COVID-19 and Disadvantage Gaps in England 2020

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This work was produced using statistical data from ONS. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

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Foreword: Education Policy Institute

The gap between the educational outcomes of disadvantaged and vulnerable students, and the rest of the student population, is one of the greatest challenges facing our education system and arguably our society in England.

Pre-pandemic research by Education Policy Institute researchers highlighted that the attainment gap between poor children and other students is a full 18 months by the end of key stage four. Worryingly, the sustained progress which had been made in closing this and other key stage gaps seemed to be stalling and even threatening to go into reverse in 2018 and 2019.

Since the beginning of the pandemic in March 2020, a wide range of research has highlighted the detrimental impact of COVID-related disruption on education outcomes for disadvantaged students, and there are some signs that the 'real' disadvantage gaps in attainment may have increased materially.[i]

Tracking what has happened to overall attainment and attainment gaps over the last two years is made significantly more difficult by the cancellation of key stage two tests in 2020 and 2021, and by the move to centre assessed grades in key stage 4 and in the 16-19 phase in those same years.

It is nonetheless essential that we should continue to closely monitor attainment and attainment gaps over this period of disruption, using both formal grades awarded under the new arrangements, and other types of assessment data. It is also essential to understand the impact of centre/teacher grading on outcomes and gaps.

This report, which has been made possible through funding and support from the Nuffield Foundation, seeks to identify attainment and gaps by using the official grade data in 2020. The report allows us to see how these measures have evolved, even if these are not directly comparable with pre-pandemic data, and even if they do not completely reflect the underlying 'real' attainment of students, which would be observed in a more typical year of education.

We can now understand better whether the approach to awarding qualifications in 2020 led to changes in the gap for disadvantaged and other more vulnerable student groups, and whether the circumstances of 2020 had a particularly adverse impact on some of these groups, as many commentators and researchers felt might be the case.

We are able to assess whether the different qualifications taken by students had an impact on any gap changes.

The research in this report also helps us to understand the geographic differences in the disadvantaged gap and the extent to which these are driven by variations in the extent and persistence of poverty.

At a time when the measurement and tracking of change is more challenging than usual, this report helps us understand how results for students have been affected by different ways of awarding grades during the pandemic. It helps ensure that we do not lose sight of the major challenges relating to the gap during this period of disruption. And it helps us to understand how grades differ

when teachers and schools and colleges are the primary mechanism for awarding them - amid ongoing public debate around the merits of retaining existing, traditional, public examinations.

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

Executive Summary

- In 2020, summer exams were cancelled due to the disruption caused by COVID-19. Instead, the higher of students' grades predicted by an algorithm or assessed by their teachers determined final grades at GCSE, A level and for other post-16 qualifications. Under this approach of 'centre assessed grades' (CAGs), students' grades were much higher than in previous years. In 2020, the average GCSE grade across English and maths was 4.9, an increase of 7.9 per cent (or 0.4 grades) from the previous year and marking the single biggest annual increase since the start of our series in 2011.

- In this report we consider whether students with certain characteristics or in certain areas fared favourably or lost out relative to their peers in 2020 under CAGs. We base this on the gap in grades awarded in GCSEs, A levels and other post-16 qualifications (between different student groups and geographic areas) in 2020 compared to 2019. Throughout, we refer to 'measured grade gaps' to distinguish from gaps in underlying learning and ability, which may not be reflected in students' grades. Where measured grade gaps have widened in 2020, this indicates certain students or areas lost out under CAGs compared to the previous year when students sat exams.

- We also look at longer-term trends in the years before the pandemic to highlight where progress is being made in addressing educational inequalities and where there is more work to do. For GCSEs, we use an established method which measures the gap in months of learning. However, due to the disruption to exams under COVID, we adjust our measure so that the 2020 GCSE disadvantage gap looks at the difference in grades awarded to pupils. Given that CAGs may not be a good guide to students' underlying learning in 2020, narrower grade gaps do not necessarily reflect narrower learning gaps.

Key stage 4

- Despite the major disruption to education with the onset of COVID-19, the measured GCSE disadvantage gap fell very slightly in 2020, with **pupils from disadvantaged backgrounds scoring on average 1.24 grades below their non-disadvantaged peers,** compared to 1.26 grades below in 2019.

- Whilst disadvantaged and non-disadvantaged pupils benefited similarly from the GCSE grade increases in 2020, disadvantaged pupils mostly shifted into the middle of the grade distribution whilst non-disadvantaged pupils tended to shift into higher grades. The share of disadvantaged pupils awarded at least a grade 4 or above across English and maths rose by 8.5 percentage points between 2019 and 2020, compared to a 6.5 percentage point increase among non-disadvantaged pupils.

- The gap for persistently disadvantaged pupils – those who are disadvantaged for at least 80 per cent of their school lifetimes – has been consistently wider than the headline gap for all

disadvantaged pupils over the last decade. **In 2020, the measured grade gap for persistently disadvantaged pupils stood at 1.60 grades.** This was a small decrease from 2019, when it stood at 1.62 grades. This indicates that, as for disadvantaged pupils, **persistently disadvantaged pupils did not lose out under centre assessments**. But unlike the headline disadvantage gap which narrowed until 2017, there has been no substantive progress in closing the gap for persistently disadvantaged pupils over the last decade.

- There has been a **marked increase in persistent poverty among disadvantaged pupils in recent years**. Among disadvantaged pupils, the share of pupils who have been eligible for free school meals for their entire time at school has increased from 18.8 per cent (or 26,000 pupils) in 2017, to 25.3 per cent (34,100 pupils) by 2020 – a rise of over 8,000 pupils in three years. Rising persistent poverty *within* disadvantaged pupils is associated with stalling progress in closing the headline disadvantage gap since 2017.

- Despite the stability of the measured gap in 2020 – for both disadvantaged and persistently disadvantaged pupils – not all groups shared equally in the grade increases that occurred under centre assessments**. Special Educational Needs and Disabilities (SEND) pupils with an Education, Health and Care Plan (EHCP) scored 3.62 grades below their peers in 2020 – the largest single gap of any subgroup of pupils that we considered and widening from 3.45 grades in 2019**. SEND pupils without an EHCP were 1.65 grades behind, virtually unchanged from 2019. This follows a longer-term trend of slowing progress in closing the gap for the SEND group without an EHCP and progress stalling altogether for those with an EHCP.

- **Late-arriving pupils speaking English as an Additional Language (EAL) were 1.64 grades behind those with English as a first language in 2020**. The measured gap for these pupils – as well as Pakistani pupils – was at least as large in 2020 as in 2019. However, there was progress in closing the measured grade gap in 2020 for most **minority ethnic groups**, including Black Caribbean and other Black pupils who had been losing ground relative to White British children prior to 2020.

- There is marked geographic variation in the disadvantage gap. The five local authorities with the largest measured grade gaps in 2020 are: Knowsley (1.76 GCSE grades), Blackpool (1.69), Salford (1.66), Derby (1.65) and Sheffield (1.61). The smallest gaps are found in Kensington and Chelsea (0.10), Westminster (0.29), Newham (0.33), Tower Hamlets (0.34) and Barnet (0.36). Indeed, **only three of the thirty local authorities with the smallest disadvantage gaps in 2020 are outside the capital** – these are Rutland (0.56), the newly created council of Bournemouth, Christchurch and Poole (0.88) and Slough (0.89).

- These gaps are partly explained by differing levels of persistent poverty, based on those who are disadvantaged for at least 80 per cent of their school lifetimes. Taking this into account can considerably alter the geographic picture. When comparing the 'raw' and 'adjusted' disadvantage gaps, the local authorities seeing the greatest reductions are: Kirklees (with a gap reduction of 0.4 grades), Sunderland, Halton, Tower Hamlets and Middlesbrough (all reduced by 0.3 grades). All of these local authorities have over half their disadvantaged pupil

populations in persistent poverty (based on our 80 per cent definition) – as do Knowsley, Kingston-upon-Hull and Hartlepool. In areas with relatively low levels of persistent poverty, taking this into account leads to a wider adjusted gap – most of all in Newham, whose gap widens by 0.3 grades (to 0.58 grades).

In summary, there was a slight narrowing of the measured grade gap in 2020 for disadvantaged pupils, as well as for most lower-attaining minority ethnic groups. The measured gap for persistently disadvantaged pupils also did not widen under centre assessed grades. As the debate around the future of GCSEs continues, these findings suggest **that fears around widespread bias in teacher assessments in relation to disadvantage and ethnicity were mostly unfounded**.

However, some other groups did not fare as well under the extraordinary circumstances in which grades were awarded in 2020. These led **to greater educational disadvantage for pupils with certain additional needs due to arriving late to the English state school system and speaking English as an additional language, or having more severe special educational needs or disabilities.** It is also important to note that the impact of the pandemic was fairly limited for the 2020 cohort, with their education disrupted from March to June that year. We know from wider evidence, including assessment results throughout the 2020/21 academic year, that learning loss during the pandemic *has* disproportionately affected disadvantaged pupils – so while this may be masked in the awarded grades, policy must still focus on support and interventions for those groups affected.

We have also positioned the 2020 findings alongside the long-term trends over the last decade to avoid losing sight of the big picture on educational inequalities. There is a growing problem of persistent poverty within disadvantaged pupils in recent years. This is associated with the stalling of progress in closing the headline disadvantage gap since 2017, whilst there has been no progress in closing the gap for persistently disadvantaged pupils since 2011. The differences we see in persistent poverty at a local level are also a key factor in the wide variation in geographic gaps and a timely reminder that **efforts to tackle the social determinants of education, such as poverty, are absolutely fundamental to any goal of 'levelling up'**.

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 attainment measure based on the qualifications and grades they achieved between the age of 16 and 19, we consider how disadvantage gaps changed in 2020. In addition, we also consider how students taking non-academic (vocational or applied) qualifications fared in 2020. In 2020, assessment for academic qualifications was more disrupted than assessment for non-academic qualifications. This is because, in addition to final exams, non-academic qualifications are likely to include more project work and continuous assessment, much of which would have gone ahead as usual in 2019/20. The different structure of qualifications and our approach to constructing metrics, means that the measured grade gaps presented are not comparable between key stage 4 and the 16-19 phase.

- **The measured 16-19 disadvantage grade gap widened in 2020**, with students from a disadvantaged background on average 3.1 grades behind their non-disadvantaged peers over their best three qualifications, compared to 2.9 grades in 2019.

- **The measured gap for students identified as persistently disadvantaged has been consistently wider than the gap for all disadvantaged students**, and the widening in 2020 was more pronounced. The 16-19 persistent disadvantage gap over students' best three qualifications stood at 4 grades in 2020 compared to 3.7 in 2019.

- In 2020, **average grades for female students increased by a quarter of a grade more** than for male students over their best three qualifications. Over the same period, those with identified **special educational needs saw a third of a grade less increase** than those that did not, and **students in general FE colleges saw almost no change** compared to an increase of over a grade for those in state school sixth forms.

- **Students' grades increased the most in London and the East Midlands**, with only relatively modest increases in the North West, Yorkshire and The Humber and the North East. These regional differences in 2020, and over the coming years will be important for the government to consider in the context of the 'levelling up' agenda.

- Following the changes to assessments in 2020, **A level grades were around half a grade higher per qualification in 2020 than in 2019**. Conversely, **applied general grades only increased by the equivalent of one quarter of an A level grade** per qualification, and for other non-academic level 3 qualifications there was little increase at all.

- **Disadvantaged students were less likely to enter A levels than non-disadvantaged students** and more likely to enter non-academic level 3 qualifications. Of non-disadvantaged level 3 students, almost half (47 per cent) entered only A levels, compared to just 32 per cent of disadvantaged level 3 students. Conversely 34 per cent of non-disadvantaged level 3 students entered non-academic (including applied general) level 3 qualifications only, compared to 53 per cent of disadvantaged students.

- Across their best three qualifications, **students completing applied general qualifications fell one grade behind** their otherwise similar peers taking A levels. This could have put these students at a relative disadvantage when competing for higher education places because 35 per cent of UCAS (University and College Admissions Service) applications included at least one non-academic qualification in 2020.

- The increase in the disadvantage gap in 2020 therefore appears to have been largely driven by the fact that disadvantaged students were less likely to take the qualifications which saw the biggest increases in grades in 2020.

Our findings show that although on average most student groups saw higher measured grades in 2020 than in previous years, the **different approaches to grading between qualification types**

disproportionately benefitted A level students. **Disadvantaged students, who are more likely to take applied alternatives to A levels, lost out as a result**. Though our research is based on 2020 results, 2021 A level results appear to have increased further. The government has committed to gradually return back to 2019 grade distributions by 2023. However, given this may still leave students taking alternatives to A levels at a disadvantage in the 2022 grading process, **the government should work with the higher education sector to ensure that these students do not disproportionately lose out when competing for university places**. This will be even more critical for those disadvantaged students who already face significant hurdles in accessing higher education.

Introduction

2020 was an exceptional year in education due to the COVID-19 pandemic. A national lockdown and restrictions to in-person teaching led to assessments being cancelled in 2020 for early years and key stage 2, and the cancellation of exams for GCSEs and A levels. Face-to-face learning in the 2019/20 academic year was only disrupted from late March 2020, meaning the majority of teaching for qualifications awarded in summer 2020 had already taken place prior to the onset of the pandemic. This suggests that differences observed in 2020 results are more likely to reflect the different grading processes than underlying and differential learning losses, which will have had more of an effect on those finishing study in 2021 and beyond.

In response, to the cancellation of exams in 2020, the Department for Education (DfE) and Ofqual initially proposed to use an algorithm to determine results. Given previous evidence has shown that teacher assessments can be more prone to biases around gender, ethnicity, disadvantage and special educational needs, the intention was that the use of the algorithm would dampen these effects, and help to avoid grade inflation.[ii] Teachers were instructed to use their professional judgement based on a range of evidence to award indicative grades, known as 'centre assessed grades' (CAGs), and schools and colleges were then required to rank students. The algorithm then combined the ranks with centres' historic performance data to produce standardised algorithmic grades.

However, after A level results were initially released on this basis, this controversial approach was abandoned and DfE announced that final marks would be based on the highest of students' CAG or their standardised algorithmic grade. Our research is based on these final marks for both key stage 4 and the 16-19 phase. Additionally, grades awarded in the 16-19 phase for the large number of non-A level qualifications often included components from assessment or project work completed earlier in the term, as well as the teacher assessments in lieu of final exams.

Analysis published by the DfE and Ofqual has demonstrated that under the final 2020 grading approach, the average grades of those at the end of key stage 4 and 16-19 study were higher than in previous years both nationally, and within most characteristic subgroups.[iii]

However, it is important that research is expanded in this area to fully understand how the 2020 grading effects interacted within different vulnerable student groups and between types of qualifications. Without additional analysis we cannot fully understand the impact on students' grade outcomes, what these differences mean in terms of access to continued education and the implications for how grade distributions are determined over the coming years.

Within this report, we aim to add to this evidence base by addressing two key research questions:

1) **What happened to the measured grade gaps between disadvantaged and non-disadvantaged students, and between other characteristic groups, based on the final 2020 qualification awards?**

    - We take a nuanced approach to examining the grade outcomes of GCSE pupils from disadvantaged backgrounds. By looking at different levels of persistent disadvantage we can

see how those facing the most acute poverty fared under the approach to grading in 2020, and how their results compared to less disadvantaged pupils.

- We also examine the grade distribution of GCSE results to assess how increases in 2020 affected the likelihood of achieving key grade thresholds for disadvantaged and non-disadvantaged pupils respectively.
- We update our recently developed 16-19 disadvantage grade gap measure to include 2020 qualification results for students at the end of 16-19 study, the only measure to include all qualification types taken in this phase when considering aggregate student outcomes.
- For both students at the end of key stage 4 and those at the end of 16-19 study, we examine how grade outcomes in 2020 have changed since 2019 for a range of student characteristic groups. For example: ethnicity, special educational needs status, and local authority.

2) Did non-academic (technical or applied) students lose out from the 2020 grading process relative to A level students?

- Research published to date only examines within-qualification differences. That is, how the 2020 grading process affected academic and non-academic students separately, rather than how they fared relative to each other.
- We address this question by building regression models that allow us to examine the relative grade increases in 2020 of academic and applied general students with otherwise similar characteristics and prior attainment.
- We further consider how these differences affect overall disadvantage grade gaps by examining the propensity of disadvantaged and non-disadvantaged students to enter different qualification types in 16-19 study.

Trends in key stage 4 attainment and disadvantage gaps

GCSE attainment

In this section we present our headline findings on educational attainment and inequalities at the end of secondary school (key stage 4) in England from 2011 to 2020.

To assess overall attainment at secondary level we measure pupils' average GCSE grade across English and maths. We use the 9 to 1 grading system, which was introduced in 2017 for English and maths (and in 2018 for many other subjects).[1] 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 2020, the average GCSE grade across English and maths was 4.9. This is an increase of 7.9 per cent (or 0.4 grades) from the previous year and marks **the single biggest annual increase since the start of our series in 2011.**

The national percentage of GCSEs graded at 5 or above in English and maths consequently jumped by 6.7 percentage points between 2019 and 2020, with the DfE cautioning that "the increases seen in the headline statistics reflect the changed method for awarding grades rather than demonstrating a step change improvement in standard".[iv] Ultimately, this means that pupil-level attainment in 2020 is not comparable with previous years and so we have to account for this in how we measure the disadvantage gap over time.

The GCSE disadvantage gap

In this section we consider whether disadvantaged pupils lost out relative to their peers under centre assessments in 2020, compared to 2019 when pupils 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 grade gap measure for 2020, 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 last six years, and non-disadvantaged if they have not, using the same definition as the DfE.[2]

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 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 poorer pupils are from their peers.

[1] For GCSEs which had not converted to the new scale by 2018, we rescale the existing grades for our all GCSE subject measure.

[2] The DfE allocates the deprivation component of the pupil premium on this basis.

For 2020, we calculate a measured 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 measured grade gap instead of months of learning gap in 2020, 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 measured grade gaps narrowed in 2020, it is possible that underlying learning gaps did not. Throughout the rest of this report, whenever we mention grade gaps in 2020, we are referring to 'measured grade gaps', as distinct from underlying learning gaps.

For English and maths, we are able to calculate the grade gap measure back to 2017. We use this as our headline measure as, unlike the average gap across all GCSEs, this is not influenced by changes in subject entry that may distort results over time.[3] For completeness, we also present the disadvantage grade gap in all GCSE subjects in Figure 2.1, although in this case we only go back one year to 2019, given the phased nature in which different subjects moved to the new grade scale from 2017.

As Figures 2.1 and 2.2 show, **despite major upheaval to the education system during the pandemic, the measured GCSE disadvantage gap fell very slightly in 2020,** with pupils from disadvantaged backgrounds scoring on average 1.24 grades below their non-disadvantaged peers, compared to 1.26 grades below in 2019. Taking a longer-term perspective, the disadvantage gap reduced over the period 2011-2019 by 1.6 months (or 8 per cent). However, this reduction was entirely consolidated during the earlier period (2011-2017) and **since 2017,** even prior to the onset of the pandemic, **progress in narrowing the GCSE disadvantage gap has stalled.**

The relative stability in the measured disadvantage gap in 2020 during a period of major educational turmoil is in itself remarkable. This suggests that **fears around widespread bias in teacher assessments against disadvantaged pupils were unfounded**.

However, it is important to note that when pupils were assessed in Summer 2020 most of the learning had already been undertaken by the time schools switched to remote teaching for all but the most vulnerable pupils and children of key workers. The major disruption to learning through COVID-related school closures will have resulted in much more lost learning time for the subsequent cohort of pupils who were due to sit exams in summer 2021. We know from wider evidence that learning loss during the pandemic *has* disproportionately affected disadvantaged pupils – even if it is not manifest in the awarded grades for this GCSE cohort.[v]

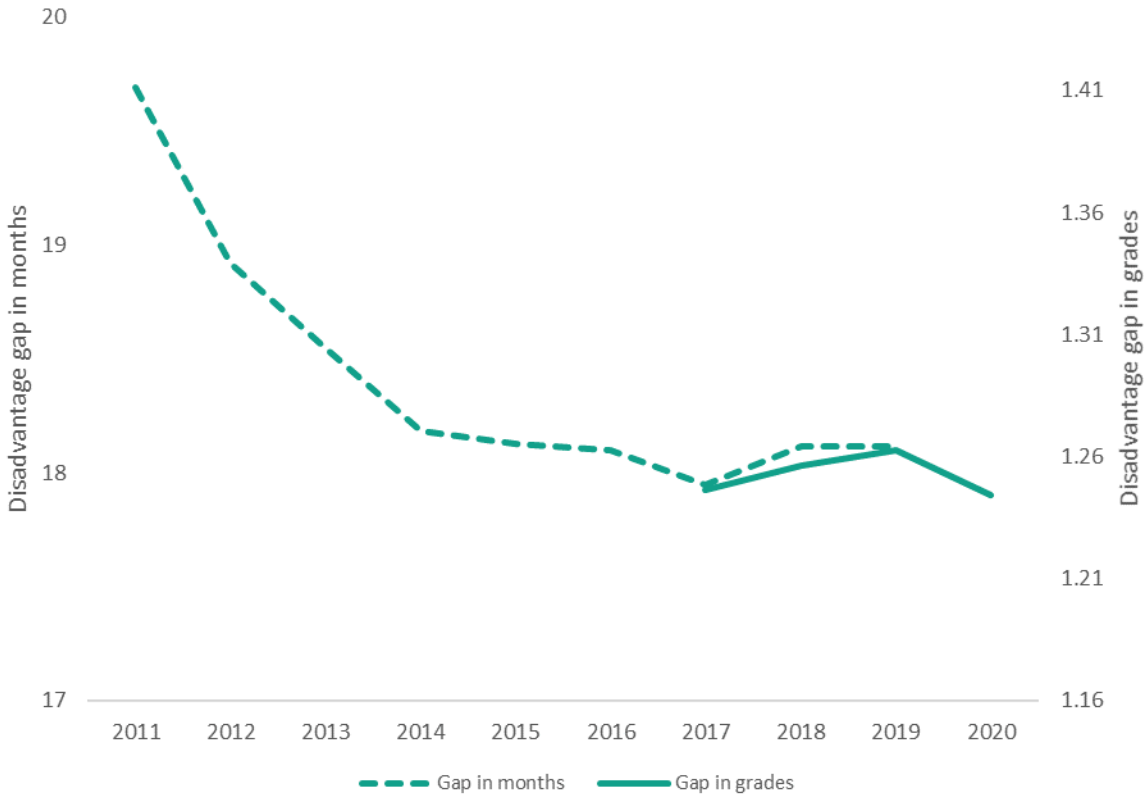
[3] The GCSE average grade across all subjects will be affected by changes in subject entry (e.g. due to the introduction of Progress 8 in 2016) and this is likely to account for the sharp reduction in the gap on this measure in 2017.

Figure 2.1: Trends in the secondary school disadvantage gap since 2011[4]

	GCSE all-subject gap in months	GCSE English and maths gap in months	GCSE all-subject gap in grades	GCSE English and maths gap in grades
2011	20.4	19.7		
2012	20.0	18.9		
2013	19.6	18.6		
2014	19.6	18.2		
2015	19.4	18.1		
2016	19.3	18.1		
2017	18.4	17.9		1.25
2018	18.4	18.1		1.26
2019	18.4	18.1	1.26	1.26
2020			1.26	1.24
2019-2020 change (%)			-0.0 (-0.3%)	-0.0(-1.5%)
2011-2019 change (%)	-2.0 (-9.8%)	-1.6 (-8.0%)		

[4] Totals may not appear to sum due to rounding errors.

Figure 2.2: Trends in the GCSE English and maths disadvantage gap at secondary school



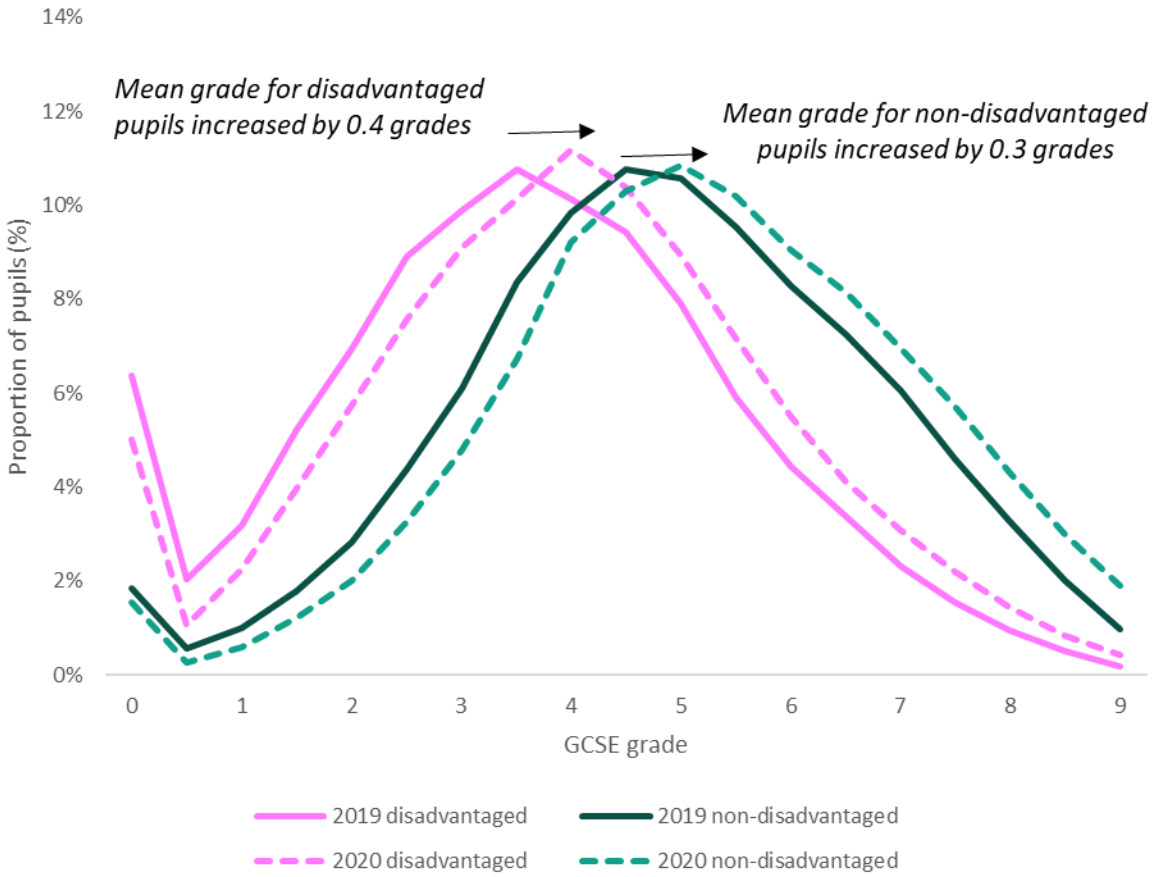
Distributional shifts in the GCSE grade distribution

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 2019 and 2020. Specifically we consider how grade increases in 2020 affected the likelihood of achieving key GCSE thresholds for disadvantaged and non-disadvantaged pupils respectively.

Figure 2.3 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 2019 and 2020. 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 both non-disadvantaged and disadvantaged pupils shifted to the right by a similar amount between 2019 and 2020 (0.35 and 0.37 grades, respectively).

This means that, on average, both **disadvantaged and non-disadvantaged pupils benefited similarly from the overall grade increases that occurred under centre assessed grades (CAGs) in 2020 –** leaving the overall measured grade gap little changed at 1.2 grades.

Figure 2.3: GCSE English and maths grade distribution for disadvantaged and non-disadvantaged pupils in 2019 and 2020



However, this stability masks how disadvantaged and non-disadvantaged pupils tended to shift into different parts of the grade distribution in 2020. Figure 2.4 shows the change in the proportions of pupils being awarded different grades between 2019 and 2020 by disadvantage background. The rightward GCSE grade shift under CAGs meant that fewer pupils – both disadvantaged and non-disadvantaged – were awarded lower grades in 2020. But disadvantaged pupils mostly shifted into the middle of the distribution (grades 4 and 5) while non-disadvantaged pupils tended to shift into higher grades (7 and above). Overall, the proportion of disadvantaged pupils awarded at least a grade 4 or above across English and maths rose by 8.5 percentage points compared to a 6.5 percentage point increase among their non-disadvantaged peers. In other words, the gap in this part of the distribution (based on the respective shares of non-disadvantaged and disadvantaged pupils awarded at least a grade 4) narrowed by around 2 percentage points.

Whilst these differences are simply a direct fallout of these groups' differing underlying distributions, the implication is that **disadvantaged pupils are now better represented at key intermediate GCSE grades**. Grades 4 and above – particularly in English and maths – are considered credible achievements for young people that often act as a passport to future study and have strong currency with employers. This may mean disadvantaged students among the 2019/20 cohort stand a better chance of progressing to level 3 courses which require GCSE grades 4 and 5 as passport qualifications. However it is also possible that institutions have increased their entry requirements in

response to the 2020 grade increases or simply that more popular courses are already oversubscribed. It may also be the case that the grades awarded in the absence of exams are a less reliable guide to some students' underlying knowledge and skills, with these students at risk of not receiving the additional support they need in order to progress and succeed. The implications of these shifts will take time to fully understand and benefit from further research as longer-term outcomes data becomes available.

Figure 2.4: Change in the proportion of pupils at different grades for GCSE English and maths distribution among disadvantaged and non-disadvantaged pupils, between 2019-2020

The GCSE disadvantage gap by subject

In this section we provide a breakdown of the disadvantage gap by GCSE subject. Overall, the share of GCSEs graded at 4 or above across all subjects jumped by almost 9 percentage points between 2019 and 2020 under CAGs.[vi] However, the extent of grade increases differed markedly between subjects. For example, in music the increase in grades awarded at the 4 or above threshold was 14 percentage points and in PE, drama, media, film and television studies, and French it was 13 percentage points. This compares to much lower grade increases for physics and maths (of 5 percentage points), as well as for chemistry and English literature (6 percentage points).

As Figure 2.5 shows, the size of the measured disadvantage gap in 2020 varies significantly by subject, ranging from 1.6 grades in combined science to -0.7 grades in Gujarati. However, some

subjects have very small numbers of pupils studying them so are more skewed by individual outliers than more popular subjects. When we focus solely on popular subjects (with at least 30,000 students), the largest measured gaps are in: combined science, music, geography, maths and history. The smallest measured gaps are in languages, chemistry, and physics, though disadvantaged pupils still do not outperform their peers in these subjects.

There are also differences in the relative likelihood of disadvantaged and non-disadvantaged pupils taking certain subjects. Figure 2.5 also shows the relative participation gap between disadvantaged and non-disadvantaged students alongside the disadvantage gap. This is the percentage point difference between the entry of non-disadvantaged and disadvantaged pupils within a given subject, divided by the percentage entry of non-disadvantaged pupils.

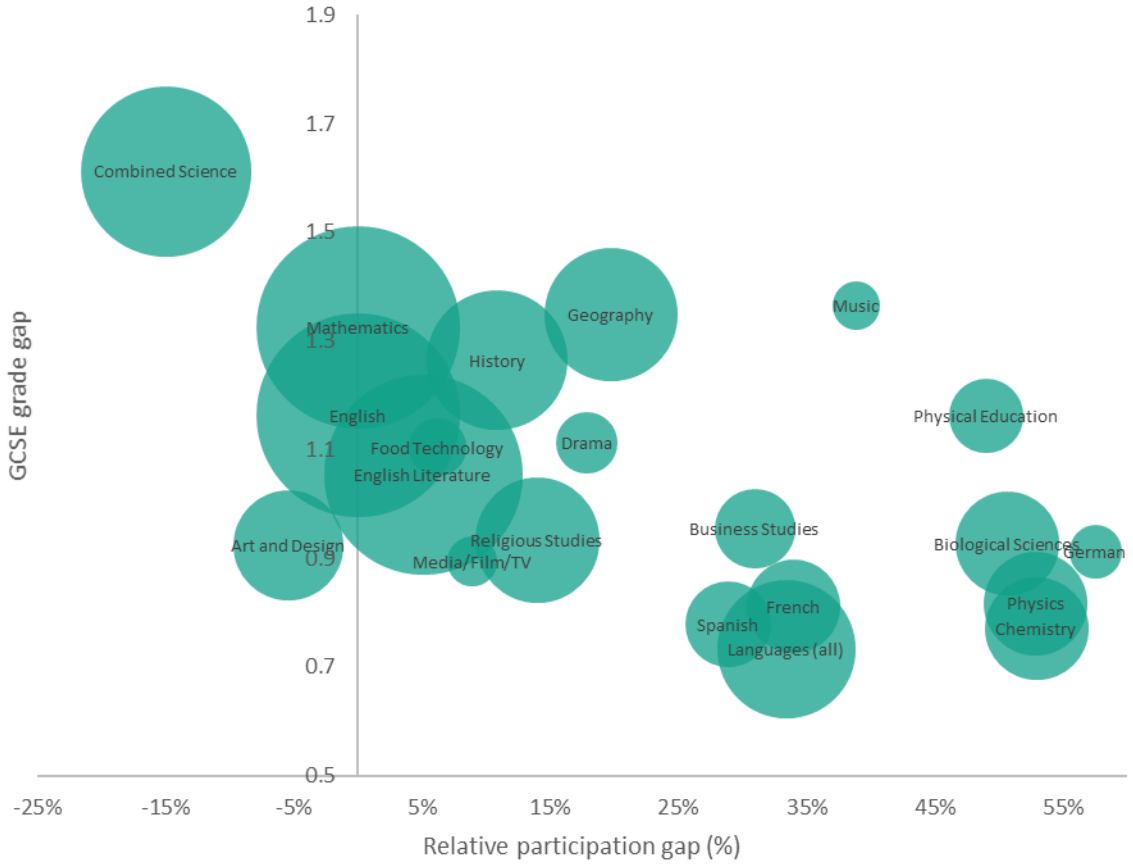
In most non-compulsory subjects, disadvantaged pupils are less likely to take the subject. Among popular subjects, this is most stark for: German, chemistry, physics, biological sciences and PE. However, in combined science and art and design, disadvantaged pupils are *more* likely to take these subjects than non-disadvantaged pupils (i.e. negative relative participation gaps).

Figure 2.5: The disadvantage GCSE grade gap by subject at secondary school in 2020

	GCSE disadvantage grade gap	Relative participation gap (%)	Total number of pupils
Combined Science	1.61	-15%	392,737
Music	1.37	39%	30,549
Geography	1.35	20%	240,604
Maths	1.33	0%	559,705
History	1.26	11%	264,898
English	1.16	0%	559,705
Physical Education	1.16	49%	75,358
Drama	1.11	18%	51,567
Food Technology	1.10	6%	44,951
English Literature	1.05	5%	539,059
Business Studies	0.95	31%	86,118
Religious Studies	0.93	14%	210,751
Biological Sciences	0.93	51%	147,239
Art and Design	0.92	-5%	165,133
German	0.91	58%	38,318
Media, Film and Television Studies	0.89	9%	33,222
Physics	0.82	53%	145,399
French	0.81	34%	117,370
Spanish	0.78	29%	97,466
Chemistry	0.77	53%	145,561
Languages (all)	0.73	33%	259,108

Figure 2.6 charts the relationship between the measured disadvantage gap and relative participation gap for subjects with at least 30,000 pupils. This enables us to assess both dimensions of subject-level inequality to get a sense of the least and most equal subjects on these measures.

Figure 2.6: Disadvantage gap and relative participation gap by GCSE subject at secondary school in 2020[5]



The size of bubble is proportionate to the total numbers of pupils taking the subject

Two of the most unequal subjects are music and PE, which have both high measured disadvantage gaps and high participation gaps. Disadvantaged pupils are 39 per cent less likely than non-disadvantaged pupils to take music at GCSE (49 per cent less likely for PE) and, when they do, they score 1.4 grades below their non-disadvantaged peers (1.2 grades lower for PE). This may be driven by parental investments in music and sport outside of school, such as private music and swimming lessons, that are less accessible for disadvantaged pupils. Disparities in schools' teacher availability, as well as their ability to provide equipment and facilities (such as musical instruments and playing fields) may also play a role.

The two effectively compulsory subjects at GCSE with zero participation gaps – maths and English – have relatively large disadvantage gaps compared to other subjects, at 1.3 grades and 1.2 grades, respectively in 2020.

Science subjects tend to have below-average disadvantage gaps: 0.8 grade gap for Chemistry and Physics and 0.9 for Biological Sciences. However these subjects have the highest participation gaps of all subjects except German. The smaller disadvantage gaps in dual/triple science could be

[5] Only subjects with a pupil count greater than 30,000 have been included in this figure. 'All languages' refers to the highest scoring language subject taken by pupils.

explained by selection of higher-attaining disadvantaged pupils into these subjects through 'ability' grouping at an early stage. Meanwhile combined science reverses this pattern, with the highest disadvantage gap of all major subjects but the smallest relative participation gap. Disadvantaged pupils are 15 per cent more likely to take combined science than their non-disadvantaged peers, and around 50 per cent less likely to take dual or triple sciences at GCSE. Art and design is the only other subject with a negative participation gap (whereby disadvantaged pupils are *more* likely to take the subject than their peers) but, unlike combined science, has a below-average grade gap.

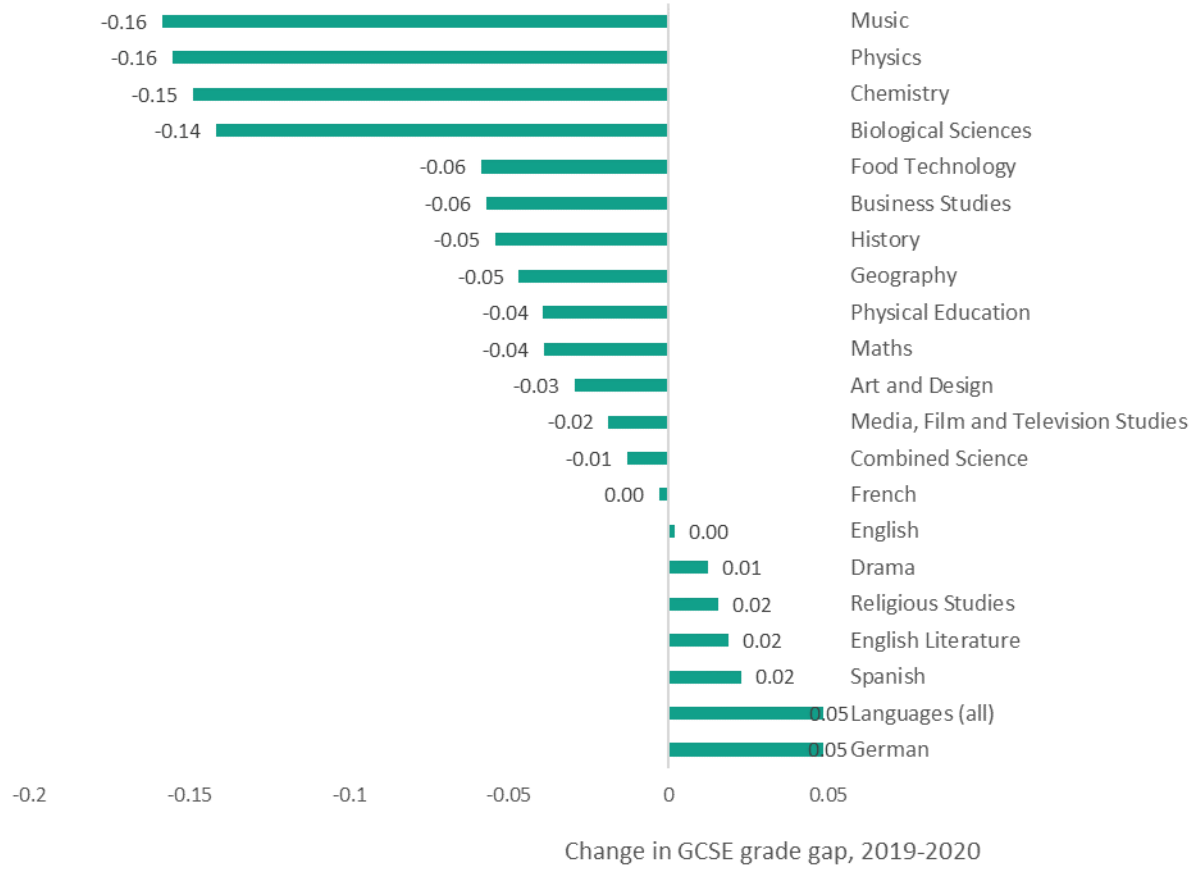
Language subjects tend to have smaller disadvantage gaps. Although not shown on the bubble chart due to small numbers of pupils, Figure 2.5 shows that in some language subjects – Gujarati, Persian, Modern Hebrew, Arabic and Turkish – there is a negative disadvantage gap. This means that, on average, disadvantaged pupils do better than their non-disadvantaged peers in these community languages. This may be because disadvantaged pupils who take these subjects are bilingual or fluent in these languages and thereby score more highly than their peers despite being socio-economically disadvantaged.

In the humanities, geography and history have relatively high disadvantage gaps but history has a relatively small participation gap of 11 per cent, nearly half the rate for geography (20 per cent). Meanwhile religious studies is more egalitarian with below-average disadvantage and participation gaps.

In Figure 2.7 we consider how these subject-level disadvantage gaps in 2020 have changed since 2019 when pupils last sat exams. Again focusing on the most popular subjects, the biggest measured gap increases under centre assessments occurred in German, Spanish, English literature and religious studies. That is, disadvantaged pupils who took these subjects in 2020 lost out – not only relative to their non-disadvantaged peers but relative to the previous year's cohort when grades were awarded under exam conditions. By contrast, the biggest measured gap reductions between 2019 and 2020 were seen in music, physics, chemistry and biological sciences.

The dominance of science subjects at the top of Figure 2.7 (with the biggest gap reductions) and languages at the bottom (with the biggest increases, albeit smaller in magnitude) may link to the average grade achieved which determines the 'headroom' for pupils to further increase their grades in a given subject. The measured gap is closing most in subjects where pupils typically attain high average grades. If those at the top end of the distribution cannot increase their grades further due to hitting the top of the 9 point grade scale, then it may allow disadvantaged pupils further down the scale to move up.

Figure 2.7: Change in the size of the disadvantage GCSE grade gap by subject at secondary school between 2019 and 2020



The GCSE gap for persistently disadvantaged pupils

As well as estimating the measured grade gap for disadvantaged pupils, we also consider the gap for pupils who are persistently disadvantaged. We define this group as those pupils who are eligible for free school meals (FSM) for 80 per cent or more of their school life. We are able to identify this subgroup 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, nearly a quarter (24.1 per cent) of pupils at the end of key stage 4 are disadvantaged in 2020 – a share that has been gradually reducing since 2016 – and nearly one-in-ten are persistently disadvantaged (9.4 per cent). These figures are based on data collected in the January of each year – for 2020, it means this snapshot was taken prior to the onset of the pandemic.

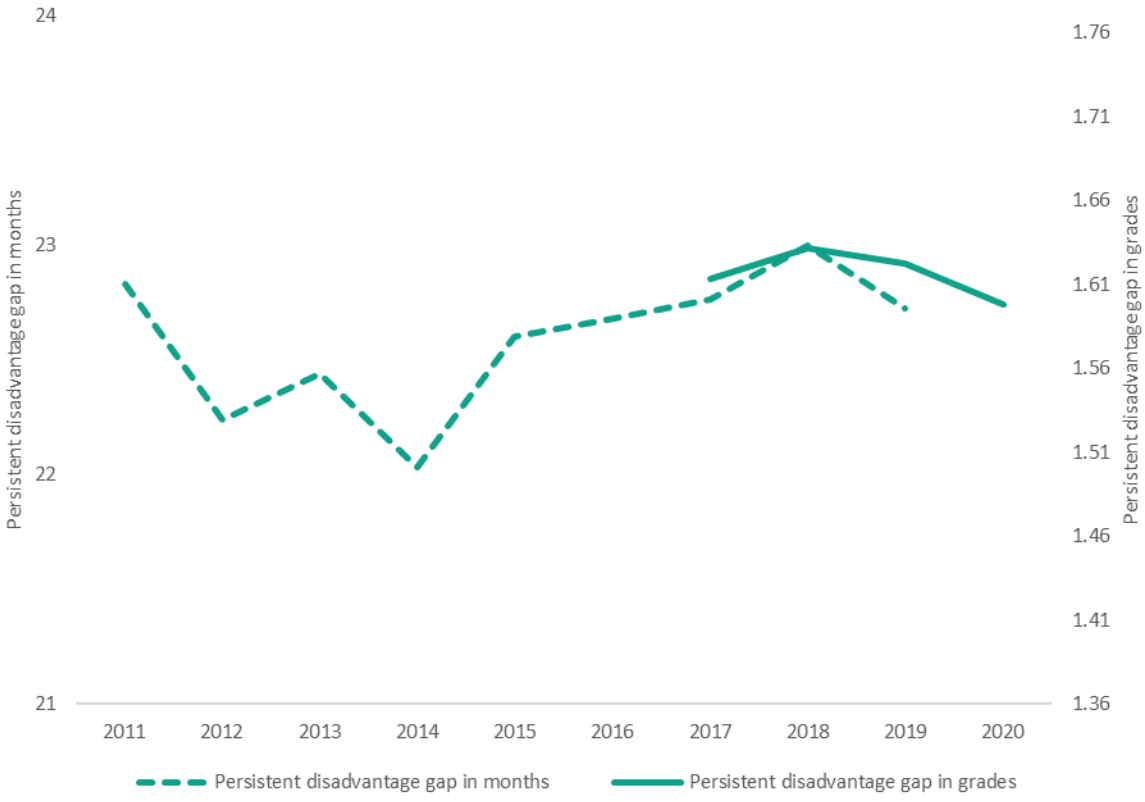
Figures 3.1 and 3.2 set out the trends in the measured grade gap for persistently disadvantaged pupils. As for the headline gap, the persistent disadvantage gap has barely changed between 2017 and 2020 at around 1.6 grades for English and maths. This stability indicates that, as for disadvantaged pupils, **persistently disadvantaged pupils did not lose out under centre assessments** in 2020.

However, **unlike the overall disadvantage gap which has been on long-term downward trend since 2011, there has been no meaningful progress in closing the persistent disadvantage gap**. Between 2011 and 2019, the persistent disadvantage gap fell by just 0.1 months (0.5 per cent), averaging 22.6 months – and over 4 months higher than the overall disadvantage gap.

Figure 3.1: Trends in the size of the persistent disadvantage gap since 2011

	GCSE all-subject gap in months	GCSE English and maths gap in months	GCSE all-subject gap in grades	GCSE English and maths gap in grades
2011	23.5	22.8		
2012	23.2	22.2		
2013	23.4	22.4		
2014	23.5	22.0		
2015	23.7	22.6		
2016	23.8	22.7		
2017	23.0	22.8		1.61
2018	23.2	23.0		1.63
2019	22.9	22.7	1.60	1.62
2020			1.59	1.60
2019-2020 change (%)			-0.0(-0.3%)	-0.0(-1.5%)
2011-2019 change (%)	- 0.6 (-2.4%)	-0.1 (-0.5%)		

Figure 3.2: Trends in the GCSE English and maths persistent disadvantage gap at secondary school



However, the overall size of the persistent disadvantage gap since 2011 masks changes *within* the group of disadvantaged pupils. Over the last four years, persistence of poverty has increased for disadvantaged pupils. In Figure 3.3 we demonstrate this by looking at the persistence of poverty 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 during their time at school. The share of this '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 around one-quarter by 2020.

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 2020, all three measures reached their highest levels since at least 2012 indicating **the persistence of poverty *within* disadvantaged pupils is growing**.

Part of this increase since 2018 may be linked to 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.[vii]

However, it is also the case that the pattern of rising poverty within the overall disadvantaged group is consistent with wider evidence showing rising poverty among young children.[viii] The number of children living in relative poverty was increasing prior to the pandemic – with the largest increases in child poverty between 2013/14 and 2019/20 among children in families with three or more children.[ix] This wider evidence base suggests Figure 3.3 is not solely an artefact of benefits eligibility changes altering the composition of disadvantaged pupils and is a cause for concern.

Figure 3.3: Persistence of disadvantage among disadvantaged pupils at the end of secondary school since 2011

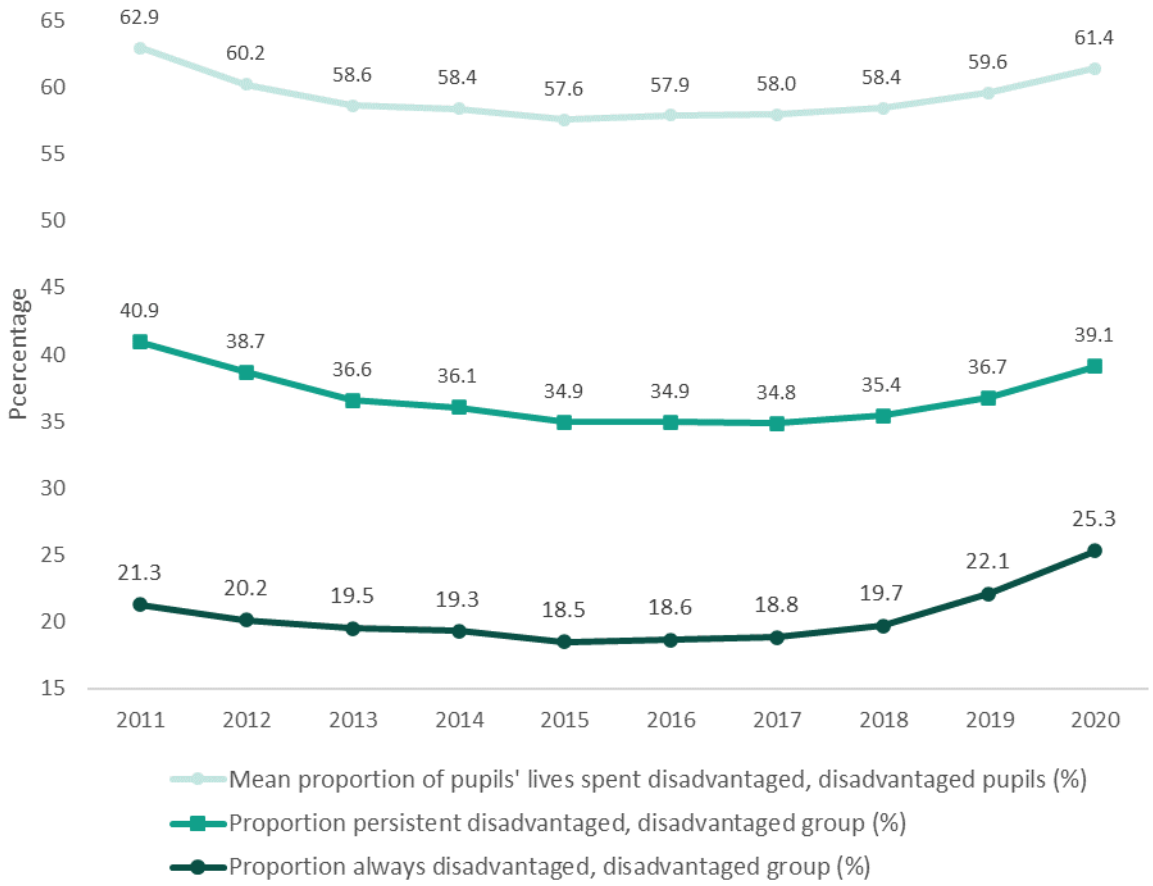
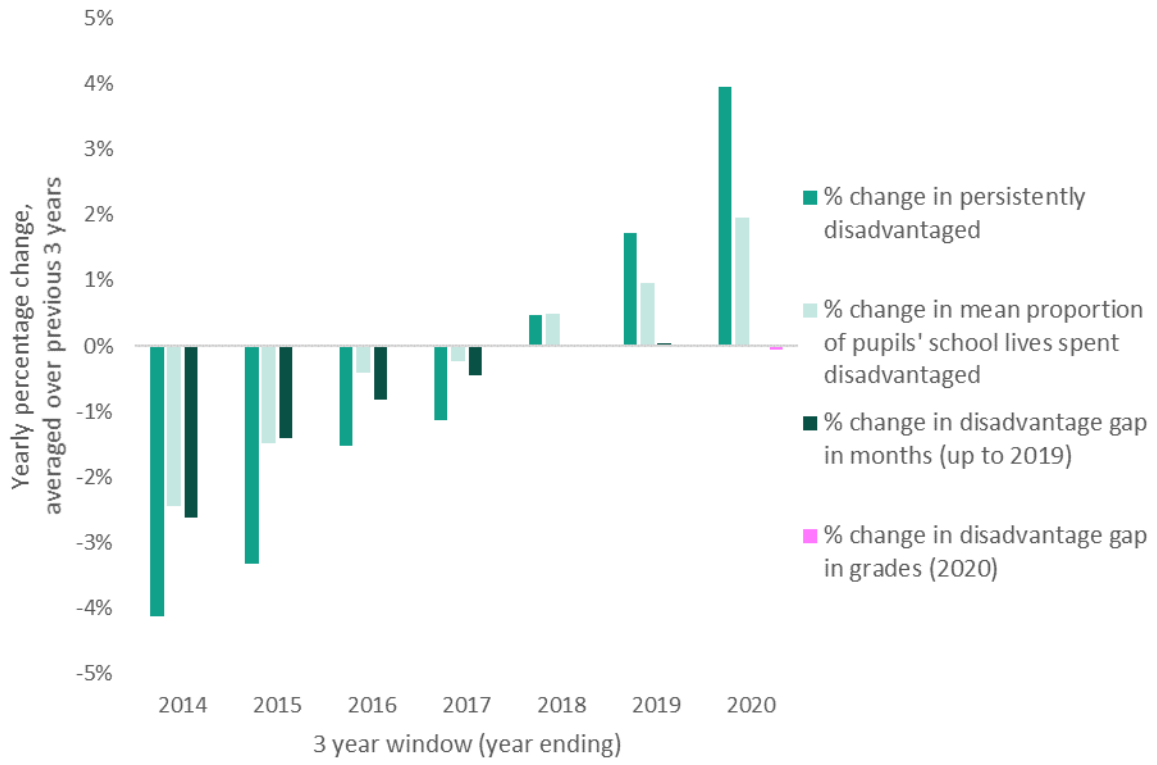


Figure 3.4 presents the changes in persistence of disadvantage in terms of yearly percentage change (averaged over a three year window). It illustrates that these trends roughly align with the trend for the disadvantage gap. Whilst the persistence of disadvantage was declining up to (the three year period to) 2017, the disadvantage gap was narrowing but at a slower rate; and as persistence has increased since 2017, progress in gap-narrowing has stalled.

Figure 3.4: Yearly percentage change in the persistence of disadvantage experienced by disadvantaged pupils, and the disadvantage gap at the end of secondary school since 2011[6]



Given this, and existing evidence that persistence of disadvantage is a key determinant of the disadvantage gap, we have explored the contribution that persistent disadvantage makes to the disadvantage gap.[x] To do this at national level, we calculate measured 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). [7]

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

[6] Figure 3.4 shows the average yearly percentage change in the disadvantage gap on the months gap measure up to (the three years to) 2019 and the grade gap measure in (the three years to) 2020.

[7] At a national level, we look at trends for separate groups of persistence as this enables an examination of non-linear time trends. Like Gorard et al. (2019), we also employ a regression approach and calculate the 'adjusted' disadvantage gap by region, controlling for average persistence of disadvantage within the disadvantaged group.

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 3.5 shows the proportions of these persistence groups over time, with their numbers shown in Figure 3.6. In 2020, 39 per cent of disadvantaged pupils experienced high persistence (including those with 100% FSM eligibility); 16 per cent experienced medium-high persistence; 21 per cent experienced medium persistence; 16 per cent experienced low-medium persistence and 9 per cent experienced low persistence.

Since 2015, the high persistence (or 'persistently disadvantaged') group has grown by 12 per cent – and within this, the 'always disadvantaged' group (not shown separately in Figure 3.5) has grown by three times as much – while the low persistence group has shrunk by 27 per cent.

Figure 3.5: Levels of persistent disadvantage among disadvantaged pupils at secondary school since 2011

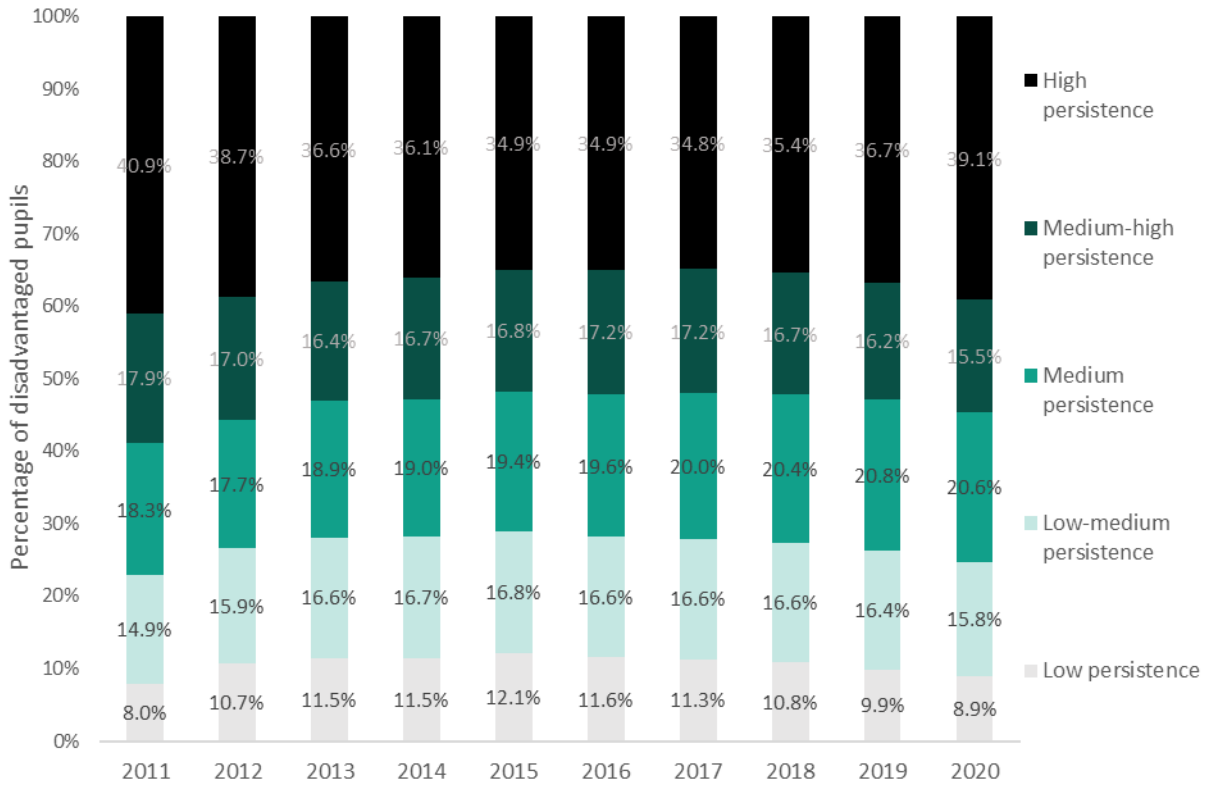


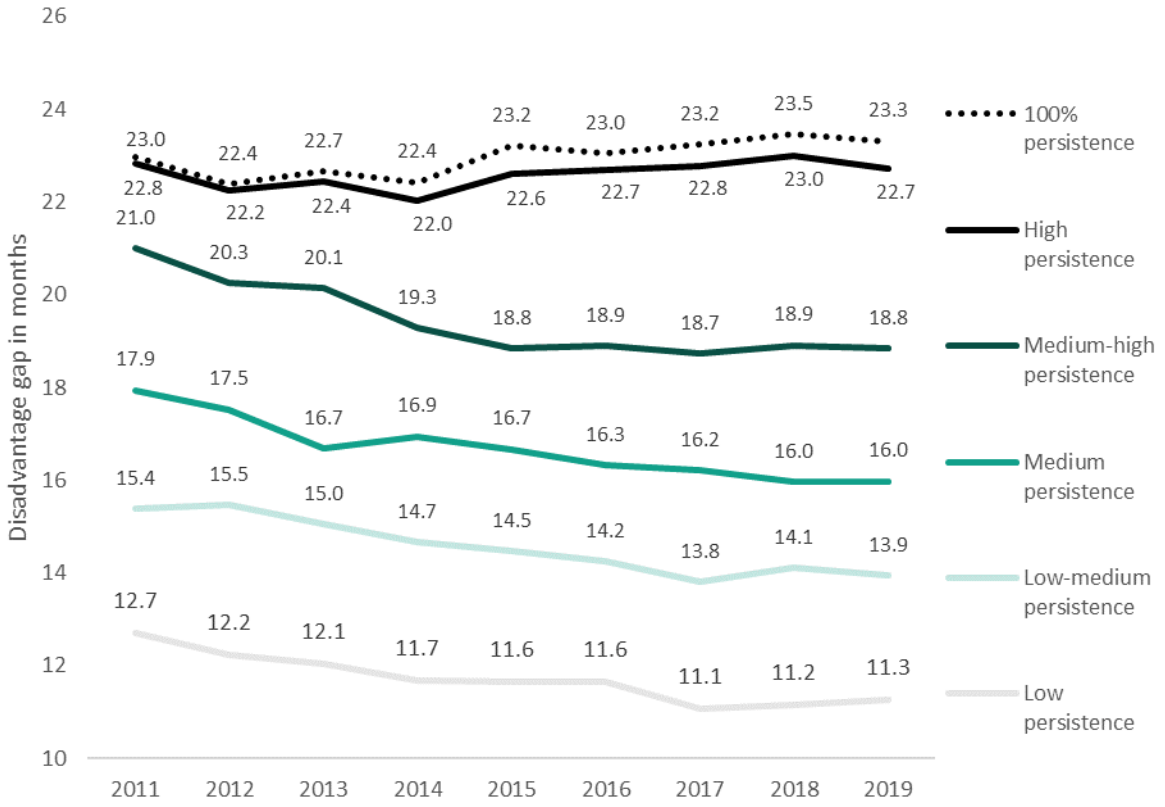
Figure 3.6: Numbers of disadvantaged pupils at the end of secondary school by levels of persistence since 2011

	Low persistence	Low-medium persistence	Medium persistence	Medium-high persistence	High persistence	100% persistence
2011	10,612	19,845	24,360	23,870	54,549	28,353
2012	14,931	22,225	24,767	23,719	54,021	28,149
2013	17,440	25,201	28,660	24,896	55,512	29,630
2014	16,955	24,739	28,159	24,733	53,346	28,542
2015	17,908	24,722	28,569	24,748	51,523	27,254
2016	16,815	24,006	28,442	24,976	50,596	26,989
2017	15,621	22,925	27,631	23,696	48,069	26,002
2018	14,497	22,228	27,354	22,431	47,449	26,406
2019	13,218	21,981	27,816	21,610	49,152	29,578
2020	12,055	21,404	27,774	20,985	52,842	34,149

Figures 3.7 and 3.8 show the disadvantage gap for each of these persistence groups in months (up to 2019) and in GCSE grades (up to 2020), respectively. 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.

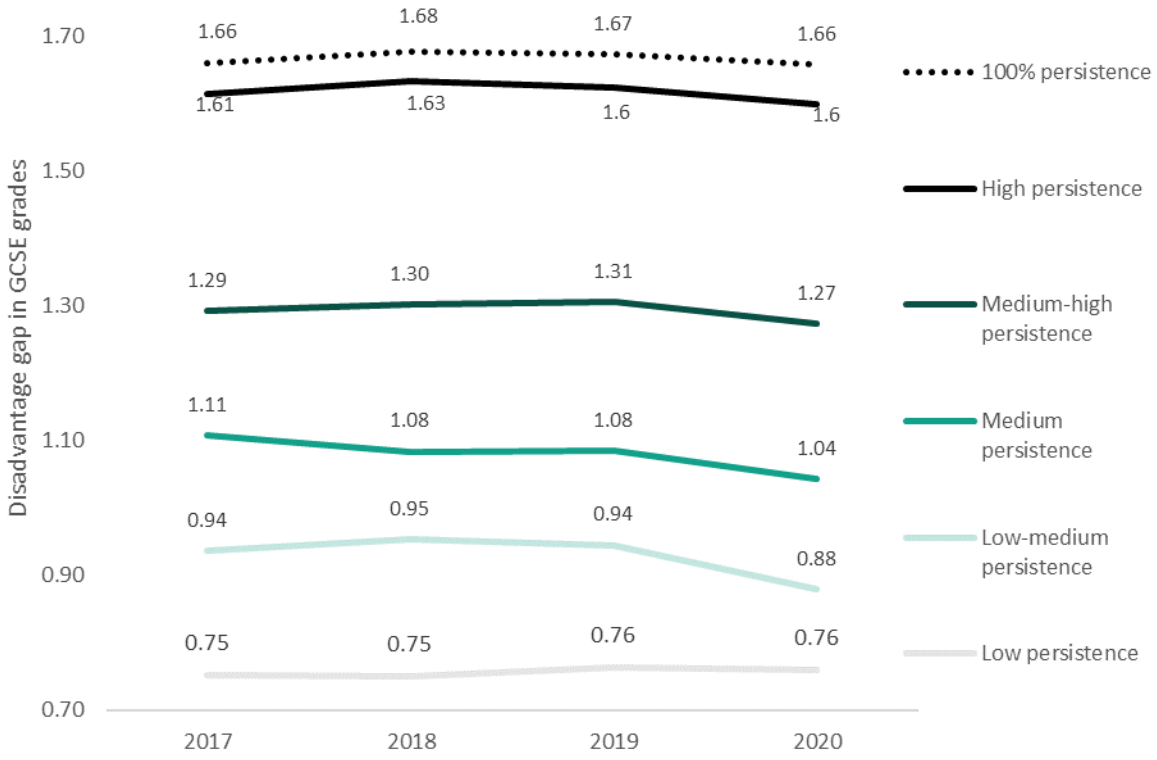
Focusing first on our months of learning measure, the gap for the high persistence group (those who have been disadvantaged for 80 per cent or more of their school life) – at 22.7 months – was twice the size of the gap for the low persistence group (those who have been disadvantaged for less than 20 per cent of their school life) in 2019. The gap for the always disadvantaged group was even bigger at 23.3 months in 2019. As Figure 3.7 illustrates, this is the only sub group of pupils for whom the gap widened slightly since 2011. This contrasts with the low persistence group which has seen a reduction in the gap of 1.4 months (11.3 per cent) over the period 2011 to 2019. It is a concern that **the always disadvantaged group of pupils are falling further behind their peers, even relative to other disadvantaged pupils.**

Figure 3.7: Disadvantage gap in months at secondary school by persistence of disadvantage, 2011-2019 (GCSE English and maths)



Turning to the GCSE grade gap (Figure 3.8) for the more recent period, again the size of the gap steadily increases with the degree of persistence. Over the period 2017 to 2020, the grade gap narrowed among the low-medium and medium persistence groups by 6 per cent but hardly changed among the most and least disadvantaged groups of pupils. Note that in a given period, it is possible for the months gap measure to widen while the grade gap might not. This is because the former only reflects the mean attainment of the group while the latter reflects changes for higher and lower attaining pupils across the distribution (making it better for comparisons over time).

Figure 3.8: Disadvantage gap in grades between 2017-2020 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 Figures 3.3 and 3.5) suggests that the slowing of progress in closing the 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 (Figures 3.7 and 3.8). This is most stark for the subgroup who are always disadvantaged – these pupils have experienced the fastest growth in recent years among all the disadvantaged groups we considered and have the widest gap of all.

The GCSE ethnicity gap

We now look at the measured grade gap by ethnic background, comparing the attainment 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.

Figures 4.1 and 4.2 show that there are notable variations in attainment by ethnic background. Pupils from Gypsy/Roma, Traveller of Irish Heritage, Black Caribbean, and White and Black Caribbean, Other Black Backgrounds, Pakistani, Any Other White Backgrounds, and Any Other Ethnic Backgrounds were all awarded lower GCSE grades on average than their White British peers in 2020. **The gap is particularly large for Gypsy/Roma pupils at 2.6 grades, and also among Traveller of Irish Heritage pupils at 1.7 grades**.

Meanwhile, other ethnic groups that do better on average than White British pupils include Chinese pupils (who scored 1.7 GCSE grades higher) and Indian pupils (1.0 grade higher). Whilst some of these ethnic groups represent very small proportions of the total pupil population, the consistently high performance of Chinese pupils over the last decade, and low performance of Gypsy/Roma and Irish Traveller groups, indicates these patterns are not being driven by small numbers.

We also look at the attainment 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.[8] 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.[xi] **At the end of secondary school, late-arriving EAL pupils were 1.6 grades behind those with English as a first language in 2020.**

Figure 4.1: The ethnicity gap in GCSE grades (relative to White British children), 2017-2020

	GCSE English and maths gap in grades				
	2017	2018	2019	2020	% of pupil population
Late arriving EAL	1.43	1.48	1.60	1.64	1.1%
Gypsy / Roma	2.83	2.77	2.68	2.59	0.2%
Traveller of Irish Heritage	2.18	2.27	1.83	1.66	0.0%
Black Caribbean	0.58	0.68	0.70	0.59	1.3%
White and Black Caribbean	0.49	0.46	0.51	0.47	1.4%
Any Other Black Background	0.45	0.44	0.46	0.33	0.8%
Pakistani	0.17	0.13	0.09	0.09	4.3%
Any Other White Background	0.09	0.09	0.10	0.03	5.4%
Any Other Ethnic Group	0.05	0.07	0.04	0.01	1.9%
White - British	0.00	0.00	0.00	0.00	68.4%
Black - African	-0.01	-0.02	0.00	-0.04	3.8%
White and Black African	-0.04	0.04	-0.03	-0.07	0.7%
Any Other Mixed Background	-0.23	-0.22	-0.23	-0.18	2.0%
Bangladeshi	-0.32	-0.26	-0.35	-0.36	1.9%
White – Irish	-0.57	-0.57	-0.55	-0.55	0.3%
White and Asian	-0.56	-0.57	-0.64	-0.57	1.2%
Any Other Asian Background	-0.62	-0.66	-0.75	-0.73	1.8%
Indian	-0.88	-0.88	-0.99	-1.00	2.9%
Chinese	-1.56	-1.63	-1.68	-1.70	0.3%

[8] 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 4.2: The ethnicity gap in grades (relative to White British children) in 2020 (GCSE English and maths)

Figure 4.3 displays these 2020 gaps alongside their change since 2019. Among those pupils who were behind in 2020 (i.e. with positive GCSE grade gap scores), **the only group that fell further behind under centre assessed grades** (by 0.04 grades) **were late-arriving EAL pupils.** With the exception of Pakistani pupils whose gap was unchanged since 2019, **all other minority ethnic groups with lower attainment than White British pupils made at least some progress in closing the measured GCSE grade gap.** This provides reassurance that fears around ethnic bias in teacher assessments were unfounded.

It is a concern that the late-arriving EAL group – with one of the largest gaps that we calculate – fared unfavourably in 2020 under centre assessments and this compounds the longer-term trend of gap-widening for this group (set out in Figure 4.4). By contrast, the minority ethnic groups that made most headway in closing the measured GCSE grade gap under centre assessments in 2020 comprised pupils from Traveller of Irish Heritage, Any Other Black Backgrounds and Black Caribbean pupils. The relative improvement in the awarded grades of Black Caribbean and other Black pupils in 2020 is a particularly unexpected outcome, given these groups have seen the largest gap widening of all minority groups in the decade to 2019 (see Figure 4.4).

Turning to children who were ahead of White British children in 2020 (i.e. with negative GCSE grade gap scores), White and Asian, Any Other Mixed Backgrounds and Any Other Asian Backgrounds – whilst still ahead of White British children in 2020 – saw their measured advantage narrow.

Figure 4.3: Changes in the size of the ethnicity gap in grades between 2019 and 2020 for pupils behind White British children in 2020 (GCSE English and maths)

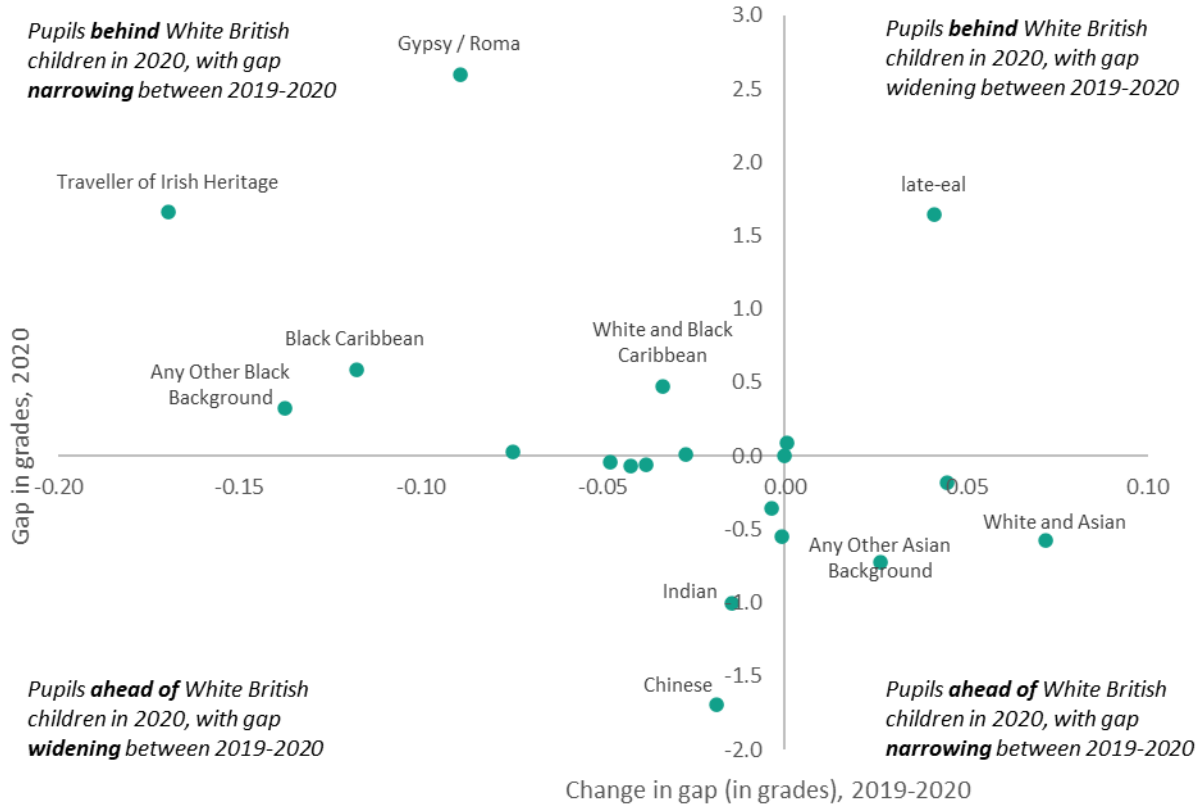


Figure 4.4 sets out a longer-term perspective, showing how the ethnicity gap has changed over the decade to 2019, using our months of learning measure. The most striking changes have been a **widening of the gap by 3.0 months (78 per cent) for pupils from Any Other Black Background, by 4.4 months (68 per cent) for Black Caribbean pupils, and by 2.1 months (11 per cent) for late arriving EAL pupils.**

Meanwhile, pupils from Bangladeshi and Any Other Asian Backgrounds, who on average score higher at GCSE than White British pupils, pulled away by over four months (an increase of fourfold and 79 per cent respectively).

Figure 4.4: Trends in the size of the secondary ethnicity gap (relative to White British children) at English and maths GCSE since 2011

Ethnicity	2011	2012	2013	2014	2015	2016	2017	2018	2019
Late arriving EAL	18.6	18.8	20.0	20.3	19.8	18.7	18.6	19.3	20.7
Gypsy / Roma	34.8	35.3	34.2	36.1	36.5	36.2	35.5	34.8	34.0
Traveller of Irish Heritage	30.6	30.7	29.9	30.6	29.7	28.5	27.8	29.0	23.8
Black Caribbean	6.5	6.6	6.4	6.2	7.3	8.4	8.7	10.4	10.9
White and Black Caribbean	6.1	5.5	4.7	5.1	5.2	5.8	7.2	7.0	7.4
Any Other Black Background	3.9	6.5	4.9	5.6	6.9	6.3	6.8	6.6	6.9
Information Not Yet Obtained	3.5	2.4	1.3	4.9	5.0	2.9	3.4	5.2	5.3
Pakistani	3.6	2.7	3.3	3.6	3.2	3.7	2.5	2.0	1.4
Any Other White Background	1.5	2.4	2.0	1.6	2.1	2.0	1.2	1.2	1.4
Any Other Ethnic Group	1.0	0.1	-0.6	-0.7	-1.1	0.3	0.3	0.7	0.2
Black - African	-0.1	0.2	-0.3	0.0	0.6	0.4	-0.2	-0.3	0.1
White - British	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White and Black African	-0.5	-1.5	-2.1	-1.1	-1.7	0.0	-0.5	0.7	-0.3
Any Other Mixed Background	-4.1	-3.4	-4.1	-4.1	-3.7	-3.0	-3.3	-3.3	-3.3
Bangladeshi	-0.9	-1.8	-2.1	-2.8	-4.1	-2.8	-4.7	-4.0	-5.1
White - Irish	-7.9	-7.3	-7.7	-8.5	-7.7	-8.3	-8.7	-8.7	-8.4
White and Asian	-9.2	-8.0	-8.3	-8.6	-8.5	-8.1	-8.2	-8.2	-9.2
Any Other Asian Background	-6.2	-6.0	-6.3	-6.4	-7.8	-8.8	-9.3	-9.8	-11.1
Indian	-13.0	-12.7	-12.7	-12.7	-11.9	-11.5	-12.8	-12.8	-14.2
Chinese	-21.3	-21.6	-21.3	-20.9	-21.0	-21.3	-22.2	-23.3	-23.9

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

There are two main categories of SEND pupils – those with an Education, Health and Care Plan (ECHP) (or, prior to 2014, a statement of SEND support) and those without. SEND pupils without an EHCP normally receive school support through regular school notional special needs budgets. SEND pupils with an EHCP are assessed to have more substantial needs; in this case, support is mandated by, and in many cases partially funded by, the local authority.

Figure 5.1 sets out the size of the measured SEND gap for these two groups of pupils for the period we have consistent data on the grade gap measure, 2017-2020. Pupils with SEND – particularly those with an EHCP – have far lower GCSE attainment than their peers with no identified SEND. **By the end of secondary school, SEND pupils with an EHCP scored 3.6 grades behind their peers** in 2020 **– the single largest gap of any subgroup of pupils that we calculate.** SEND pupils without an EHCP were 1.7 grades behind.

These two groups have also fared differently under centre assessments. Compared to pupils sitting exams in the previous year, the measured gap for pupils receiving SEND support without an EHCP was little changed between 2019 and 2020. However, for those with an EHCP the gap widened by 0.2 grades. **That the group of pupils with the largest gap of all widened yet further under centre assessments in 2020 is a concern.** It also follows a longer-term trend of slowing progress in closing the gap for the non-EHCP SEND group, and progress stalling altogether for those with an ECHP.

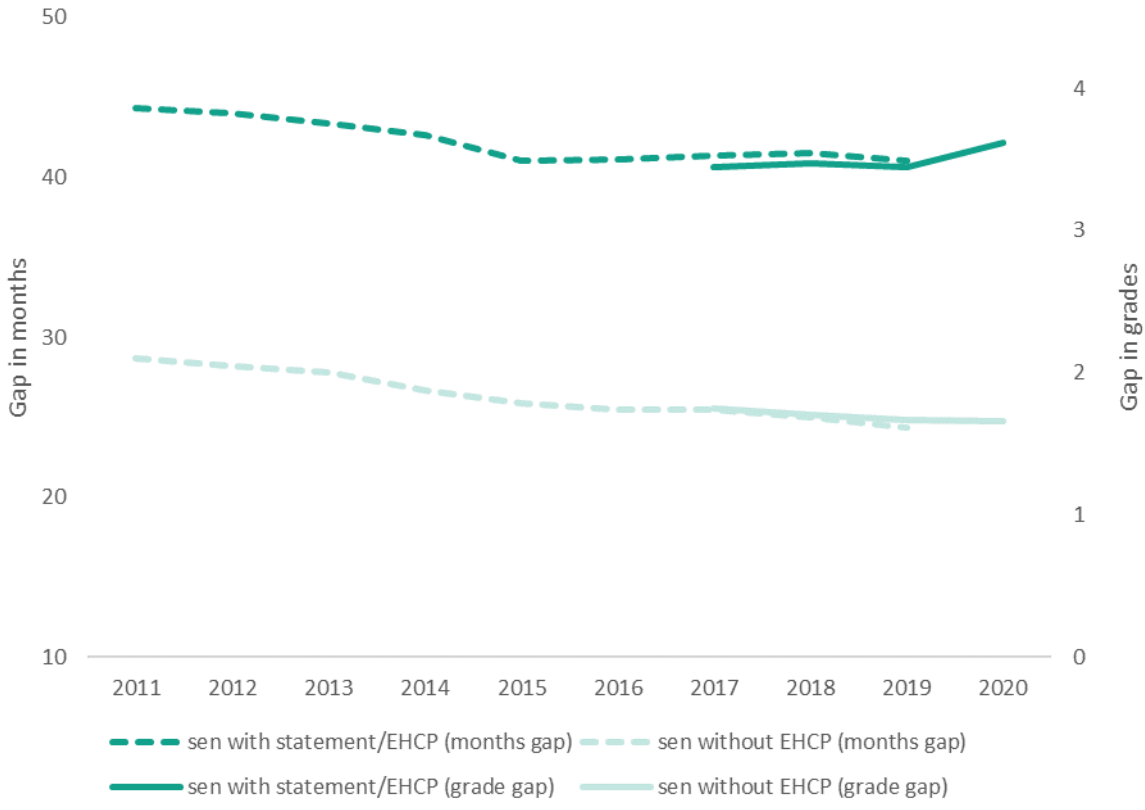
Figure 5.1 - Trends in the size of the secondary SEND gap in GCSE grades in English and Maths, 2017-2020

	SEND without EHCP	SEND with EHCP
2017	1.75	3.45
2018	1.71	3.47
2019	1.67	3.45
2020	1.65	3.62
2019-2020 change	-0.01 (-0.8%)	+0.17 (+4.9%)
2017-2020 change	-0.09 (-5.4%)	+0.17 (+4.9%)

Figures 5.2 provides a longer-term perspective, showing how SEND gaps at the end of secondary school have changed using the months of learning measure which allows for consistent gap measurement going back to 2011. While the gap for pupils receiving SEND support without a statement or EHCP reduced by 2.7 months (9.6 per cent) in the four-year period from 2011 to 2015, in the four-year period from 2015 to 2019 it closed by just 1.5 months (5.9 per cent).

This slowing of progress has been more pronounced for pupils with greater needs. **The gap for pupils with a statement or EHCP narrowed by 3.3 months (7.5 per cent) from 2011 to 2015, but has since stagnated and even increased slightly.**

Figure 5.2: Trends in the size of the secondary SEND gap in English and Maths GCSE, 2011-2020



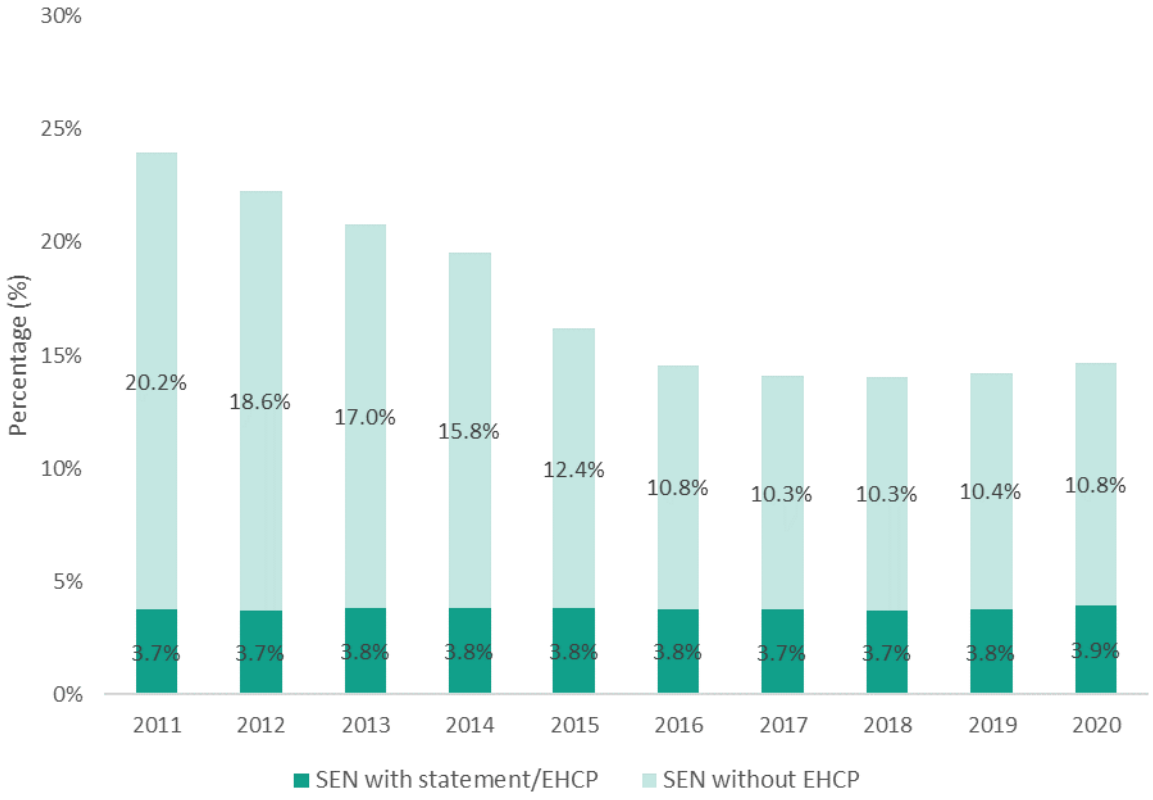
These trends should be seen within the context of changes in the prevalence of these SEND groups (Figure 5.3). The group receiving SEND support without a statement or EHCP reduced as a proportion of the pupil cohort from 20.2 per cent 2011 to 12.4 per cent in 2015, as thresholds for identification of this group rose in response to the incoming reforms of 2014. This makes the

reduction in the gap for the non-EHCP SEND group from 2011 to 2015 surprising, given the policy context and the fact that any reduction in the size of the group due to threshold changes would – if anything – drive an increase in the average severity of the group and thereby the size of the gap.

One explanation could be that the pupils who were removed from the school action group were not actually receiving structured additional school support; they were merely recorded on the SEND register to flag that they were facing challenges with their learning. The exit of these pupils from the group would mean that the remaining pupils were those receiving comparatively more support, thus potentially explaining some of the improvement in the gap from 2011 to 2015.

By contrast, the size of the EHCP group among GCSE pupils has been relatively stable since 2011.[9] The widening of the gap for this group is therefore less likely to be explained by compositional changes.

Figure 5.3: Proportion of pupils at the end of secondary school identified with SEND by type since 2011



[9] Note that our estimates for the share of pupils who are identified with SEND with a statement/EHCP differ from published DfE statistics (DfE, 'Special Educational Needs in England', July 2020, https://explore-education-statistics.service.gov.uk/find-statistics/special-educational-needs-in-england) because the latter covers all school-age children, whereas our estimates specifically cover to the pupil population in Year 11. DfE's statistics suggest that the share of pupils with an EHCP in schools has increased since 2017; our estimates here suggest that for pupils at the end of secondary school specifically, it has been relatively stable.

The GCSE disadvantage gap by local authority

There is clear geographic variation in the size of the measured GCSE disadvantage gap at local authority level at secondary school. We classify geographical breakdowns based on where pupils live, rather than where they go to school. Within each area, we compare the GCSE grades of disadvantaged pupils in that area to the national average for all non-disadvantaged pupils. We do this rather than look at the difference between disadvantaged and non-disadvantaged pupils *within* the same area to allow for a consistent reference point across the country. This avoids representing gaps as being especially large in certain areas based on very high attainment of non-disadvantaged children in the area, rather than low attainment by disadvantaged children.

Figure 6.1 shows the local authorities with some of the biggest and smallest measured disadvantage gaps in the country. The five local authorities with the largest gaps in 2020 are: Knowsley (1.76 GCSE grades), Blackpool (1.69), Salford (1.66), Derby (1.65) and Sheffield (1.61). The smallest gaps are found in Kensington and Chelsea (0.10), Westminster (0.29), Newham (0.33), Tower Hamlets (0.34) and Barnet (0.36). Indeed London heavily dominates the list of areas with the smallest disadvantage gaps – a widely reported phenomenon known as the 'London Effect'**. Of the 30 authorities with the smallest measured grade gaps, just three are not in the capital**: Rutland (0.56), the newly created Bournemouth, Christchurch and Poole Council (0.88) and Slough (0.89).

However, there is evidence that the size of the disadvantage gap in an area is strongly influenced by the local persistence of disadvantage and ethnic composition.[xii] Given our earlier findings about the importance of the persistence of disadvantage in determining the size of the gap, we include estimates of a both a 'raw' gap and 'adjusted' disadvantage gap. The adjusted gap is what the measured grade gap would be if each local authority had the same level of persistent disadvantage as England as a whole. It is based on a regression model which allows us to strip out the effects of local demographics on the raw gap so that comparisons of educational outcomes across local authorities are more meaningful.

Looking again at the 20 local authorities included in Figure 6.1 we see that in some areas – like Knowsley and Tower Hamlets – their adjusted gaps are lower than their raw gaps. This means that once levels of disadvantage among their local pupil populations are taken into account, their relative position improves. Meanwhile in places like Newham and Rutland the reverse is true: their disadvantage gaps tend to worsen once we account for their local pupil profiles.

Figure 6.1: The 10 local authorities with the biggest and smallest disadvantage gaps (English and maths GCSE) in 2020

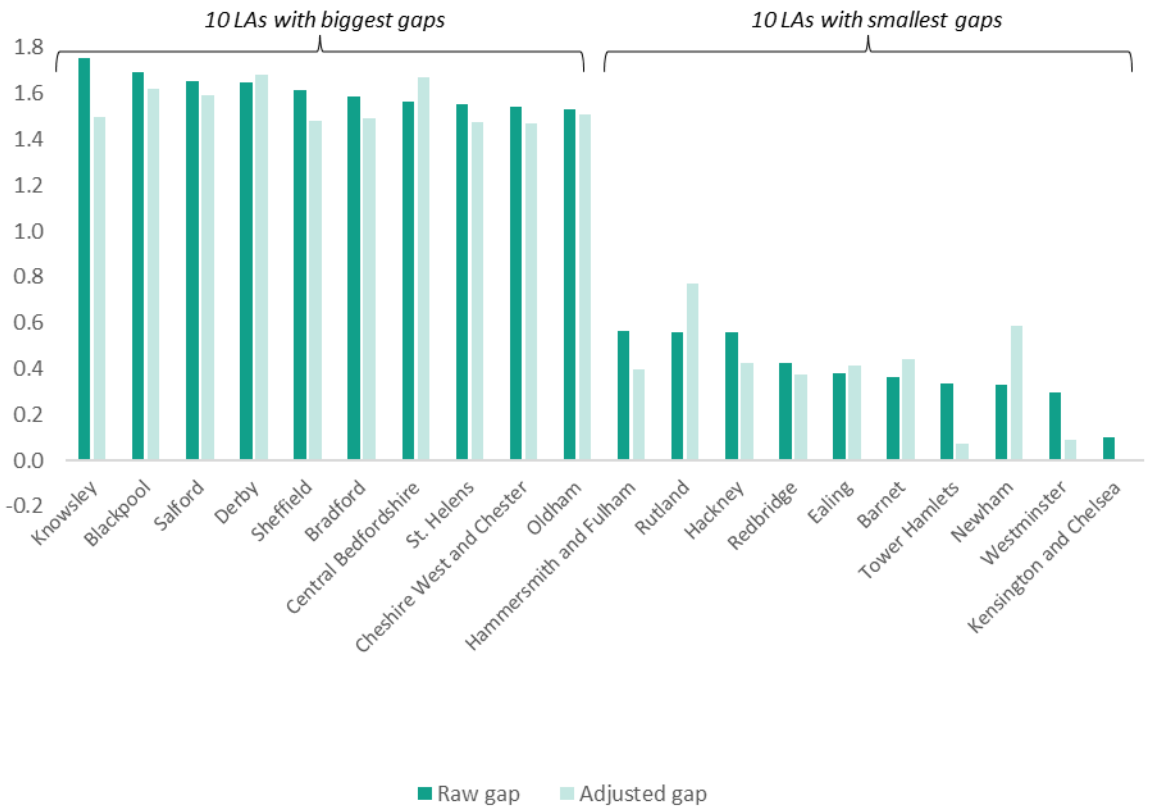


Figure 6.2 shows how the (raw) gap has changed since 2019 in the ten local authorities experiencing the biggest and smallest gap changes under centre assessments. There are no clear geographic patterns to where in the country grade increases or decreases were most pronounced – for example, several London boroughs feature at both ends of the spectrum. Local authorities where the measured gap widened the most under CAGs include York, Westminster, Redbridge, Oldham and Doncaster. Meanwhile areas whose measured gaps narrowed the most include Kensington and Chelsea, Plymouth, Haringey, Torbay and Isle of Wight.

Figure 6.2: The 10 local authorities with the biggest and smallest changes in the size of disadvantage gaps (English and maths GCSE), 2019-2020

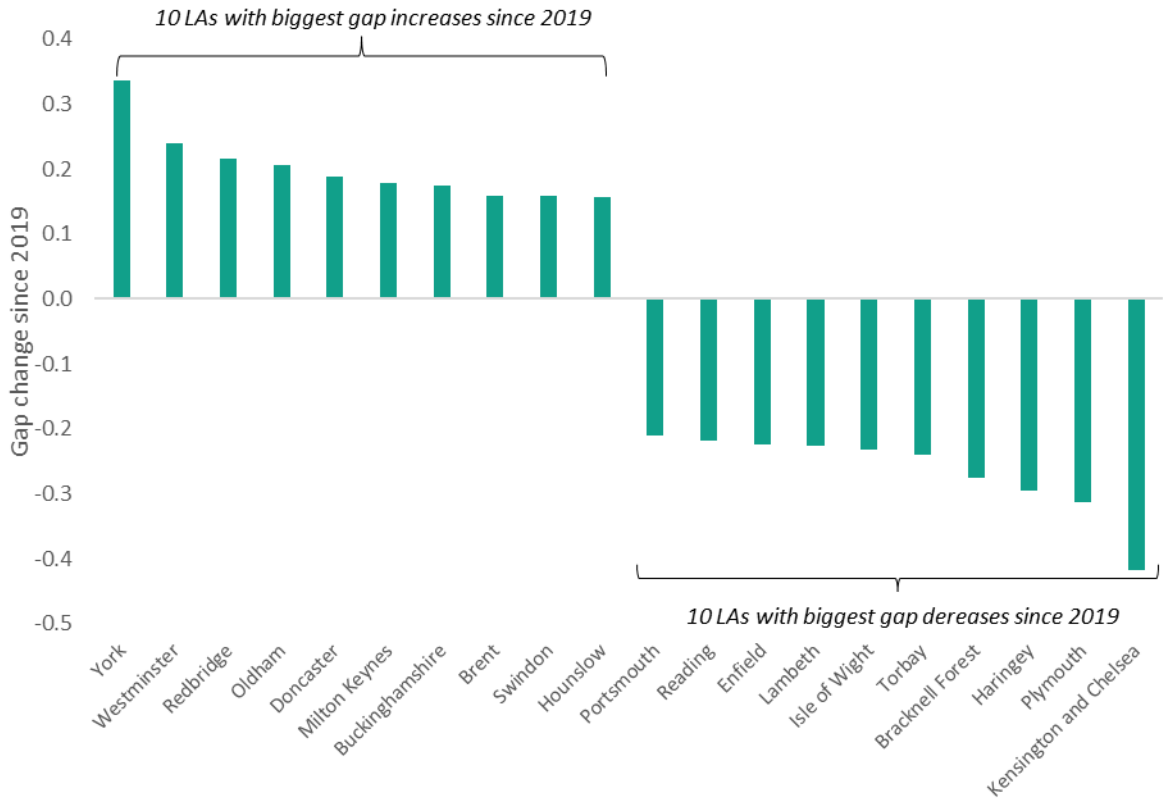


Figure A1 in Annex A sets out the size and rank of the disadvantage gap for every local authority, both with and without adjustment for the persistence of disadvantage. Local authorities are ranked in descending order of their disadvantage gaps, with 1 being the local authority with the largest gap, and 151 the lowest. When looking across all authorities rather than just the most extreme, again we find that adjusting for the persistence of disadvantage in a locality has a significant impact on the disadvantage gap, and on the relative ranking of local authorities. The gap narrows for half of local authorities and widens for the other half (and by construction, the national gap is unaltered).

The adjusted disadvantage gap narrows for areas with relatively high levels of persistent poverty, and it worsens the gap for areas with relatively low levels of persistent poverty. **For areas with high levels of persistent poverty such as Kirklees** (774 persistently disadvantaged pupils)**, Sunderland** (479)**, Halton** (277)**, Tower Hamlets** (837) **and Middlesbrough** (352)**, adjusting for persistence reduces their disadvantage gap**. This means they are not doing as badly as the raw ranking suggests, given the profile of disadvantage they are dealing with. All of these local authorities have over half their disadvantaged pupil populations in persistent poverty – as do Knowsley, Kingston-upon-Hull and Hartlepool.

Meanwhile, **for local authorities with relatively low levels of persistent poverty such as Newham, North Yorkshire, Slough, Buckinghamshire and Rutland, the adjusted disadvantage gap is larger** than the raw gap. This means that, conditional on the profile of students they cater for, these areas are not doing as well as their raw gaps suggest.

These findings suggest that we should be cautious when interpreting how well local authorities or schools are doing in terms of their disadvantage gaps, as the gap can be a complex reflection of socio-economic characteristics of the pupil cohort which are, to a certain extent, beyond the control of local authorities, multi-academy trusts and individual schools.

Further geographic breakdowns, including by parliamentary constituency, Opportunity Area and City Region, can be found in the Geographical Analysis Pack on the EPI website.

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

In March 2021, EPI published exploratory research analysing the disadvantage gap in 16-19 education. For the first time, this research considered all level 1-3 qualifications students achieved during this phase. For example, academic qualifications such as A levels, applied general qualifications such as level 3 BTECs, and all other qualifications students may have been awarded while at college or sixth form. This highlighted that pre-existing measures, for example the gap in grades between disadvantaged and non-disadvantaged A level students, do not provide the complete picture.

In 2020, the COVID-19 pandemic caused widespread disruption to the qualification grading process, with final examinations cancelled and replaced for each student with the highest of their teacher assessed grade, or that predicted by an algorithm.

As the disruption caused by the pandemic took hold in late March 2020, most of the learning for qualifications awarded in the 2019/20 academic year had already taken place. This means that differences in grades in 2020 compared to previous years will largely reflect the impact of the disrupted awarding process, rather than underlying differences in ability or differential learning loss which will be more of a factor in 2021 results. Throughout this section, we have focussed on the qualifications achieved during 16-19 study. Correspondingly, as in the key stage 4 section of this report, this research considers differences in measured grade gaps, and not differences in learning (or learning loss).

When considering changes in 2020, we have focussed on those that reached the end of their 16-19 study in the 2019/20 academic year. The vast majority of qualifications held by these students will have been awarded in 2020, however some students may also hold qualifications awarded in an earlier year of their 16-19 study, which may slightly interact with the overall 2020 specific effects observed.

In a more normal year, academic qualifications such as A levels are graded based primarily on final examinations sat at the end of a student's study programme. Conversely, non-academic qualifications are more likely to utilise ongoing assessment, practical examination and project work, much of which would have already been completed by March 2020. This means that relative to A levels, many non-academic qualifications would have been less reliant on teacher assessed or calculated grades in lieu of final 2020 exams. Correspondingly research from Ofqual indicates that the increase in top grades in 2020 was more apparent for A levels than for other qualifications, this may in part be due to the less granular grading scales of non-academic qualifications. [xiii]

Box 1 – changes to the scope of students included in 2020

There will be some minor differences in data coverage in 2020 alongside the differences arising from how grades were awarded. In a usual year, the Department for Education checks students results with schools and colleges, specifically, whether students should be included in their results in that year, or should be included in the following year (e.g. students on a three year programme). In 2020 this process did not take place. Our analysis indicates that minor differences between 2020 and previous years may exist for this reason.

Statistics published by the Department for Education indicate that disadvantage gaps measured within qualification types did not change substantially between 2019 and 2020 (Department for Education, 2020). However, as the effect of the 2020 grading process is likely to impact differently between academic and non-academic qualifications, it is of even greater importance that broader measures examining all students and all the qualifications they achieved in this phase are examined.

In this section of the report, we update our previous analysis to examine how disadvantage grade gaps in the 16-19 phase changed since 2019, both at an overall level and for different characteristic groups. Furthermore, we have undertaken additional modelling to examine how changes in the grading processes affected students opting for academic or applied qualifications differently, and whether some students were left at a disadvantage as a result.

Entry patterns in 16-19 education

Throughout the 16-19 sections of this report, we define disadvantaged students as those that were in receipt of a free school meal at any point in the 6 years prior to finishing key stage 4 (as equivalent student level disadvantage flags are not available in the 16-19 phase).

Figure 7.1: Average number of qualifications held by type and disadvantage status, 2018-2020

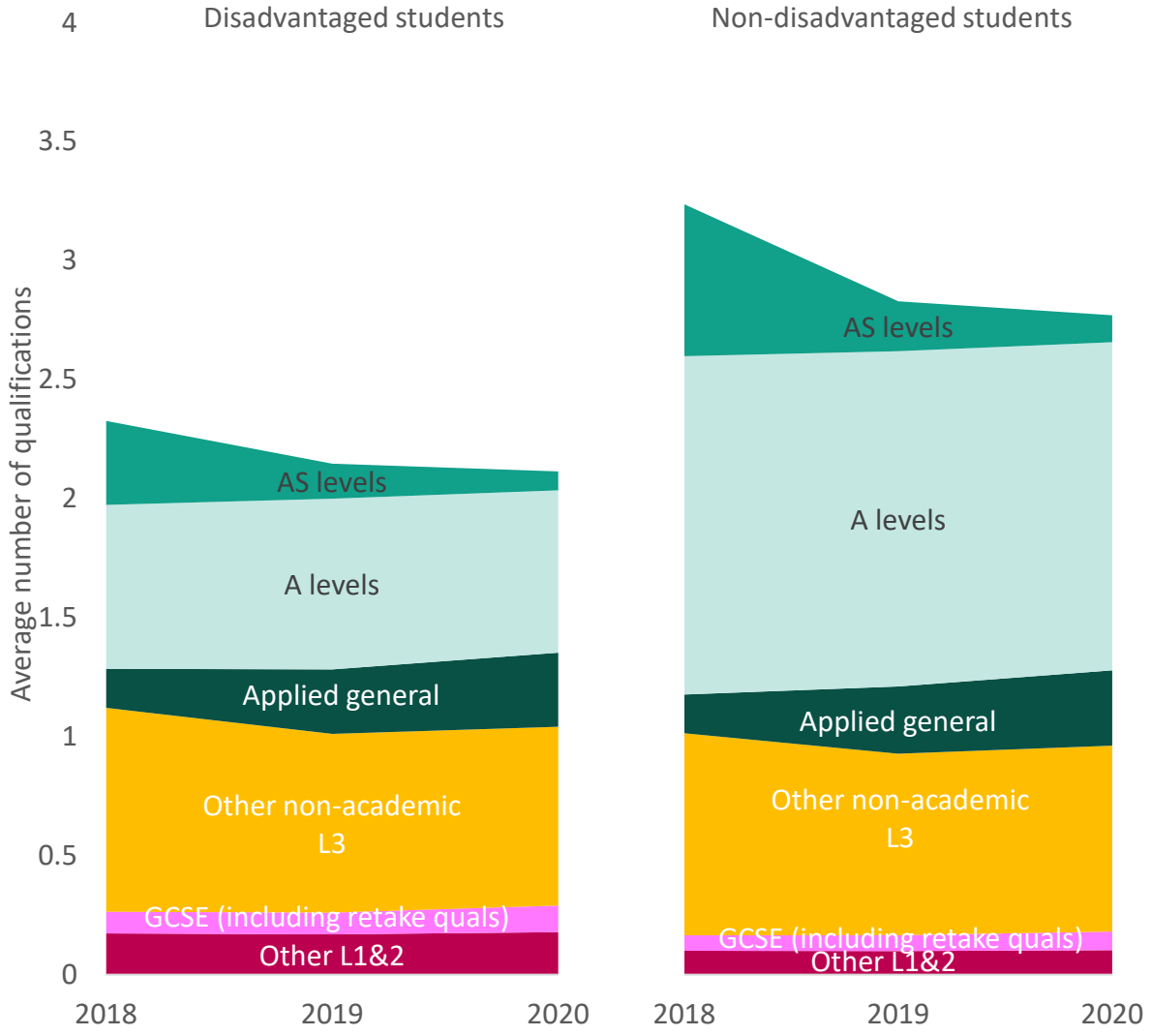


Figure 7.1 shows that disadvantaged students on average entered fewer qualifications during the 16-19 phase across all years examined. The decrease in AS levels seen between 2018 and 2019, followed by a flattening of the trend, shows that the decoupling of A levels and AS levels has now concluded. **We also see that a greater proportion of the level 3 qualifications held by disadvantaged students are non-academic (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 non-academic 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.

The measured 16-19 disadvantage grade gap in 2020

Figure 7.2 below shows the disadvantage grade gap over students' best three qualifications in the 16-19 phase since 2017. This initial 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 2020. Our regression modelling presented later in this report makes further adjustments such that the impact of qualification type can be examined between otherwise 'similar' students.

The time series is displayed for both methodologies developed in our previous research, updated to include figures for 2020. Method 1 applies equal weighting to qualifications at the same level with a similar number of guided study hours. Method 2 gives extra weighting to academic compared to non-academic qualifications proportionate to the economic returns seen to these qualifications in later life.[xiv] 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. And 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 non-academic qualifications.

Figure 7.2: 16-19 measured disadvantage grade gap – method 1 and 2, 2017-2020

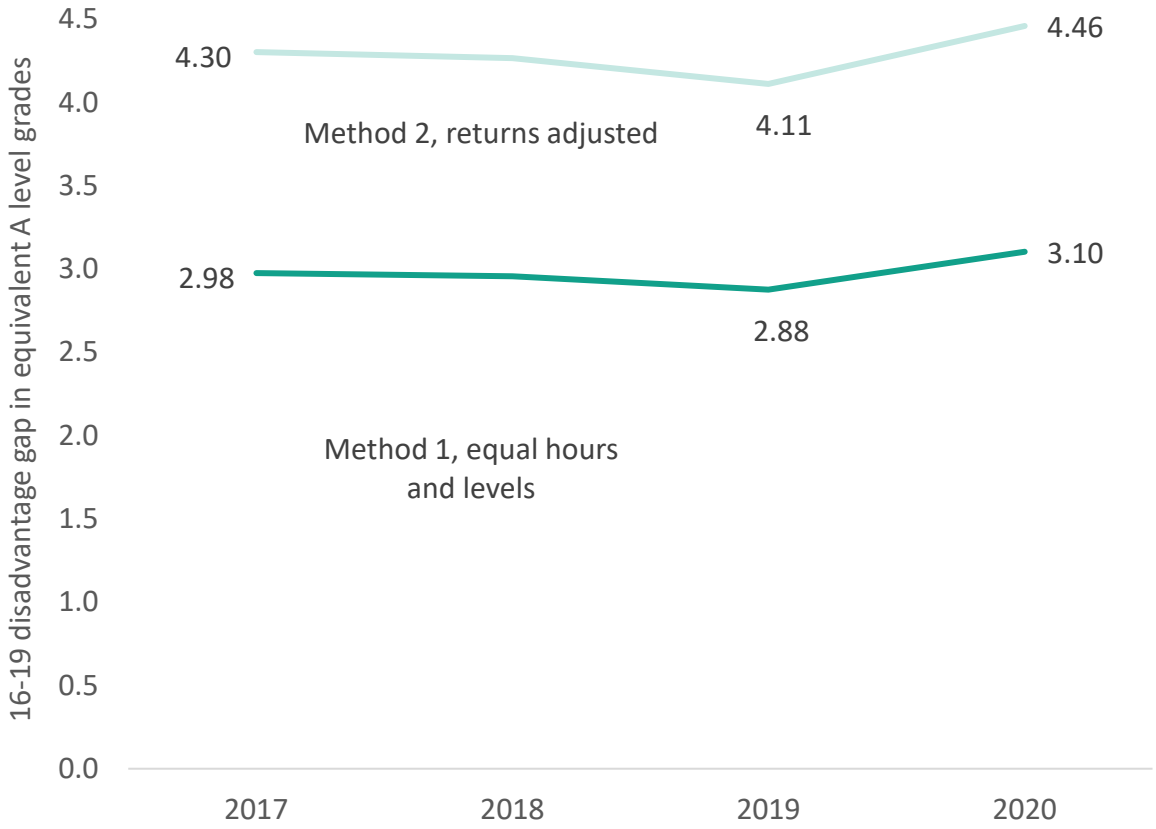


Figure 7.2 shows that although there was a very slight narrowing between 2017 and 2019, the gap stayed broadly stable at a little under three grades under methodology 1. One of the main reasons for this fall is likely to be the recent reforms to A levels and AS levels.[xv] These reforms led to fewer 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-

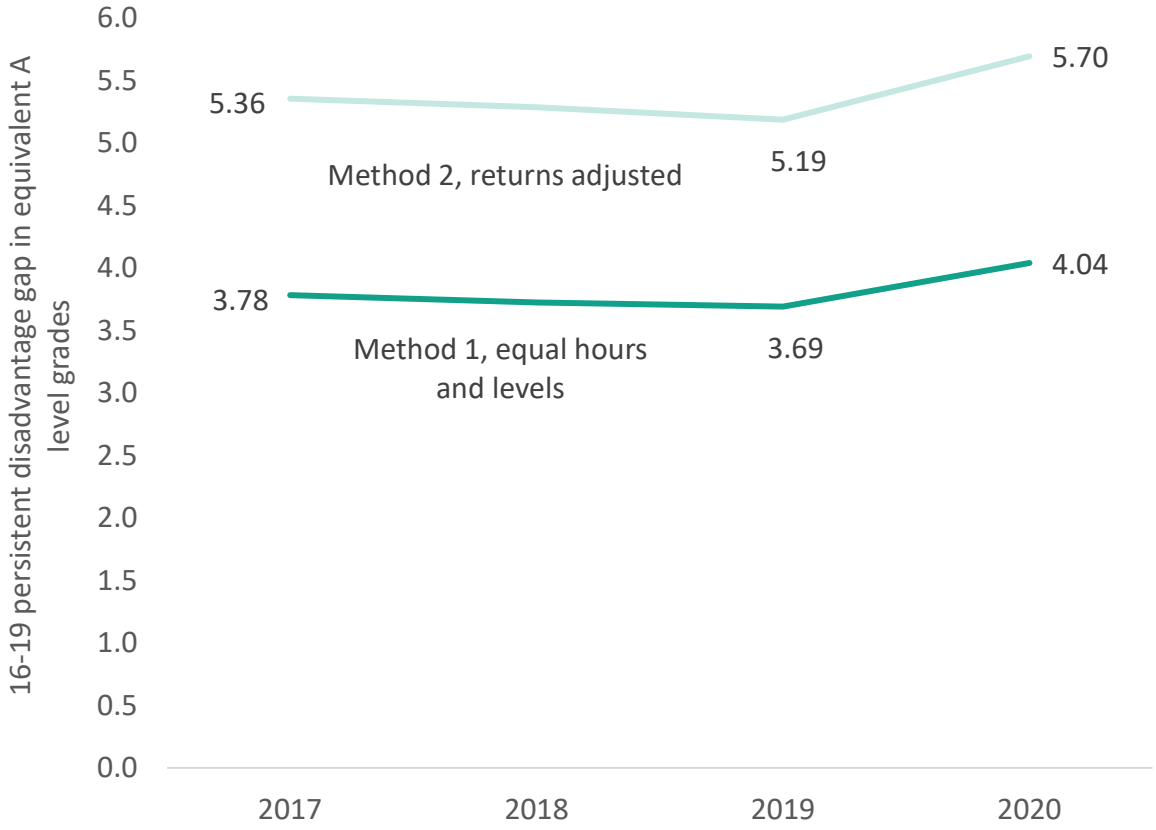
disadvantaged students were more likely to take these academic qualifications in the first place, this is likely to have resulted in a narrowing of the gap.

However, in 2020 the minor narrowing of the gap since 2017 was reversed completely and the gap stood at over 3 grades.

Under method 2, the widening of the gap between 2019 and 2020 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 the effects of the grading processes between academic and non-academic qualifications were not equal.** Our modelling presented later in this report examines this effect in more detail. Our aforementioned 16-19 disadvantage attainment gap report includes further sensitivity testing of the weighting given to academic and non-academic qualifications. Although there is no single equivalence which is optimal for all contexts, this report demonstrated that prior to 2020, the trends in disadvantage gap measures through time were not sensitive to this assumption. In 2020, there was a notable widening of the gap under both methodologies, the exact extent of which varies slightly dependent on the weighting given to academic and non-academic qualifications.

It should be noted that the gap in grades awarded in 2020 is not necessarily reflective of trends in learning or underlying ability. Nor is it an accurate indication of how the 16-19 disadvantage gap may look in 2021 or beyond, when grading processes will be different again. However, for the students awarded these grades in 2020 the impact is very real. The 2020 specific differences seen between students from different backgrounds will have had, and continue to have, real world implications. For example, for more competitive higher education courses when applying with non-academic qualifications, or when seeking employment.

Figure 7.3: 16-19 measured persistent disadvantage grade gap – method 1 and 2, 2017-2020



For the purpose of figure 7.3, 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 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 7.3 shows similar trends to the overall 16-19 disadvantage grade gap presented in figure 7.2, although there was a slightly more evident trend for the gap closing between 2017 and 2019. **Although the trend is similar, the persistent disadvantage gap was significantly wider than the standard disadvantage gap in all years, and the widening under the 2020 grading process was more pronounced.**

Figure 7.4: total point score in best 3 qualifications 2017-2020

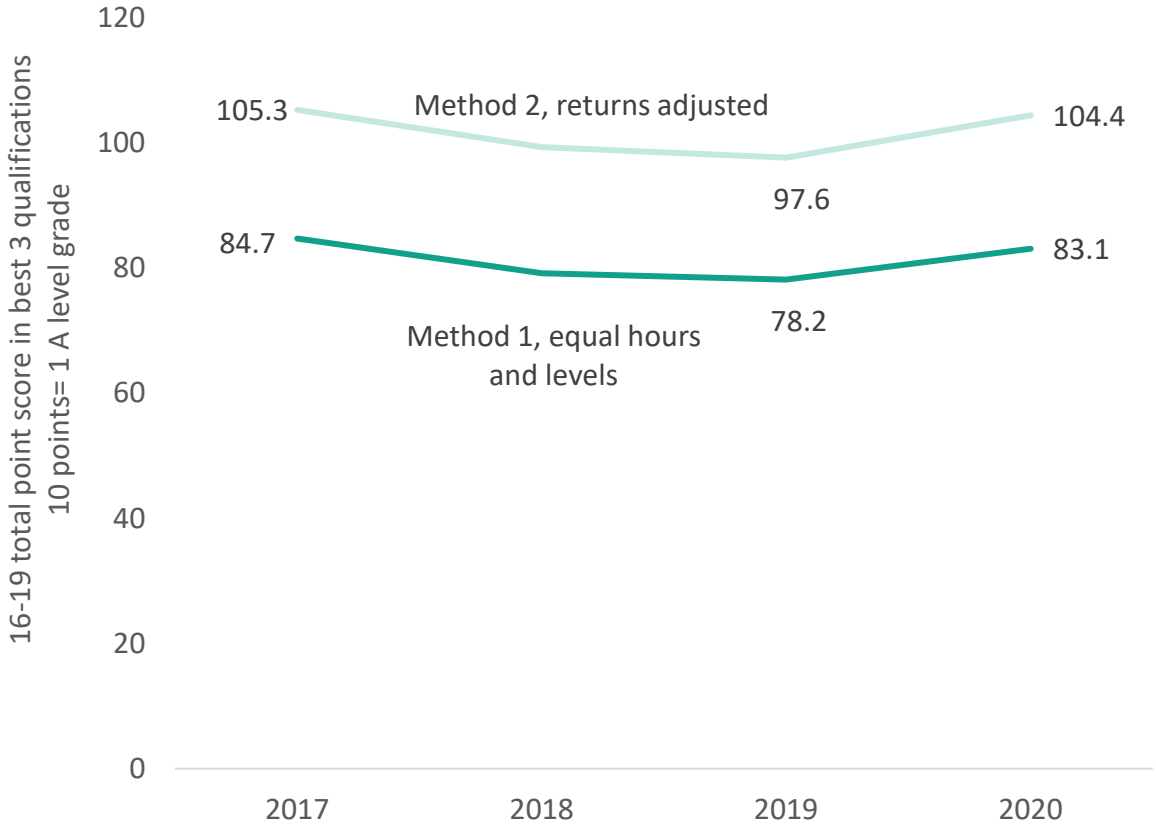
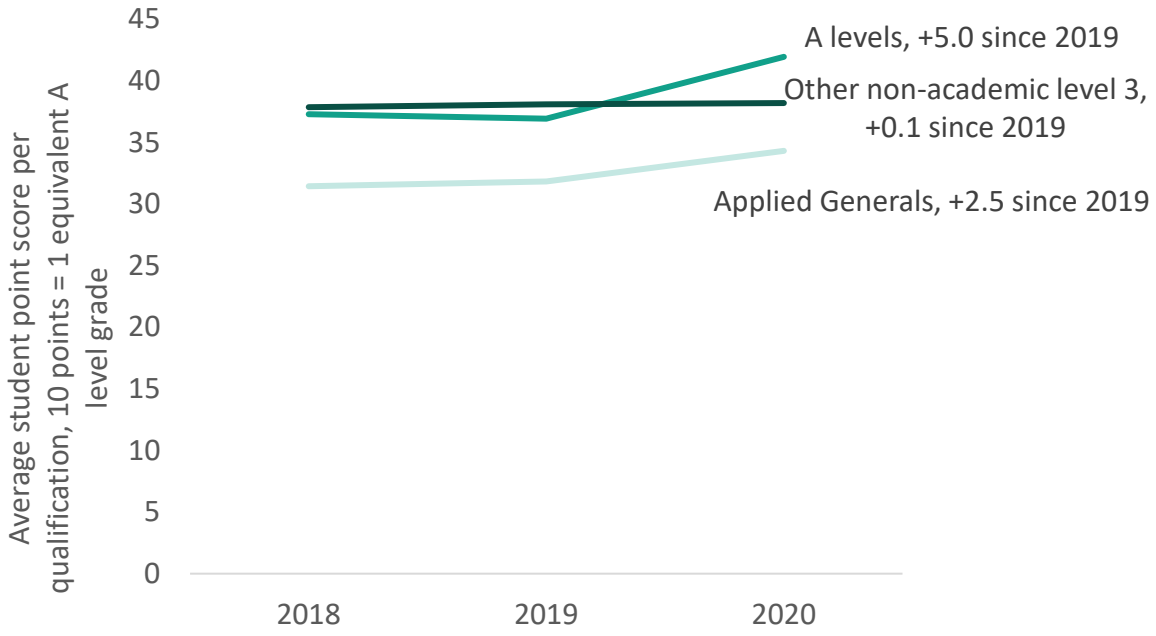


Figure 7.4 shows that for all students, the point score over their best 3 qualifications decreased between 2017 and 2019 on average. This was in part down to the reforms to A levels and AS levels mentioned previously. In 2020, under the disrupted awarding process, there was an increase in grades awarded compared to 2019, this increase was slightly more pronounced under method 2, again suggesting that grade increases were more significant for academic qualifications.

Indeed, Figure 7.5, which shows the change in average point score per qualification split by level 3 qualification type, confirms this to be the case.

Figure 7.5: average point score per qualification in A levels and non-academic level 3 qualifications, 2018-2020[10,11]



Between 2018 and 2019, the average point score per applied general qualification remained at a similar level**, before increasing by a quarter of a grade in 2020, when the grading process was disrupted by COVID-19**. Between 2019 and 2020, average grades for other non-academic level 3 qualifications showed little change at all.

Conversely, when considering A levels, the average point score per qualification decreased very 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.[12]

As noted in box 1, minor differences may also exist as a result of different data checking/processing in 2020. Although these differences are likely to be small and will not affect interpretation, they are likely to have had more impact upon the results of students taking non-academic qualifications.

These differences by qualification type are substantial and are explored in more detail in the following section. Nevertheless, **as disadvantaged students are on average less likely than non-disadvantaged students to have entered the qualifications with the largest grade increases in 2020 (A levels) this appears to be one factor driving the overall widening of the 16-19 disadvantage gap we have seen in 2020.**

[10] 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.

[11] This chart and following outputs in this section are based on methodology one, that is the method that gives equal weighting to qualifications of the same level and with similar guided learning hours.

[12] This differs from statistics published by the Department for Education which show minor increases in A level average point to 2019. However, the Department for Education figures include AS levels which have been declining in number over this period. The numbers in Figure 7.5 relate just to full A levels with no equivalents.

Figure 7.6: The 16-19 per qualification disadvantage gap, 2018-2020

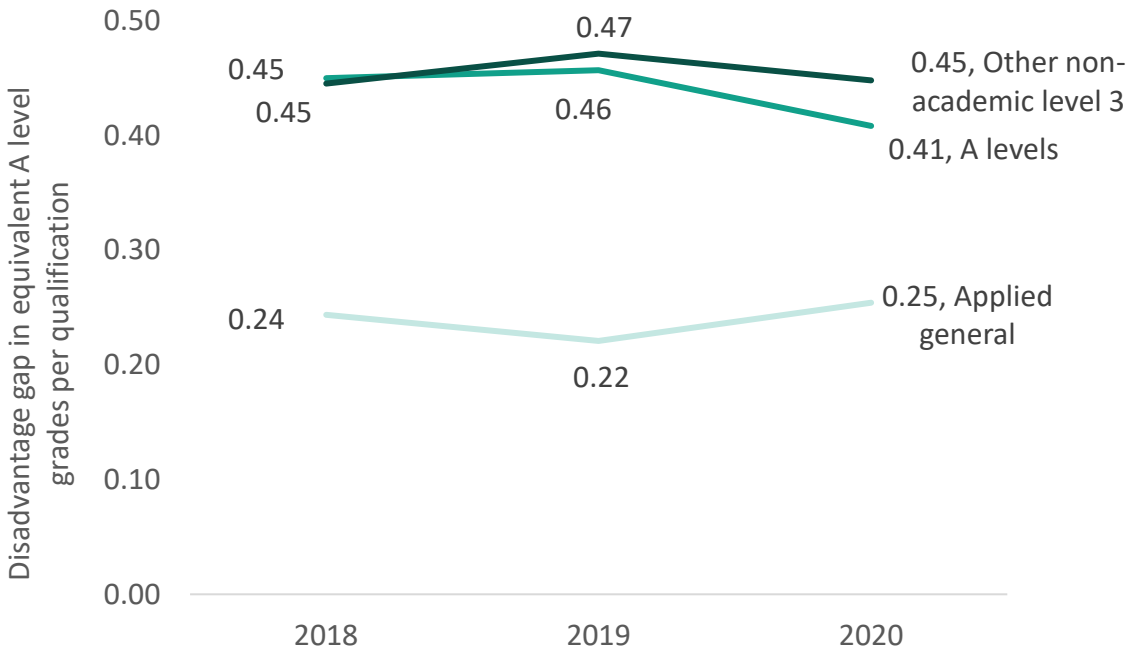


Figure 7.6 shows that the disadvantage gap per entry by qualification type has decreased between 2019 and 2020 for both A levels and non-academic level 3 qualifications other than applied generals. However, within all qualification types, changes in the per qualification gap have been relatively modest, compared to the differences in the overall gap across all of students' qualifications seen in figure 7.2.

For applied general qualifications, the disadvantage gap was wider in 2020 than 2019, although at a similar level to which it stood in 2018.

Although there are some positive results in these trends when considered in isolation, looking at gaps within qualifications does not account for the fact that the balance of disadvantaged and non-disadvantaged students differs between qualification types.

The 16-19 disadvantage gap by student characteristics

Figure 8.1: Total point score over best 3 qualifications taken during 16-19 study by gender, 2017-2020

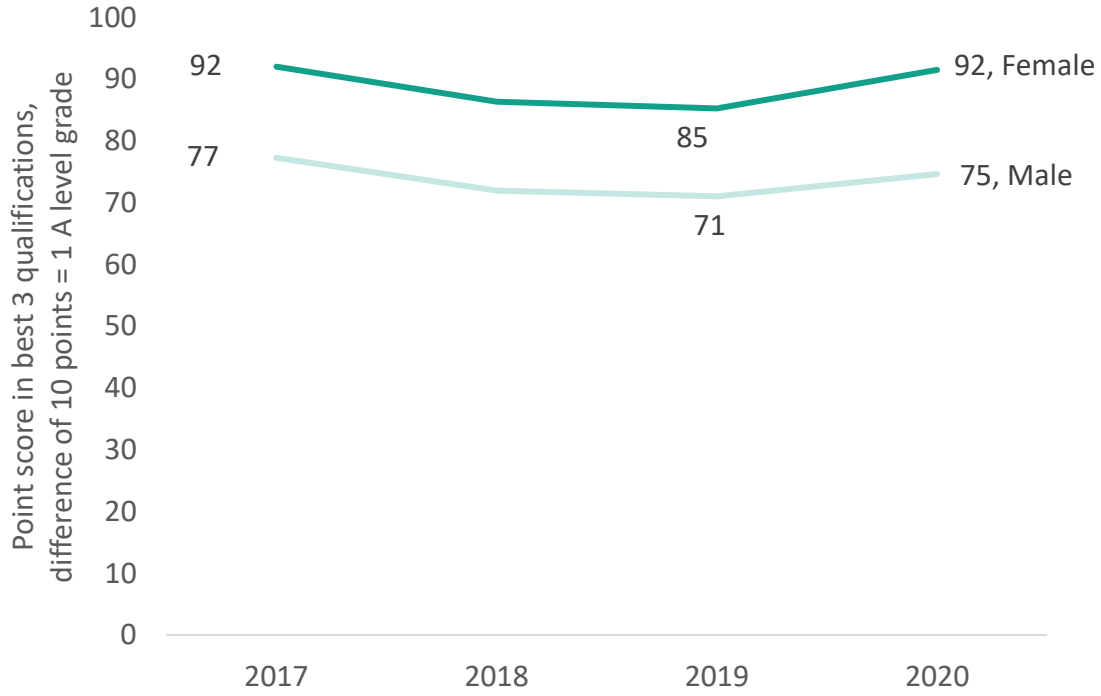


Figure 8.1 shows that for both male and female students, the point score over their best 3 qualifications decreased between 2017 and 2019, mirroring the national trend seen in figure 7.4.

In the context of the 2020 grading process, figure 8.1 suggests that the teacher assessed or algorithm predicted grades may have been more favourable to female than male students. The increase for female students was over two thirds of a grade, whilst it was less than half a grade for male students. As a result, without controlling for other student characteristics, the gender grade gap widened from 1.4 to 2 grades over students' best 3 qualifications.

This is consistent with evidence from the OECD which indicated that teachers generally award higher marks to girls than boys in reading and mathematics courses. [xvi]

Figure 8.2: Grade increases between 2019 and 2020 by 16-19 institution type

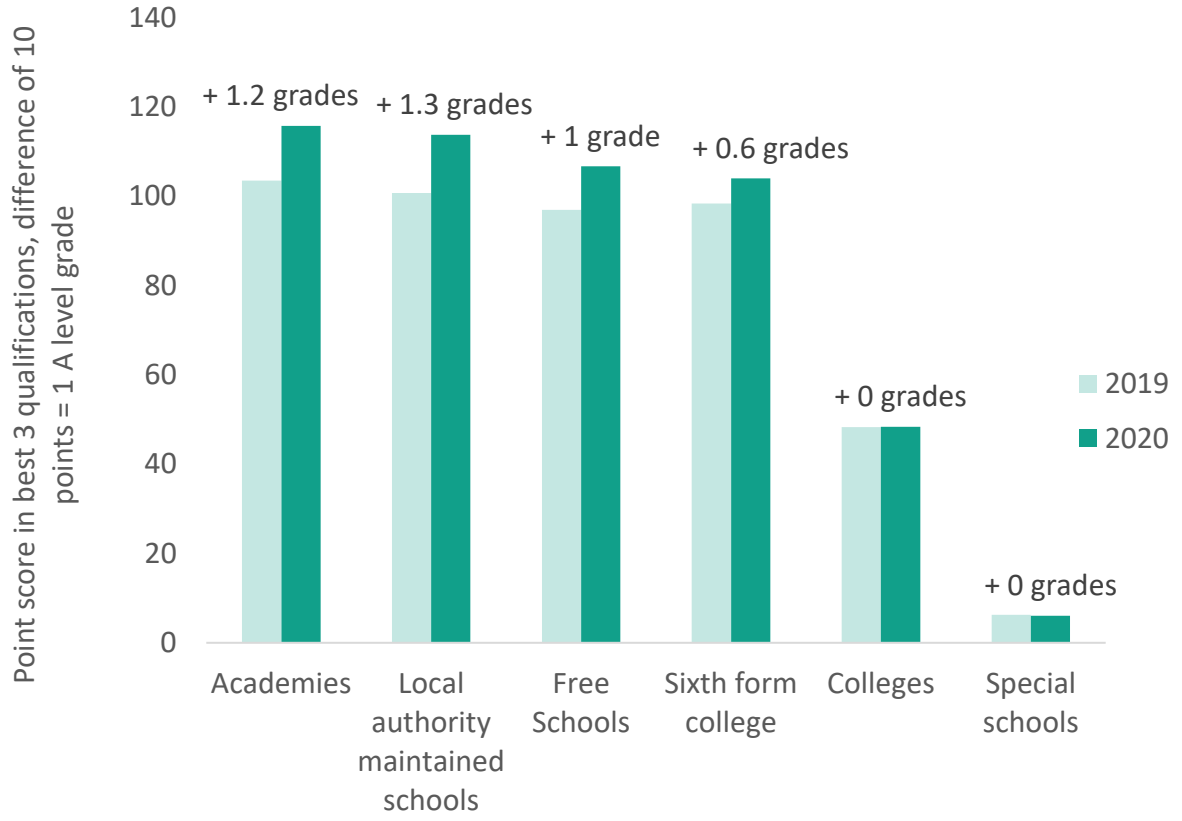


Figure 8.2 shows how the grade increases since 2019 as a result of the different awarding process in 2020 varied by institution type. The average grade increase for all students across all institutions was the equivalent of half a grade. However, this increase was not evenly distributed amongst students in different institution types. **For instance, those in state school sixth forms (Academies, LA maintained and Free Schools) all saw an average increase of a grade or more since 2019, whilst those in general further education colleges, on average experienced no grade increases at all.**

This finding suggests that there may have been key differences in how the grading process in 2020 impacted upon students in different settings. However, these differences may also be related to the types of qualifications most commonly entered by students attending certain institution types.

Figure 8.3: Total point score over best 3 qualifications taken during 16-19 study by special educational needs status, 2017-2020

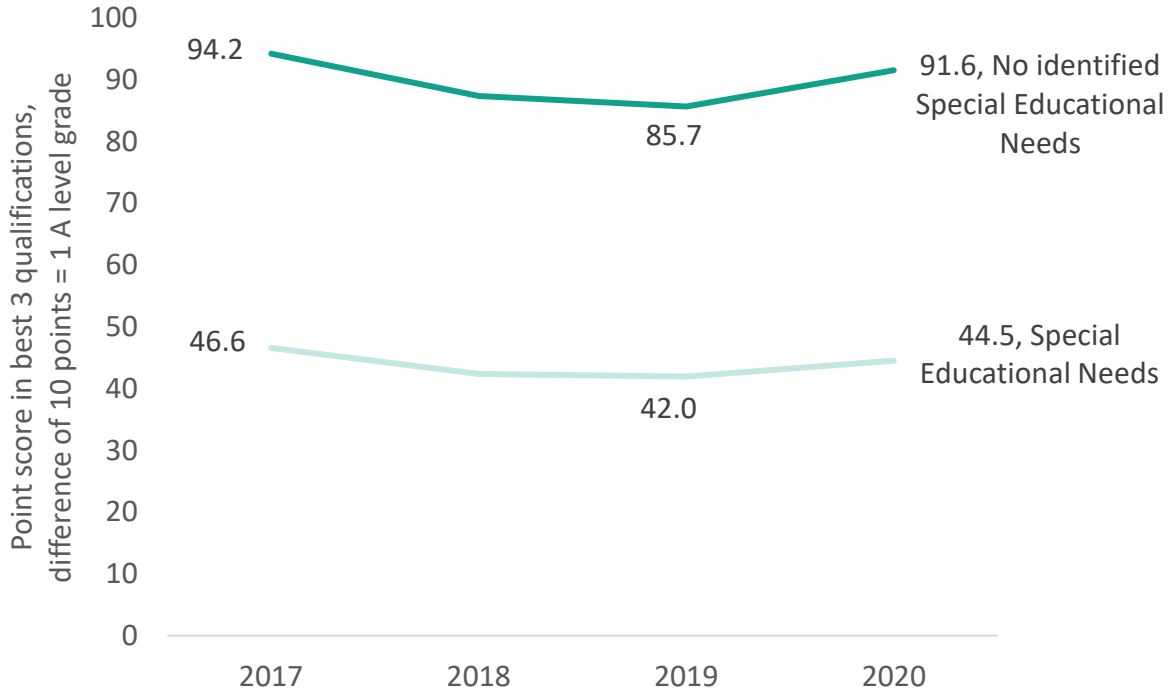


Figure 8.3 shows a similar decreasing trend in best 3 point scores between 2017 and 2019 as per the national average, however the results of those with identified special educational needs (those with an education health and care plan, statement of support or any other identified special educational need) were consistently around 4.5 grades below those that did not.

Between 2019 and 2020, grades increased for both groups of students, but at a notably faster rate for those without special educational needs (three fifths of a grade increase compared to one quarter of a grade for those with identified special educational needs).

Part of this increase may be attributed to the number of qualifications taken. For example, a student taking three A levels, would on average see three times the grade increase of a student that only entered one A level in 2020 compared to 2019. Students with special educational needs are also less likely to have entered A levels on average, which saw greater grade increases than other qualification types.

Figure 8.4: Total point score over best 3 qualifications taken during 16-19 study by first language, 2017-2020

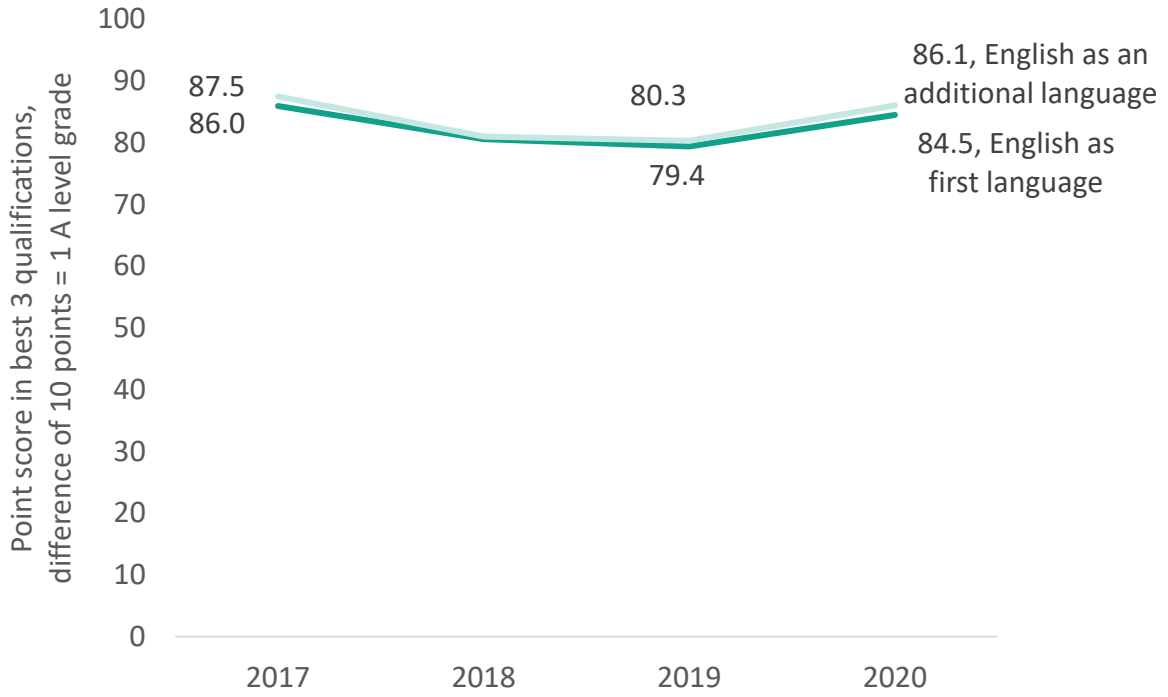


Figure 8.4 shows similar trends to the overall national average, that is a decrease in total point score over students' best 3 qualifications between 2017 and 2019, followed by an increase in grades between 2019 and 2020.

There is very little difference in the 16-19 grades between students based on whether English was their first language. This is in contrast to earlier key stages, particularly at primary school, where students with English as a second language on average have lower attainment.

However, we are not able to measure the results of 16-19 students considered 'late arrivals' in the same way as we do in the key stage 4 section of this report. This is because characteristic information such as first language is collected via the school census, which is recorded at the end of key stage 4, two years prior to the end of 16-19 study for most students.

Figure 8.5: Total point score over best 3 qualifications taken during 16-19 study by ethnicity, 2019-2020

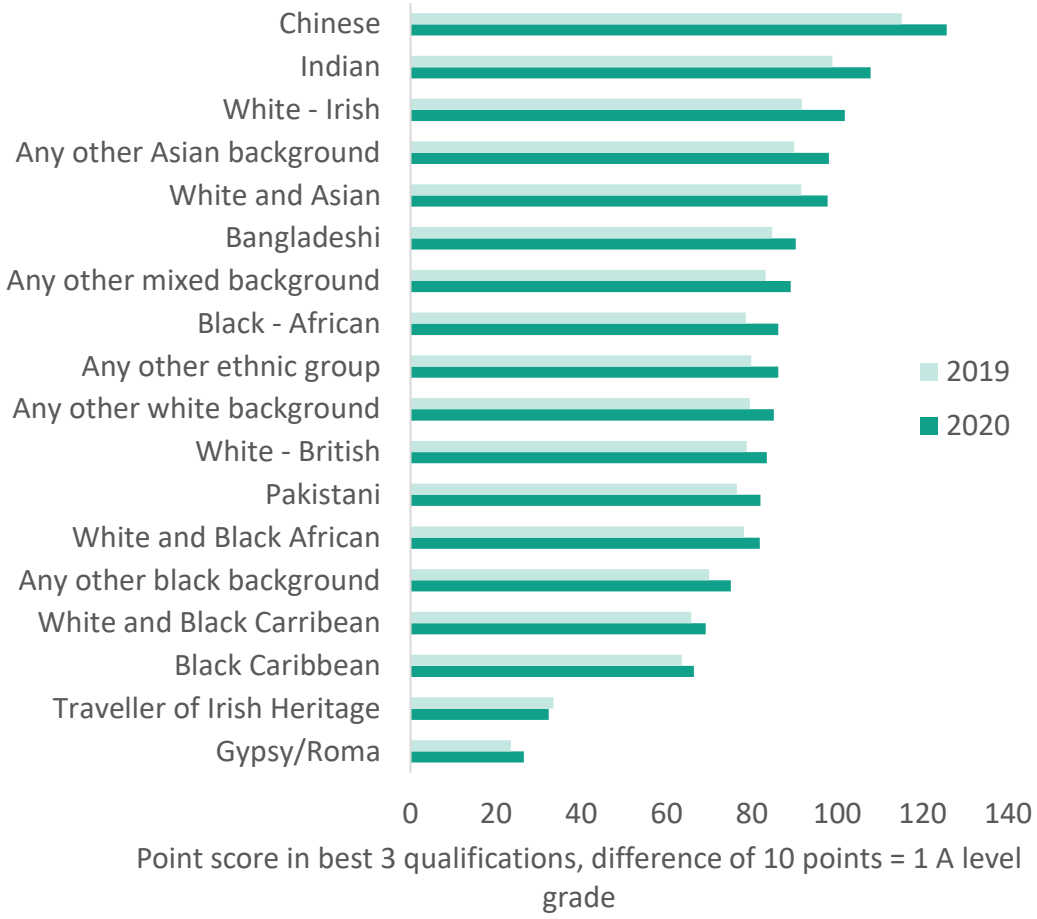


Figure 8.5 shows that there is significant variation by ethnicity in the total point score measure over students' best 3 qualifications. The relative ranks of each ethnicity seen in 2020 are broadly consistent with 2019. **The largest group, 'White – British' has a total point score in line with the overall national average of 83.1, 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.**

Broadly speaking, it is the groups that achieved the highest point scores that also see the greatest increase in 2020 compared to 2019 grades.

As with previous breakdowns, this increase is likely to be correlated with the number and type of qualifications entered, as well as any direct impact of the 2020 grading process by student demographics.

Figure 8.6: Total point score over best 3 qualifications taken during 16-19 study by region, 2019-2020

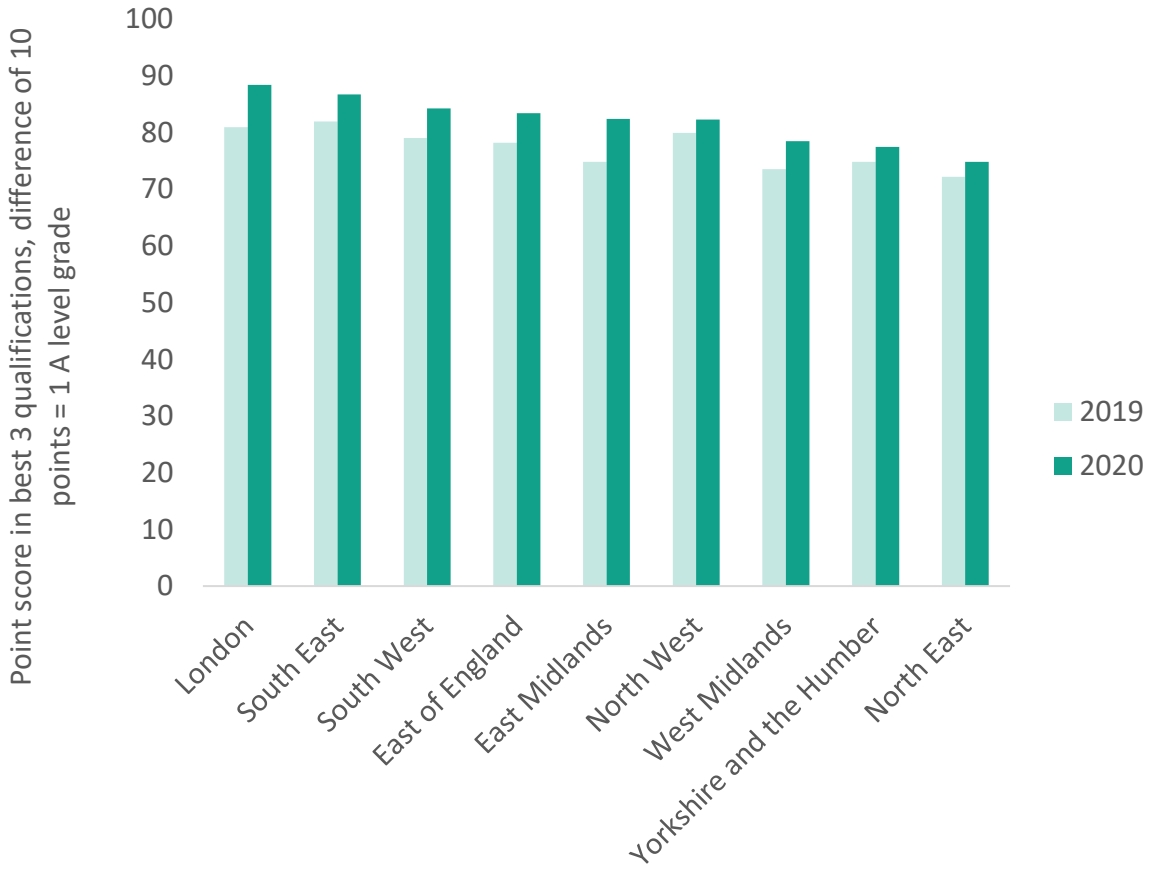


Figure 8.6 shows notable variation by region in the absolute grades achieved, but also in the pattern of grade increases between 2019 and 2020. **Students in London saw one of the biggest increases in grades between 2019 and 2020, and were already amongst the highest attaining prior to the pandemic.**

The East Midlands was the only region where grades increased at a greater rate than London since 2019. This means that under the 2020 grading system the results of students were very close to the national average, whereas in previous years with results based on examinations, students in the East Midlands had relatively low grades.

Students in the North West were the highest attaining in 2019 after London and the South East. **However, the grade increases seen in the North West were relatively modest compared to the rest of the country, such that it was only the region with the sixth highest grades in 2020.**

In addition to region, we have also examined the 16-19 disadvantage gap at local authority level. The tables below show the ten local authorities that have the widest and narrowest disadvantage grade gaps. Full results for all local authorities can be found in Annex D.

At a national level, the 16-19 disadvantage gap is measured as the number of equivalent A level grades that disadvantaged students were behind non-disadvantaged students. At local authority level, we have looked at the number of grades that disadvantaged students within each local authority, are behind non-disadvantaged students nationally. Using a national, non-disadvantaged comparator is preferable as it allows for meaningful comparisons of how well disadvantaged students are achieving between local authorities. If the disadvantage gap were measured entirely within local authorities, some may have a very small gap largely as a result of non-disadvantaged students having low grades.

Figure 8.7: The ten local authorities with the widest disadvantage gap in grades, 2020

Local authority	Disadvantage gap in equivalent A level grades 2019	Disadvantage gap in equivalent A level grades 2020
Knowsley	5.4	5.8
Barnsley	4.3	5.2
Hartlepool	4.2	5.1
Stockton-on-Tees	4.7	4.9
Derby	4.3	4.8
North East Lincolnshire	3.9	4.8
Havering	3.1	4.8
North Somerset	4.8	4.8
Portsmouth	3.8	4.8
Torbay	4.4	4.7

Figure 8.8: The ten local authorities with the narrowest disadvantage gap in grades, 2020

Local authority	Disadvantage gap in equivalent A level grades 2019	Disadvantage gap in equivalent A level grades 2020
Luton	1.4	-0.2
Hackney	0.2	-0.7
Brent	0.4	-0.9
Bexley	0.0	-0.9
Ealing	-0.5	-1.1
Redbridge	-0.5	-1.4
Merton	-0.2	-1.4
Islington	-0.1	-1.4
Southwark	-1.2	-1.4
Sutton	-0.2	-1.6

Figure 8.7 shows that there is no clear geographic pattern as to where in England the local authorities with the widest 16-19 disadvantage gaps in 2020 are located. However, there is some

correlation with the local authorities with the widest and narrowest gaps at key stage 4, most notably the presence of multiple London Boroughs amongst the local authorities with the narrowest gaps.

Figure 8.9: Scatter plot of 16-19 disadvantage grade gap by local authority 2019-2020

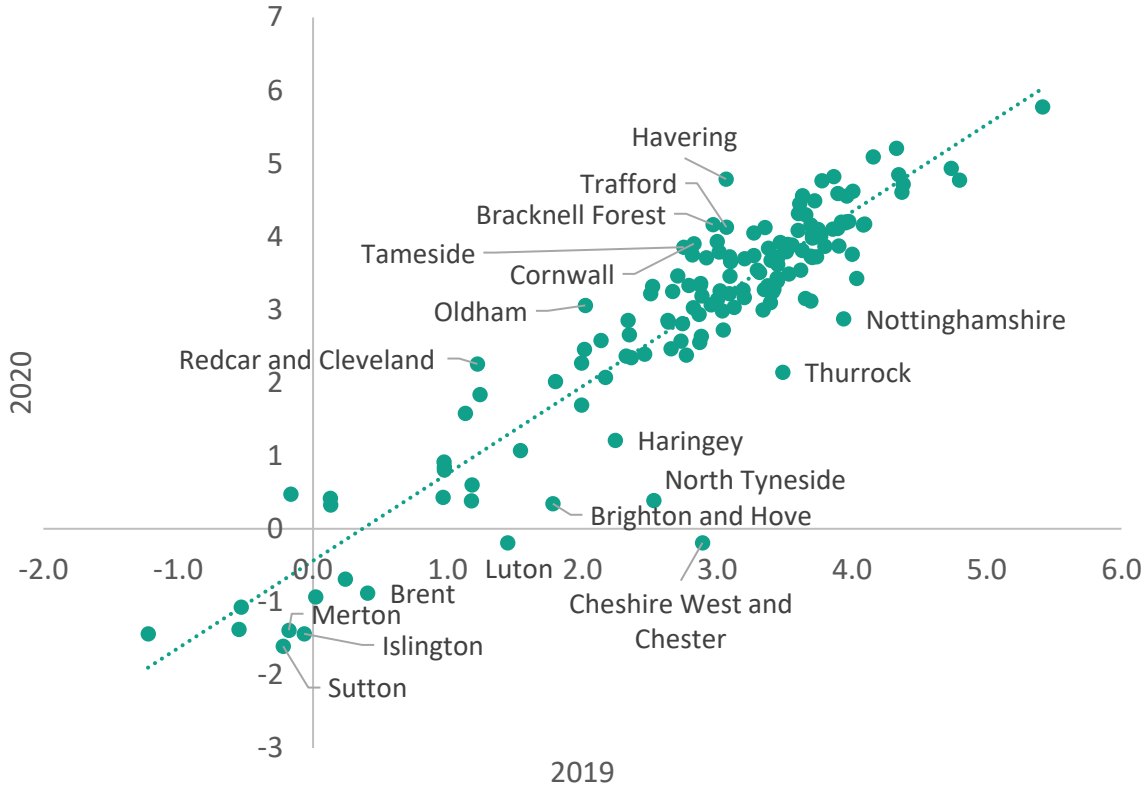


Figure 8.9 shows the 16-19 grade gap by local authority in 2019 and 2020. Local authorities where the gap increased or decreased by more than 1 equivalent A level grade over this period have been highlighted on the chart.

There are no clear geographic patterns to where in the country grade increases or decreases were most pronounced. However, combined with figures 8.7 and 8.8, we can observe that the areas with the widest or narrowest gaps are not exclusively those that have undergone the greatest change over this period, although there was a little more variation between years amongst local authorities with smaller initial gaps.

Modelling the 16-19 grade gap between academic and non-academic students

As mentioned previously, the lack of final exams in 2020 affected the grading of academic and non-academic qualifications differently. In this section we focus on understanding how the different grading approaches may have led to differences in outcomes between similar students taking technical or applied qualifications, and those who took academic qualifications. We focus on comparisons of students who completed either applied general or academic qualifications such as A levels, as these qualifications are commonly used to access higher education. Indeed, 35 per cent of UCAS applicants now apply with at least one non-academic qualification.[xvii] This is up from 27 per cent ten years ago. Therefore, it is more likely that students taking these qualification types may have been competing directly with each other for higher education places.

Methodology

To understand how students completing applied general qualifications fared in comparison to students taking academic qualifications in 2020, we created a series of regression models pooling students from 2018, 2019 and 2020.

We calculated students' grade outcomes by adding together their top three qualification results during the 16-19 phase, to create a total point score for each student. The top three qualifications could be all academic, all applied general or a combination of both. However, this measure differs from that used in the previous section of this report to measure disadvantage gaps as it focuses on a subset of level 3 qualifications and does not include level 1 or 2 qualifications. Because we have included the top three grades students achieved in their 16-19 study, the total point scores for the cohort finishing in 2020 may include some results from 2019 or 2018, if that was one of the students' best qualifications. It is more likely that this will affect non-academic 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. This difference in how qualification awards are distributed over the study programme may be one of the factors that has led to greater grade increases in academic qualifications awarded in 2020.

Of the students' top three academic and applied general qualifications, we calculated the proportion that were applied general. We then 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 qualifications studied, the year the student completed their study, and institution characteristics as the independent variables. To understand the increase in applied general grades in 2020 relative to the increases for similar students taking academic qualifications in 2020, we included an interaction term between the proportion of applied general qualifications taken and the year in which the student completed their study.

We also investigated whether there were differences in the coefficient for the interaction term for different levels of key stage 4 prior attainment. We split students into those with low (grade < 4), middle (4 <= grade <= 5.5) and high (grade > 5.5) average English and maths GCSE grades. We then

ran the full regression model separately for each prior attainment group. Additionally, we investigated using the average point score as our dependent variable rather than the total point score. For this average point score model, our findings were consistent with those from our total point score model.

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 we will henceforth call 10 points one grade.

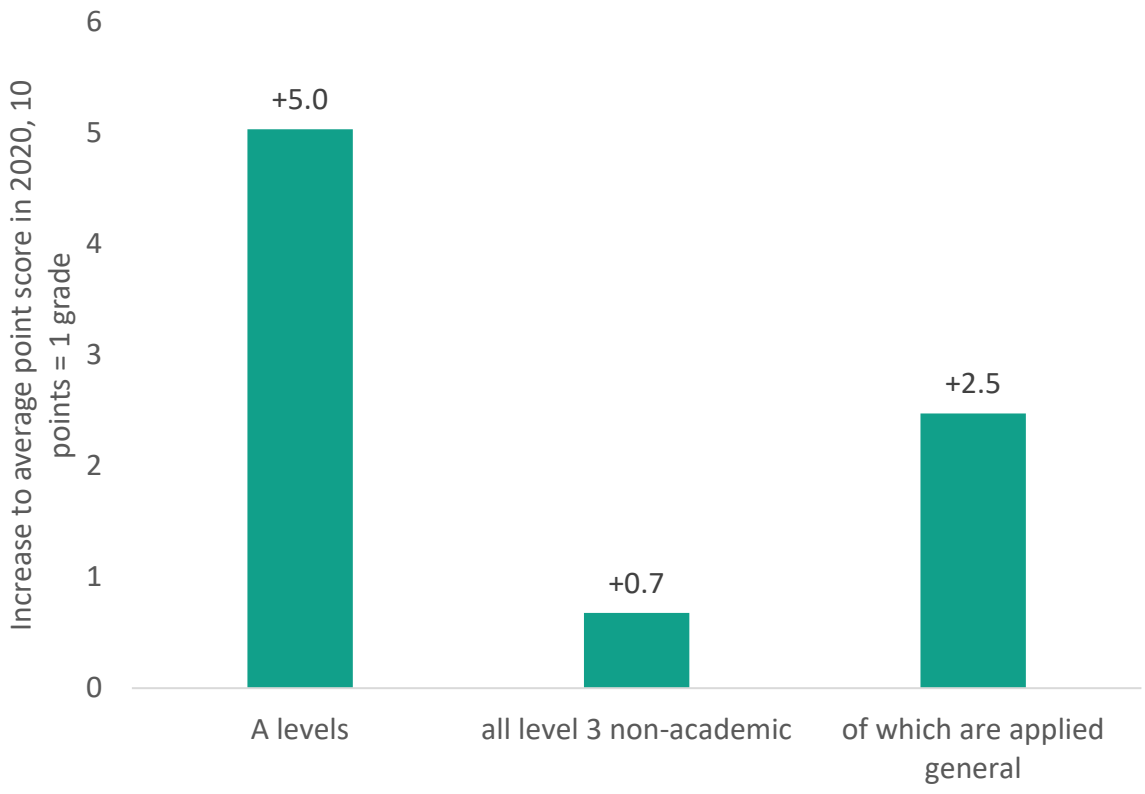
Full model outputs can be found in Annex B.

For completeness we also ran the analysis comparing academic and all non-academic level 3 qualifications (as opposed to just applied general qualifications). In some of the following charts we have displayed both applied general and all level 3 non-academic qualifications. It should be noted that applied generals are a subset of non-academic level 3 qualifications.

Overview of 2020

Before presenting the findings of our modelling, for context we review the grade increases associated with academic and applied general qualifications, and the proportion of students holding each qualification. As previously discussed, the change to the grading process in 2020 resulted in students generally receiving higher grades than in previous years, regardless of student characteristics. However, we observe differences when considering the grade increases by qualification type.

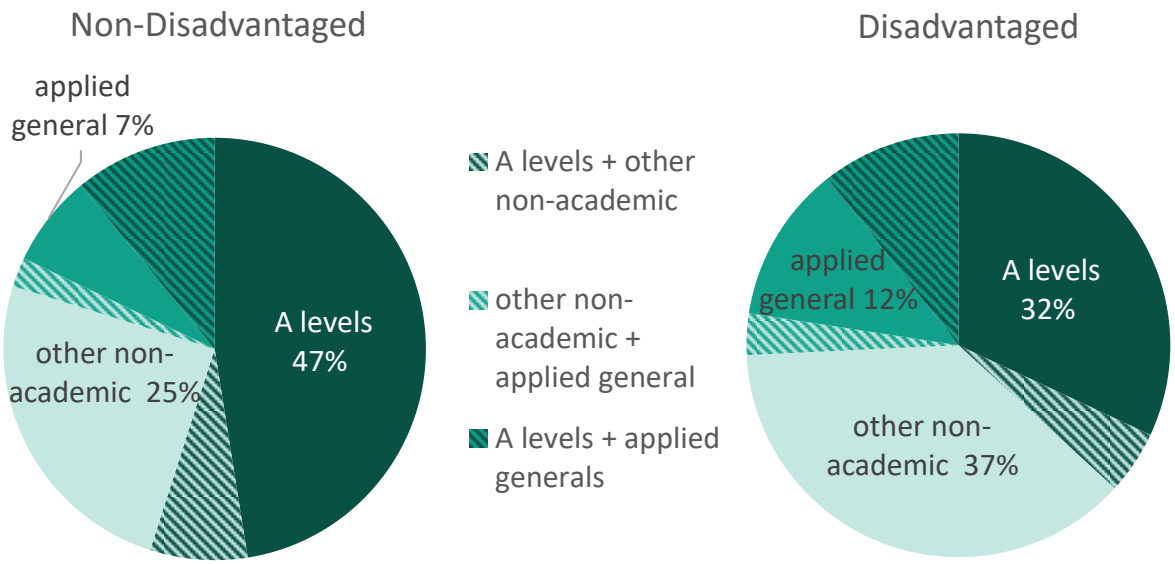
Figure 9.1: increase to the average student point score from 2019 to 2020, by qualification type



In 2020 we saw a steep increase of 5.0 points to the average point score for A levels, and a smaller increase of 2.5 points for applied generals. In contrast there was almost no change to the average point score for all level 3 non-academic qualifications. This suggests that the grade increases were not distributed equally across the different qualification types.

As figure 9.2 highlights, in 2020 disadvantaged level 3 students predominately (68%) completed at least one non-academic level 3 qualification, including applied generals, whereas around half of non-disadvantaged level 3 students studied only A levels. **This suggests that the greater increase in A level grades will have disproportionately benefitted non-disadvantaged students.**

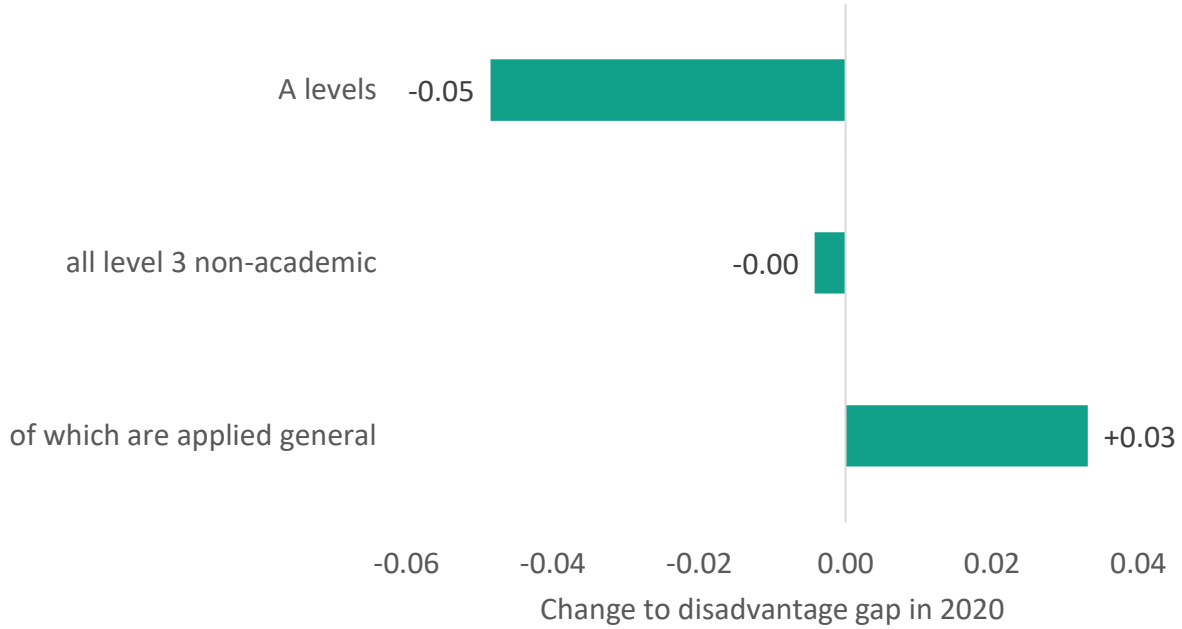
Figure 9.2: Proportion of level 3 students taking A levels, applied general or other level 3 non-academic qualifications in 2020, by disadvantaged status[13]



In the previous section we found that the overall 16-19 disadvantage gap widened in 2020, however, when we consider this by qualification type, we find a different story. The gap narrowed within academic qualifications such as A levels and widened within applied general qualifications.

[13] The A levels + applied general figures also include students who studied at least one A level, applied general and other level 3 non-academic qualification. However, these students account for 1% for both non-disadvantaged and disadvantaged pupils.

Figure 9.3: change in the disadvantage gap in average point score per qualification from 2019 to 2020, by qualification type



Modelling results – the 2020 grade increases

In previous sections we have found that:

- the grade increases in 2020 were more significant for A levels than for non-academic qualifications,
- disadvantaged students are more likely to take non-academic qualifications,
- the overall disadvantage gap has widened in 2020,
- though for some qualification types it has narrowed.

In this and the following sections we consider how these and other factors have interacted, and what the underlying changes were for disadvantaged students and students taking non-academic qualifications.

Figure 9.4: Estimated average grade increases over best three level 3 academic or applied general qualification in 2020[14], by prior attainment[15]

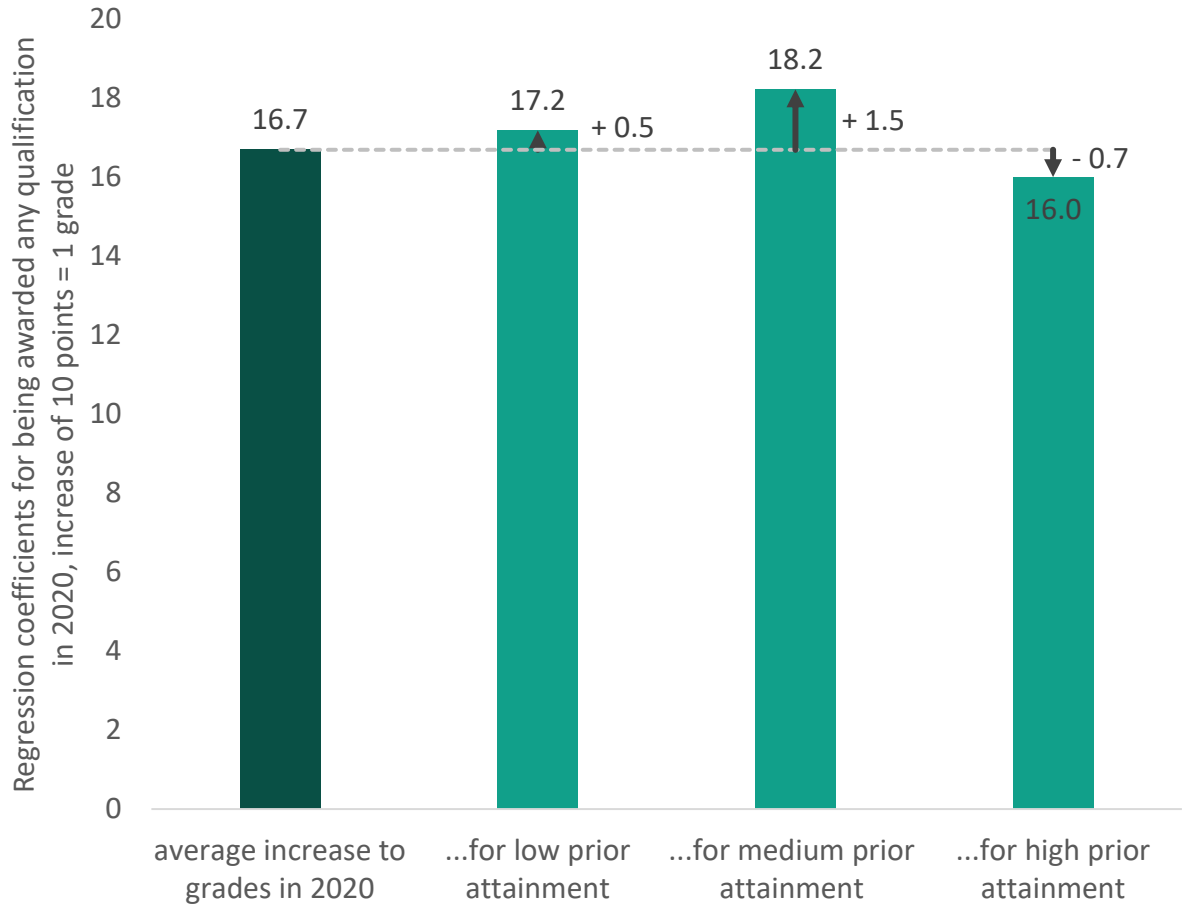


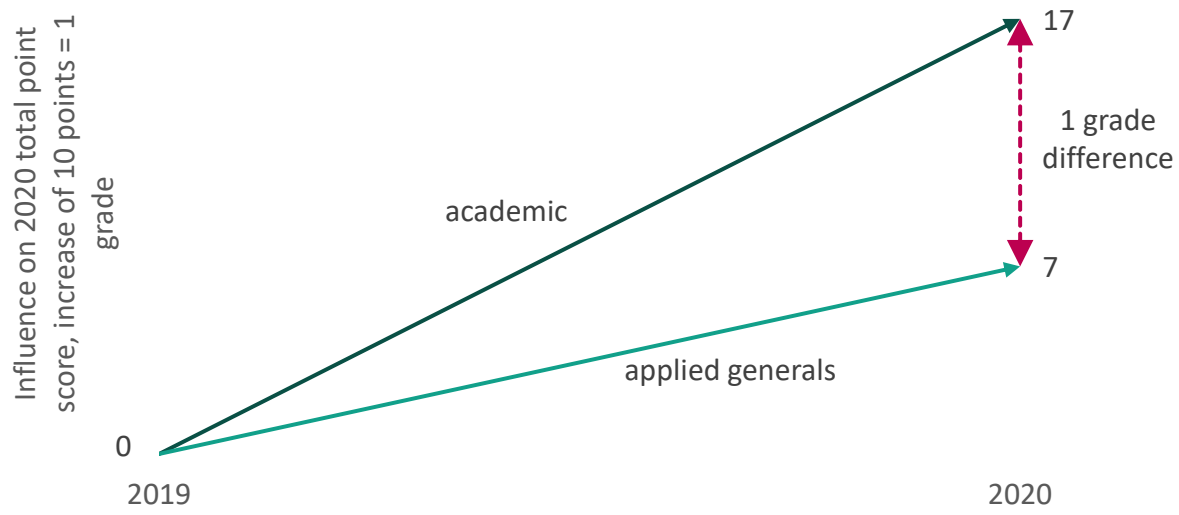
Figure 9.4 shows that after controlling for student characteristics, qualification type and prior attainment, the average student completing level 3 academic or applied general qualifications in 2020, saw an increase equivalent to over one and a half A level grades (17 points) over their best three qualifications, in comparison to a student with similar characteristics in 2019. However, students with medium prior attainment appear to have fared the best in 2020 in comparison to similar students in 2019. On average, increases for this group were one fifth of a grade (2 points) greater than their peers with high prior attainment. Although there are some differences in the increases for each prior attainment group, these are small relative to the overall scale of increases in 2020, indicating that prior attainment was not a key driver in the grade increases seen in 2020.

[14] Regression coefficients for being awarded any qualification in 2020 after controlling for student characteristics compared to the regression coefficients for the same variable but split by prior attainment.
[15] Prior attainment is calculated by taking the students' average English and maths GCSE scores, we classify those with "high" prior attainment as the students with an average score more than 5.5, those with "medium" have an average score between 4 and 5.5 and those with "low" have an average score of less than 4.

Modelling results – the 2020 qualification gap

Previously in figure 9.1, we highlighted that the average point score for A level students in 2020 increased more than it did for applied general students, and this increase caused the average point score gap between the two qualifications to widen. Our modelling confirms that this was not due to the influence of other observed factors. As we can see in figure 9.5, there were increases to the grades awarded in 2020 for both academic students and applied general students, in contrast to similar students in 2019. However, students taking only academic qualifications experienced an average increase of 17 points (over one and a half grades) over their best three qualifications, compared with their 2019 peers, whereas applied general students only saw an increase of 7 points when comparing to similar applied general students in 2019. **Thus, academic students saw their point score increase by 10 points (or one grade) more than otherwise similar applied general students in 2020.**

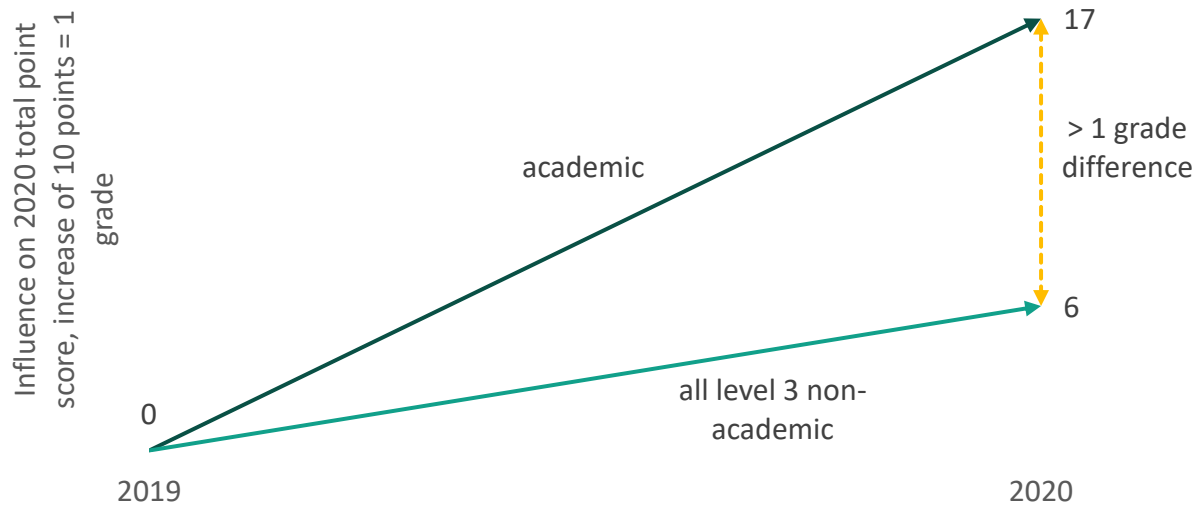
Figure 9.5: increase to total point score for academic and applied general students in 2020 in comparison to their respective values in 2019[16]



Similarly, figure 9.6 below shows that when academic qualifications are compared with all non-academic level 3 qualifications the findings are the same: on average, students completing level 3 technical or applied qualifications in 2020 achieved just over one equivalent A level grade less than their academic counterparts over their best three qualifications.

[16] Figure 10.1 in Annex B shows how these numbers are derived from our regression models.

Figure 9.6: increase to total point score for academic and all level 3 non-academic students in 2020 in comparison to their respective values in 2019

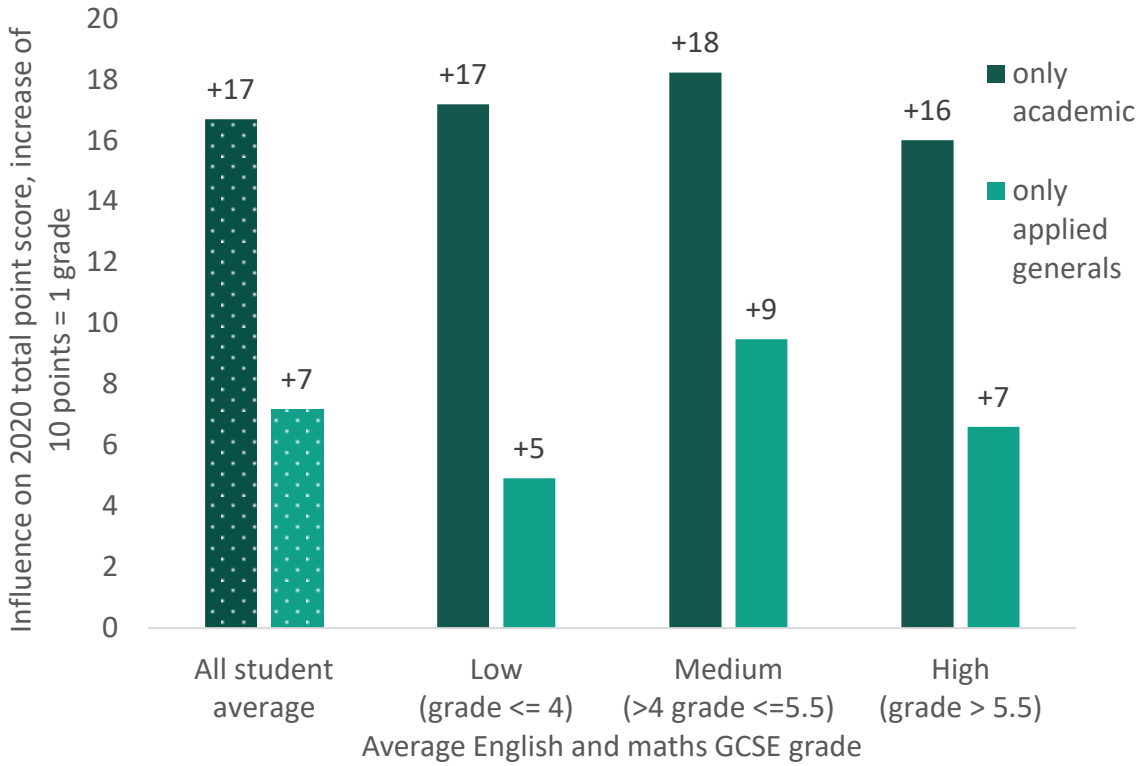


One of the key assumptions of our main model is that an academic and applied general qualification of the same size are awarded similar points. To test whether our finding is sensitive to this assumption we ran the model again but gave extra weighting to academic qualifications compared to applied generals, reflecting the greater labour market returns seen to these qualifications. Further detail on this methodology is provided in our previous research report.[xviii]

Our results from this model confirm the findings from the main model: we find that compared with 2019, students taking applied general qualifications in 2020 saw smaller increases relative to students taking academic qualifications. If anything, the gap is even greater once academic qualifications, such as A levels, are given greater weighting.

We undertook further analysis to understand if our findings differed for students with low, medium or high English and maths GCSE attainment. As figure 9.7 illustrates, for students who only took academic qualifications, the increase to the 2020 grades were similar regardless of prior attainment, with an increase between 16 and 18 points. However, there was more variation in the applied general results. Those with medium prior attainment saw the largest increases, of around nine points, while those with low prior attainment saw an average increase of only five points.

Figure 9.7: Estimates of increases to grades in 2020, by qualification type and prior attainment group[17]

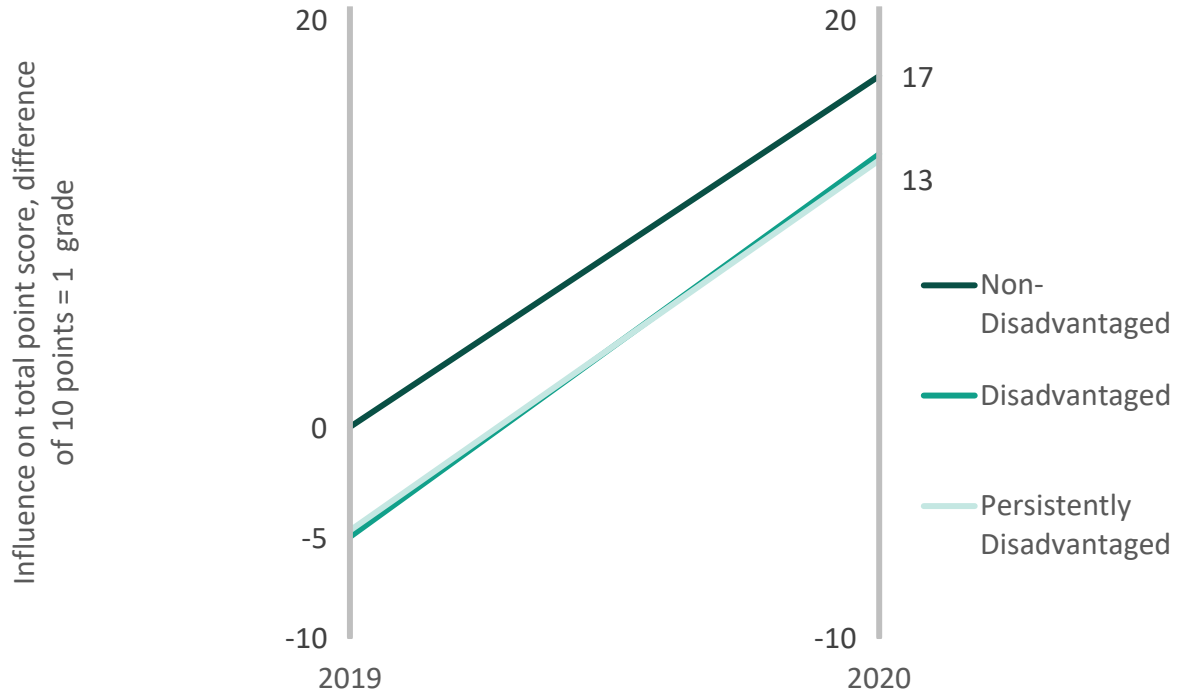


Correspondingly, for students with high or medium prior attainment there was a nine-point gap between academic students and applied general students. For students with low prior attainment there was a twelve-point gap. **It is likely to be students with high, or medium (to a lesser extent) prior attainment who will have been competing for higher education places. Although the gap is smaller than the average for these groups it remains significant, at just under one equivalent A level grade over three qualifications.**

[17] Prior attainment is calculated by taking the students' average English and maths GCSE scores, we classify those with "high" prior attainment as the students with an average score more than 5.5, those with "medium" have an average score between 4 and 5.5 and those with "low" have an average score of less than 4.

Modelling results – the 2020 disadvantage gap

Figure 9.8: estimates of 2020 increases in total point score by disadvantage status, comparing otherwise similar students



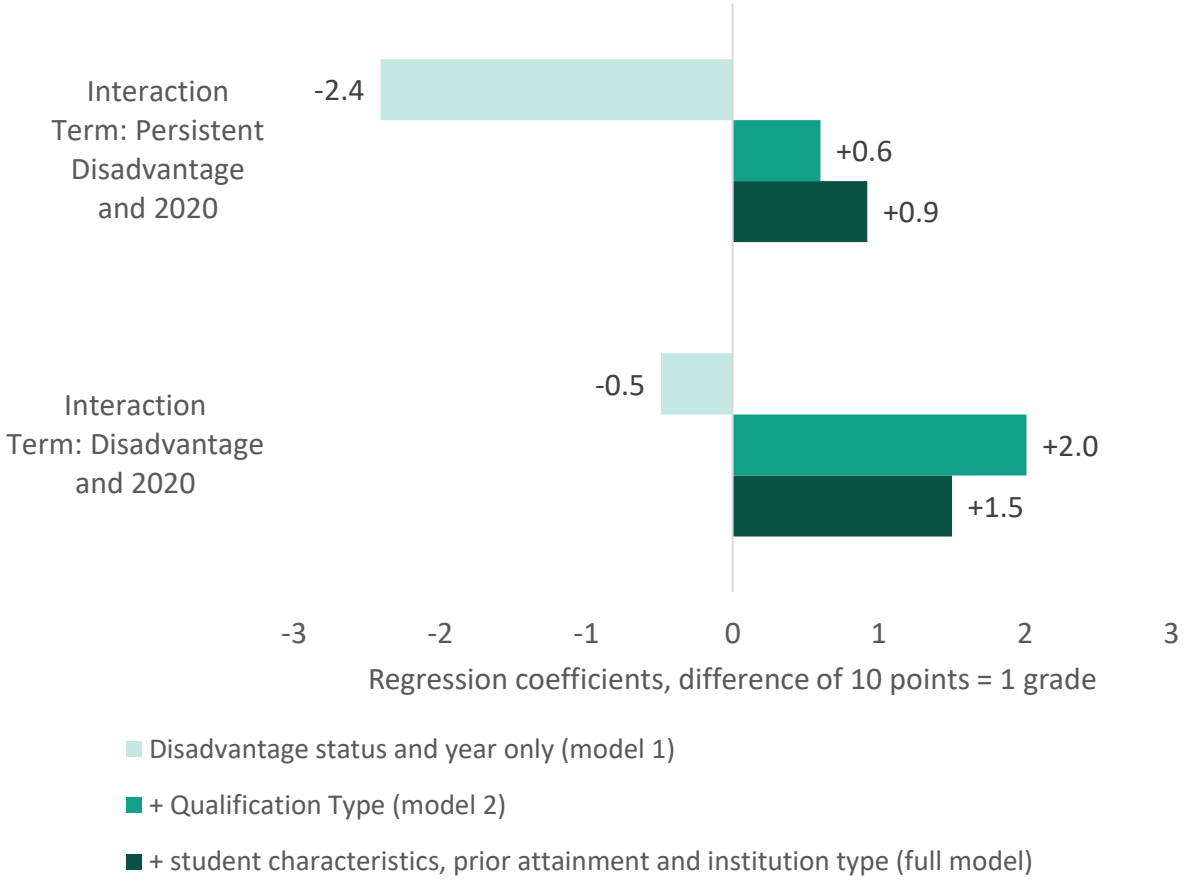
Our modelling also allows us to consider how disadvantaged students entering academic and applied general qualifications fared in 2020. Although most groups on average saw an increase in grades in 2020, these increases were not equal across all student groups. Figure 9.8 shows the association that being disadvantaged, persistently disadvantaged or non-disadvantaged has with students' total point score in both 2019 and 2020, compared to otherwise similar students. We can see that being disadvantaged or persistently disadvantaged in 2019 was associated with a total point score half a grade (5 points) lower than that of their non-disadvantaged peers. However, in 2020 it appears as if this gap had narrowed very slightly, by 1.5 points for disadvantaged students and 0.9 points for persistently disadvantaged students. This leaves disadvantaged students around 4 points behind otherwise similar non-disadvantaged students.

It is important to bear in mind that we are comparing disadvantaged students to otherwise similar non-disadvantaged students, including in the balance of academic vs applied general qualifications taken. **Thus, this analysis shows that, of students with similar characteristics, taking similar types of qualifications, disadvantaged students have caught up slightly in 2020.**

Figure 9.9 shows the regression coefficients for the interaction term between disadvantaged status and qualifications being awarded in 2020 for three different versions of our model. Model 1 conditions only on disadvantaged status, qualification year and the interaction term between them. We can see that in 2020, a disadvantaged student will on average receive a lower grade in comparison to a non-disadvantaged student. This supports the finding from figure 7.6 in the

previous section as it indicates that, if we only consider disadvantaged status and qualification year, the disadvantaged gap widens in 2020.

Figure 9.9: Estimates of the association that disadvantaged status in 2020 has with total point score for three regression models



However, once we consider the qualification types (and the associated interaction terms) taken in model two, the coefficient on disadvantage in 2020 flips to being positive. This implies that when we compare students who have taken the same type of qualifications, the disadvantage gap has narrowed slightly. This also indicates that **it is differences in the qualification types taken between disadvantaged and other students, along with the different increases for those qualifications in 2020, that is driving the increase in the 16-19 disadvantage gap.**

The regression coefficients do not change significantly in the full model where we control for student demographics, prior attainment and institution type. We also found the same trends when considering all level 3 technical qualifications relative to academic qualifications.

Conclusions and recommendations

2020 was an exceptional year in education due to the global pandemic. With the cancellation of exams, most students had their final grades based on their teachers' assessments. This resulted in **the single biggest annual increase in GCSE and A level grades in the last decade.**

The measured 16-19 disadvantage grade gap widened in 2020. This appears to have been driven by disadvantaged students being less likely to take the qualifications which saw the biggest increases in grades in 2020. Due to different grading approaches, over their best three qualifications, **students completing applied generals in 2020 fell one grade behind** their otherwise similar peers taking A levels. Disadvantaged students, who are much more likely to take applied general qualifications, could have been handicapped when competing for university places as a result. Moreover, Ofqual research suggests these grading differences continued into 2021.

Despite the exceptional circumstances under which grades were awarded, **there was a slight narrowing of the measured GCSE grade gap in 2020 for disadvantaged pupils**, **as well as for most lower-attaining minority ethnic groups**. As the debate around the future of GCSEs continues, these findings suggest that **fears around widespread bias in GCSE teacher assessments in relation to disadvantage and ethnicity were unfounded**.

However, some of the lowest attaining and most vulnerable groups did not fare as well in 2020 under centre assessed grades. **The measured grade gap for persistently disadvantaged pupils widened among 16-19 year-olds on our overall measure, and continued to stagnate at GCSE in 2020.** These persistently disadvantaged students are a growing group. The compositional shift towards persistent poverty *within* the disadvantaged group is a trend which predates the pandemic and is associated with the stalling of progress in closing the GCSE disadvantage gap.

We also see a 'levelling-up' problem across secondary and 16-19 provision. Some areas have much higher disadvantage gaps than the national average whilst in others, disadvantaged students are doing at least as well as their peers. There is some correlation between the areas with the widest and smallest gaps across education phases. The differences we see in persistent poverty at a local level are a key factor in these **wide geographic variations,** though the dominance of London boroughs – often with high poverty rates – among areas with the narrowest gaps indicates that the link between poverty and educational inequalities is not fixed**.**

Also of key concern are **SEND pupils with the greatest needs whose grades fell further behind their peers, both pre- and post-16. Late-arriving pupils speaking English as an Additional Language (EAL) also fared unfavourably at the end of secondary school in 2020.**

Throughout our report we have positioned the 2020 findings alongside long-term trends to highlight where progress is being made in addressing educational inequalities and where there is more work to do. There is a risk some of the previously long-term widening gaps – for example, for Black Caribbean and other Black pupils – could get overlooked, in the 2020 story of grade increases.

More broadly, these findings for the 2020 cohort will understate the effects of the pandemic on the educational development of children and young people. With the pandemic only having a widespread impact in the last few months of the 2019/20 academic year, students were less

disrupted than in 2020/21 (and so far in 2021/22). Our own research on learning loss for the 2020/21 cohort shows that disadvantaged pupils' educational outcomes *have* been disproportionately affected. [xix]

Looking further ahead to 2022, those finishing their studies will again have experienced periods of disrupted learning, and assessment processes will be different again. End of year examinations are scheduled to go ahead but with minor adjustments. For example, exam boards will provide advance guidance around the content focussed on in exams to aid students' revision, and study aids will be allowed in certain subjects. It is not yet clear how learning loss and these alterations will impact upon the results achieved by students from different backgrounds. However, grade distributions will be set using the midpoint of 2019 and 2021 outcomes, so we can be sure that 2022 will not look like a usual, pre-pandemic set of results.

For 16-19 education in particular, there is an ongoing risk around the parity of grading of academic qualifications compared to applied and vocational alternatives. Though Ofqual aims to ensure fairness between qualification types, if grade distributions are partially anchored to 2021 results, this risks preserving some of the systematic differences we have seen between academic and non-academic qualifications that have arisen as a result of teacher assessed grading.

Taken together, we recommend the following:

- **The government should work with the higher education sector to ensure that students taking alternatives to A levels do not disproportionately lose out when competing for university places**. This will be especially critical for disadvantaged students who already face significant hurdles in accessing higher education.
- Given that grades awarded under teacher assessments may not be a good guide to students' underlying learning, **policy must still focus on support and interventions for those groups most affected by learning loss during the pandemic.**
- **Education policy should prioritise closing gaps for the lowest attaining and most vulnerable learners** and ensure that the story of 2020 grade increases does not distract from tackling the big picture on long-term educational inequalities.
- If the government is serious about levelling-up, **its efforts must include tackling the social determinants of education, such as poverty.**

Annex A: Geographic analysis of the disadvantage gap

Figure A1: The size of the raw and adjusted disadvantage gap at secondary level (English and maths GCSE) by local authority in 2020[18]

Local authority	% persistently disadvantaged	Raw gap	Adjusted gap	Difference	Raw rank	Adjusted rank
Knowsley	0.19	1.76	1.50	-0.26	1	37
Blackpool	0.17	1.69	1.62	-0.07	2	12
Salford	0.16	1.66	1.59	-0.06	3	17
Derby	0.10	1.65	1.68	0.03	4	2
Sheffield	0.14	1.61	1.48	-0.13	5	43
Bradford	0.14	1.59	1.49	-0.10	6	38
Central Bedfordshire	0.05	1.57	1.67	0.11	7	3
St. Helens	0.12	1.55	1.48	-0.07	8	45
Cheshire West and Chester	0.08	1.54	1.47	-0.07	9	48
Oldham	0.13	1.53	1.51	-0.02	10	34
Southampton	0.12	1.53	1.53	0.00	11	28
Kent	0.07	1.53	1.60	0.08	12	14
Rotherham	0.12	1.52	1.51	-0.01	13	33
Somerset	0.06	1.52	1.60	0.08	14	15
North Tyneside	0.09	1.51	1.48	-0.03	15	44
Redcar and Cleveland	0.15	1.51	1.32	-0.19	16	81
East Sussex	0.09	1.51	1.51	0.00	17	32
Cambridgeshire	0.06	1.50	1.63	0.12	18	9
Milton Keynes	0.06	1.50	1.70	0.20	19	1
Lincolnshire	0.07	1.49	1.64	0.14	20	6
Cumbria	0.06	1.49	1.47	-0.02	21	47
Herefordshire	0.04	1.49	1.66	0.18	22	4
Peterborough	0.09	1.48	1.54	0.05	23	27
Dudley	0.10	1.48	1.43	-0.04	24	54
South Gloucestershire	0.05	1.47	1.60	0.12	25	16
Wakefield	0.10	1.47	1.46	-0.01	26	50
Reading	0.08	1.47	1.57	0.10	27	21
West Sussex	0.05	1.46	1.62	0.16	28	10
Leeds	0.12	1.46	1.41	-0.06	29	56
Sefton	0.11	1.46	1.39	-0.07	30	61
Halton	0.19	1.46	1.19	-0.27	31	102
Wiltshire	0.04	1.46	1.64	0.18	32	5
Bedford	0.07	1.46	1.55	0.09	33	25
West Berkshire	0.04	1.46	1.56	0.10	34	22

[18] Isles of Scilly and City of London are omitted due to low cell counts.

Local authority	% persistently disadvantaged	Raw gap	Adjusted gap	Difference	Raw rank	Adjusted rank
Liverpool	0.20	1.45	1.27	-0.19	35	93
Oxfordshire	0.05	1.45	1.59	0.14	36	19
Worcestershire	0.07	1.45	1.48	0.02	37	46
Portsmouth	0.13	1.45	1.38	-0.07	38	66
Northamptonshire	0.06	1.45	1.53	0.08	39	30
Hartlepool	0.20	1.45	1.22	-0.23	40	100
Doncaster	0.12	1.45	1.39	-0.05	41	63
Gloucestershire	0.05	1.45	1.53	0.09	42	29
Cheshire East	0.06	1.44	1.49	0.04	43	41
Wirral	0.12	1.44	1.30	-0.14	44	83
Northumberland	0.09	1.44	1.40	-0.04	45	57
Shropshire	0.05	1.43	1.63	0.19	46	8
Essex	0.06	1.43	1.58	0.14	47	20
North Somerset	0.05	1.43	1.61	0.18	48	13
Walsall	0.14	1.43	1.39	-0.03	49	62
Telford and Wrekin	0.11	1.42	1.40	-0.03	50	59
Stoke-on-Trent	0.14	1.42	1.38	-0.04	51	65
Suffolk	0.07	1.42	1.55	0.12	52	26
Medway	0.07	1.42	1.59	0.17	53	18
Nottingham	0.18	1.41	1.22	-0.20	54	99
Staffordshire	0.06	1.41	1.46	0.04	55	51
Gateshead	0.12	1.41	1.37	-0.04	56	68
Newcastle upon Tyne	0.18	1.41	1.23	-0.18	57	96
Norfolk	0.07	1.41	1.48	0.07	58	42
Durham	0.12	1.41	1.33	-0.08	59	79
Buckinghamshire	0.03	1.41	1.63	0.22	60	7
Sunderland	0.17	1.41	1.13	-0.28	61	109
Middlesbrough	0.21	1.41	1.14	-0.26	62	105
Southend-on-Sea	0.08	1.40	1.55	0.15	63	24
Plymouth	0.11	1.40	1.34	-0.06	64	72
Lancashire	0.09	1.40	1.33	-0.07	65	77
North Yorkshire	0.04	1.39	1.62	0.23	66	11
Cornwall	0.07	1.39	1.51	0.12	67	35
Hampshire	0.05	1.39	1.56	0.17	68	23
Torbay	0.11	1.38	1.33	-0.05	69	73
Nottinghamshire	0.08	1.38	1.33	-0.05	70	76
Darlington	0.10	1.38	1.49	0.10	71	40
Devon	0.07	1.38	1.39	0.01	72	64
Dorset	0.08	1.38	1.29	-0.09	73	85
Wigan	0.09	1.37	1.33	-0.05	74	75
Bristol City of	0.14	1.37	1.23	-0.14	75	97
Surrey	0.04	1.37	1.49	0.12	76	39

Local authority	% persistently disadvantaged	Raw gap	Adjusted gap	Difference	Raw rank	Adjusted rank
Derbyshire	0.08	1.37	1.40	0.03	77	58
Isle of Wight	0.07	1.36	1.50	0.14	78	36
Barnsley	0.11	1.36	1.37	0.01	79	67
Warrington	0.06	1.35	1.40	0.05	80	60
Warwickshire	0.06	1.34	1.47	0.12	81	49
Coventry	0.12	1.34	1.27	-0.07	82	91
Bath and North East Somerset	0.05	1.33	1.45	0.11	83	52
Wolverhampton	0.15	1.33	1.27	-0.06	84	94
Bolton	0.12	1.33	1.27	-0.06	85	92
Swindon	0.07	1.33	1.31	-0.02	86	82
Leicestershire	0.04	1.32	1.52	0.20	87	31
Brighton and Hove	0.09	1.32	1.36	0.05	88	69
Rochdale	0.13	1.32	1.28	-0.04	89	89
Tameside	0.11	1.32	1.28	-0.03	90	88
Stockport	0.08	1.32	1.35	0.04	91	70
Leicester	0.11	1.31	1.33	0.02	92	74
South Tyneside	0.16	1.30	1.17	-0.13	93	104
Kirklees	0.15	1.29	0.94	-0.35	94	123
Stockton-on-Tees	0.13	1.29	1.20	-0.08	95	101
Kingston upon Hull City of	0.18	1.28	1.04	-0.24	96	116
East Riding of Yorkshire	0.06	1.27	1.26	-0.02	97	95
North East Lincolnshire	0.11	1.27	1.29	0.02	98	86
York	0.04	1.25	1.43	0.18	99	53
Calderdale	0.09	1.25	1.33	0.08	100	78
Bracknell Forest	0.05	1.23	1.41	0.18	101	55
Bury	0.08	1.23	1.22	-0.01	102	98
Manchester	0.19	1.23	1.14	-0.09	103	107
North Lincolnshire	0.09	1.22	1.35	0.13	104	71
Sandwell	0.14	1.20	1.14	-0.06	105	108
Solihull	0.08	1.18	1.08	-0.10	106	112
Bromley	0.06	1.17	1.29	0.11	107	87
Hertfordshire	0.05	1.16	1.33	0.16	108	80
Blackburn with Darwen	0.11	1.13	1.06	-0.07	109	114
Windsor and Maidenhead	0.03	1.09	1.30	0.21	110	84
Luton	0.09	1.09	1.27	0.18	111	90
Wokingham	0.03	1.05	1.18	0.13	112	103
Thurrock	0.08	1.05	1.07	0.03	113	113

Local authority	% persistently disadvantaged	Raw gap	Adjusted gap	Difference	Raw rank	Adjusted rank
Croydon	0.11	1.05	1.11	0.07	114	110
Birmingham	0.19	1.03	0.93	-0.10	115	124
Bexley	0.07	1.03	1.14	0.12	116	106
Trafford	0.07	1.01	0.99	-0.02	117	117
Havering	0.07	0.99	1.06	0.08	118	115
Lewisham	0.14	0.98	0.95	-0.03	119	122
Barking and Dagenham	0.12	0.91	0.95	0.04	120	120
Sutton	0.07	0.90	0.92	0.01	121	125
Greenwich	0.12	0.90	0.95	0.05	122	121
Slough	0.06	0.89	1.11	0.23	123	111
Bournemouth, Christchurch and Poole	0.07	0.88	0.91	0.02	124	126
Enfield	0.12	0.87	0.89	0.02	125	127
Hillingdon	0.07	0.82	0.97	0.15	126	118
Merton	0.09	0.81	0.88	0.07	127	128
Kingston upon Thames	0.05	0.80	0.95	0.15	128	119
Waltham Forest	0.12	0.79	0.84	0.05	129	129
Hounslow	0.10	0.75	0.75	0.01	130	133
Lambeth	0.17	0.73	0.73	0.01	131	135
Richmond upon Thames	0.05	0.72	0.81	0.09	132	130
Wandsworth	0.13	0.69	0.75	0.06	133	134
Haringey	0.16	0.64	0.60	-0.05	134	137
Islington	0.26	0.64	0.51	-0.13	135	141
Harrow	0.07	0.63	0.78	0.15	136	131
Brent	0.10	0.62	0.64	0.02	137	136
Camden	0.23	0.61	0.51	-0.10	138	140
Southwark	0.18	0.57	0.57	0.00	139	139
Hammersmith and Fulham	0.18	0.56	0.40	-0.17	140	145
Rutland	0.03	0.56	0.77	0.21	141	132
Hackney	0.23	0.56	0.42	-0.14	142	143
Redbridge	0.10	0.43	0.37	-0.05	143	146
Ealing	0.10	0.38	0.41	0.03	144	144
Barnet	0.08	0.36	0.44	0.08	145	142
Tower Hamlets	0.30	0.34	0.07	-0.26	146	148
Newham	0.12	0.33	0.58	0.25	147	138
Westminster	0.24	0.29	0.09	-0.20	148	147
Kensington and Chelsea	0.19	0.10	0.00	-0.10	149	149

Annex B: Full results of regression modelling

The models used in this report are in the below tables. Models 1 to 6 build up iteratively, with model 6 being the final model. Models 7 to 11 use model 6 as the base but have different dependent variables.

Model	Dependent variable	Independent variables
Model 1	Total point score from best three academic or applied general qualifications	Disadvantage status + year qualification awarded + interaction term: disadvantaged status and year qualification awarded
Model 2	Total point score from best three academic or applied general qualifications	+ proportion of applied general qualifications taken + interaction term: proportion of applied general qualifications taken and year qualification awarded
Model 3	Total point score from best three academic or applied general qualifications	+ special educational needs status + English as an additional language status + gender + ethnicity
Model 4	Total point score from best three academic or applied general qualifications	+ average KS4 English and maths results + difference in KS4 English and maths results + average KS4 English and maths results squared + interaction term: EAL status and average KS4 English and maths results
Model 5	Total point score from best three academic or applied general qualifications	+ region + urban / rural status + average KS4 English and maths results for the cohort
Model 6	Total point score from best three academic or applied general qualifications	+ institution type
Model 7	Total point score from best three academic or applied general qualifications	Model 6 but with the underlying dataset split for those students with “high” prior attainment (average KS4 English and maths results > 5.5)
Model 8	Total point score from best three academic or applied general qualifications	Model 6 but with the underlying dataset split for those students with “medium” prior attainment (average KS4 english and maths results between 4 and 5.5)
Model 9	Total point score from best three academic or applied general qualifications	Model 6 but with the underlying dataset split for those students with “low” prior attainment (average KS4 English and maths results < 4)
Model 10	Average point score from academic or applied general qualifications	Model 6
Model 11	Total point score from best three academic or applied general qualifications	Model 6 with method 2 methodology where additional weighting is given to the A level results

Model	Dependent variable	Independent variables
Model 12	Total point score from best three academic or any level 3 non-academic qualifications	Model 6 but with proportion of level 3 non-academic qualifications taken

The following table shows the reference category for each variable:

Independent variable	Reference category
Disadvantage status	Non-disadvantaged
Qualification year	2019
SEN status	Non-SEN
EAL status	Non-EAL
Gender	Male
Ethnicity	White British
Region	London
Area	Rural
Institution type	Local authority-maintained schools

Regression coefficients for models 1 to 3

The following table show the regression coefficients for models 1 to 3, where method 1 was used and the dependent variable is the total point score from the best three academic or applied general qualifications.

† indicates the coefficient is not significant at the 5% level.

	Coefficients and standard errors					
Independent variables	Model 1	SE	Model 2	SE	Model 3	SE
(Intercept)	104.26	0.09	109.25	0.10	105.72	0.12
Disadvantaged status: disadvantage	-15.90	0.27	-13.06	0.26	-12.69	0.26
Disadvantaged status: persistent disadvantage	-18.52	0.42	-14.39	0.41	-13.52	0.41
Qualification year: 2018	-0.91	0.13	-2.87	0.14	-2.79	0.14
Qualification year: 2020	12.57	0.13	15.68	0.14	15.89	0.14
Interaction term: disadvantage and 2018	-1.10	0.38	-1.74	0.37	-1.75	0.36
Interaction term: persistent disadvantage and 2018	-2.15	0.60	-3.24	0.58	-3.11	0.58
Interaction term: disadvantage and 2020	-0.49†	0.37	2.01	0.36	1.83	0.36
Interaction term: persistent disadvantage and 2020	-2.41	0.60	0.60†	0.58	0.31†	0.57
Proportion applied general qualifications taken			-32.93	0.25	-31.52	0.25
Interaction term: proportion applied general and 2018			-0.48†	0.40	-0.36†	0.40
Interaction term: proportion applied general and 2020			-14.03	0.34	-13.99	0.35
Special educational needs					-10.44	0.21
English as an additional language					-3.47	0.19
Gender: female					6.91	0.10

Independent variables	Coefficients and standard errors					
	Model 1	SE	Model 2	SE	Model 3	SE
Ethnicity: any other Asian background					3.52	0.34
Ethnicity: any other Black background					-5.34	0.60
Ethnicity: any other ethnic group					5.19	0.38
Ethnicity: any other mixed background					3.13	0.36
Ethnicity: any other White background					3.96	0.26
Ethnicity: Bangladeshi					3.34	0.36
Ethnicity: Black - African					-0.66	0.26
Ethnicity: Black Caribbean					-9.11	0.46
Ethnicity: Chinese					19.34	0.62
Ethnicity: Gypsy/Roma					-7.63	2.83
Ethnicity: Indian					8.97	0.27
Ethnicity: information not yet obtained					1.77	0.70
Ethnicity: Pakistani					-2.32	0.26
Ethnicity: refused					1.27†	0.67
Ethnicity: traveller of Irish heritage					-16.82	6.05
Ethnicity: White - Irish					7.18	0.75
Ethnicity: White and Asian					7.56	0.44
Ethnicity: White and Black African					-0.26†	0.64
Ethnicity: White and Black Caribbean					-6.03	0.47
R-squared	0.038		0.112		0.128	
Student count	820,336		820,336		779,296	

Regression coefficients for models 4 to 6

The following table show the regression coefficients for Models 4 to 6, where method 1 was used and the dependent variable is the total point score from the best three academic or applied general qualifications.

† indicates the coefficient is not significant at the 5% level.

Independent variables	Coefficients and standard errors					
	Model 4	SE	Model 5	SE	Model 6	SE
(Intercept)	14.90	0.66	-35.53	0.74	-23.33	0.78
Disadvantaged status: disadvantage	-6.54	0.21	-5.28	0.20	-5.23	0.20
Disadvantaged status: persistent disadvantage	-6.53	0.33	-4.96	0.32	-4.93	0.32
Qualification year: 2018	2.08	0.11	3.29	0.11	3.11	0.11
Qualification year: 2020	14.86	0.11	17.15	0.11	16.70	0.11
Interaction term: disadvantage and 2018	-0.58	0.29	-0.40†	0.29	-0.46†	0.29
Interaction term: persistent disadvantage and 2018	-1.45	0.47	-1.00	0.46	-1.05	0.45
Interaction term: disadvantage and 2020	0.94	0.29	1.62	0.28	1.50	0.28
Interaction term: persistent disadvantage and 2020	0.12†	0.46	1.07	0.45	0.92	0.45

Independent variables	Coefficients and standard errors					
	Model 4	SE	Model 5	SE	Model 6	SE
Proportion applied general qualifications taken	5.14	0.21	9.41	0.21	9.23	0.21
Interaction term: proportion applied general and 2018	-1.38	0.33	-3.12	0.32	-3.78	0.32
Interaction term: proportion applied general and 2020	-12.33	0.28	-9.15	0.27	-9.51	0.27
Special educational needs	-1.63	0.18	-1.61	0.17	-1.52	0.17
English as an additional language	13.51	0.43	17.41	0.43	16.32	0.43
Gender: female	6.01	0.08	6.36	0.08	6.36	0.08
Ethnicity: any other Asian background	-3.53	0.28	-6.27	0.28	-6.14	0.28
Ethnicity: any other Black background	-0.98	0.48	-2.42	0.47	-2.10	0.47
Ethnicity: any other ethnic group	2.63	0.31	0.66	0.31	0.87	0.31
Ethnicity: any other mixed background	0.69	0.29	-0.91	0.29	-0.70	0.29
Ethnicity: any other White background	3.24	0.21	2.25	0.21	2.41	0.21
Ethnicity: Bangladeshi	-1.21	0.29	-2.34	0.29	-2.21	0.29
Ethnicity: Black - African	-0.96	0.21	-2.99	0.22	-2.84	0.21
Ethnicity: Black Caribbean	-3.28	0.37	-3.49	0.37	-3.28	0.37
Ethnicity: Chinese	5.87	0.50	3.08	0.49	3.43	0.49
Ethnicity: Gypsy/Roma	-0.74†	2.29	1.54†	2.24	1.23†	2.24
Ethnicity: Indian	1.30	0.22	-1.05	0.22	-0.77	0.22
Ethnicity: information not yet obtained	1.74	0.57	0.22†	0.56	0.38†	0.55
Ethnicity: Pakistani	-2.50	0.21	-3.18	0.21	-3.17	0.21
Ethnicity: refused	0.05†	0.54	-1.11	0.53	-0.83†	0.53
Ethnicity: Traveller of Irish heritage	-12.92	4.90	-14.05	4.79	-14.73	4.78
Ethnicity: White - Irish	3.39	0.61	1.08†	0.60	1.05†	0.59
Ethnicity: White and Asian	2.04	0.35	0.38†	0.35	0.53†	0.35
Ethnicity: White and Black African	0.02†	0.52	-1.24	0.51	-1.12	0.51
Ethnicity: White and Black Caribbean	-2.42	0.38	-2.76	0.37	-2.62	0.37
Prior attainment: average English and maths GCSE results	6.40	0.21	5.84	0.20	5.75	0.20
Prior attainment: difference between English and maths GCSE results	-1.02	0.02	-1.02	0.02	-1.01	0.02
Prior attainment: average English and maths GCSE results squared	1.14	0.02	1.04	0.02	1.06	0.02
Interactional term: English as an additional language and average English and maths GCSE results	-2.15	0.07	-2.67	0.07	-2.51	0.07
Region: East Midlands			-0.82	0.17	-0.54	0.18
Region: East of England			-0.68	0.15	-0.28†	0.16
Region: North East			-2.24	0.22	-1.69	0.22
Region: North West			-0.56	0.15	0.44	0.15
Region: South East			-2.09	0.14	-1.64	0.14
Region: South West			-0.78	0.17	-0.04†	0.17

Independent variables	Coefficients and standard errors					
	Model 4	SE	Model 5	SE	Model 6	SE
Region: West Midlands			-1.44	0.16	-1.11	0.16
Region: Yorkshire and the Humber			-3.04	0.17	-2.45	0.17
Area: urban			-0.85	0.15	-0.16†	0.15
Cohort average English and maths GCSE results			9.69	0.05	7.85	0.07
Institution type: academies					-0.81	0.11
Institution type: colleges					-7.61	0.18
Institution type: free schools					-9.40	0.27
Institution type: independent schools					-12.47	0.74
Institution type: other types					-23.09	2.49
Institution type: sixth form college					-4.76	0.14
Institution type: special schools					-13.42	5.43
R-squared	0.429		0.453		0.456	
Student count	778,764		777,596		777,596	

Regression coefficients for models 7 to 9

The following table show the regression coefficients for Models 7 to 9, where method 1 was used and the dependent variable is the total point score from the best three academic or applied general qualifications. These models are equivalent to model 6 but the underlying dataset has been split into students with low (model 9), medium (model 8) and high (model 7) prior attainment.

† indicates the coefficient is not significant at the 5% level.

Independent variables	Coefficients and standard errors					
	Model 7	SE	Model 8	SE	Model 9	SE
(Intercept)	-40.85	3.52	-121.29	13.49	3.35†	3.63
Disadvantaged status: disadvantage	-6.37	0.29	-4.57	0.33	-3.05	0.54
Disadvantaged status: persistent disadvantage	-7.15	0.50	-4.15	0.52	-2.66	0.75
Qualification year: 2018	2.96	0.14	4.17	0.20	3.58	0.45
Qualification year: 2020	16.01	0.13	18.23	0.22	17.19	0.56
Interaction term: disadvantage and 2018	0.03†	0.44	-1.43	0.45	-0.59†	0.72
Interaction term: persistent disadvantage and 2018	-0.67†	0.74	-1.81	0.71	-1.52†	1.01
Interaction term: disadvantage and 2020	2.39	0.41	0.90	0.46	-0.62†	0.74
Interaction term: persistent disadvantage and 2020	2.59	0.69	-0.32†	0.73	-1.19†	1.03
Proportion applied general qualifications taken	-1.45	0.52	10.18	0.31	15.98	0.48
Interaction term: proportion applied general and 2018	-7.63	0.98	-4.71	0.50	-5.52	0.64

Independent variables	Coefficients and standard errors					
	Model 7	SE	Model 8	SE	Model 9	SE
Interaction term: proportion applied general and 2020	-9.41	0.70	-8.75	0.43	-12.27	0.69
Special educational needs	-2.71	0.27	-1.01	0.28	-0.18†	0.35
English as an additional language	11.23	1.09	22.22	2.09	-0.22†	1.93
Gender: female	4.08	0.11	8.89	0.14	8.97	0.24
Ethnicity: any other Asian background	-8.93	0.35	-2.53	0.52	1.56†	0.88
Ethnicity: any other Black background	-5.38	0.74	0.07†	0.75	2.51	1.09
Ethnicity: any other ethnic group	-1.49	0.42	3.93	0.54	4.79	0.82
Ethnicity: any other mixed background	-2.28	0.37	0.81†	0.51	3.52	0.88
Ethnicity: any other White background	1.91	0.27	3.86	0.36	4.64	0.60
Ethnicity: Bangladeshi	-5.01	0.39	1.07	0.50	2.29	0.84
Ethnicity: Black - African	-6.54	0.30	0.34†	0.36	3.40	0.57
Ethnicity: Black Caribbean	-7.75	0.58	-1.85	0.58	1.70	0.86
Ethnicity: Chinese	1.90	0.56	5.24	1.10	8.44	2.15
Ethnicity: Gypsy/Roma	7.43†	4.39	5.88†	3.67	-6.08†	3.63
Ethnicity: Indian	-2.78	0.27	1.85	0.41	3.73	0.71
Ethnicity: information not yet obtained	1.68	0.75	-1.11†	0.96	1.02†	1.55
Ethnicity: Pakistani	-6.83	0.30	-0.26†	0.36	3.74	0.57
Ethnicity: refused	-2.13	0.70	0.25†	0.95	3.55	1.55
Ethnicity: traveller of Irish heritage	-25.40	7.90	-12.93†	7.94	-6.63†	8.98
Ethnicity: White - Irish	1.03†	0.74	0.74†	1.10	1.18†	2.21
Ethnicity: White and Asian	0.08†	0.42	1.05†	0.65	1.35†	1.25
Ethnicity: White and Black African	-3.40	0.70	1.17†	0.86	2.74	1.39
Ethnicity: White and Black Caribbean	-3.54	0.54	-2.00	0.59	-0.78†	1.00
Prior attainment: average English and maths GCSE results	13.00	0.95	37.91	5.38	-6.44	2.03
Prior attainment: difference between English and maths GCSE results	-0.49	0.03	-2.10	0.04	-1.33	0.10
Prior attainment: average English and maths GCSE results squared	0.53	0.06	-2.06	0.53	2.88	0.31
Interactional term: English as an additional language and average English and maths GCSE results	-1.53	0.15	-3.95	0.41	0.45†	0.52
Region: East Midlands	-0.20†	0.23	-1.32	0.30	-1.04	0.53
Region: East of England	0.97	0.20	-1.23	0.27	-4.09	0.47
Region: North East	-1.19	0.29	-2.49	0.37	-2.78	0.63
Region: North West	1.27	0.20	-0.67	0.27	-1.46	0.47
Region: South East	-0.12†	0.18	-2.99	0.25	-5.50	0.42
Region: South West	1.39	0.22	-1.33	0.30	-4.18	0.52
Region: West Midlands	-1.66	0.21	-0.86	0.27	-0.44†	0.45
Region: Yorkshire and the Humber	-0.67	0.22	-4.24	0.29	-5.72	0.49

Independent variables	Coefficients and standard errors					
	Model 7	SE	Model 8	SE	Model 9	SE
Area: urban	-0.63	0.19	0.43†	0.25	0.77†	0.48
Cohort average English and maths GCSE results	7.08	0.09	9.95	0.13	5.84	0.22
Institution type: academies	-0.86	0.15	-0.68	0.20	0.06†	0.34
Institution type: colleges	-7.02	0.26	-6.06	0.30	-10.32	0.48
Institution type: free schools	-6.83	0.35	-12.81	0.48	-6.75	0.76
Institution type: independent schools	-16.20	0.89	-5.67	1.43	4.02†	3.15
Institution type: other types	-17.58	2.80	-39.94	6.12	-42.79	9.36
Institution type: sixth form college	-3.07	0.19	-6.92	0.24	-6.58	0.44
Institution type: special schools	-9.59†	10.31	-26.41	9.99	-8.37†	8.13
R-squared	0.3249		0.1471		0.1344	
Student count	419,810		277,441		80,345	

Regression coefficients for models 10 and 11

The following table show the regression coefficients for Models 10 which uses the method 1 and the average point score for the dependent variable and model 11 which uses method 2 and is equivalent to model 6.

† indicates the coefficient is not significant at the 5% level.

Independent variables	Coefficients and standard errors			
	Model 10	SE	Model 11	SE
(Intercept)	21.44	0.21	-14.63	1.08
Disadvantaged status: disadvantage	-1.15	0.05	-7.18	0.28
Disadvantaged status: persistent disadvantage	-1.00	0.09	-6.69	0.45
Qualification year: 2018	1.00	0.03	4.21	0.15
Qualification year: 2020	4.81	0.03	24.12	0.16
Interaction term: disadvantage and 2018	0.08†	0.08	-0.91	0.40
Interaction term: persistent disadvantage and 2018	0.00†	0.12	-1.72	0.63
Interaction term: disadvantage and 2020	0.08†	0.08	2.31	0.39
Interaction term: persistent disadvantage and 2020	-0.10†	0.12	1.48	0.63
Proportion applied general qualifications taken	0.92	0.06	-19.38	0.29
Interaction term: proportion applied general and 2018	-0.59	0.08	-4.12	0.44
Interaction term: proportion applied general and 2020	-2.25	0.07	-15.21	0.38
Special educational needs	0.21	0.05	-1.94	0.24
English as an additional language	5.16	0.11	22.02	0.59
Gender: female	1.59	0.02	8.42	0.11
Ethnicity: any other Asian background	-2.15	0.07	-8.90	0.38
Ethnicity: any other Black background	-1.53	0.13	-2.96	0.65

	Coefficients and standard errors			
Independent variables	Model 10	SE	Model 11	SE
Ethnicity: any other ethnic group	-0.12†	0.08	1.02	0.42
Ethnicity: any other mixed background	-0.48	0.08	-0.95	0.40
Ethnicity: any other White background	0.69	0.05	3.52	0.29
Ethnicity: Bangladeshi	-1.42	0.08	-3.55	0.40
Ethnicity: Black - African	-1.97	0.06	-4.18	0.30
Ethnicity: Black Caribbean	-1.73	0.10	-4.75	0.51
Ethnicity: Chinese	0.93	0.13	4.82	0.68
Ethnicity: Gypsy/Roma	0.06†	0.59	2.64†	3.10
Ethnicity: Indian	-0.74	0.06	-1.28	0.30
Ethnicity: information not yet obtained	0.09†	0.15	0.74†	0.77
Ethnicity: Pakistani	-1.58	0.06	-4.66	0.29
Ethnicity: refused	-0.58	0.14	-1.16†	0.74
Ethnicity: traveller of Irish heritage	-2.33†	1.27	-19.69	6.62
Ethnicity: White - Irish	0.16†	0.16	1.61	0.82
Ethnicity: White and Asian	-0.01†	0.09	0.98	0.48
Ethnicity: White and Black African	-0.86	0.13	-1.60	0.70
Ethnicity: White and Black Caribbean	-0.78	0.10	-3.62	0.52
Prior attainment: average English and maths GCSE results	-2.71	0.05	1.06	0.28
Prior attainment: difference between English and maths GCSE results	-0.24	0.01	-1.38	0.03
Prior attainment: average English and maths GCSE results squared	0.62	0.00	2.08	0.02
Interactional term: English as an additional language and average English and maths GCSE results	-0.79	0.02	-3.38	0.09
Region: East Midlands	-0.76	0.05	-0.88	0.24
Region: East of England	-0.37	0.04	-0.41†	0.21
Region: North East	-0.06†	0.06	-2.52	0.30
Region: North West	0.21	0.04	0.63	0.21
Region: South East	-0.20	0.04	-2.10	0.19
Region: South West	-0.06†	0.04	-0.20†	0.23
Region: West Midlands	-0.69	0.04	-2.07	0.22
Region: Yorkshire and the Humber	-0.26	0.04	-3.35	0.23
Area: urban	-0.01†	0.04	-0.31†	0.20
Cohort average English and maths GCSE results	1.33	0.02	11.33	0.10
Institution type: academies	-0.08	0.03	-1.07	0.16
Institution type: colleges	-0.86	0.05	-8.75	0.25
Institution type: free schools	-0.57	0.07	-13.27	0.37
Institution type: independent schools	-0.01†	0.20	-17.88	1.03
Institution type: other types	-1.68	0.66	-32.52	3.45
Institution type: sixth form college	0.07†	0.04	-5.90	0.20
Institution type: special schools	2.17†	1.44	-19.08	7.52

	Coefficients and standard errors			
Independent variables	Model 10	SE	Model 11	SE
R-squared	0.433		0.523	
Student count	777,596		777,596	

Regression coefficients for model 12

The following table show the regression coefficients for Model 12, where method 1 was used and the dependent variable is the total point score from the best three academic or non-academic level 3 qualifications.

† indicates the coefficient is not significant at the 5% level.

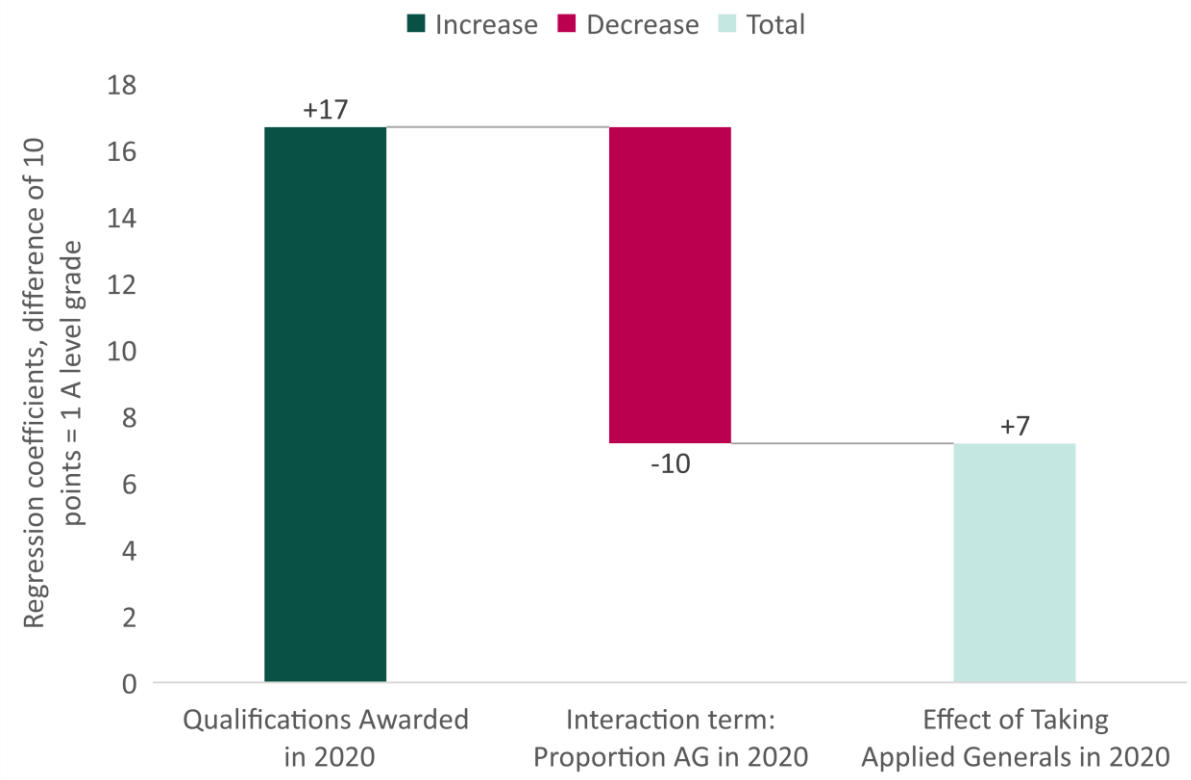
	Coefficients and standard errors	
Independent variables	Model 12	SE
(Intercept)	-21.46	0.59
Disadvantaged status: disadvantage	-6.04	0.17
Disadvantaged status: persistent disadvantage	-6.68	0.26
Qualification year: 2018	3.89	0.12
Qualification year: 2020	16.58	0.12
Interaction term: disadvantage and 2018	-0.62	0.24
Interaction term: persistent disadvantage and 2018	-0.19†	0.36
Interaction term: disadvantage and 2020	1.03	0.24
Interaction term: persistent disadvantage and 2020	0.61†	0.36
Proportion of level 3 non-academic qualifications taken	18.85	0.15
Interaction term: proportion non-academic and 2018	2.42	0.18
Interaction term: proportion non-academic and 2020	-11.03	0.18
Special educational needs	-1.77	0.13
English as an additional language	16.80	0.33
Gender: female	5.33	0.07
Ethnicity: any other Asian background	-4.07	0.26
Ethnicity: any other Black background	-1.50	0.41
Ethnicity: any other ethnic group	0.53†	0.28
Ethnicity: any other mixed background	-0.62	0.26
Ethnicity: any other White background	1.66	0.19
Ethnicity: Bangladeshi	-0.90	0.27
Ethnicity: Black - African	-3.00	0.20
Ethnicity: Black Caribbean	-3.13	0.30
Ethnicity: Chinese	4.86	0.48
Ethnicity: Gypsy/Roma	-4.02	1.66

	Coefficients and standard errors	
Independent variables	Model 12	SE
Ethnicity: Indian	0.13†	0.21
Ethnicity: information not yet obtained	0.17†	0.49
Ethnicity: Pakistani	-1.43	0.19
Ethnicity: refused	-1.19	0.48
Ethnicity: traveller of Irish heritage	-10.96	3.94
Ethnicity: White - Irish	-0.14†	0.56
Ethnicity: White and Asian	0.24†	0.32
Ethnicity: White and Black African	-1.90	0.45
Ethnicity: White and Black Caribbean	-2.28	0.31
Prior attainment: average English and maths GCSE results	10.65	0.13
Prior attainment: difference between English and maths GCSE results	-0.86	0.02
Prior attainment: average English and maths GCSE results squared	0.51	0.01
Interactional term: English as an additional language and average English and maths GCSE results	-2.70	0.06
Region: East Midlands	-3.04	0.16
Region: East of England	-0.63	0.14
Region: North East	1.49	0.18
Region: North West	4.98	0.14
Region: South East	-0.32	0.13
Region: South West	0.81	0.15
Region: West Midlands	-0.57	0.14
Region: Yorkshire and the Humber	1.19	0.15
Area: urban	0.59	0.13
Cohort average English and maths GCSE results	6.40	0.06
Institution type: academies	0.72	0.11
Institution type: colleges	-4.34	0.15
Institution type: free schools	-0.33†	0.25
Institution type: independent schools	6.73	0.63
Institution type: other types	-12.31	2.08
Institution type: sixth form college	6.31	0.14
Institution type: special schools	-13.43	4.03
R-squared	0.387	
Student count	1,058,166	

Calculation of the influence of taking applied general qualifications in 2020

In the "Modelling results - the 2020 qualification gap" section, we discuss that students who were awarded applied general qualifications in 2020 saw an increase of 7 points in comparison to similar students from 2019. Figure 10.1 shows how we calculated the overall influence of taking Applied General qualifications in 2020.

Figure 10.1: Regression coefficients and total effect of taking applied general qualifications in 2020 in comparison to completing applied generals in 2019



The dark teal bar illustrates the increase of 17 points that all students experience if they took their qualifications in 2020 rather than in 2019. The pink bar highlights the 10-point drop that applied general students experience if they completed their qualifications in 2020. Combining these coefficients together gives the pale blue bar which shows the overall influence of completing applied general qualifications in 2020 is an increase of 7 points to the total point score in comparison to similar students taking applied general qualifications in 2019.

Annex C: 16-19 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.

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 that 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 LA 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 and will have points allocated as set out below.

Point score allocations

For this project, the starting assumption when allocating point scores is to assume equivalence based on qualification level, guided learning hours and grade scheme.

For example, all level 2 Pass/Merit/Distinction qualifications with the same number of guided learning hours will be awarded the same points.

The same would be true for a level 2 qualification with the same guided learning hours and a C/B/A grade scheme – the important thing is the number of distinct pass grades available rather than what name these grades are given.

Level 3 qualifications

For many of the qualifications in scope, the points will be the same ones that are used in performance tables measures, created by the DfE. Their approach based on qualification size is extended to all level 3 qualifications in the exam level dataset, regardless of whether the qualification is eligible to count in the performance tables. Only level 3 qualifications are included in

the regression modelling sections of this report. The detail of lower-level qualifications described below relates only to the total point score measure over students' best 3 qualifications, used for the 16-19 descriptive statistics and disadvantage gaps in the preceding section of this report.

Level 2 qualifications approved for 16-19 study

For lower-level qualifications, those that count in the 16-19 performance tables will again have the same points used by the Department for Education. These points are extended to all level 2 qualifications approved for 16-19 study. The potential points available from a level 2 qualification will always be less than the potential points available from a level 3 qualification of the same size.

Other level 1 and 2 qualifications

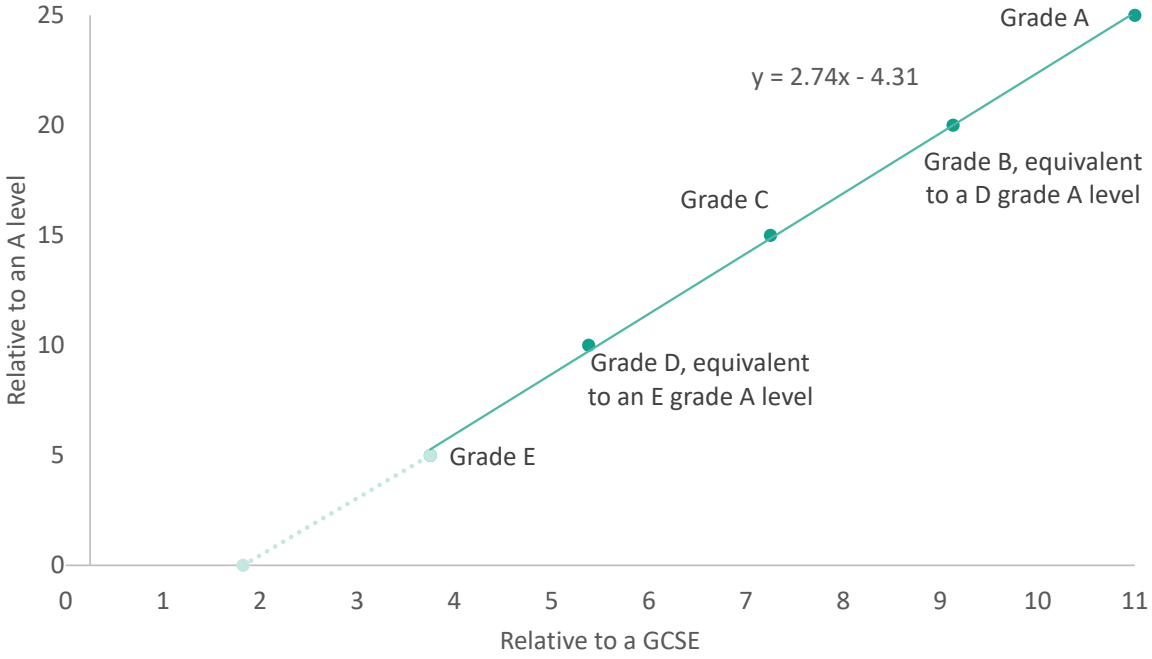
For other level 1 and 2 qualifications, we have set points in a similar way based on level, guided learning hours and grade scheme. However, as an interim step, points are expressed relative to a 9-1 GCSE as set out in Annex B of the DfE's secondary accountability guidance, before a secondary mapping is applied to rescale them relative to an A level. [xx]

This approach is applied to all level 1 and 2 qualifications which do not already have points attributed to them on the correct scale, regardless of whether these qualifications are eligible to count towards the key stage 4 performance tables.

This approach to setting point scores is intended for qualifications of equivalent size (in terms of guided learning hours) to a GCSE. Where level 1 and 2 qualifications have been sat with less guided learning hours than a GCSE, points are set on the same basis but then multiplied through by their size equivalence. For example, a qualification with one quarter of the guided learning hours of a GCSE would have points set as described above, then multiplied by 0.25.

Once all remaining level 1 and 2 qualifications have had points set on this basis, we use the fact that an AS level has points expressed under both systems, that is, relative to both a GCSE and an A level, to create a mapping.

Figure 11: Points awarded to each AS level grade, in key stage 4 reporting relative to a GCSE and key stage 5 reporting relative to an A level



Plotting a line of best fit on the chart above yields the equation y=2.74x-4.31. We make an assumption that this relationship can be extrapolated to the full range of level 1 and 2 point scores available, to map the remaining qualifications onto a point scale relative to a qualification with similar teaching hours to an A level.

Finally, we shift the value of all qualifications (not just level 1 and 2) up by 4.31 (meaning the intercept on the chart above becomes zero). This is for presentational purposes only, it serves to maintain the relative distance between qualifications and grades, but ensures all qualifications attract positive points. On this basis, a difference of 10 points, can be seen as equivalent to one A level grade.

Worked example

Consider a level 2 qualification with a pass/merit/distinction grade scheme and similar guided learning hours to a GCSE. The important consideration is not what the grades are called, but how many distinct pass grades there are.

In this case, as there are three distinct pass grades, we consult the table on page 38 of the Department for Education's guidance which gives the point score table below.[xxi]

Level 2 grade structure	Example grade	2016 points	2017 to 2020 points
4 grade scheme	A*	8.00	8.50
	A	7.00	7.00
	B	6.00	5.50
	C	5.00	4.00
3 grade scheme	Distinction	7.50	7.75
	Merit	6.50	6.25
	Pass	5.00	4.00
Pass only	Pass	6.00	5.50

In this case, the points expressed relative to a 9-1 GCSE (2017-2020 points) for the Pass/Merit/Distinction grades are 4.00, 6.25 and 7.75 respectively.

We then apply the mapping based on the line of best fit discussed above, that is y=2.74x-4.31, to map these points onto a scale relative to an A level.

This transformation gives 6.65, 12.815 and 16.925 for the three respective grades, which we then shift up by 4.31 to obtain 10.96, 17.125 and 21.235.

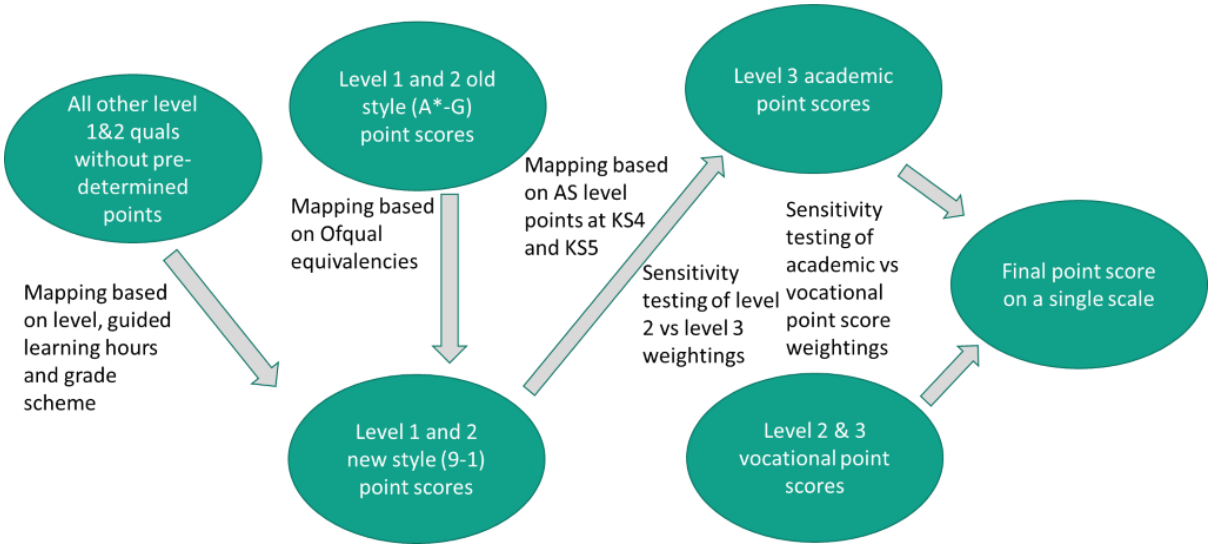
For reference, a D grade A level under this system would attract 24.31 points. This means that in this example, a distinction grade in a level 2 pass/merit/distinction qualification would be awarded points just below the equivalent of a D grade A level. This compares to a grade 9 GCSE which would be allocated 24.66 points, also roughly equivalent to a D grade A level.

Note that if this qualification only had half the guided learning hours of a GCSE, we would have multiplied the points relative to a GCSE by 0.5 prior to applying the mapping derived from an AS level.

Student's best three results are then calculated based on the size of their qualifications rather than the distinct number. Where qualifications of size equal to a GCSE are considered 0.25 the size of an A level. As an AS level is of size 0.5 relative to an A level, students could therefore have two A levels, an AS level and two GCSEs counting as their best three qualifications if these were all taken during 16-19 study.

Qualification discounting has been applied such that if students enter the same qualification (or a different qualification with substantial overlap in content) multiple times, only one result is eligible to count in their best three point score.

Figure 12: Flow chart showing the process to allocate points to all level 1-3 qualifications taken in the 16-19 phase



The flow diagram above depicts the full process for all level 1, 2 and 3 qualifications. It also indicates the points where sensitivity testing has been applied to test the robustness of assumptions.

Once a total point score has been calculated for each student based on their best three results, the average of this score is taken separately for non-disadvantaged and disadvantaged students. This difference between the mean point score for each group is then divided by 10 (the difference in points between each A level grade) to calculate the overall disadvantage gap, expressed as an average number of A level grades.

Annex D: 16-19 disadvantage gap, full local authority results

Local authority	2019		2020	
	Disadvantage gap in A level grades 2019	Disadvantaged students at the end of 16-19 study	Disadvantage gap in A level grades 2020	Disadvantaged students at the end of 16-19 study
Knowsley	5.4	141	5.8	85
Barnsley	4.3	652	5.2	644
Hartlepool	4.2	238	5.1	240
Stockton-on-Tees	4.7	291	4.9	464
Derby	4.3	880	4.8	813
North East Lincolnshire	3.9	633	4.8	679
Havering	3.1	728	4.8	332
North Somerset	4.8	459	4.8	410
Portsmouth	3.8	356	4.8	437
Torbay	4.4	357	4.7	417
Southend-on-Sea	4.0	785	4.6	1,252
Swindon	4.4	466	4.6	521
Warwickshire	3.9	1,065	4.6	1,173
South Tyneside	3.6	305	4.6	529
Rotherham	4.0	819	4.6	847
East Sussex	3.7	887	4.5	995
North Lincolnshire	3.6	555	4.5	802
Sheffield	3.6	1,267	4.3	1,416
Salford	3.6	629	4.3	742
Blackpool	3.7	663	4.3	753
Isle of Wight	4.0	240	4.2	280
Southampton	3.9	493	4.2	507
Newcastle upon Tyne	4.0	1,845	4.2	1,899
South Gloucestershire	4.1	556	4.2	584
Bracknell Forest	3.0	127	4.2	110
West Sussex	4.1	1,161	4.2	1,215
Oxfordshire	3.7	1,094	4.2	1,350
Trafford	3.1	424	4.1	656
Kingston upon Thames	3.4	808	4.1	925
Medway	3.9	712	4.1	786
Stoke-on-Trent	3.9	537	4.1	486
Somerset	3.7	822	4.1	766
Bedford	3.6	645	4.1	718
Halton	3.3	682	4.1	588

Local authority	2019		2020	
	Disadvantage gap in A level grades 2019	Disadvantaged students at the end of 16-19 study	Disadvantage gap in A level grades 2020	Disadvantaged students at the end of 16-19 study
Central Bedfordshire	3.7	308	4.0	347
Nottingham	3.8	1,282	4.0	1,220
Durham	3.7	1,139	4.0	1,221
York	3.7	547	4.0	568
Herefordshire	3.0	293	3.9	358
Lincolnshire	3.5	1,105	3.9	1,155
Cornwall	2.8	1,021	3.9	1,087
Peterborough	3.5	666	3.9	609
Cheshire East	3.6	741	3.9	879
Norfolk	3.9	1,497	3.9	1,603
Telford and Wrekin	3.8	399	3.9	380
Tameside	2.8	668	3.9	761
Wakefield	3.5	779	3.9	821
Gateshead	3.4	468	3.8	439
Kent	3.6	2,690	3.8	2,898
Staffordshire	3.5	1,428	3.8	1,384
Bath and North East Somerset	3.0	280	3.8	299
Worcestershire	4.0	636	3.8	698
Warrington	2.8	396	3.8	563
Dudley	3.3	1,203	3.7	1,485
Middlesbrough	3.7	830	3.7	759
Kingston upon Hull City of	3.5	863	3.7	955
Walsall	3.7	1,235	3.7	1,148
Sunderland	3.1	719	3.7	887
Suffolk	3.7	1,279	3.7	1,366
Windsor and Maidenhead	2.9	198	3.7	174
Hampshire	3.2	2,068	3.7	2,304
East Riding of Yorkshire	3.4	404	3.7	469
St. Helens	3.1	645	3.7	773
Cumbria	3.4	587	3.6	501
Milton Keynes	3.3	691	3.5	616
Sefton	3.6	712	3.5	669
Blackburn with Darwen	3.3	462	3.5	627
Dorset	3.5	440	3.5	380
Lancashire	2.7	1,943	3.5	2,018

Local authority	2019		2020	
	Disadvantage gap in A level grades 2019	Disadvantaged students at the end of 16-19 study	Disadvantage gap in A level grades 2020	Disadvantaged students at the end of 16-19 study
Essex	3.1	2,426	3.5	2,330
Bromley	3.4	1,021	3.4	1,001
Wiltshire	4.0	554	3.4	518
Leeds	3.4	2,040	3.4	2,123
Derbyshire	2.9	653	3.4	703
Solihull	2.9	1,225	3.3	1,162
Calderdale	2.8	463	3.3	446
Cambridgeshire	3.4	729	3.3	739
Kirklees	2.5	938	3.3	1,149
Northamptonshire	3.4	1,056	3.3	1,011
Coventry	3.3	832	3.3	823
Rochdale	3.2	738	3.3	682
Surrey	3.0	1,402	3.3	1,308
Wirral	2.7	948	3.3	836
Northumberland	3.4	377	3.2	361
Leicester	2.5	1,043	3.2	1,066
Bradford	3.1	1,364	3.2	1,473
Devon	2.9	932	3.2	940
Hammersmith and Fulham	3.2	685	3.2	679
Bournemouth, Christchurch and Poole	3.7	590	3.2	570
Hertfordshire	3.0	2,231	3.1	2,250
Plymouth	3.7	602	3.1	721
Bristol City of	3.4	772	3.1	806
Bolton	3.0	775	3.1	754
Oldham	2.0	798	3.1	958
Richmond upon Thames	3.1	318	3.0	337
Shropshire	2.8	362	3.0	286
Barking and Dagenham	3.3	927	3.0	807
West Berkshire	3.0	169	3.0	160
Wigan	2.9	707	2.9	663
Nottinghamshire	3.9	1,003	2.9	868
Bury	2.3	709	2.9	835
Sandwell	2.6	1,236	2.9	1,394
Camden	2.6	2,206	2.8	2,344
Gloucestershire	2.7	719	2.8	736

Local authority	2019		2020	
	Disadvantage gap in A level grades 2019	Disadvantaged students at the end of 16-19 study	Disadvantage gap in A level grades 2020	Disadvantaged students at the end of 16-19 study
Leicestershire	3.0	723	2.7	772
Slough	2.3	600	2.7	518
Doncaster	2.9	424	2.6	379
Birmingham	2.1	4,211	2.6	4,299
Hillingdon	2.7	1,186	2.6	1,100
Buckinghamshire	2.9	504	2.6	531
Darlington	2.7	389	2.5	358
Waltham Forest	2.0	1,462	2.5	1,398
Wolverhampton	2.5	693	2.4	665
Stockport	2.8	415	2.4	372
Liverpool	2.3	1,398	2.4	1,396
Greenwich	2.4	680	2.3	583
Manchester	2.0	2,060	2.3	2,366
Redcar and Cleveland	1.2	230	2.3	242
Thurrock	3.5	77	2.1	65
North Yorkshire	2.2	529	2.1	488
Croydon	1.8	945	2.0	1,031
Tower Hamlets	1.2	1,625	1.8	2,340
Lambeth	2.0	609	1.7	639
Westminster	1.1	1,192	1.6	1,353
Haringey	2.2	667	1.2	762
Lewisham	1.5	717	1.1	657
Kensington and Chelsea	1.0	494	0.9	490
Reading	1.0	96	0.8	62
Enfield	1.0	711	0.8	763
Hounslow	1.2	745	0.6	709
Newham	-0.2	1,622	0.5	1,707
Barnet	1.0	1,159	0.4	1,161
Harrow	0.1	617	0.4	639
North Tyneside	2.5	139	0.4	96
Wandsworth	1.2	836	0.4	678
Brighton and Hove	1.8	399	0.3	324
Wokingham	0.1	82	0.3	83
Cheshire West and Chester	2.9	276	-0.2	179
Luton	1.4	607	-0.2	577
Hackney	0.2	713	-0.7	721
Brent	0.4	449	-0.9	454

Local authority	2019		2020	
	Disadvantage gap in A level grades 2019	Disadvantaged students at the end of 16-19 study	Disadvantage gap in A level grades 2020	Disadvantaged students at the end of 16-19 study
Bexley	0.0	238	-0.9	263
Ealing	-0.5	568	-1.1	577
Redbridge	-0.5	725	-1.4	664
Merton	-0.2	160	-1.4	153
Islington	-0.1	293	-1.4	249
Southwark	-1.2	433	-1.4	477
Sutton	-0.2	297	-1.6	264

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