowns showing how 16-19 grades vary split by ethnicity and gender are available in Annex C.

Figure 2.154: Total point score over best 3 qualifications taken during 16-19 study by ethnicity, 2019-2021

Point score over best 3 qualifications, 10 points = 1 A level grade
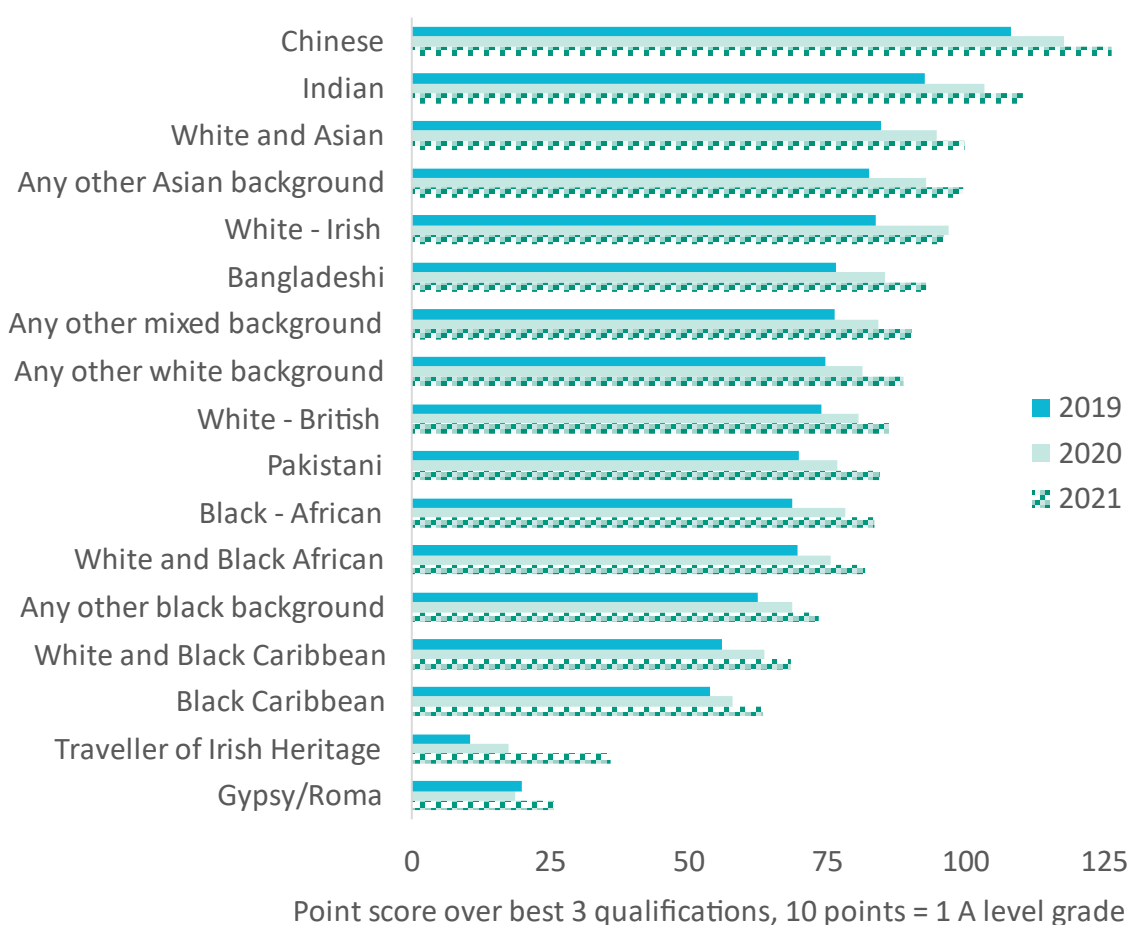
Figure 2.16 shows estimates for the difference in the 2021 and 2020 increase in point score between the ethnicity group in question (e.g. Gypsy/Roma) and the increase for White British students (the reference category). Whilst there were average increases for all these groups between 2019 and 2021 (see Figure 2.15), this chart shows whether those increases were larger or smaller than those for White British students, once other observable factors have been controlled for in our models.

In 2020, increases for any other mixed background students were 0.13 grades below those for otherwise similar White British students. Increases for all other ethnicities were not statistically significantly different from those for white British students.

In 2021 students of Chinese, Black – African, White and Asian and Any other mixed background ethnicities saw increases that were below those of White British students, by between 0.1 and 0.3 grades. Even more strikingly, Gypsy/Roma students saw an average grade increase 1.1 grades lower than the increase for White British students. These students may have had particular difficulties in accessing online learning from home.

All other ethnicities saw increases that were not statistically significantly different from those for white British students.

Figure 2.16: Estimates of 2020 and 2021 change in level 3 grade score by ethnicity, relative to otherwise similar White British students[6]
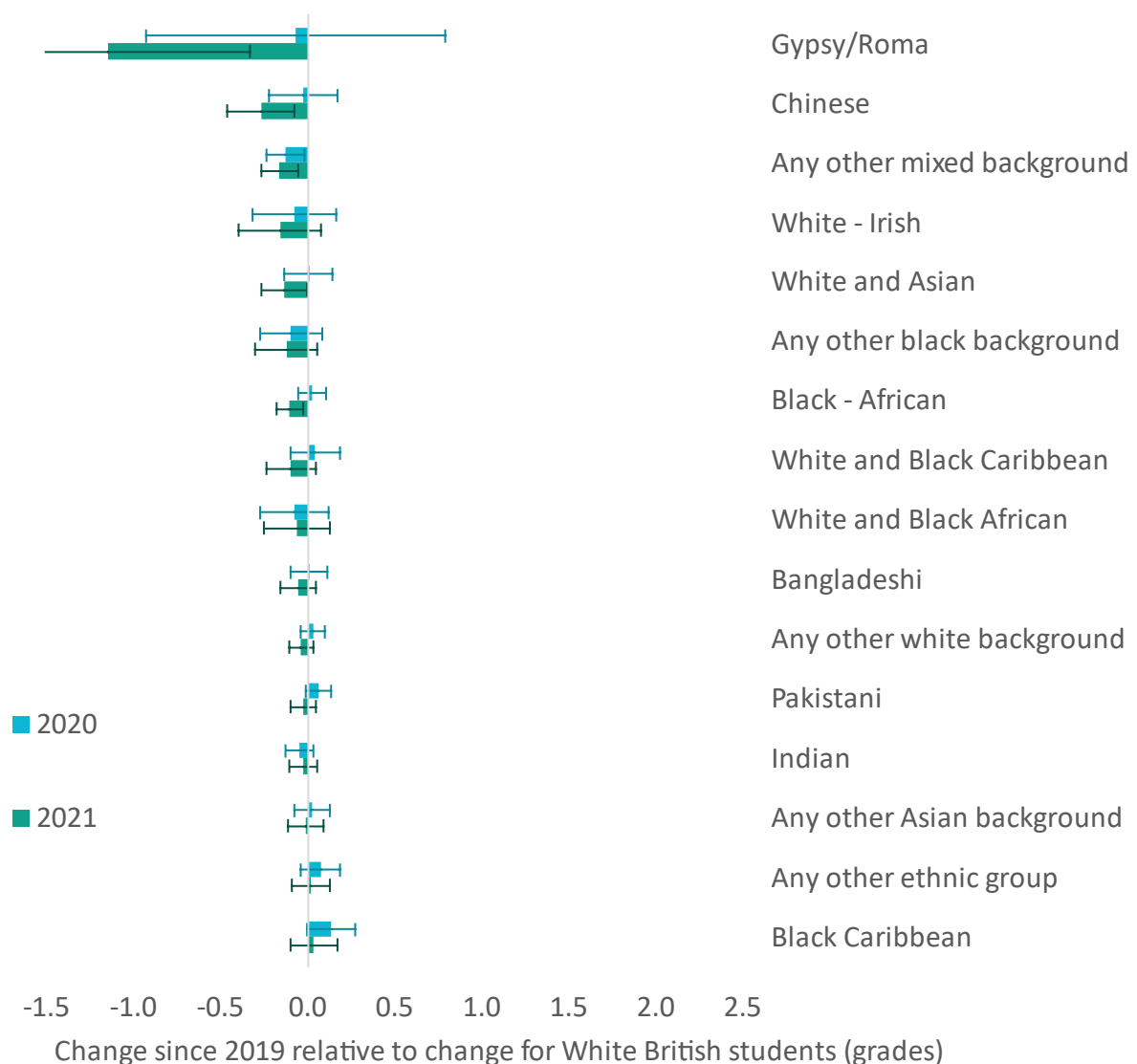
Figure 2.17 shows how these estimates for relative increases in grades vary across four models each of which build on the previous model with additional independent variables. It shows that although students with Bangladeshi, Pakistani, Indian, Any other Asian background and Any other ethnic group ethnicities saw greater increases than white British students in our basic model, once prior

[6] Traveller of Irish Heritage students excluded due to small numbers

attainment and institution factors are controlled for they are no longer statistically significant i.e. the difference were explained by other characteristics of the students.

Figure 2.175: Estimates of the change in level 3 grade scores between 2019 and 2021 for different ethnicities relative to otherwise similar White British students, for three sequential models

Change since 2019 relative to change for White British (grades)
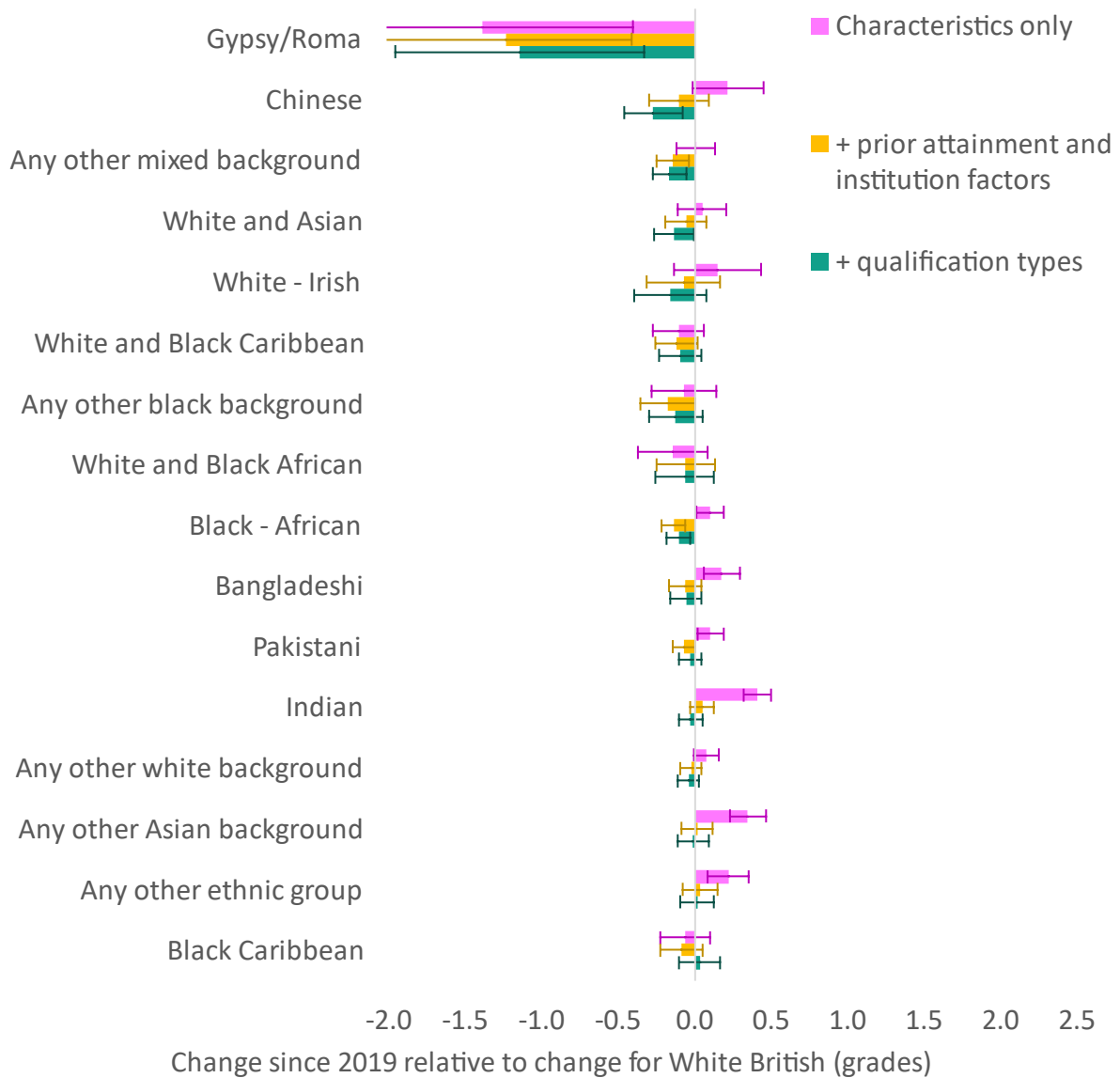
The gap for Special Educational Needs and Disabilities (SEND) pupils

Figure 2.18 shows a similar trend in best three-point scores up to 2019, for those with and without identified special educational needs or disability (SEND), those with an education health and care plan, statement of support or any other identified special educational need. However, the results of students that had SEND were consistently below those that had not.

Between 2019 and 2020, grades increased for both groups of students, but at a notably faster rate for those without SEND. Three was almost a grade increase, compared to only half a grade increase for those with identified SEND.

However, in 2021 the opposite was true. Grades increased again for both student groups, but at a faster rate for those with SEND, such that the grade gap in 2021 stood at a similar level to 2018.

Figure 2.18: Total point score over best 3 qualifications taken during 16-19 study by special educational needs status, 2017-2021
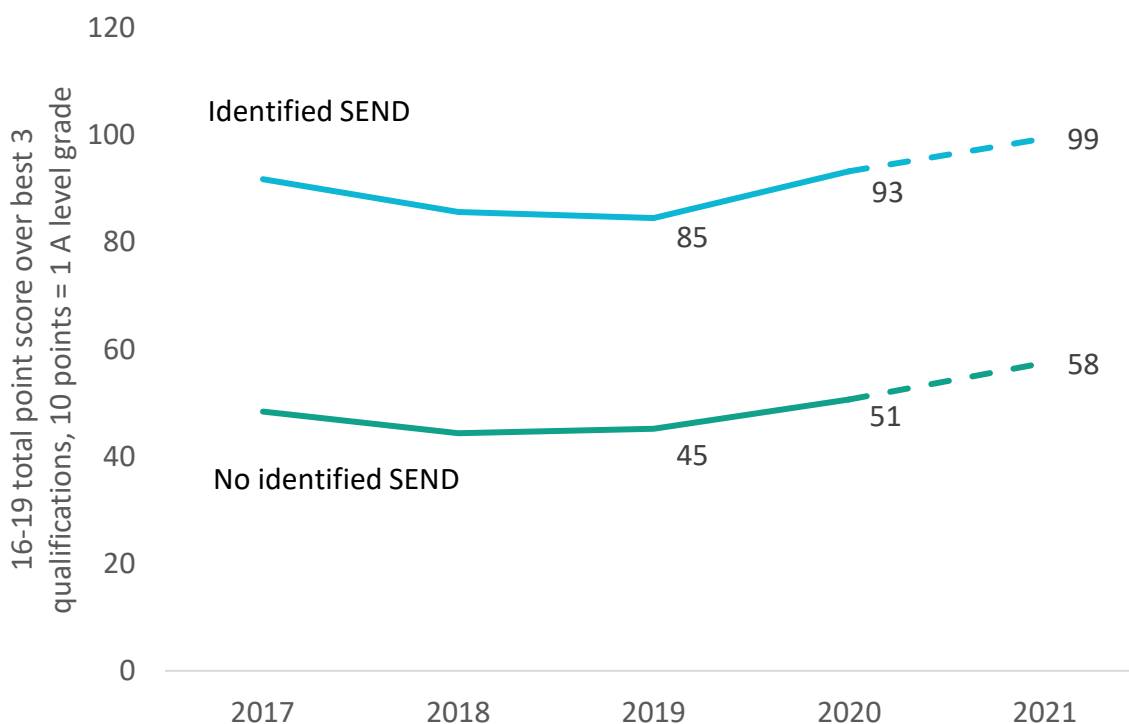
Figure 2.19 shows the association that having special education needs or disability (SEND) has with grade increases since 2019, compared to otherwise similar students who do not have identified SEND, from our full model. It is worth noting that the majority of 16-19 year old students with SEND do not take two or more level 3 qualifications, and so will not be included in our modelled analysis. In addition, our models do not differentiate between different types of special education needs, which may have interacted with school closures, learning loss and changes in assessment to differing extents. As such, this analysis will only provide a partial picture for these students.

Once student and institution factors have been controlled for, students with special education needs saw grade increases in 2020 that were not statistically significantly different from those for students

with no special educational needs. However, by 2021 student with special education needs had fallen an additional 0.14 grades behind otherwise similar students.

Figure 2.19: Estimates of 2020 and 2021 change in level 3 grade score for students with SEND, relative to otherwise similar students without SEND
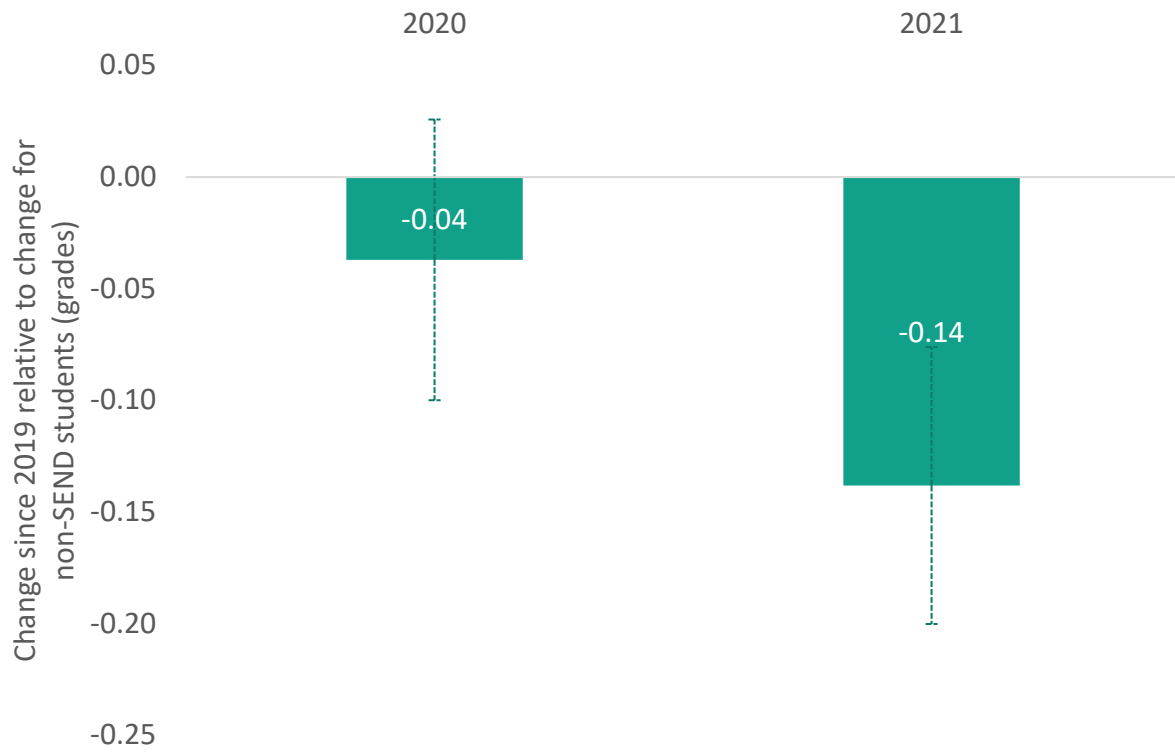
Figure 2.20 shows the same estimates for four different versions of our model. It shows that differences in qualification types appears to explain some of the differences between students with SEND and their peers. Once qualification type is included in our otherwise full model, the difference in grade increases between students with SEND and other students halves from 0.28 to 0.14 grades.

Figure 2.20: Estimates of the change in level 3 grade scores between 2019 and 2021 for students with SEND, relative to otherwise similar students without SEND, for four sequential models
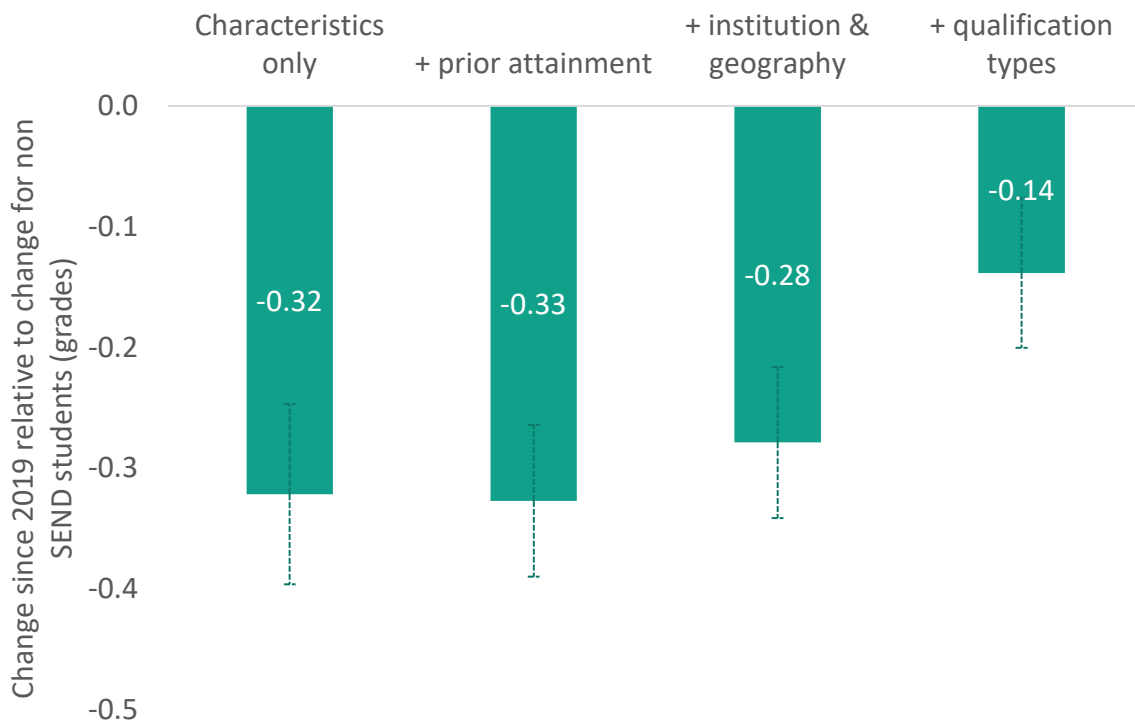
As discussed previously, students with Education Health and Care Plans (EHCP) were able to access face-to-face learning whilst most students were accessing only online learning but became even less likely to be attending schools and college than their peers during the pandemic. These absences appear to have been driven by a number of additional barriers that these young people have faced and of those who did not attend many may have struggled with online learning where it was available.

Figure 2.21 shows that the average grades over students best three qualifications increased in 2020 and 2021 across all mainstream institution types. For most types of 16-19 institution, this increase was more pronounced in 2020 than 2021. However, for further education colleges the opposite was true, students' grades across their best three qualifications increased by a fifth of a grade in 2020 and by a further three quarters of a grade in 2021.

These findings suggests that there may have been differences in how the grading process and learning losses in the years affected by the pandemic impacted upon students in different settings. However, these differences are also likely to be correlated with our earlier findings by qualification type, as certain types of qualifications are more commonly taken in some institution types than others. We explore these effects in our modelled analysis below.

Figure 2.216: Total point score over best 3 qualifications taken during 16-19 study by 16-19 institution type, 2017-2021
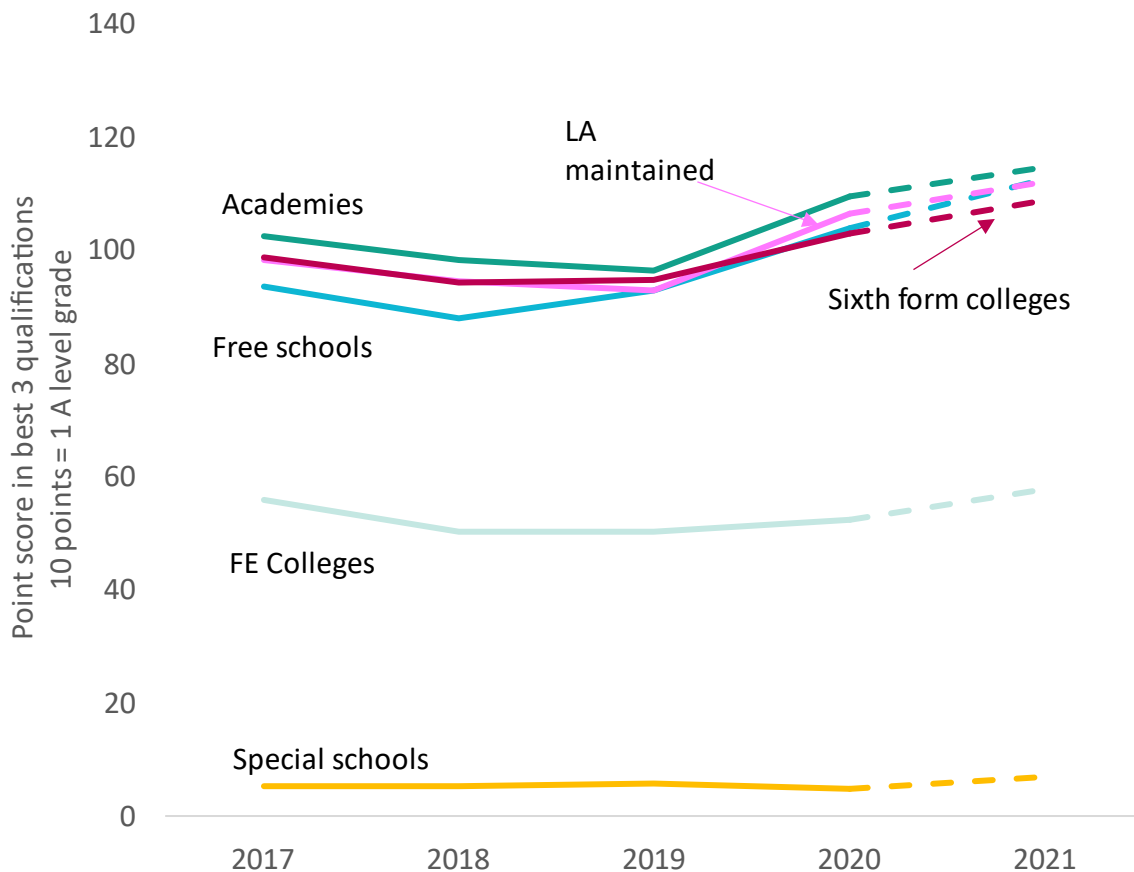
Figure 2.22 shows estimates from our full model for the increase in grades since 2019 for students in different institution types (e.g. students in FE colleges) compared with the increase for students in local authority (LA) maintained school sixth forms (the reference category). It shows that both further education colleges and sixth form colleges saw greater increases since 2019 in both 2020 and 2021 than similar students in LA maintained school sixth forms. In 2021, estimated increases were 0.2 grades higher for sixth form colleges and 0.3 grades higher for FE colleges. Estimated increases since 2019 for academies were lower than for LA maintained sixth forms in both 2020 and 2021,

though by less than a tenth of a grade. Increases were also lower for free schools in 2020, by a fifth of a grade. However, in 2021 increases in free schools were not statistically significantly different from those for LA maintained school sixth forms.

Figure 2.22: Estimates of 2020 and 2021 changes in level 3 grade score by institution type, relative to otherwise similar students in local authority maintained school sixth forms
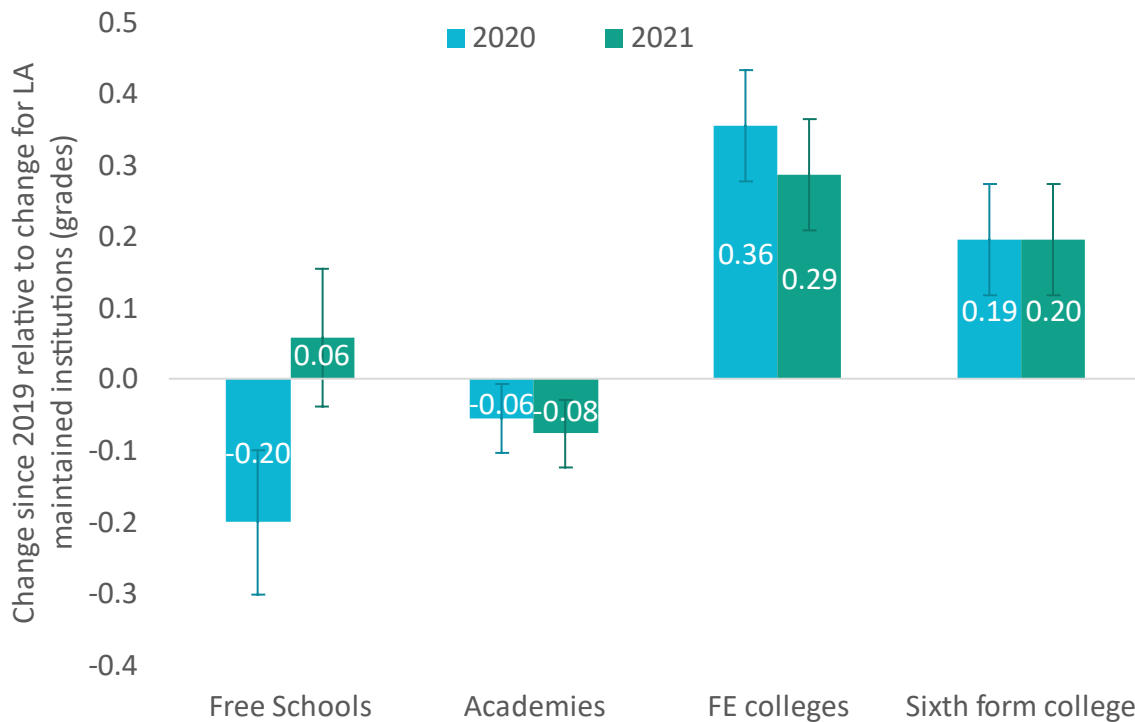
Figure 2.23 shows how these estimates for relative increases in grades vary across four models each of which build on the previous model with additional independent variables. In our basic model, all institution types have grade increases smaller than those for LA maintained school sixth forms. The inclusion of differences in geography, student characteristics and qualification type choices in our model substantially reduces these differences. Notably, the inclusion of qualification type halves the estimated effect for FE colleges, where many students take applied general or other non-academic qualifications which saw lower levels of grade increases in 2021.

The inclusion of institution size in our otherwise full model has an even greater effect on the estimates for FE and sixth form colleges, such that once controlled for, students in these institutions no longer have lower increases since 2019 than students in LA maintained school sixth forms. Once institution size is included, students in FE colleges are estimated to have had increases 0.3 grades greater than similar students in LA maintained school sixth forms. Similarly, increases for sixth form colleges are 0.2 grades higher. The apparent effect of size may be because under teacher assessment in 2020 and 2021, the moderation of grades took place within institutions. As such extensive moderation may have been difficult in smaller institutions. Therefore, grade increases may have been tempered in larger institutions, such as the typical FE and sixth form college.

Figure 2.23: Estimates of the change in level 3 grade scores between 2019 and 2021 for different institution types relative to students in local authority maintained school sixth forms, for four sequential models
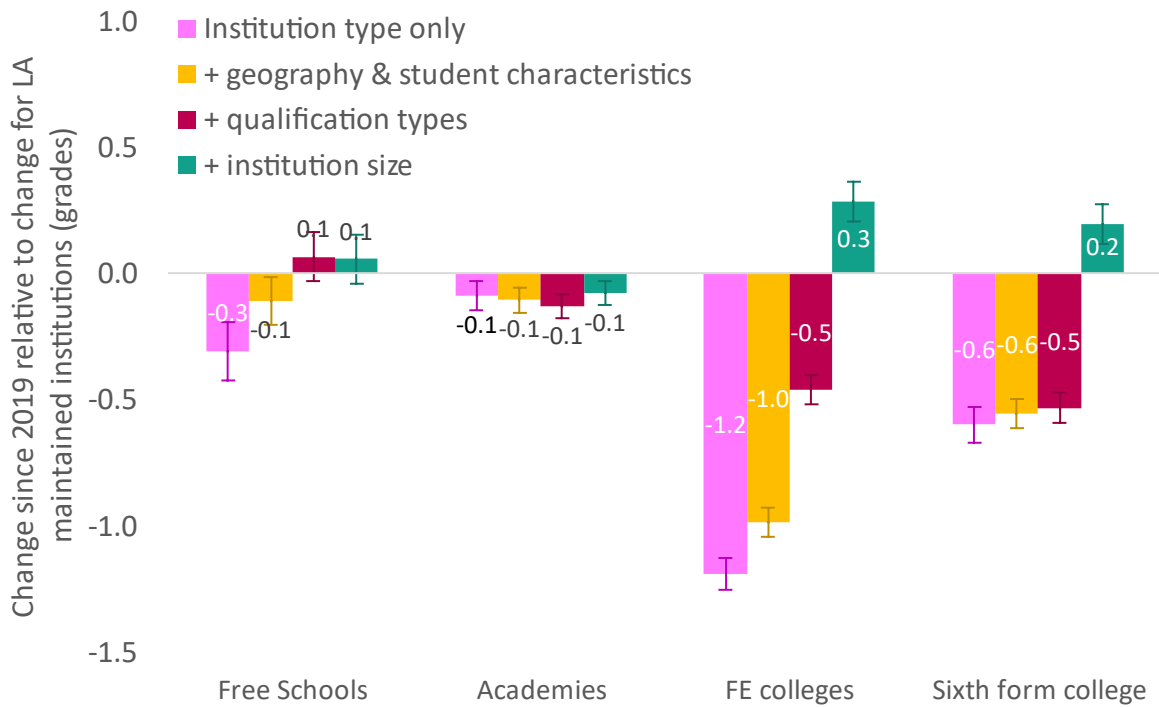
Conclusions and recommendations

In the first year of the pandemic, though the disadvantage grade gap widened in the 16-19 phase, it was broadly stable for students taking their GCSEs. Concerningly, it grew in both phases in 2021. We also find that the grade gap widened for persistently disadvantaged students in both phases in 2021. Taken alongside our modelling results which control for the effects of other characteristics, it is clear that the pandemic worsened existing educational inequalities for disadvantaged students.

To better understand which groups were most affected, our analysis considers the different sorts of qualifications taken by 16-19 students. As in 2020, disadvantaged students were less likely to take qualifications which saw the biggest grade increases. This appears to be one factor contributing to the overall widening of the disadvantage gap. However, in 2021 disadvantage gaps widened even when considering both disadvantaged and non-disadvantaged students taking the same qualification types. The widening of the disadvantage gap we observe persists even after adjusting for other student characteristics. Our analysis does not directly disentangle whether the cause of this widening was the changes to assessment in 2021 or the impact of greater learning loss for disadvantaged students. However, our own research on learning loss for the 2020/21 cohort shows that disadvantaged secondary school pupils' educational outcomes *were* disproportionately affected[xxx], so although we cannot say to what extent, it is likely that differential learning loss was playing a part in the gaps we see in later phases of education too.

The fact that the 16-19 gap continued to widen in 2021 should be of concern to policy makers and reinforces the need for more support targeted towards disadvantaged students in the 16-19 phase.

Some other vulnerable groups also fared poorly in 2021 under teacher assessments. Of key concern are pupils with special educational needs and disabilities (SEND). The GCSE grade gap for SEND pupils with more severe and complex needs was the largest of all the key stage 4 pupil characteristics we considered at 3.64 grades. Whilst we see little change in descriptive SEND gaps since 2020 for GCSEs, (and a very slight narrowing for 16-19 students), our modelled analysis which isolates the effects of having SEND shows that these students did fall even further behind in 2021 for GCSE and level 3 qualifications.

The uniquely disruptive events of the pandemic caused disadvantaged students and those with special educational needs to fall further behind their peers. But by positioning our 2020 and 2021 findings alongside longer-term trends, it is clear that what we are seeing is not solely the effects of the pandemic. Even prior to the pandemic, there had been a stalling of progress in closing the GCSE disadvantage gap since around 2015, and no progress in closing the GCSE gap for persistently disadvantaged pupils since 2011. Likewise for pupils with SEND, GCSE gap-narrowing had been slowing for those with less severe needs and had stalled altogether for those with an EHCP. It is crucial that policy makers continue to monitor grade gaps in each successive year and do not lose sight of the big picture on educational inequalities.

Looking further ahead to 2023, those finishing their studies will still have experienced periods of disrupted learning, as will many subsequent cohorts. It is not yet clear how the effects of learning loss for younger pupils will affect students' long-term development, and by extension their eventual exam performance. Summer exams are expected to go ahead in 2023, without most of the

adjustments seen in 2022. Grade distributions are also set to return to levels seen in 2019, and some protections will be in place to ensure grades don't fall below this level. Depending on exactly how pass marks are set, this could still mask lost learning relative to earlier years, but it is likely that differential learning loss which may have occurred between different groups of students will emerge more clearly at this point.

Taken together, we recommend the following:

Grades awarded under teacher assessments in 2021 are not comparable to examinations taken in 2019 as an indicator of underlying learning. Policy must still focus on support and interventions for those groups most affected by learning loss during the pandemic.

- At GCSE, more support is needed for disadvantaged pupils in the years leading up to their qualifications, but especially for those who are persistently disadvantaged. Despite their additional challenges, persistently disadvantaged pupils receive no extra focus or support beyond the pupil premium. We recommend higher levels of funding for disadvantage which is weighted more heavily towards persistently disadvantaged pupils.

- In the 16-19 phase, we recommend the introduction of a student premium based on previous free school meal status, akin to the pupil premium for school age pupils. If any serious progress is to be made in closing the 16-19 disadvantage gap, additional, well targeted and ongoing support is required.

- To better understand outcomes for persistently disadvantaged students and target support to where it is most needed, the DfE should ensure these learners can be easily identified by schools, colleges and researchers. This will be possible within existing data collections as it can be derived from the National Pupil Database. Given that Universal Credit protections will continue to affect who is considered disadvantaged based on FSM eligibility, there is a growing need to make available to researchers centrally held data that links family income to pupil-level attainment in the National Pupil Database.

- There is a pressing need for a fuller understanding of the drivers of poor outcomes for disadvantaged and SEND students, who have fallen even further behind during the pandemic. Further research should consider the role of student absence – and wider links with students' wellbeing – as a driver of gaps.

- If the government is serious about addressing educational inequalities, its efforts must include tackling the social determinants of educational outcomes, such as poverty. As a first step, the government should urgently put in place a credible cross-government child poverty strategy.

Annex A: Alternative disadvantage gap measures

To address the reliability with which we can identify persistently disadvantaged pupils beyond 2018 due to UC rollout, we have also included three alternative measures to investigate the prevalence of persistent disadvantage and corresponding grade gaps:

- Our **headline measure** presents the 'upper scenario' with regards to the level of persistent poverty, where pupils under transitional protections remain defined as persistently disadvantaged if they are eligible for free school meals (FSM) at least 80 per cent of their time in school. This scenario likely overrepresents the true number of pupils in persistent poverty but is consistent with the DfE data and reflects the reality of management information available for secondary schools.

- Our **UC-adjusted persistent disadvantage measure** presents the 'lower scenario', where any years in which pupils may be benefiting from transitional protections are not used in calculating their persistent disadvantage status. This scenario likely underrepresents the number of pupils in persistent poverty, as it necessarily requires discarding valid FSM years in cases where we are uncertain if the pupil was eligible due to UC protections or due to their financial circumstances.

- Our **Year 8 measure** presents a consistent measure of the prevalence of persistent poverty across cohorts, but does not reflect changes in poverty since 2018. Year 8 is the last year in which we can be certain of all pupils' FSM eligibility for all cohorts.

- Our **UC-adjusted always disadvantaged measure** tracks the prevalence of the most persistently disadvantaged pupils (those who have been eligible for FSM for their entire time in schools), where pupils' eligibility between 2019 and 2021 is discarded in cases where we are uncertain if the pupil was eligible due to UC protections.

Figure 3.1 shows the number of persistently disadvantaged pupils for the above four measures as a proportion of the entire pupil population from 2017 (the year before UC protections were applied) to 2021.

For our UC-adjusted persistent disadvantage measure, the proportion remains unchanged when compared to the headline measure in 2018 before dropping slightly in 2019 as a result of eliminating all FSM years that could potentially be a result of FSM protections. [7] Despite this possible overcorrection, we can see that the proportion of persistently disadvantaged pupils rises in each following year to 8.4 per cent in 2021. This shows that even when eliminating eligibility as a result of UC protections, the prevalence of persistent poverty has increased in recent years.

Similarly, our UC-adjusted always disadvantaged measure rises steadily from 2017 to a peak of 6.5 per cent in 2021, showing again that even when accounting for transitional protections, the proportion of pupils in the deepest poverty has also risen in recent years.

Finally, our Year 8 measure drops slightly from 10.1 per cent in 2017 to 9.4 per cent in 2021, demonstrating the prevalence of persistent poverty when the pupils of each cohort were in Year 8.

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[7] 2018 is unaffected in our measures because we base our data on the January Census which pre-dates the introduction of UC protections in April 2018.

While this measure does not account for recent trends in underlying poverty, it provides a comparison for our other UC-adjusted measures. It is consistent with the trend of falling persistence of disadvantage among disadvantaged pupils until around 2017 (see figure 1.5), with more recent increases in poverty not yet feeding into this measure.

Taking all these measures into account, suggests that the true proportion of persistently disadvantaged pupils is in the range of 8-10 per cent, and that this proportion has been rising since 2019.is likely increasing in 2021 compared with previous years.

Figure 3.1: Persistence of disadvantage among pupils at the end of secondary school since 2017 across alternative measures of persistent disadvantage
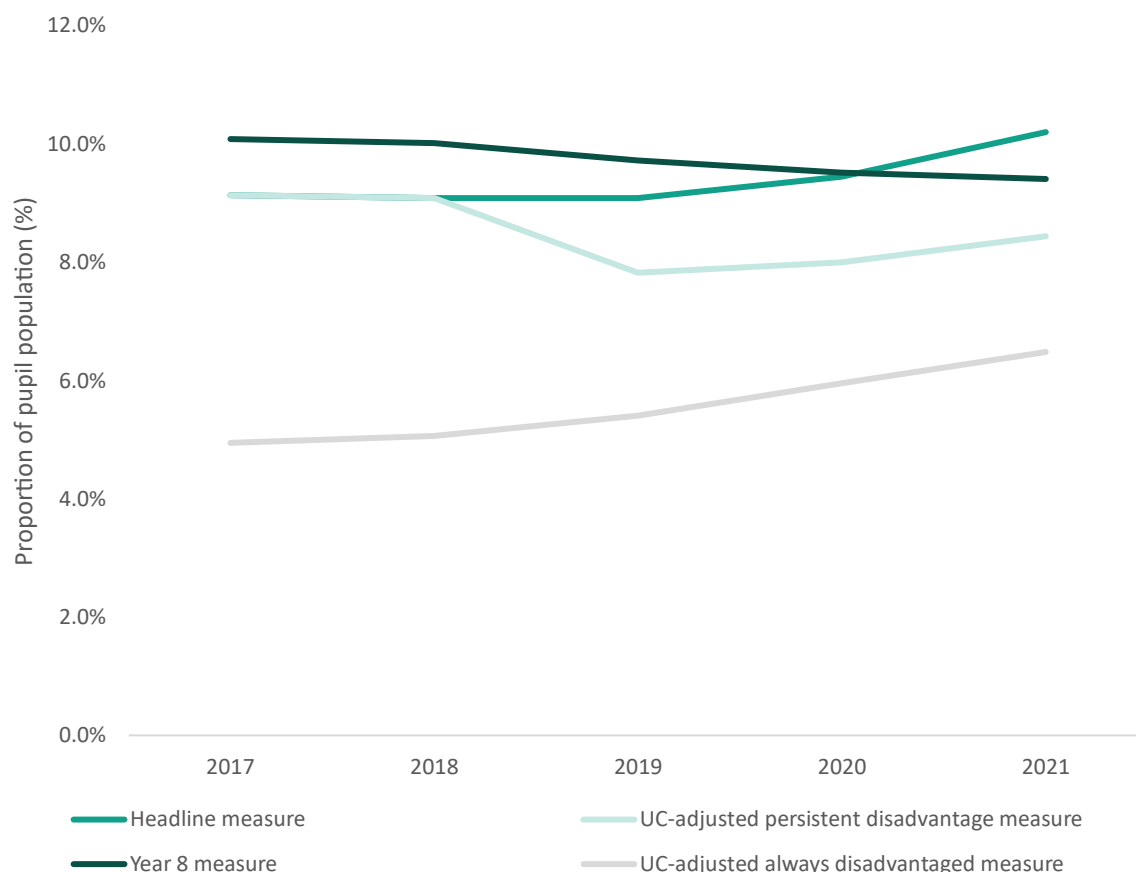
Turning to the gap itself, Figure 3.2 shows the the grade gap in GCSE English and maths for persistently disadvantaged pupils under the same four measures. The trend seen for our headline measure (Figure 1.4) can also be seen across the three other measures, with the gap significantly increasing in 2021 following a slight drop in 2020. The higher gap for the UC-adjusted persistent disadvantage measure reflects that this is capturing a less transient FSM group, who will generally have lower grades as a result of experiencing more entrenched poverty. The lower gap for the Year 8 measure (until 2021) conversely reflects that it comprises a higher attaining group on average because those who are disadvantaged in years 9-11 (who are captured in the other measures but not the Year 8 one) are generally in poorer families. The common patterns across these three gap measures is an indication of worsening educational outcomes for persistently disadvantaged pupils relative to their non-disadvantaged peers, unrelated to UC protections affecting the composition of disadvantaged pupils.

Figure 3.2: Trends in the GCSE English and maths persistent disadvantage gap at secondary school across alternative measures of persistent disadvantage
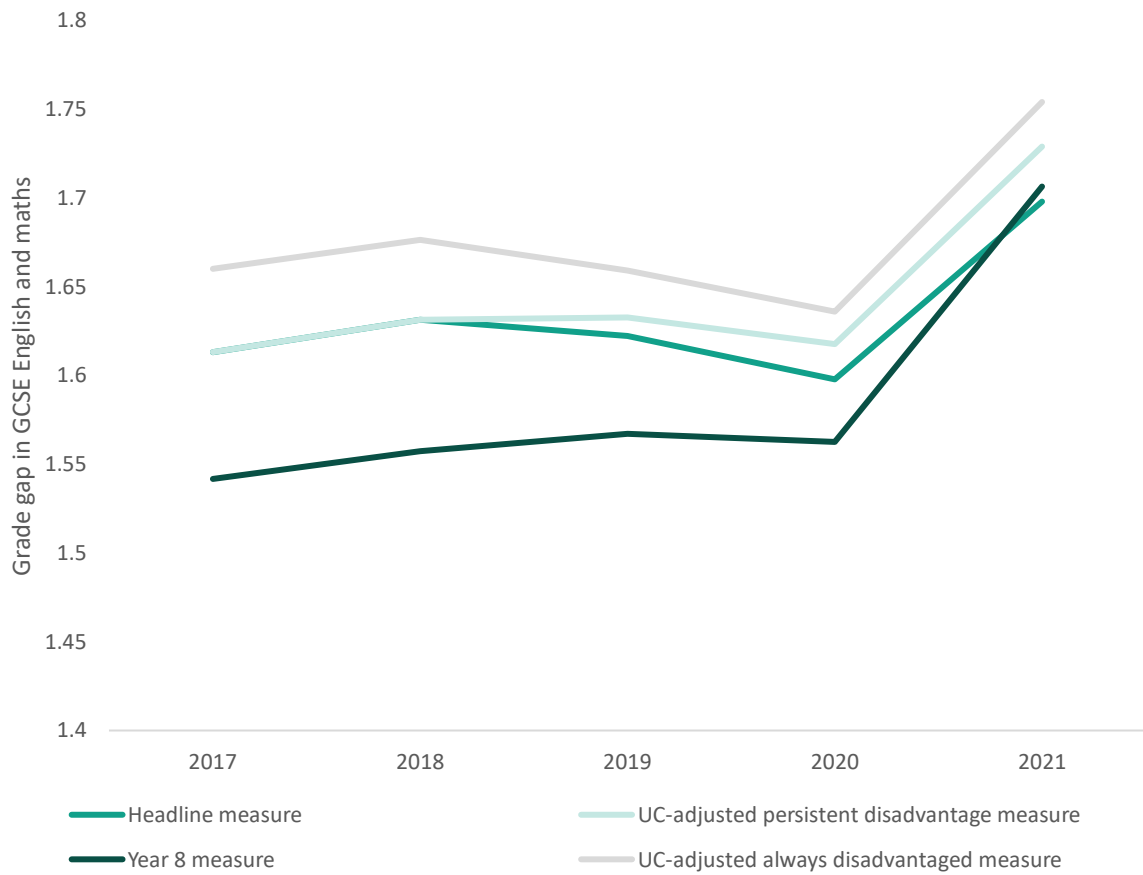
Annex B: Regression modelling tables

The models used in this report are in the below tables. The interaction term between each characteristic and the year of the cohort are shown, along with the base coefficients for the characteristics and year. P values are represented with: * p<0.05, ** p<0.01, *** p<0.001.

Table 1: Key stage 4 student characteristics regression coefficients, various models, dependent variable: average GCSE grade in English and maths

Regression coefficients, GCSE grades												
Controls												
Age, month of birth	Yes			Yes			Yes			Yes		
Personal characteristics: disadvantage, SEND, ethnicity, gender, EAL	Yes			Yes			Yes			Yes		
Prior attainment: Key Stage 2	No			Yes			Yes			Yes		
School: Insitution type, insitution size, cohort prior attainment	No			No			Yes			Yes		
Geography: Government Office Region	No			No			No			Yes		
	Base	year interaction (ref: 2019) 2020	2021	Base	year interaction (ref: 2019) 2020	2021	Base	year interaction (ref: 2019) 2020	2021	Base	year interaction (ref: 2019) 2020	2021
Year (reference = 2019)												
2020	0.35 ***	-	-	0.34 ***	-	-	0.41 ***	-	-	0.40 ***	-	-
2021	0.44 ***	-	-	0.51 ***	-	-	0.59 ***	-	-	0.50 ***	-	-
Disadvantage (reference = non-disadvantaged)												
persistent disadvantaged	-1.42 ***	0.06 ***	-0.03 **	-0.72 ***	0.03 ***	-0.04 ***	-0.66 ***	0.01	-0.05 ***	-0.65 ***	0.01	-0.05 ***
other disadvantaged	-1.04 ***	0.03 ***	-0.02 **	-0.53 ***	0.02 **	-0.03 ***	-0.49 ***	0.00	-0.04 ***	-0.48 ***	0.00	-0.04 ***
SEND (reference = no SEND)												
SEND with EHCP	-2.99 ***	-0.18 ***	-0.15 ***	-0.73 ***	-0.21 ***	-0.19 ***	-0.42 ***	-0.13 ***	-0.15 ***	-0.42 ***	-0.13 ***	-0.15 ***
SEND without EHCP	-1.41 ***	0.02	-0.01	-0.34 ***	-0.03 ***	-0.07 ***	-0.38 ***	-0.03 ***	-0.06 ***	-0.38 ***	-0.03 ***	-0.06 ***
Gender (reference = male)												
Female	0.28 ***	0.02 **	0.01 *	0.42 ***	0.05 ***	-0.11 ***	0.41 ***	0.05 ***	-0.11 ***	0.41 ***	0.05 ***	-0.11 ***
Ethnicity (reference = White British)												
Any other Asian background	0.80 ***	-0.06	-0.07	0.44 ***	-0.01	0.02	0.42 ***	-0.03	0.00	0.40 ***	-0.03	0.02
Any other black background	-0.07 *	0.08	0.06	0.11 ***	0.06	0.03	0.11 ***	0.06 *	0.03	0.08 ***	0.07 *	0.06 *
Any other ethnic group	0.29 ***	0.08	0.07	0.19 ***	0.09	0.06	0.17 ***	0.11 *	0.07	0.15 ***	0.11 *	0.10 *
Any other mixed background	0.34 ***	-0.07 **	-0.04	0.16 ***	-0.04 *	-0.03	0.15 ***	-0.04 *	-0.04 *	0.13 ***	-0.03	-0.02
Any other white background	0.46 ***	-0.02	0.04	0.27 ***	-0.04	-0.03	0.25 ***	-0.04	-0.04 *	0.23 ***	-0.03	-0.03
Bangladeshi	1.00 ***	-0.19	-0.13	0.47 ***	0.01	0.01	0.46 ***	0.01	0.00	0.43 ***	0.03	0.04
Black - African	0.37 ***	-0.01	0.00	0.37 ***	0.05 *	-0.03	0.35 ***	0.05 *	-0.03	0.31 ***	0.05 *	0.01
Black Caribbean	-0.32 ***	0.08 ***	0.07 **	-0.06 ***	0.11 ***	0.06	-0.05 ***	0.10 ***	0.04 *	-0.10 ***	0.11 ***	0.10 ***
Chinese	1.99 ***	-0.22 *	-0.18	0.68 ***	-0.09	-0.01	0.59 ***	-0.07	0.00	0.58 ***	-0.06	0.01
Gypsy/Roma	-1.08 ***	-0.04	-0.13	-0.39 ***	-0.03	-0.15 *	-0.41 ***	-0.03	-0.16 *	-0.43 ***	-0.02	-0.14 *
Indian	1.03 ***	-0.07	-0.01	0.50 ***	-0.02	0.10 ***	0.43 ***	-0.01	0.09 **	0.41 ***	-0.01	0.11 ***
Pakistani	0.44 ***	-0.09 *	0.00	0.31 ***	0.01	0.07 *	0.31 ***	0.01	0.07 *	0.29 ***	0.01	0.08 *
Traveller of Irish Heritage	-0.68 ***	-0.07	-0.08	-0.40 ***	0.01	-0.09	-0.38 ***	0.00	-0.10	-0.40 ***	0.02	-0.07
White - Irish	0.51 ***	0.00	-0.01	0.27 ***	-0.09 **	-0.10 **	0.24 ***	-0.09 **	-0.11 **	0.21 ***	-0.09 **	-0.08 *
White and Asian	0.64 ***	-0.09 **	-0.06 *	0.27 ***	-0.06 **	-0.05 **	0.25 ***	-0.05 *	-0.05 **	0.23 ***	-0.04 *	-0.03
White and Black African	0.21 ***	-0.02	-0.04	0.10 ***	0.02	-0.02	0.09 ***	0.02	-0.02	0.07 **	0.03	0.00
White and Black Carribean	-0.18 ***	0.01	-0.02	-0.10 ***	0.04 *	-0.01	-0.10 ***	0.03 *	-0.01	-0.12 ***	0.03 *	0.00
Students			2,145,987			2,042,703			2,040,421			2,038,256
Adjusted r²			0.28			0.66			0.66			0.66

Table 2: Key stage 4 late-arriving English as an additional language (EAL) regression coefficients, various models, dependent variable: average GCSE grade in English and maths

Regression coefficients, GCSE grades

Controls						
Age, month of birth	Yes			Yes		
Personal characteristics: disadvantage, SEND, ethnicity, gender	Yes			Yes		
Prior attainment: Key Stage 2	NA			NA		
School: Insitution type, insitution size, cohort prior attainment	No			Yes		
Geography: Government Office Region	No			Yes		
		year interaction			year interaction	
	Base	2020	2021	Base	2020	2021
Year (reference = 2019)						
2020	0.35 ***	-	-	0.40 ***	-	-
2021	0.44 ***	-	-	0.46 ***	-	-
Late-arriving English as an additional language	-2.31 ***	-0.03	-0.03	-1.88 ***	-0.04	-0.03
Students			2,145,987			2,140,982
Adjusted r ^{2}			0.28			0.35

Table 3: School type regression coefficients, various models, dependent variable: average GCSE grade in English and maths

Regression coefficients, GCSE grades									
Controls									
Age, month of birth	Yes			Yes			Yes		
Personal characteristics: disadvantage, SEN, ethnicity, gender, EAL	No			No			Yes		
Prior attainment: Key Stage 2	No			No			Yes		
School: insitution size, cohort prior attainment	No			Yes			Yes		
Geography: Government Office Region	No			Yes			Yes		
	Base	year interaction		Base	year interaction		Base	year interaction	
		2020	2021		2020	2021		2020	2021
Year (reference = 2019)									
2020	0.39 ···	-	-	0.47 ···	-	-	0.04 ···	-	-
2021	0.47 ···	-	-	0.49 ···	-	-	0.05 ···	-	-
School type (reference = LA maintained)									
Converter academy	0.34 ···	-0.06 ···	-0.07 ···	0.14 ···	-0.04 ···	-0.05 ···	0.06 ···	-0.04 ···	-0.06 ···
Free Schools	0.14 ···	0.01	0.07 ···	0.16 ···	0.02	0.09 ···	0.16 ···	-0.02	0.01
Special schools	-4.16 ···	-0.27 ···	-0.35 ···	1.13 ···	-0.33 ···	-0.95 ···	-0.34 ···	-0.23 ···	-0.16 ···
Sponsored academy	-0.47 ···	0.04 ···	0.00	-0.14 ···	0.02 ··	0.01	-0.07 ···	0.02 ··	0.00
UTC or studio school	-0.68 ···	0.24 ···	0.31 ···	-0.48 ···	0.19 ···	0.28 ···	-0.34 ···	0.16 ···	0.21 ···
Students			2,720,707			2,717,460			2,038,256
Adjusted r ^{2}			0.13			0.21			0.66

Table 4: 16-19 student characteristics regression coefficients, various models, dependent variable: level 3 total grade score

Regression coefficients, Level 3 grades

Controls												
Age, year	Yes			Yes			Yes			Yes		
Personal characteristics: disadvantage, SEND, ethnicity, gender	Yes			Yes			Yes			Yes		
Prior attainment: Key Stage 4 GCSE English and maths	No			Yes			Yes			Yes		
Institution and geography: Insitution type, insitution size, cohort prior attainment, Government Office Region	No			No			Yes			Yes		
Qualification type	No			No			No			Yes		
		year interaction			year interaction			year interaction			year interaction	
	Base	2020	2021	Base	2020	2021	Base	2020	2021	Base	2020	2021
Year (reference = 2019)												
2020	0.95 ⋯	-	-	0.98 ⋯	-	-	1.54 ⋯	-	-	1.75 ⋯	-	-
2021	1.18 ⋯	-	-	1.31 ⋯	-	-	2.03 ⋯	-	-	2.28 ⋯	-	-
Disadvantage (reference = non-disadvantaged)												
persistent disadvantaged	-0.92 ⋯	-0.26 ⋯	-0.47 ⋯	-0.24 ⋯	-0.21 ⋯	-0.42 ⋯	-0.26 ⋯	-0.15 ⋯	-0.33 ⋯	-0.34 ⋯	-0.04	-0.21 ⋯
other disadvantaged	-0.87 ⋯	-0.11 ⋯	-0.27 ⋯	-0.31 ⋯	-0.10 ⋯	-0.26 ⋯	-0.32 ⋯	-0.05 ⋅⋅	-0.19 ⋯	-0.38 ⋯	0.02	-0.11 ⋯
SEND (reference = no SEND)												
SEN	-0.61 ⋯	-0.19 ⋯	-0.32 ⋯	0.11 ⋯	-0.20 ⋯	-0.33 ⋯	0.10 ⋯	-0.16 ⋯	-0.28 ⋯	0.00	-0.04	-0.14 ⋯
Gender (reference = male)												
Female	0.50 ⋯	0.21 ⋯	0.39 ⋯	0.36 ⋯	0.25 ⋯	0.39 ⋯	0.36 ⋯	0.26 ⋯	0.40 ⋯	0.42 ⋯	0.22 ⋯	0.35 ⋯
Ethnicity (reference = White British)												
Any other Asian background	-0.04	0.25 ⋯	0.35 ⋯	-0.58 ⋯	0.23 ⋯	0.25 ⋯	-0.52 ⋯	0.05	0.02	-0.49 ⋯	0.02	-0.01
Any other black background	-0.65 ⋯	-0.06	-0.07	-0.34 ⋯	-0.02	-0.04	-0.31 ⋯	-0.13	-0.18 ⋅	-0.28 ⋯	-0.10	-0.12
Any other ethnic group	0.06	0.23 ⋯	0.22 ⋯	-0.11 ⋯	0.25 ⋯	0.26 ⋯	-0.04	0.09	0.04	0.03	0.07	0.02
Any other mixed background	0.13 ⋯	-0.02	0.01	-0.14 ⋯	0.01	0.02	-0.09 ⋅⋅	-0.12 ⋅⋅	-0.14 ⋅⋅	-0.05	-0.13 ⋅⋅	-0.16 ⋯
Any other white background	0.13 ⋯	0.11 ⋅⋅	0.08 ⋅	0.14 ⋯	0.13 ⋯	0.09 ⋯	0.20 ⋯	0.04	-0.02	0.27 ⋯	0.03	-0.04
Bangladeshi	-0.15 ⋯	0.09	0.18 ⋯	-0.35 ⋯	0.12 ⋅⋅	0.12 ⋅⋅	-0.32 ⋯	0.00	-0.06	-0.31 ⋯	0.01	-0.06
Black - African	-0.61 ⋯	0.19 ⋯	0.10 ⋅	-0.56 ⋯	0.18 ⋯	0.11 ⋯	-0.47 ⋯	0.00	-0.14 ⋯	-0.46 ⋯	0.03	-0.11 ⋯
Black Caribbean	-1.03 ⋯	0.10	-0.06	-0.58 ⋯	0.15 ⋅	0.04	-0.51 ⋯	0.05	-0.09	-0.56 ⋯	0.13 ⋅	0.03
Chinese	1.60 ⋯	0.23 ⋅	0.22 ⋅	0.33 ⋯	0.26 ⋯	0.12	0.34 ⋯	0.11	-0.10	0.45 ⋯	-0.03	-0.27 ⋯
Gypsy/Roma	-0.42	-0.26	-1.39 ⋯	0.26	-0.08	-1.20 ⋯	0.39	-0.10	-1.24 ⋯	0.39	-0.07	-1.15 ⋯
Indian	0.39 ⋯	0.17 ⋯	0.41 ⋯	-0.19 ⋯	0.16 ⋯	0.27 ⋯	-0.12 ⋯	0.01	0.05	-0.06 ⋅⋅	-0.05	-0.03
Pakistani	-0.46 ⋯	0.06	0.10 ⋅	-0.28 ⋯	0.06	0.03	-0.30 ⋯	0.02	-0.07 ⋅	-0.31 ⋯	0.06 ⋅	-0.03
White - Irish	0.43 ⋯	0.14	0.15	-0.01	0.15	0.15	0.06	-0.01	-0.07	0.14	-0.08	-0.16
White and Asian	0.58 ⋯	0.13	0.05	-0.03	0.15 ⋅⋅	0.07	0.00	0.06	-0.06	0.07	0.00	-0.13 ⋅⋅
White and Black African	-0.12	-0.15	-0.15	-0.28 ⋯	0.03	0.07	-0.24 ⋯	-0.08	-0.06	-0.19 ⋅⋅	-0.08	-0.06
White and Black Caribbean	-0.53 ⋯	0.03	-0.10	-0.28 ⋯	0.05	-0.06	-0.24 ⋯	0.02	-0.12 ⋅	-0.24 ⋯	0.04	-0.10
Students		1,168,644			1,168,644			1,168,644			1,168,644	
Adjusted r²		0.07			0.34			0.35			0.37	

Table 5: Insitution type regression coefficients, various models, dependent variable: level 3 total grade score

Regression coefficients, Level 3 grades												
Controls												
Age, year	Yes			Yes			Yes			Yes		
Institution type	Yes			Yes			Yes			Yes		
Student characteristics: disadvantage, SEND, ethnicity, gender, Key Stage 4 GCSE English and maths	No			Yes			Yes			Yes		
Geography: cohort prior attainment, Government Office Region	No			Yes			Yes			Yes		
Qualification type	No			No			Yes			Yes		
Institution size	No			No			No			Yes		
	Base	year		Base	year		Base	year		Base	year	
		2020	2021		2020	2021		2020	2021		2020	2021
Year (reference = 2019)												
2020	1.34 ···	-	-	1.45 ···	-	-	1.64 ···	-	-	1.75 ···	-	-
2021	1.77 ···	-	-	1.91 ···	-	-	2.14 ···	-	-	2.28 ···	-	-
School or college type (reference = LA maintained)												
Other types	-1.99 ···	2.26 ···	2.08 ···	-1.35 ···	0.62	0.51	-2.27 ···	1.25 ···	1.14 ··	-2.23 ···	1.22 ···	1.12 ··
Independent schools	1.32 ···	-0.35 ··	0.14	1.13 ···	-0.19	0.11	0.56 ···	0.02	0.40 ···	0.42 ···	0.13	0.54 ···
Free Schools	0.31 ···	-0.47 ···	-0.31 ···	0.36 ···	-0.33 ···	-0.11 ··	0.09 ··	-0.18 ···	0.07	0.11 ···	-0.20 ···	0.06
Academies	0.28 ···	-0.09 ···	-0.09 ···	0.06 ···	-0.08 ···	-0.11 ···	0.05 ···	-0.09 ···	-0.13 ···	0.00	-0.06 ··	-0.08 ···
FE colleges	-0.55 ···	-0.81 ···	-1.19 ···	0.65 ···	-0.68 ···	-0.99 ···	0.05 ···	-0.22 ···	-0.46 ···	-0.65 ···	0.36 ···	0.29 ···
Sixth form college	0.57 ···	-0.44 ···	-0.60 ···	0.59 ···	-0.40 ···	-0.56 ···	0.51 ···	-0.37 ···	-0.53 ···	-0.18 ···	0.19 ···	0.20 ···
Special schools	0.99	-3.01 ·	-4.44 ···	0.73	-1.76	-2.07 ·	0.86	-1.79	-2.17 ·	1.01	-1.93	-2.33 ·
Students		1,168,644			1,168,644			1,168,644			1,168,644	
Adjusted r²		0.07			0.35			0.37			0.37	

Table 6: Qualification type regression coefficients, various models, dependent variable: level 3 total grade score (applied general and academic qualifications only)

	Model 1			Model 2			Model 3			Model 4		
Controls												
Age, year	Yes			Yes			Yes			Yes		
Institution type	Yes			Yes			Yes			Yes		
Student characteristics: disadvantage, SEND, ethnicity, gender, Key Stage 4 GCSE English and maths	No			Yes			Yes			Yes		
Geography: cohort prior attainment, Government Office Region	No			Yes			Yes			Yes		
Qualification type	No			No			Yes			Yes		
Institution size	No			No			No			Yes		
	Base	year 2020	year 2021	Base	year 2020	year 2021	Base	year 2020	year 2021	Base	year 2020	year 2021
Year (reference = 2019)												
2020	1.38 ···	-	-	1.23 ···	-	-	1.41 ···	-	-	1.69 ···	-	-
2021	1.91 ···	-	-	1.67 ···	-	-	1.88 ···	-	-	2.24 ···	-	-
Proportion of level 3 qualifications that are applied general	-2.42 ···	-0.74 ···	-1.03 ···	0.78 ···	-0.65 ···	-0.87 ···	0.79 ···	-0.65 ···	-0.89 ···	1.02 ···	-0.67 ···	-0.88 ···
Students			928,353			928,353			928,353			928,353
Adjusted r²			0.11			0.43			0.43			0.43

Annex C: Additional breakdowns by gender and ethnicity

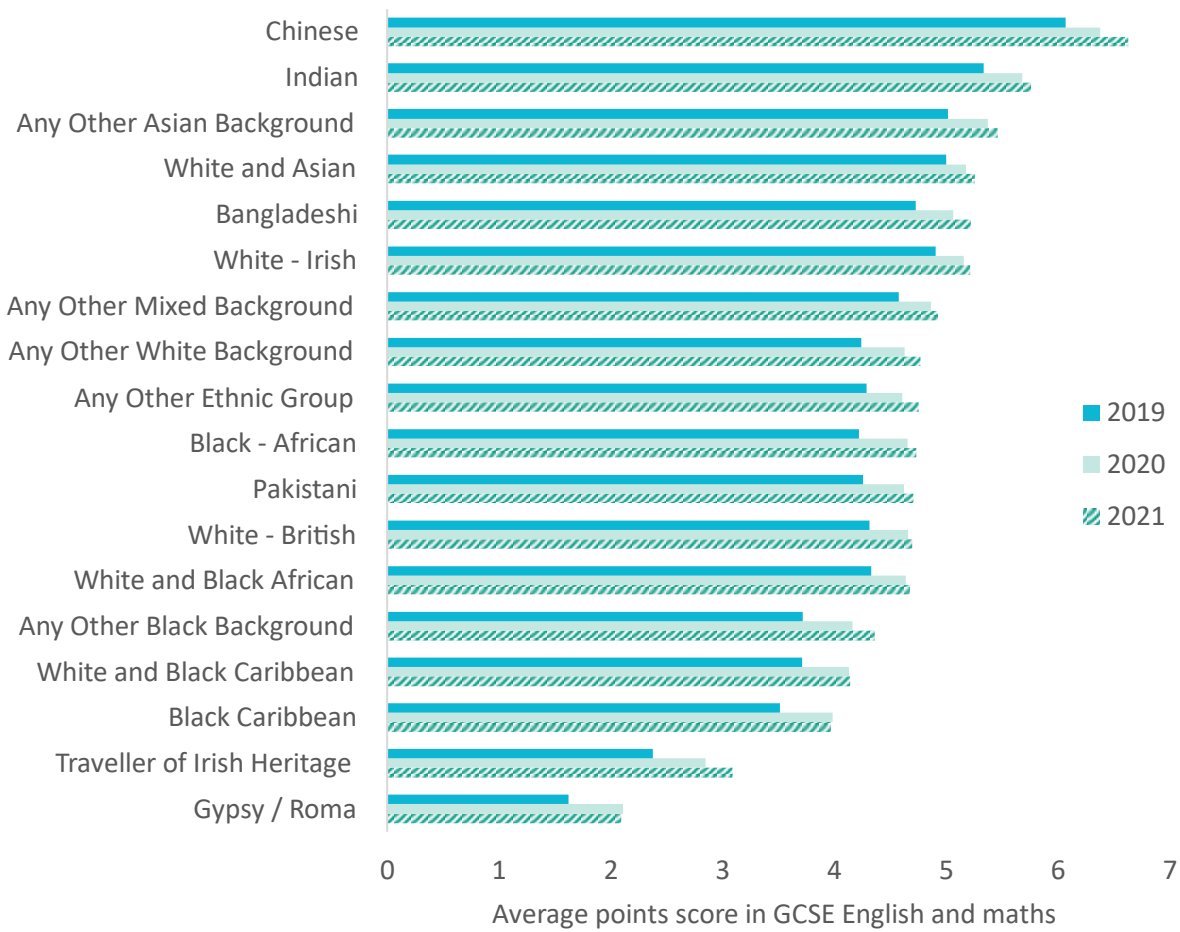**Figure 4.1: Average GCSE points score in GCSE English and maths, male students**

Average points score in GCSE English and maths

Figure 4.2: Average GCSE points score in GCSE English and maths, female students

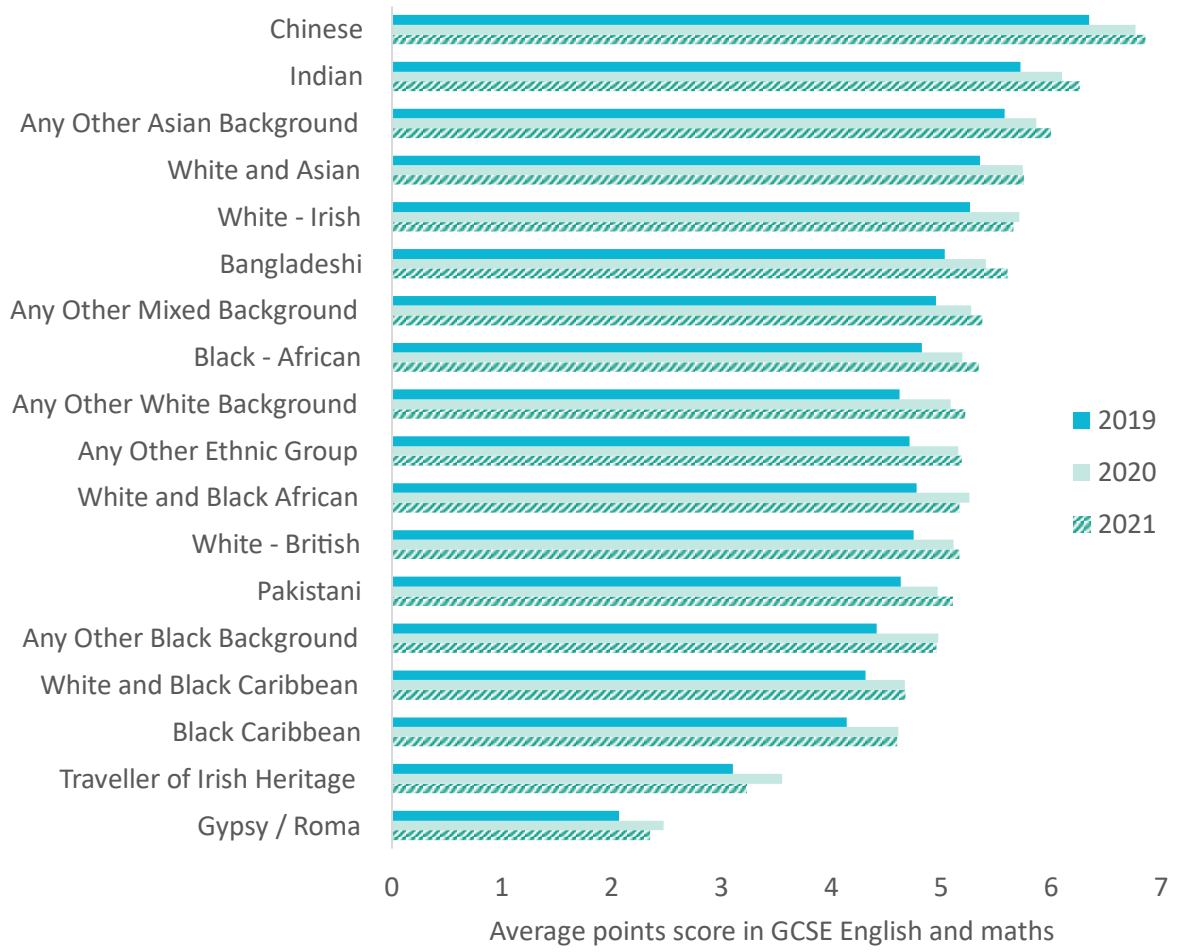Average points score in GCSE English and maths

Figure 4.37: 16-19 total point score over best three qualifications, method 1, male students

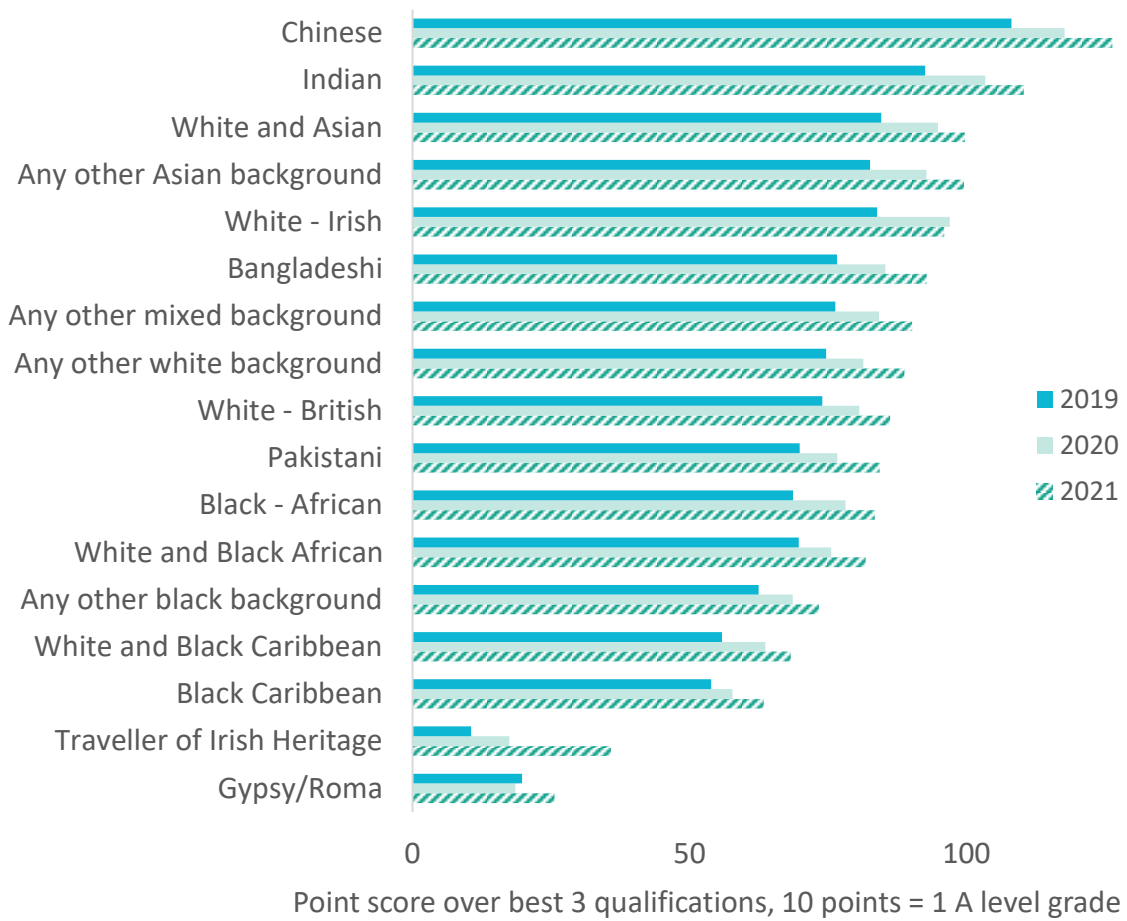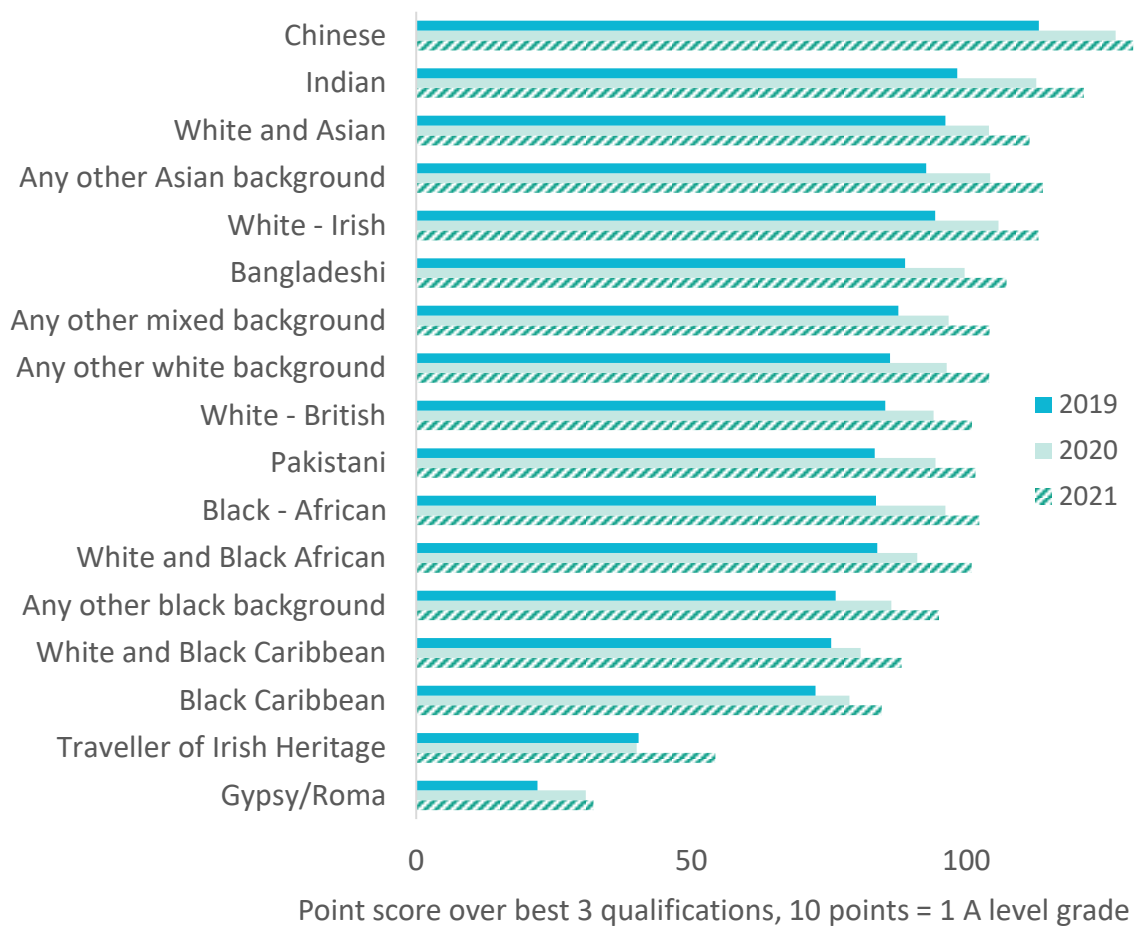Point score over best 3 qualifications, 10 points = 1 A level grade

Figure 4.4: 16-19 total point score over best three qualifications, method 1, female students

Point score over best 3 qualifications, 10 points = 1 A level grade

Annex D: Measures, underlying datasets and inclusion criteria

The datasets used by EPI to produce the measures presented in this report are provided via the DfE and accessed via the Office for National Statistics' Secure Research Service.

Key Stage 4

We include pupils at the end of key stage 4 in all state-funded schools except for those whose sole, or main, registration was in alternative provision, a pupil referral unit, or a hospital school. Independent schools are not included.

To provide maximum stability in our disadvantage gap time series, we calculate the gap based on an average of each pupil's GCSE English and maths grades. This provides a measure that, while relatively narrow, is not affected by changes in GCSE subject entry patterns over time. Pupils failing, or not entering, a relevant English or maths qualification by the end of key stage 4 receive a score of zero for that component, to reflect the expectation that all pupils should study these core subjects.

In 2017, GCSE English and maths were reformed, with a new grading scale from 9 (the highest grade) to 1 (the lowest grade) which replaced the old A* to G grading scale. To account for changes in the grading structure for pupils sitting GCSEs prior to 2017, we adjust average GCSE scores in the earlier years by mapping across the old score boundaries to the new, to produce a new adjusted point score for these pupils.

Whilst the shift from unreformed to reformed GCSEs makes (absolute) comparisons of attainment difficult over time, our focus is on attainment gaps between specific groups of pupils. For the years leading up to the pandemic, we calculate these gaps in terms of 'months of learning', based on the following steps:

1. We rank all pupils by their average GCSE points score in English and maths.

2. We identify the relevant groups of interest (e.g. disadvantaged and non-disadvantaged pupils), and calculate the mean rank of pupils in these groups.

3. We subtract the mean rank of the group of interest from that of the reference group.

4. We convert this mean rank difference to a months of learning measure using a scalar.

For 2020 and 2021 (plus 2017-2019 as 'bridging years'), we instead calculate a GCSE grade gap measure instead of the months gap measure. This is because GCSE grades awarded using centre and teacher assessments following the cancellation of exams during the pandemic may be a less reliable guide to some pupils' underlying learning. Our GCSE grade gap measure is calculated by subtracting the average GCSE grade of the group of interest from the average grade of the reference group.

To have a consistent disadvantage gap measure over the entire period from 2011 to 2021, we also consider a rank-based measure that is consistent with how the Department for Education calculates their disadvantage gap index. This is based on steps one to three above to derive the mean rank difference, which is then rescaled to a base of 10 so it is easier to interpret (equivalent to multiplying

by 20).[8] Using this mean rank method, trends in the GCSE disadvantage gap and persistent disadvantage gap for the decade to 2021 are shown below.

Figure 5.1 Trends in the GCSE English and maths disadvantage gap using the mean rank measure, 2011-2021

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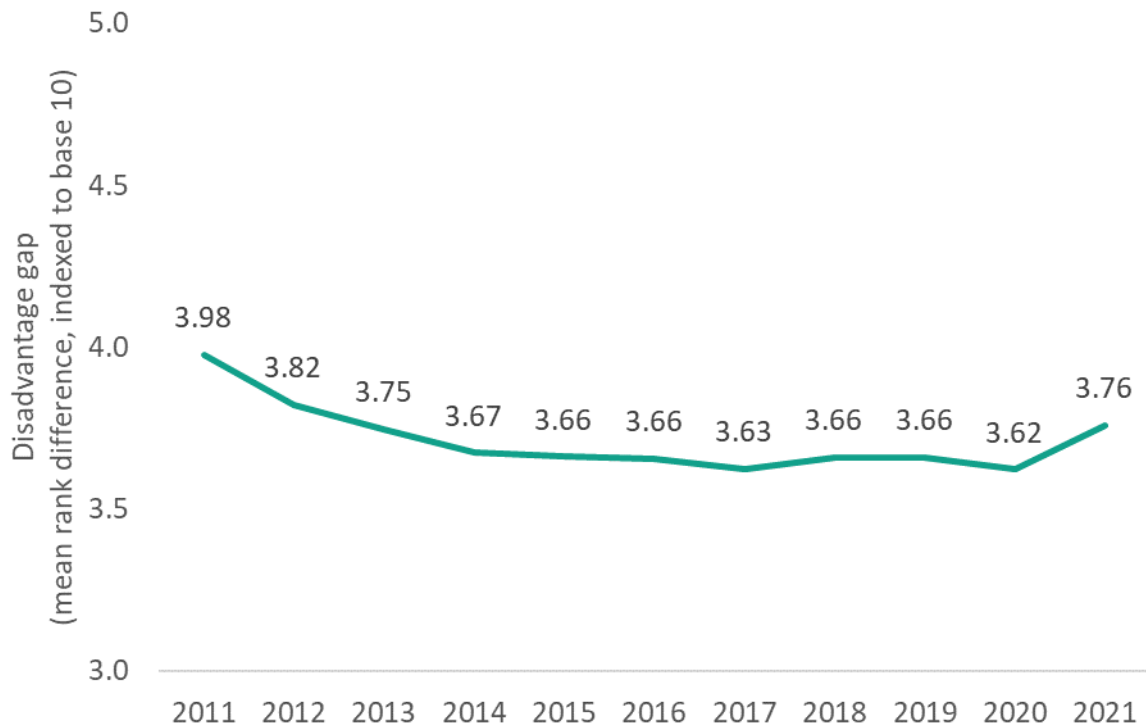
[8] Further details on the DfE methodology for calculating the disadvantage gap index can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/398657/ SFR_40_2014_Measuring_disadvantaged_pupils_attainment_gaps_over_time__updated_.pdf

Figure 5.2 Trends in the GCSE English and maths persistent disadvantage gap using the mean rank measure, 2011-2021
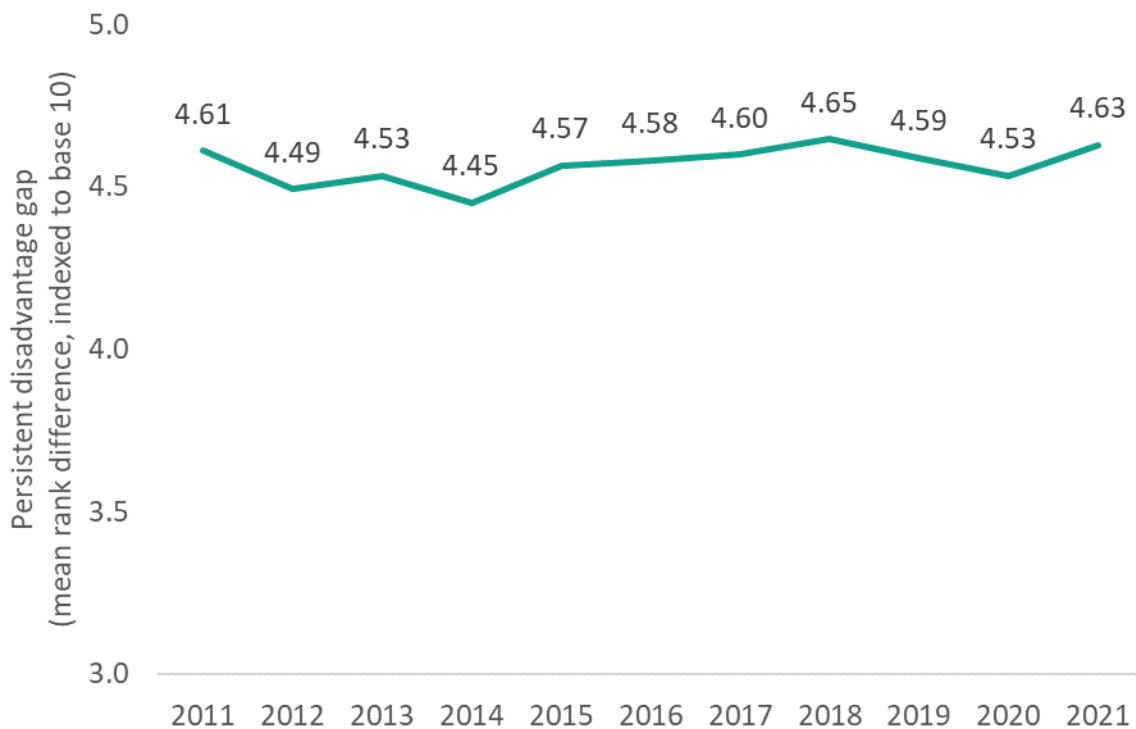
16-19

The student level National Pupil Database (NPD) is used to identify all students at the end of 16-19 study who were affiliated with a state-funded school or college. This is a composite database including those who were in a sixth form as recorded in the school census, and those who were enrolled or took qualifications at FE colleges or other organisations which complete an Individualised Learner Record (ILR) return. We further remove apprentices from our analysis due to the difficulty in allocating them a comparable numeric outcome to other students.

The exam level NPD has been used to identify the level 1-3 qualifications that these students entered in the two or three year period since finishing key stage 4. From 2017 onwards the exam level NPD includes all regulated qualifications up to level 3 (as listed in the Ofqual qualification register) entered by students of the relevant age. This includes qualifications under the Qualifications Credit Framework, which sits within the regulated qualification register.

We further remove any English or maths entries by students who were obliged to continue study of these subjects because of the English and maths condition of funding policy. However, where students have been obliged to continue study of these subjects and have made positive progress since the end of key stage 4, we create an exam record with points equal to the amount of progress they have made, rather than the overall grade.

Students in maintained schools who are at the end of their study but have no level 1-3 qualifications will remain in the measure, with a point score allocation of zero.

All level 1-3 qualifications are included, regardless of grade scheme. For example, pass/fail qualifications or those with any other grade scheme are in scope.

When considering grades awarded in 2021, we have focussed on those that reached the end of their 16-19 study in the 2020/21 academic year. The vast majority of qualifications held by these students will have been awarded in 2021. However, some students will also hold qualifications awarded in an earlier year of their 16-19 study, which may interact with the 2021 effects observed.

Changes in 16-19 coverage

In a usual year, the DfE identify students considered to be at the end of their 16-19 study programme, and therefore to be included in published results, according to three rules. To be included, students must have met one of the following criteria:

- Attended the same post 16 institution for two years

- Have entered level 3 qualifications of size equivalent to at least two A levels (and each individual qualification equivalent to at least one A level)

- Have reached aged 18 by the start of the academic year

There is then a checking exercise through which institutions can make changes to their data, for example if a student aged 17 meets one of the above criteria, but has not yet completed their study programme, they can be removed and reported in the following year's results.

In 2020 and 2021 when grading processes were disrupted by the pandemic, no institution level data were published by the DfE, so the checking exercise did not go ahead. However, in 2021 the DfE removed the first of the above three inclusion rules to avoid reporting students that had not yet finished their study programme, as far as is possible.

This adjustment removed more students that would normally be removed in the checking exercise, and was made only in 2021, although similar issues were present in 2020 data.

In 2020, student datasets were created according to the same set of three rules as had been used up until 2019, and the only difference in coverage resulted from the lack of a checking exercise. The implication of this was that some 17-year-old students that met one of the above rules, but had not completed their study programme were not removed from the data as they would usually have been during the checking exercise.

To account for these additional students in 2021, DfE removed the rule that stated a student would be included if they attended the same institution for two years. As most students completing three-year 16-19 study programmes did not hold two or more level 3 qualifications after two years, this removed most of the students who would otherwise have been removed in the checking exercise, had it gone ahead. However, this adjustment removed more than just these students such that in 2021, the data contained around 450,000 students in maintained schools and colleges, compared to around 550,000 in a pre-pandemic year.

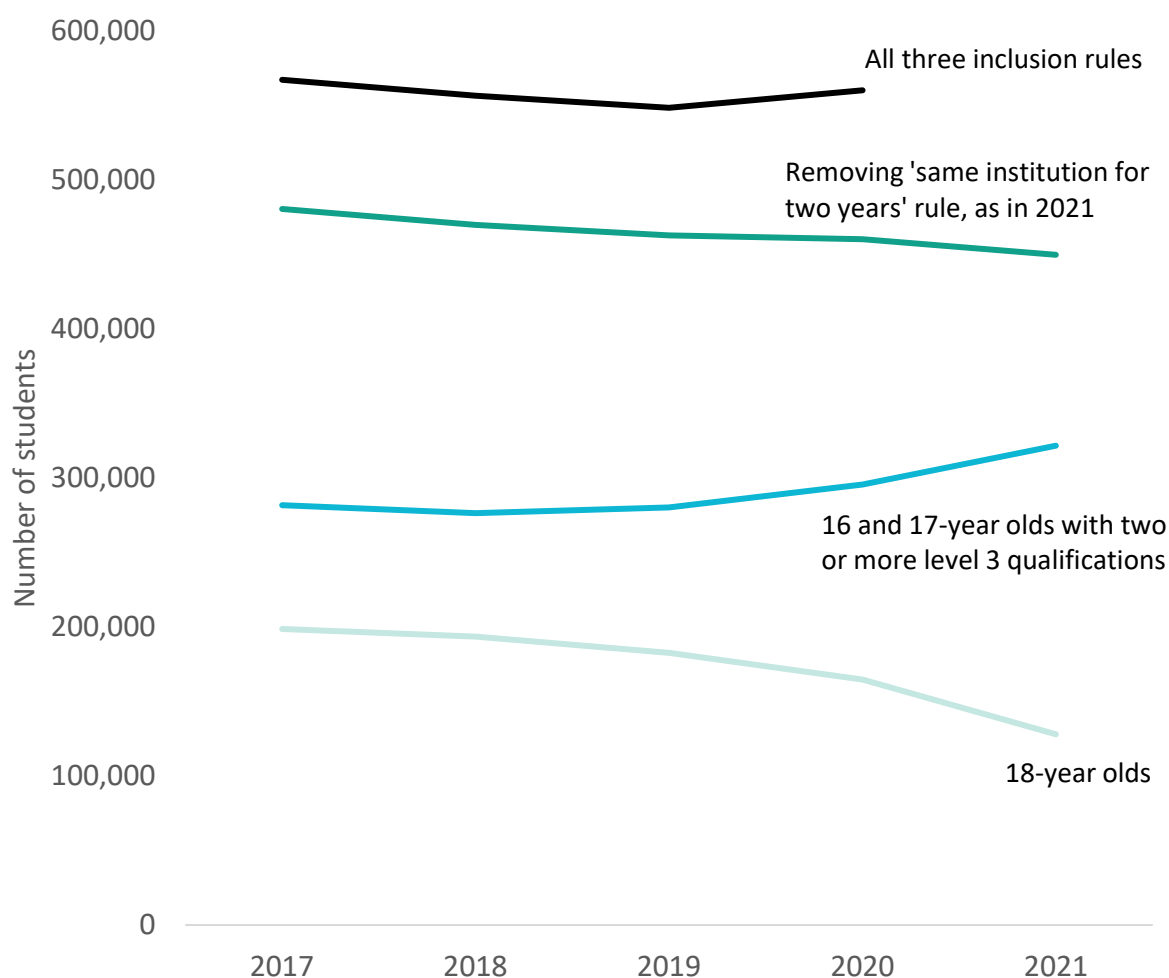**Figure 5.3: Number of students included by year and inclusion rules[9]**

Figure 5.3 shows that by removing the 'two years in the same institution' rule, the number of students included drops by a consistent amount between 2017 and 2019.

The number of students included in 2020 and 2021 without the third rule is similar to in previous years, but the two lines below which split these students by age show that there are still compositional differences. Specifically, a greater number of 16- and 17-year-olds were included in 2020 and 2021, when there was no checking exercise. This meant that there were less 18-year-olds 'left' to be included in 2021, despite the overall population of 18-year-olds increasing over this period.

To account for this, we have made a further adjustment to proxy the effect of the usual checking exercise. For example, if a 16- or 17-year old student went on to take a further qualification at level 3 or below in 2021, we remove them from the 2020 data. This is an over adjustment that removes more students than would usually be taken out in the checking exercise. However, by applying this adjustment to earlier years as well, we achieve consistency.

We are not able to make a similar adjustment to 2021 without 2022 data. In the 16-19 analysis in this report, we present a timeseries that is consistent as possible by removing the 'two years in the

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[9] Age as recorded at the beginning of the relevant academic year

same institution' rule throughout, and further removing 16- and 17-year-olds that had not 'finished' in the year they were included in data from the DfE. This creates a consistent time series for 2017 to 2020. We then calculate outputs from the 2020 and 2021 data with the same inclusion rules, but without the checking exercise adjustment. This means that 2020 acts as a bridging year between the two methodologies.

This approach creates a slight discontinuity in 2020. For example, the average total point score calculated with the checking exercise adjustment and 2021 inclusion rules is slightly greater than the version with just the 2021 inclusion rules.

We therefore shift the 2021-point score up by this difference, to index it to the 2017-2020 time series. This adjustment preserves the trend between 2020 and 2021, whilst presenting our best estimate of the figure for 2021, on a comparable basis to the rest of the time series. This adjustment is demonstrated more clearly in Figure 5.4 below.

Figure 5.4: 16-19 disadvantage grade gap, showing different inclusion rules and reindexing adjustment
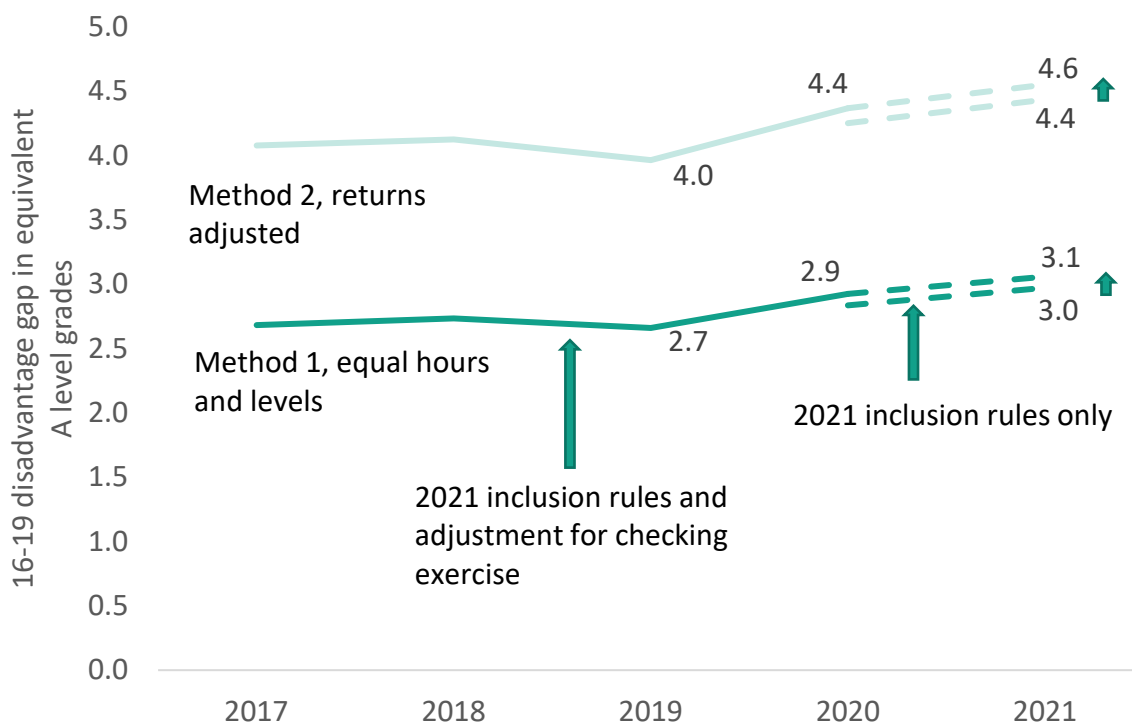
The equivalent figure included in the body of this report is Figure 2.6. In Figure 2.6, only the upper most dashed line is shown for each methodology for simplicity, as this represents out best estimate of the 2021 disadvantage gap or a comparable basis to our 2017-2020 figures.

As noted we have made adjustments to the 2017-2020 datasets to create improve consistency. This means that the 16-19 analysis presented here, is not directly comparable to that which we have published in our previous reports.

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