UNIVERSITY OF CAMBRIDGE
Academic Division
Cambridge Admissions Office

The evidence concerning justification of differential offers at the University of Cambridge

EXECUTIVE SUMMARY

Introduction

1. The Colleges of the University of Cambridge take several types of contextual information that can be indicative of disadvantage into account as part of their holistic assessment of applicants, but in contrast to many other highly selective Universities, they do not systematically reduce the standard offer level for admission of such applicants (also known as making *differential offers*, or as the practice of contextual admissions).

2. This research paper first considered the rationale behind Universities such as Cambridge considering making differential offers, then explored the pre-existing relevant evidence which could inform whether or not this is justified at Cambridge. Novel analysis was then conducted to expand the pre-existing evidence base.

Section 1: Rationale for considering differential offers

3. The stated principal admissions aim of the Colleges of the University of Cambridge is to "offer admission to students of the *highest intellectual potential*, irrespective of social, racial, religious and financial considerations".

4. The rationale for differential offers stems from the premise that this *potential* to succeed academically at Cambridge is randomly distributed across potential applicants from all backgrounds and with all non-academic characteristics.

5. If this is true, it would be expected that if the University were entirely successful in this admissions aim, the composition of admitted applicants would reflect the composition of the UK population in terms of backgrounds, characteristics, etc., but this is not presently the case.

6. This is likely due to a wide range of factors, but one reason might be that KS5 attainment – which is critical in the admissions process – can underestimate Cambridge undergraduate degree potential for some disadvantaged groups. Intuitively it seems very plausible that, given the exact same potential to succeed academically at Cambridge, differences in support or resources or schooling, etc., could result in an A Level grade profile varying by one or two A* grades, or indeed by much more than that.

7. If KS5 attainment does underestimate potential at Cambridge for individuals from certain disadvantaged groups, then they might outperform their more advantaged peers with the same KS5 attainment once admitted, which could justify introducing reduced offer levels for them i.e. differential offers.

Section 2: Review of pre-existing relevant research

8. A search was undertaken for pre-existing research pertaining to the question of whether or not KS5 examination performance appears to underestimate actual degree attainment for certain disadvantaged groups. Relevant research would be in the form of a comparison of undergraduate degree attainment outcomes for a group of disadvantaged UK-domiciled students

against a UK-domiciled group without the disadvantage(s) in question, with prior KS5 attainment taken into account in some way.

9. The search was not limited to studies of degree attainment at the University of Cambridge, but parameters were set to ensure that any research considered would likely be informative in the Cambridge context. These included that the KS5 attainment accounted for should include A Level grade profiles up to at least A*A*A*, with each of the highest grade profiles distinct from the others (e.g. a distinction made between A*A*A and A*A*A*).

10. Only five relevant items of analysis or research were found, four of which originated from the University of Cambridge (two the Cambridge Admissions Office, one Academic and Financial Planning and Analysis, one Cambridge University Press and Assessment). The fifth was from the Office for Students.

11. The five items found were broadly of two methodological types, both of which had merit, but all five items had limitations from the present perspective of interest. This provided the impetus for conducting the further analyses which are detailed in the rest of this paper, using both methodological approaches (in turn), but in a manner more suited to addressing the present question of interest.

Section 3: Comparing mean Cambridge examination performance for groups with different characteristics and matched A Level attainment

12. Cambridge examination percentage means from 2013-19 were compared for groups of UK-domiciled students with different levels of matched A Level attainment (AAA-4A*, as far as group sizes permitted), but differing in respect of a characteristic of interest. This analysis was repeated separately for each course year (first, second or third) and course type (typical A Level entry requirement of A*AA or A*A*A, not including Mathematics due to STEP). (The characteristics considered were school type, flag for schools with few recent Oxford/Cambridge offers, Participation of Local Areas (POLAR4) quintile, regional Indices of Multiple Deprivation (IMD) quintile, ethnicity, declared disability, interaction of POLAR4 and IMD, interaction of school type and POLAR4, and interaction of school type and IMD.)

13. The findings did not show consistent relative overperformance in Cambridge examinations by any disadvantaged groups with matched A Level attainment, and therefore did not provide support for the idea that the potential of the disadvantaged groups was underestimated by their A Level attainment, or for differential offers. Relative overperformance was only found in isolated cases, and never in the third course year (by more than 1%). It was also never to the extent that disadvantaged entrants attained as well on average in Cambridge examinations as more advantaged counterparts with a whole A Level grade higher (which would be needed to straightforwardly justify differential offers a grade lower).

14. In fact, several disadvantaged groups quite consistently underperformed compared to more advantaged peers with matched A Level attainment, including those in low IMD quintiles, of any ethnicity other than White, and those with a declared disability. This means that not only did their A Level attainment not appear to underestimate their potential such that their performance in Cambridge examinations was higher than indicated, but the potential indicated by their A Levels did not fully translate through to actual performance in examinations. It also did not generally

appear to be the case that these disadvantaged students underperformed at the beginning of their degree but then "caught up" in later course years.

Section 4: Multiple linear regression analyses to identify non-academic characteristics which are predictive of Cambridge examination performance when A Level attainment and other characteristics are taken into account

15. Multiple linear regression models were fitted to predict Cambridge examination performance percentage from A Level A* count and several non-academic characteristics that could indicate disadvantage. The characteristics were as in Section 3, with the additions of care experience, gender and age. Models were fitted separately for each course year (first, second, or third) and course type (typical A Level entry requirement of A*AA or A*A*A, not including Mathematics due to STEP), and also for three of the largest individual courses as examples (Natural Sciences, History, Law). This type of analysis reveals the apparent effect of each non-academic characteristic on examination performance when A* count and all of the other non-academic variables in each model are controlled for.

16. The findings did not provide support for the idea that the potential of students with characteristics associated with disadvantage was underestimated by their A Level attainment, or for differential offers. None of the non-academic characteristics associated with disadvantage had any significant positive effects on examination performance (which would be expected if performance was underestimated by A Levels), but nearly all of them were at least sometimes found to have statistically significant (albeit usually quite small) negative effects, and otherwise had non-significant effects.

17. The negative effects were seen for students from maintained schools or ones with few recent Oxford/Cambridge offers, from low IMD quintile areas, ethnicities other than White, declared disability, mature, female, and care experienced students. This suggests that each type of disadvantage may, at least in some circumstances, individually contribute to a constraining impact on the translation of a student's potential into their actual Cambridge examination performance.

Concluding remarks

18. The findings did not provide support for introducing differential offers for any of the disadvantaged groups considered.

19. Given that the present analyses took prior A Level attainment into account, the examples of underperformance in Section 3 for many disadvantaged groups, and the finding in Section 4 that many characteristics associated with disadvantage appear sometimes to contribute negatively to the prediction of examination performance, are most likely due to ongoing impacts of a student's disadvantaged circumstances during their degree, rather than to their having lower potential to succeed academically at Cambridge.

20. The collegiate University is increasingly engaged in providing support and interventions to support disadvantaged students at Cambridge, and it is hopeful that this will reduce the ongoing impacts of disadvantage that might currently be preventing some students from realising their potential at Cambridge.

UNIVERSITY OF CAMBRIDGE
Academic Division
Cambridge Admissions Office

The evidence concerning justification of differential offers at the University of Cambridge

Introduction

The Colleges of the University of Cambridge take several types of contextual information that can be indicative of disadvantage into account as part of their holistic assessment of applicants[1], but in contrast to many other highly selective Universities[2], they do not systematically reduce the standard offer level for admission of such applicants (also known as making *differential offers*, or as the practice of contextual admissions). This paper will first consider the rationale behind Universities such as Cambridge considering making differential offers, then explore the pre-existing relevant evidence which could inform whether or not this is justified at Cambridge. This paper then proceeds to present additional analysis that has been conducted to expand the pre-existing evidence base.

Section 1: Rationale for considering differential offers

The stated principal admissions aim of the Colleges of the University of Cambridge is to "offer admission to students of the *highest intellectual potential*, irrespective of social, racial, religious and financial considerations"[3]. The rationale for differential offers stems from the premise that this *potential* to succeed academically at Cambridge (or indeed at other Universities) is randomly distributed across potential applicants from all backgrounds and with all non-academic characteristics, at least to the extent that it cannot be permanently reduced by prior life experiences and circumstances. If this is true, it would be expected that if the University were entirely successful in this admissions aim, the composition of admitted applicants would reflect the composition of the UK population in terms of backgrounds, characteristics, etc., but this is not presently the case (see, for example, the collegiate Universities' current Access and Participation Plan[4]). This is likely due to a wide range of contributing factors, but given the critical role of KS5 examination performance in the admissions process, if KS5 performance were to under- or over-estimate the potential to succeed academically at Cambridge for groups with certain characteristics, this could be a very important factor which would hinder the University's ambition to admit those with the highest potential.

The idea that KS5 attainment could under- or over-estimate the potential to succeed academically at Cambridge for groups with certain characteristics or from certain backgrounds is consistent with the widely known fact that A Level attainment is unequally distributed by various characteristics that can be indicative of relative disadvantage. For example, research recently conducted by Dr Rachel Sequeira[5] showed that the A Level attainment of the highest performing UK-domiciled HE entrants varies by characteristics including school type, POLAR4 quintile, IMD quintile, ethnicity, and intersections of these, with lower attainment seen for disadvantaged groups relative to more advantaged ones. Moreover, the idea that KS5 attainment could under- or over-estimate the potential

[1] https://www.undergraduate.study.cam.ac.uk/applying/contextual-data
[2] See Table 3 in V. Boliver, C. Crawford, M. Powell & W. Craige (October 2017) *Admissions in context: The use of contextual information by leading universities* [Link]
[3] https://www.undergraduate.study.cam.ac.uk/applying/decisions/admissions-policy
[4] https://www.undergraduate.study.cam.ac.uk/files/publications/university_of_cambridge_app_2020_25.pdf
[5] R. Sequeira (January 2022) *The A Level grade profiles attained by the highest performing UK-domiciled students in Higher Education (based on HESA data) and how this varies for students from different groups*. University of Cambridge, unpublished.

to succeed academically at Cambridge makes intuitive sense. Consider the differential extent of challenge faced by a student taking A Levels with limited IT resources, limited access to quiet study space, and limited study time due to working part time jobs or supporting dependents, compared to a much more advantaged counterpart. There can also be large differences in education opportunities depending on the school or college a student attends, and additionally individuals may also experience personal educational disruption of various kinds, for example due to ill health or disabilities. It is not hard to imagine that, given the exact same potential to succeed academically at Cambridge, these differences could result in an A Level grade profile varying by one or two A* grades, or indeed by much more than that. Finally, it should be noted that this is far from being a novel concept; the 2004 Schwartz report[6] stated – in a section entitled "What is a fair admissions system?" – that although "*prior educational attainment data remains the best single indicator of success at undergraduate level*...", "…*the Group has considered suggestions that equal examination grades do not necessarily represent equal potential*". The report went on to state "*identifying latent talent and potential, which may not fully be demonstrated by examination results, is a legitimate aim for universities and colleges which seek to recruit the best possible students regardless of background."* The sector regulator, the Office for Students, more recently expressed a similar view[7]: "*Achieving equality of opportunity in relation to higher education access will require a new approach to determining merit and fairness in admissions. Given the educational inequalities evident from primary school onwards, finding ways of judging students' achievement and potential that go beyond public exam results will be central to this*."

If there are indeed groups whose potential to succeed academically at Cambridge is underestimated by their KS5 attainment, then it could be the case that individuals from these groups outperform their more advantaged peers at University when admitted with equivalent KS5 examination attainment, or perform similarly when admitted with lower KS5 attainment, in which case it should be possible to evidence this analytically – and indeed this is the primary focus of the present paper. If such evidence is found, then it could provide a straightforward attainment-based justification for making lower differential offers for individuals from the groups in question.

It is worth noting at this point, however, that even if it is perfectly true that there are groups whose potential to succeed academically at Cambridge is underestimated by their KS5 attainment, it would not necessarily be the case that they actually do outperform their more advantaged peers at Cambridge when admitted with equivalent KS5 examination attainment, or perform similarly when admitted with lower KS5 attainment. This is because the characteristics or backgrounds of relatively disadvantaged groups could continue to have impacts beyond their KS5 examinations, which would interfere with the translation of their greater potential into actual greater degree attainment. One example is if a preparation gap exists – meaning that no matter how great a person's potential is, their academic skills and sheer knowledge may not be at a sufficient level to facilitate successful transition into an undergraduate degree course at the immediate time, particularly at a very academically intense institution such as Cambridge. However, such individuals are unlikely to be offered admission, so this will not apply to many Cambridge entrants. An example which is of relevance to Cambridge entrants is the ongoing impacts of disadvantaged circumstances during a degree which could constrain a student's performance – such as the impacts of disabilities, or challenging family circumstances during University vacations (which are approximately half of the

[6] S. Shwartz (September 2004) *Fair admissions to higher education: recommendations for good practice.* [Link]
[7] Office for Students (May 2019) Insight Brief No. 3, *Contextual admissions: Promoting fairness and rethinking merit.* [Link]

year for Cambridge students), or being of an ethnic group for which teaching, learning and assessment practices may be unfavourable, or needing to undertake paid employment during term time and/or vacations whilst many other Cambridge peers do not.

Section 2: Review of pre-existing relevant research

2.1. Introduction

This section will explore pre-existing relevant research pertaining to the question of whether or not KS5 examination performance appears to underestimate actual degree attainment for certain disadvantaged groups, either at the University of Cambridge specifically, or in similar enough contexts elsewhere that it seems plausible that the same might apply in the Cambridge context. This foundation will identify where there are gaps in the pre-existing research, and thus provide focus for the new analysis that will be conducted and presented in the rest of the paper.

2.2. Methodology

Relevant research would generally be in the form of a comparison of undergraduate degree attainment outcomes for a group of disadvantaged students against a group without the disadvantage(s) in question, with prior KS5 attainment taken into account (either by comparing equivalently qualified students to each other, or by statistically taking this into account by including it as a factor in a regression analysis). However, to ensure that research is only included in this review if is likely to be informative with respect to the University of Cambridge context, the decision was made to set some restrictions on which students are included in the research, and on the format of KS5 attainment taken into account in the research. The restrictions are as follows, and the reason for each is given in italics:

Restrictions on which students are included - *these were occasionally compromised upon, and this has been noted where relevant*

- UK-domiciled students *These students are the usual focus of Access and Participation activity for English Universities. This criterion also reduces the heterogeneity of the population included in analyses, and reducing variability in this way is helpful for detecting effects of interest.*
- Students at UK HE institutions, which must include England (so, for example, research about students at only Scottish Universities would not be included, but research including students at English and Scottish Universities would be) *This is the context in which the University of Cambridge operates. Furthermore, this is consistent with focussing on A Levels (see below)*
- Including full-time students (but not excluding part-time) *Ideally only students undertaking full-time degrees would be included as this is the nature of the provision at Cambridge.*

Restrictions on the format of KS5 attainment taken into account

- KS5 attainment should include A Levels *A Levels are by far the most common qualification held by UK-domiciled applicants to Cambridge, so this is the qualification of primary interest.*
- A Level attainment should be included at the highest levels of attainment (up to a minimum of A*A*A*), and for this reason A*s should have been available in all years of data used *For any research to be informative for the Cambridge context, any findings must apply to students with very highest levels of KS5 attainment.*

- A Level attainment should be differentiated at the highest levels of attainment (for example, AAA, A*AA, A*A*A and A*A*A* should all be distinct and not grouped into AAA+) *This is because most Cambridge applicants are in the AAA+ range, so it is important to maximise the sensitivity and discriminability within this.*

A proportionate search for relevant literature within these restrictions was undertaken by initially searching for terms such as "contextual admissions" in Google Scholar. Papers and other sources identified in this way were read, and the references within them were also investigated to identify additional papers of interest. Internal unpublished Cambridge research that the author is aware of was also considered. This proportionate search for relevant evidence was not necessarily exhaustive.

2.3. Findings

Within these parameters, there is a striking paucity of evidence, with only five items of analysis or research identified, only two of which are not specific to the University of Cambridge. These are discussed here in turn, beginning with the pieces which are not specific to Cambridge.

OfS (2019)[8]

The analysis with the widest coverage of Universities was published by the OfS in 2019, and summarised internally for several committees of the University of Cambridge by Dr Alexa Horner later the same year[9]. This analysis of the national 2016-17 graduating population falls within the majority of the restrictions above, with the population included being UK-domiciled graduates with a classified first undergraduate degree from a HEFCE-funded higher education institution, and KS5 examination performance in the form of A Levels with differentiated categories including A*AA, A*A*A and A*A*A*. However, part-time students were also included. It should also be noted that the analysis was apparently restricted to non-mature entrants (although presumably not for the comparison of mature and non-mature entrants).

The analysis simply reported the proportion of entrants from each A Level attainment band and with each of several characteristics (separately there were splits by age, ethnicity, POLAR3 quintiles, and disability groups) that attained either a 1st or at least a 2.1 for their final degree outcome. Several examples of higher degree attainment for disadvantaged groups with matched A Level attainment were found (specifically for mature students compared to young, and POLAR3 Q1-3 students compared to Q5). However, there were also instances of lower degree attainment for some under-represented or disadvantaged groups (specifically for Asian, Black and Mixed/Other ethnicity groups compared to White, and students that declared a disability compared to those that did not).

Limitations of this analysis from the present perspective of interest include the inclusion of part-time students; course of study not being taken into account (which could affect both entry requirements and degree outcome); and that no interactions of characteristics were considered, but different indicators of disadvantage are known to have compounding impacts. The fact that such a wide range of HE institutions are included in this national analysis is also problematic because 2.1 and 1st class degrees are not necessarily equivalent at all institutions. Finally, the outcome measures used (1st or not and at least 2.1 or not) will both group together quite a wide range of actual performances in

[8] Office for Students (March 2019) *Differences in student outcomes* [Link]
[9] A. Horner (October 2019) *National degree outcome data (2016-17).* University of Cambridge, unpublished.

terms of the percentage attained in examinations, so will not be very discriminative or sensitive measures of degree performance.

Vidal Rodeiro and Zanini (2015)[10]

Vidal Rodeiro and Zanini conducted an analysis of 2012-13 final year graduates from Russell Group institutions, which falls within all of the restrictions listed previously. Some additional restrictions to note for this particular study are that students with degrees longer than 3 years[11] were not included, and nor were students that had a mixed KS5 profile including qualifications other than A Levels.

The authors conducted a series of multilevel[12] logistic regression analyses, which sought to fit regression models predicting the binary outcomes of either a 1st (or not) or at least a 2.1 (or not) as their final degree outcome from potential explanatory variables including A Level attainment (in the form of the number of A* grades and the average A Level grade) and several characteristics which can be associated with disadvantage (gender, IDACI, and school type). A Level subject specialism and University subject area were also taken into account as potential explanatory variables. Students from all school types other than Independent (namely, Comprehensive, Sixth Form College, Selective, FE college and Other) appeared to outperform their Independent school counterparts in terms of both outcome measures (1st and at least a 2.1) when the effects of A Level attainment and other factors were controlled for in these models[13]. However, students from more deprived IDACI areas underperformed compared to counterparts from more advantaged areas when other factors were controlled for.

In terms of limitations from the present perspective of interest (other than the idea that 1st and 2.1 degrees may not necessarily be equivalent at all Russell Group institutions), the characteristics of disadvantage considered were both rather limited and not considered in interaction with each other, and the same degree outcome measures were used as in the OfS analysis (which are not very discriminative or sensitive).

Chetwynd (2011)[14]

Moving on now to Cambridge-specific research (in chronological order), Dr Peter Chetwynd conducted an initial analysis of first year Tripos[15] outcomes for 2010-11 entrants to the University of Cambridge. This analysis falls within most of the restrictions listed above, although it may have included non-UK-domiciled students (but only those with at least 3 A Levels). Other restrictions to note are that, because the outcome looked at was performance in first year Cambridge Tripos examinations, students taking courses which did not have these were excluded from the analysis (i.e. Anglo-Saxon, Norse and Celtic; English; History; and Modern and Medieval Languages).

Chetwynd divided students into 15 groups (comprising 5 A Level profiles [AAA/A*AA, A*A*A, 3A*, 4A*, 5A*+] split by 3 school sectors [maintained, independent, other and overseas]) and compared

[10] C. Vidal Rodeiro & N. Zanini (October 2015) *The role of the A* grade at A level as a predictor of university performance in the United Kingdom* [Link]
[11] So excluding 4 year degrees at Scottish Universities, as well as Medicine, Veterinary Medicine, Dentistry, and some Languages and Engineering degrees
[12] Students were nested within both their A Level school and their University in a cross-classified structure.
[13] This was not directly considered by Vidal Rodeiro and Zanini (because it was not the main focus on their research), and has instead been inferred by the author of the current paper from the results that Vidal Rodeiro and Zanini presented (where Comprehensive was the actual reference group that each other school type was compared to).
[14] P. Chetwynd (December 2011) *A* at A Level as a Predictor of Tripos Performance: An initial analysis* [Link]
[15] In this context, Tripos refers to Cambridge examinations.

the outcomes (mean standardised first year Tripos score) for them by conducting two-way independent ANOVAs. This analysis tested whether or not the outcome was significantly associated with either A Level profile, school sector, and/or an interaction between these factors. This analysis was conducted for all students together, and separately for three types of course: Arts, Science and Technology and Social Sciences. Although Chetwynd found no overall significant effects of school type or the interaction term on first year Tripos performance, data presented in the Appendix show that maintained sector students usually had numerically higher Tripos scores than independent sector students with the same number of A*s (the only exceptions being Social Sciences students with 0/1 A*s and students with 4A*s taking courses other than Science and Technology). This was to the extent that, for Science and Technology, maintained sector students with 4A*s outperformed independent school students with 5A*s, and for Social Sciences, that maintained sector students with 2A*s marginally outperformed independent school students with 3A*s.

Limitations of this analysis from the present perspective of interest include the fact that the outcome considered was only first year degree performance and no later years which are arguably of more importance when determining ultimate potential to succeed academically at Cambridge; that only one year of data was used and the number of students was relatively small overall and very small for some groups (which will limit both reliability and power to detect statistical effects); and that the only type of disadvantage considered was maintained sector schooling, with no interaction with any other characteristics.

Sumnall (2015)[16]

Extending Chetwynd's work, Dr Catherine Sumnall conducted an analysis of first year Tripos outcomes for 2010-2013 entrants to the University of Cambridge, which falls within all of the restrictions listed above. Other restrictions to note are that, because the outcome looked at was performance in first year Cambridge Tripos examinations, students taking courses which did not have these were again excluded from the analysis. Students from schools not classified as either maintained or independent were also excluded.

Sumnall divided students into 8 groups (comprising 4 A Level profiles [A*AA, A*A*A, 3A*, 4A*+] split by 2 school sectors [maintained, independent]) and compared the outcomes (this time mean first year Tripos percentage) for them by again conducting ANOVAs. This analysis was not conducted for all students together, but just separately for the three types of course: Arts, Sciences and Social Sciences. Similar to Chetwynd, Sumnall found no overall significant effects of school type or the interaction term on first year Tripos performance, for any group of courses. In contrast to Chetwynd, Sumnall's findings show that mean Tripos percentage tended to be very similar for maintained and independent school pupils (within the same course and A Level grade group).

Although the number of students included in this analysis was much improved compared to Chetwynd's, the other limitations from the present perspective of interest still apply.

Samoylova and Hall (2020)[17]

Finally, Samoylova and Hall conducted an analysis of 2011-12 to 2018-19 examination data for students at the University of Cambridge. This research falls within most of the restrictions noted

[16] C. Sumnall (July 2015) *ANOVA on A*s at A-level and Tripos performance* [Link]
[17] E. Samoylova & L. Hall (April 2020) *Analysis of student characteristics and attainment outcomes at the University of Cambridge* [Link]

previously, although non-UK-domiciled students were included. It should also be noted that students with all KS5 and equivalent qualifications awarded UCAS tariff points were included in this analysis, which is in contrast to the four studies above which considered A Levels only.

The authors conducted a series of multiple regression analyses, which sought to fit either logistic regression models predicting the binary outcomes of either a 1st (or not) or at least a 2.1 (or not) as the final degree outcome, or linear regression models predicting the final degree percentage, from potential explanatory variables including KS5 attainment (in the form of UCAS tariff points, number of A Levels and an A Level score which differentiated A*s from As) and several characteristics associated with disadvantage (age, gender, ethnicity, disability and school type, POLAR4 quintile and IMD quintile). Tripos course, month of birth and first year degree outcome were also taken into account as potential explanatory variables. These multiple regression analyses can identify the specific effect of each factor when the others are controlled for (held constant). The analysis found no cases, with any of the three types of outcome, of characteristics indicating disadvantage being associated with higher final degree outcomes, but instead found several instances of associations with lower outcomes.

Considering limitations of this study from the present perspective of interest, the inclusion of students from a variety of non-UK-domiciles and of students that took a variety of KS5 qualifications other than A Levels will increase the heterogeneity of the population and the uncontrolled variance in the models, which complicates interpretation of the findings. Moreover, this would mean the composition of the ethnicity groups would be different to the UK-domiciled ethnicity groups which are usually considered for Access and Widening Participation purposes. Also problematic is the inclusion of first year examination results as a potential explanatory factor in the analyses, because "*it was deemed important to include the year of course as a contributing factor*". Unsurprisingly, this was the strongest predictor of final year performance, but including this in the models means that, for example, if characteristic *x* is associated with lower performance in both the first and final years, the apparent impact of *x* on final year performance from this analysis will only be the impact over and above its impact on first year performance (because multiple regression analyses show the effects of each factor [like characteristic *x*] with all other factors [like first year performance] included in the model held constant, or in other words controlled for). For all of these reasons, whilst this study technically falls within the restrictions listed previously for inclusion in this summary of relevant prior research, the findings from this study are very difficult to interpret from the present perspective of interest, and they are not included in the overview in the Conclusions section that follows.

2.4. Conclusions

In terms of general methodological approach, the above five analyses can broadly be divided into two types: those which split students into groups defined by A Level attainment band and a characteristic associated with disadvantage (or the absence of such) and compare the degree outcomes for the groups either just numerically (OfS (2019)) or utilisting tests for statistical significance (Chetwynd (2011) and Sumnall (2015)), and those which fit multiple regression models predicting degree outcome from potential explanatory variables including A Level attainment measures and multiple characteristics associated with disadvantage (Vidal Rodeiro and Zanini (2015) and Samoylova and Hall (2020)). These multiple regression models can show the specific effect of each significant explanatory variable when all the others are held constant, or in others words, are controlled for. This is in contrast to the first type of approach, where characteristics relating to disadvantage are considered simply without the impacts of any other characteristics

controlled for. In the author's opinion, both approaches have merit from the present perspective of interest. If a simple characteristic *x* which is indicative of disadvantage were found to be strongly associated with higher degree attainment (given equivalent A Level attainment), that would be very useful information for admissions assessors, and could be operationally useful to identify candidates suitable for reduced differential offers. However, because the impacts of other characteristics were not controlled for, it is very possible that the apparent impact of *x* is actually mediated by *y* and *z*, and that if *y* and *z* were controlled for the apparent impact of *x* would at least be reduced. Alternatively, the actual impact of *x* could be masked by its associations with *y* and *z*, if they are have an opposing relationship with degree attainment. So more complex regression analyses that reveal the impact of one variable with the effects of others controlled for are more useful for interrogating root underlying factors (although causation between these and the outcome variable still cannot be inferred; for example, apparent impacts of *y* and *z* could themselves be mediated by the unconsidered variable *w*). Because there is merit to both methodological approaches, both will be utilised in the analysis presented subsequently in this paper.

In terms of evidence for or against the idea that KS5 (particularly A Level) examination performance underestimates actual degree attainment for certain disadvantaged groups, either at Cambridge or in at least a similar context elsewhere, the studies reviewed above had mixed findings. With regard to students from maintained sector schools, Vidal Rodeiro's study showed that they outperform equivalently qualified independent school peers, and this was also consistent with Chetwynd's numerical findings for first year degree performance. However, using more years of data than Chetwynd, Sumnall found similar first year Tripos performances for students from maintained and independent schools with equivalent A Level attainment. This is consistent with a review by Boliver and colleagues[18], referencing several studies which did not fall within the restrictions of the review conducted here: "*Students educated in state schools have been found to perform better at degree level than privately schooled students with the same level of prior attainment at Bristol University, at Oxford University, at Russell Group universities, at UK medical schools and nationally, though anomalously not at Cambridge University*". The review went on to state "*However, it is important to note that studies which measure comparative disadvantage at the area level or individual level rather than the school level tend to find that disadvantaged students are less likely to succeed at degree level than their comparably qualified but more advantaged peers*." Consistent with this, Vidal Rodeiro and Zanini found students from more deprived IDACI areas underperformed compared to counterparts from more advantaged areas when other factors were controlled for, and the OfS data showed that Asian, Black and Mixed/Other ethnicity students underperformed compared to White students with matched A Level attainment, and students that declared a disability underperformed compared to those that didn't. However, in some cases the OfS data did find overperformance for mature students compared to young students with matched A Level attainment, and for POLAR3 Q1-3 students compared to Q5.

Some of these conflicting findings could be related to the limitations of the various studies that have been noted throughout this section, or at least the methodological differences between them (such as the division in main methodological approach which has been noted). A few methodological points that feel important to note and take forward into the novel analyses in the next sections are:

- Studies involving more than one institution can be problematic to interpret, which will be resolved by conducting an analysis with Cambridge data only.

[18] V. Boliver, P. Banerjee, S. Gorard & M. Powell (September 2021) *Reconceptualising fair access to highly academically selective universities*. Page 10. [Link]

- Small group sizes are often problematic, so as many years of data as possible should be used.
- As explained above, both broad types of methodological approach should be utilised.
- Characteristics of interest should include school type and geodemographic measures and individual characteristics. Where possible interactions between these should be considered too.
- Course of study or the typical offer level of courses (i.e. A*AA vs A*A*A) should be taken into account.
- Final year degree outcomes should be considered as well as first year ones.
- Degree outcomes considered should include percentages attained, not (just) classifications.

Section 3: Comparing mean Cambridge examination performance for groups with different characteristics and matched A Level attainment

3.1. Introduction

The preceding review of pre-existing relevant analysis noted that two broad methodologies have been used, one of which is splitting students into groups defined by A Level attainment band and a characteristic associated with disadvantage (or the absence of such), and comparing the degree outcomes for the groups either just numerically or utilisting tests for statistical significance. However, previous work has had limitations from the present perspective of interest, as discussed in the previous section: the OfS (2019) study looked at a wide range of HE institutions not just Cambridge, and whilst the Chetwynd (2011) and Sumnall (2015) studies were Cambridge-specific, they only considered first year Tripos[19] performance as an outcome, and only looked at school type as a characteristic. There is therefore a gap for a Cambridge-specific analysis of this nature to be conducted, considering all course years of examination performance, for more characteristics of interest, which will also be able to use more data and more recent data.

3.2. Methodology

Population

The population included were:

- UK-domiciled (also known as 'Home') undergraduate entrants to the University of Cambridge in years 2012-2018 inclusive;
- for all courses except the Cambridge Graduate Course in Medicine and Mathematics[20];
- A Level-takers only, defined as applicants with at least 3 A Levels (not including General Studies or Critical Thinking) and without any other of the main standard UK qualifications (Advanced Highers, International Baccalaureate, or Pre-U);
- with one of the following best 3 (or 4) A Level grade profiles: AAA, A*AA, A*A*A, 3A* or 4A*+[21] (not including General Studies or Critical Thinking).

[19] In this context, Tripos refers to Cambridge examinations.
[20] Mathematics was not included due to the critical importance of STEP results in admissions decisions which could not practically be accounted for. The CGCM was not included because it is an unusual undergraduate course that is only open those with a first degree, for whom KS5 is no longer their most recent academic qualification.
[21] This restriction was made to ensure comparability within the A Level grade profile bands included, and a reasonable number of students in each. As a result, a total of 281 entrants out of 14801 were excluded from this analysis: 94 with A*A*B and 159 with A*AB (for A*AA courses) and small numbers with other profiles (e.g. **C, *AC, *BB).

Figure A shows the number of entrants per year meeting these criteria.

Figure A
The number of entrants per entry year.

Entry year							
2012	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2012-18*
2039	2165	2172	2143	2070	1978	1953	14520

Examination percentage results for these entrants were obtained from an internal University database, and were limited by the completeness of that database[22]. Examination results in the form of percentages were included in the analysis according to the following rules:

- included if a classification category was filled in (but excluding the categories of Deserved Honours and Allowed the Examination[23]);
- included both Tripos and preliminary[24] examinations;
- included examinations for course years 1-4 in 2013-19;
- only included results for students whose first year examination was within three academic years of matriculating, and only included results obtained within the first five academic years of matriculating;
- the first classed result for each course year was used (e.g., if an individual took a year 2 Natural Sciences course and then a year 2 Psychological and Behavioural Sciences course after a course change, the result for the first of these was used);
- results in later course years following a gap in studies, course change, etc. were included if they were within the other rules listed here.

The population was divided into two groups for all analyses: entrants to courses with a typical A Level offer level of A*AA, or of A*A*A[25]. This division was chosen instead of the Arts, Sciences and Social Sciences split used by Chetwynd and Sumnall because those groupings would have mixed typical offer levels within them now (most Sciences have A*A*A as the typical offer level, but Veterinary Medicine and Psychological and Behavioural Sciences do not, and most Social Sciences have A*AA but Economics does not), which would not be ideal for the present purpose of comparing outcomes for entrants within the same A Level attainment band.

Figure B shows the number of examination percentage results that were available and included in analyses, for each entry year and type of course.

[22] There were some instances of results being missing from this database, both for individuals and for whole year groups and whole subject areas.
[23] The included categories were as follows: classes I, II, II.1, II.2, III, Pass, and Failed (Not classed, No allows, Failed). Deserved Honours and Allowed the Examination were excluded as they can occur for a variety of reasons which may not relate to ability.
[24] Some courses have these instead of Tripos examinations at the end of the first or second course year. https://www.lib.cam.ac.uk/university-archives/glossary/preliminary-examination
[25] This was based on course of entry, which in a small number of cases will not have had the same typical A Level offer level as the course that examinations were ultimately taken in each year (but if differential offers were made they would be based upon the course of entry). It is also based on standard offer levels at the time of writing in 2022, not necessary what they were at the time.

Figure B

*The number of entrants per year with a first, second, third and/or fourth year examination percentage result included in analysis, shown separately for those that entered courses with a standard A Level offer of A*AA and A*A*A.*

	Entry year							
	2012	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2012-18*
First year (A*A*A)	949	957	989	985	961	907	900	6648
First year (A*AA)	768	801	507	777	788	653	746	5040
Second year (A*A*A)	930	937	970	973	936	865	0	5611
Second year (A*AA)	837	822	927	941	973	992	0	5492
Third year (A*A*A)	895	915	942	911	892	0	0	4555
Third year (A*AA)	821	930	949	840	730	0	0	4270
Fourth year (A*A*A)	308	385	405	407	0	0	0	1505
Fourth year (A*AA)	17	24	29	25	0	0	0	95

The decision to aggregate data from all years together for analysis was taken having checked the extent of variability across entry years for each of the course years 1-3, looking at each of the 2 standard A Level offer groups separately. The mean percentages for the A*AA course groups across 2012-18 had a range of less than 1% for all three course years, although the ranges for A*A*A courses were higher – up to 2%. Although this is not ideal, it could partly be due to actual differences in average cohort ability, and it was felt aggregation was necessary to ensure groups of robust sizes for analysis.

Characteristics examined

A number of characteristics and some combinations of characteristics[26] were examined:

- School type (both maintained vs independent, and comprehensive vs grammar vs independent vs sixth form[27])
- Flag for schools with few recent Oxford/Cambridge offers[28]
- Participation of Local Areas (POLAR4)[29] quintile
- Regional Indices of Multiple Deprivation (IMD)[30] quintile
- Ethnicity
- Declared disability
- Interaction of POLAR4 and IMD
- Interaction of school type and POLAR4
- Interaction of school type and IMD

[26] These were limited by the need to ensure reasonable group sizes.
[27] These categories are derived from UCAS data and known not to be entirely reliable.
[28] Applicants from post-16 schools/colleges where fewer than five students have been made an offer by Oxford or Cambridge Universities over the past five years receive this flag. Please see our contextual data webpage for further information.
[29] Office for Students - Young participation by area
[30] Comprising the IMDs for England, Northern Ireland, Scotland and Wales.

Individuals with missing data, or that did not fall into any category under consideration (e.g. from a school in the "Other and Overseas" category), were excluded from the analysis of the characteristic in question.

Analysis conducted

The analysis conducted was simply to group students and their examination results by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), their group within a characteristic of interest (e.g. Q1 or Q5 within POLAR4 quintile), and attainment in best 3 or 4 A Levels.

The number of students in each group was counted, and their mean examination percentage calculated. These data were presented in tables (only for groups with at least 10 individuals), and the percentages also plotted in graphs in most cases (although not for school type with a split between different maintained sector schools, where the graphs would have been too crowded to be useful). Percentages based on fewer than 30 individuals were shaded in grey in tables and not plotted on graphs as they are considered unreliable (though it is worth noting that percentages based on 30 or more individuals should not necessarily be considered entirely reliable – the fewer individuals a mean is based upon, the greater the influence of each individual's performance, so the more volatile and less reliable the group's mean). For ease of visual reference, the data for the least disadvantaged group in each case (e.g., among school types, those from independent schools) is marked in bold in the tables, and always plotted as a dashed line on graphs.

Within each group in the tables, the mean examination percentage of each of the relatively disadvantaged groups within it was coloured in orange if they underperformed[31] compared to the least disadvantaged group by at least 1.0%, and in blue if they overperformed by at least 1.0%. To give an example, within the group of first year examination results for those that entered A*A*A courses with A*A*A, if the mean examination performance of independent school students was 60.0%, the figure for maintained school students would be in orange if it was 59.0% or lower, in blue if it was 61.0% or higher, and in black if it was within those bounds or if there were insufficient numbers of individuals for a reliable comparison. This colour coding was done for ease of visual reference whilst trying to avoid overinterpretation of very small differences between groups, but it should be noted that no statistical significance testing has been done, and differences that are marked with colour coding may not be statistically significant (and conversely that those which are not marked could be statistically significant).

Due to the very small number of entrants to A*AA courses that have 4th year examination results, analyses were not conducted for this group. 4th year results are shown for A*A*A courses, but not discussed because they are often optional and only available for a minority of courses, so the populations taking them may not be representative.

[31] Please note that if a group has lower mean examination attainment and is said to have underperformed, this should not be assumed to be in any sense attributable to that group or the sole responsibility of the individuals in that group (i.e. a 'student deficit model'). For example, it is increasingly understood that University teaching, learning and assessment practices have an important role in examination attainment.

Ethical considerations

The Cambridge Higher Education Studies Research Ethics Committee (CHESREC) has agreed that this research project [CHESREC SAA-SP.2023.MT.63.Horner] was conducted in accordance with the CHESREC Agreed Standard Protocol for research of this nature conducted by the Student Admissions and Access office[32].

3.3. Findings

3.3.1. *School type*

Results

Table 3.3.1.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), school type (independent or maintained) and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, Independent sector students) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic (in this case, Maintained sector) are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		**A*AA**		**A*A*A**		**3A***		**4A*+**	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	**Independent**	**0**	**-**	**43**	**56.0%**	**209**	**58.3%**	**676**	**62.9%**	**1212**	**66.9%**
	Maintained	<10	-	173	55.1%	732	58.5%	1650	62.9%	1922	66.2%
Second year (A*A*A)	**Independent**	**0**	**-**	**35**	**57.6%**	**174**	**60.2%**	**583**	**63.3%**	**1054**	**66.6%**
	Maintained	<10	-	152	58.2%	605	60.1%	1376	63.3%	1609	66.6%
Third year (A*A*A)	**Independent**	**0**	**-**	**31**	**63.4%**	**145**	**64.1%**	**472**	**66.4%**	**865**	**68.1%**
	Maintained	<10	-	125	62.5%	487	63.8%	1091	66.1%	1319	67.6%
Fourth year (A*A*A)	**Independent**	**0**	**-**	**<10**	**-**	**21**	**65.9%**	**129**	**66.3%**	**322**	**70.2%**
	Maintained	<10	-	27	65.9%	139	65.9%	358	67.6%	496	70.4%
First year (A*AA)	**Independent**	**19**	**64.2%**	**370**	**63.7%**	**615**	**65.1%**	**576**	**65.9%**	**156**	**67.6%**
	Maintained	147	62.1%	904	63.7%	1192	64.6%	828	65.9%	197	67.1%
Second year (A*AA)	**Independent**	**21**	**66.1%**	**375**	**64.3%**	**700**	**65.8%**	**653**	**66.8%**	**188**	**68.0%**
	Maintained	165	63.2%	942	64.1%	1303	65.4%	893	66.5%	222	67.5%
Third year (A*AA)	**Independent**	**16**	**67.3%**	**299**	**67.1%**	**542**	**67.7%**	**523**	**68.4%**	**153**	**69.5%**
	Maintained	133	65.8%	728	66.3%	993	67.1%	676	68.0%	182	69.2%

[32] Also known as the Cambridge Admissions Office

Figure 3.3.1.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by school type (solid lines = maintained, dashed = independent). Data points based on under 30 individuals are not plotted.*

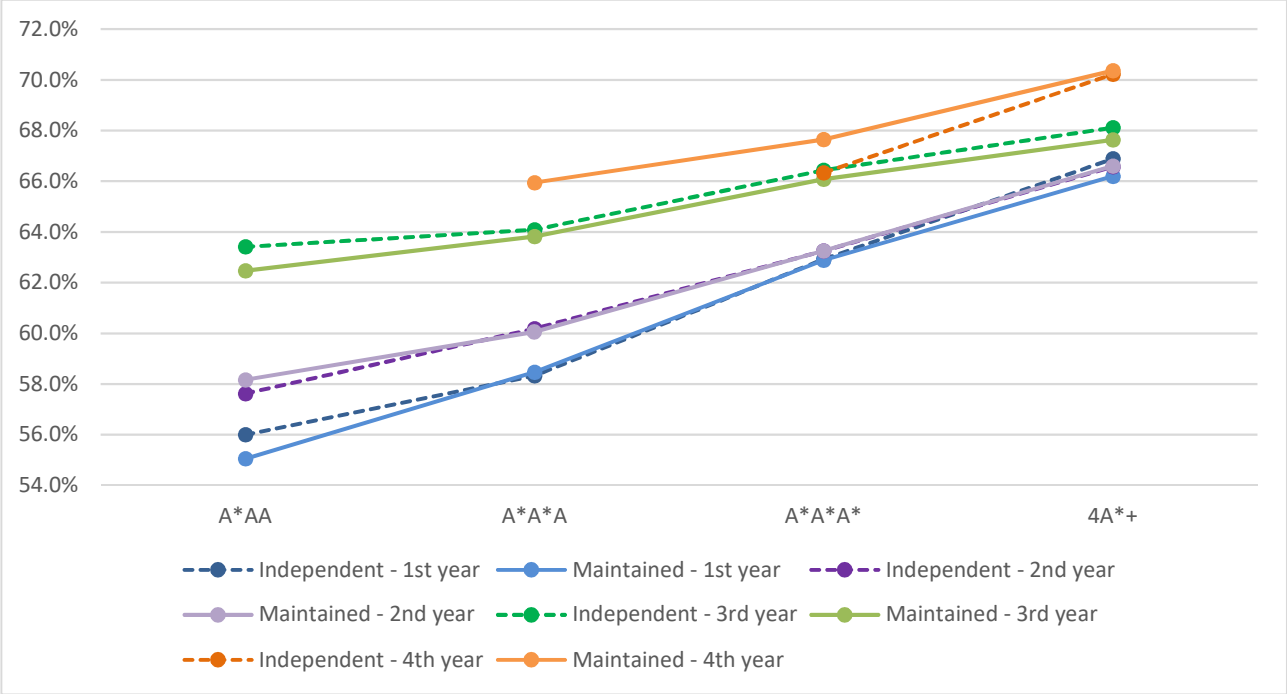


Figure 3.3.1.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by school type (solid lines = maintained, dashed = independent). Data points based on under 30 individuals are not plotted.*

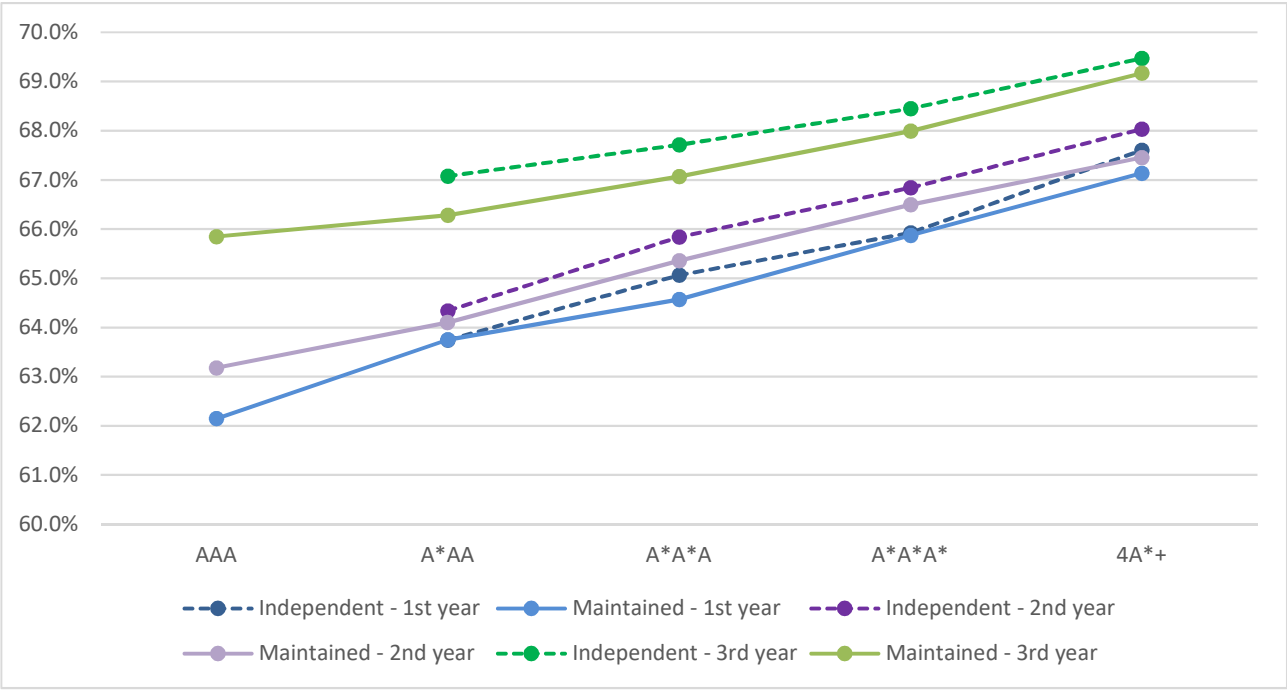


Table 3.3.1.b.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), school type (independent, grammar, comprehensive, or sixth form; students from other school types were excluded) and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, being from an Independent sector school) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	Comprehensive	<10	-	94	55.5%	332	58.3%	726	63.5%	746	65.7%
	Grammar	0	-	42	53.6%	261	59.4%	607	62.7%	831	66.7%
	Independent	**0**	**-**	**43**	**56.0%**	**209**	**58.3%**	**676**	**62.9%**	**1212**	**66.9%**
	Sixth Form	<10	-	25	55.0%	112	57.5%	255	62.0%	285	66.2%
Second year (A*A*A)	Comprehensive	<10	-	81	58.6%	273	59.8%	601	63.4%	613	66.3%
	Grammar	0	-	37	57.1%	227	61.0%	512	63.3%	705	66.9%
	Independent	**0**	**-**	**35**	**57.6%**	**174**	**60.2%**	**583**	**63.3%**	**1054**	**66.6%**
	Sixth Form	0	-	23	58.2%	82	58.5%	214	62.9%	234	66.7%
Third year (A*A*A)	Comprehensive	<10	-	62	62.9%	218	63.7%	470	66.1%	496	67.7%
	Grammar	0	-	29	62.1%	186	64.4%	404	65.8%	582	67.6%
	Independent	**0**	**-**	**31**	**63.4%**	**145**	**64.1%**	**472**	**66.4%**	**865**	**68.1%**
	Sixth Form	0	-	24	60.9%	62	63.4%	178	66.6%	191	67.6%
Fourth year (A*A*A)	Comprehensive	0	-	12	62.4%	78	65.9%	159	67.8%	198	71.1%
	Grammar	0	-	<10	-	45	66.9%	119	67.0%	204	69.7%
	Independent	**0**	**-**	**<10**	**-**	**21**	**65.9%**	**129**	**66.3%**	**322**	**70.2%**
	Sixth Form	0	-	<10	-	11	63.2%	65	68.1%	75	69.5%
First year (A*AA)	Comprehensive	83	62.6%	465	63.6%	538	64.6%	352	65.5%	61	68.9%
	Grammar	39	61.3%	268	64.2%	417	64.4%	319	66.3%	98	66.8%
	Independent	**19**	**64.2%**	**370**	**63.7%**	**615**	**65.1%**	**576**	**65.9%**	**156**	**67.6%**
	Sixth Form	14	60.9%	134	63.8%	178	65.3%	127	66.0%	28	65.8%
Second year (A*AA)	Comprehensive	91	63.3%	465	64.2%	545	65.4%	363	66.5%	71	68.7%
	Grammar	42	63.4%	291	64.3%	492	65.3%	368	66.7%	112	67.5%
	Independent	**21**	**66.1%**	**375**	**64.3%**	**700**	**65.8%**	**653**	**66.8%**	**188**	**68.0%**
	Sixth Form	20	62.1%	147	63.7%	205	65.8%	132	66.3%	31	65.5%
Third year (A*AA)	Comprehensive	70	66.1%	361	66.4%	402	67.3%	264	68.1%	58	69.8%
	Grammar	34	66.2%	227	65.9%	381	67.0%	282	68.3%	88	69.4%
	Independent	**16**	**67.3%**	**299**	**67.1%**	**542**	**67.7%**	**523**	**68.4%**	**153**	**69.5%**
	Sixth Form	19	63.5%	109	66.6%	158	67.1%	108	67.5%	27	68.5%

Interpretation

As shown in Table 3.3.1.a and Figure 3.3.1.a, for entrants to A*A*A courses, mean examination performance appears to be similar numerically in each course year 1-3 for students with the same A Level attainment from maintained and independent schools, particularly for the A*A*A and 3A* attainment bands. The picture is a little more mixed for the A*AA band (where the numbers of students from independent schools are relatively low), and for the 4A*+ band where students from maintained schools appear to very slightly underperform peers from independent school in course years 1 and 3 (but by less than 1.0%).

When students from the three types of maintained sector schools with greatest numbers of entrants to Cambridge (Comprehensive, Grammar, and Sixth Form Colleges) are considered separately, Table 3.3.1.b. shows that the picture of over- and underperformance by school type becomes more mixed. For entrants to A*A*A courses with A*AA, there are a couple of differences between groups of at least 1.0%, but it should be noted again that the numbers of students involved from independent schools are relatively low. For entrants to A*A*A courses with A*A*A, it appears there may be an interesting divergence of the maintained sector school types, with students from Grammar schools tending to slightly outperform their Independent school counterparts in the first two course years (by 0.8-1.1%), whilst students from Sixth Form Colleges at least slightly underperform in all three years (by 0.7-1.7%) and students from Comprehensive schools are quite similar to their Independent school counterparts. For entrants to A*A*A courses with 3A* and 4A*+, there are generally quite similar outcomes for the different school types in each course year, although students from Comprehensive schools entering with 4A*+ underperform Independent school counterparts by 1.2%.

As shown in Table 3.3.1.a and Figure 3.3.1.b, for entrants to A*AA courses, mean examination performance in each course year for students in the same A Level attainment band also tends to be numerically quite similar for students that attended a maintained or independent school, with a leaning towards being very slightly higher for independent school students if anything. Similarly, Table 3.3.1.b. shows that it is generally the case in all three course years that students from all three maintained sector school types either perform similarly to independent school counterparts with matched A Levels, or that they slightly underperform (but by no more than 1.2% when groups sizes are above 32). The main exception to this was that comprehensive school students with 4A*+ overperformed somewhat in the first two course years (by 0.7-1.3%).

Average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, despite a few isolated exceptions, students from maintained schools do not appear to reliably outperform independent school peers with matched A Level attainment, but often have similar performance.

3.3.2. *Schools with few recent Oxford/Cambridge offers*

Results

Table 3.3.2.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), whether or not they received the flag for being from a school with few recent Oxford/Cambridge offers, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, not flagged) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic (in this case, flagged) are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	**Not flagged**	**<10**	**-**	**179**	**55.1%**	**809**	**58.4%**	**2099**	**62.9%**	**2932**	**66.6%**
	Flagged	<10	-	38	56.0%	135	58.7%	233	63.1%	212	64.9%
Second year (A*A*A)	**Not flagged**	**<10**	**-**	**154**	**57.9%**	**669**	**60.0%**	**1770**	**63.2%**	**2507**	**66.7%**
	Flagged	<10	-	34	58.7%	112	60.5%	195	63.5%	164	65.2%
Third year (A*A*A)	**Not flagged**	**<10**	**-**	**131**	**63.0%**	**541**	**63.9%**	**1417**	**66.2%**	**2058**	**67.8%**
	Flagged	<10	-	26	61.1%	92	64.0%	152	66.1%	132	67.4%
Fourth year (A*A*A)	**Not flagged**	**0**	**-**	**27**	**67.0%**	**130**	**65.4%**	**432**	**67.2%**	**764**	**70.4%**
	Flagged	<10	-	<10	-	32	67.8%	55	67.8%	57	69.4%
First year (A*AA)	**Not flagged**	**136**	**62.0%**	**1126**	**63.9%**	**1639**	**64.8%**	**1321**	**65.9%**	**340**	**67.3%**
	Flagged	32	63.1%	159	62.9%	179	64.1%	91	65.6%	17	67.1%
Second year (A*AA)	**Not flagged**	**152**	**63.6%**	**1163**	**64.3%**	**1821**	**65.6%**	**1444**	**66.6%**	**396**	**67.8%**
	Flagged	35	62.9%	161	63.3%	192	64.8%	110	66.6%	18	64.7%
Third year (A*AA)	**Not flagged**	**123**	**66.1%**	**897**	**66.5%**	**1400**	**67.4%**	**1133**	**68.2%**	**322**	**69.3%**
	Flagged	27	65.4%	135	66.3%	144	66.5%	73	68.5%	16	67.6%

Figure 3.3.2.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by few recent Oxford/Cambridge offers school flag status (solid lines = flagged, dashed = not flagged). Data points based on under 30 individuals are not plotted.*

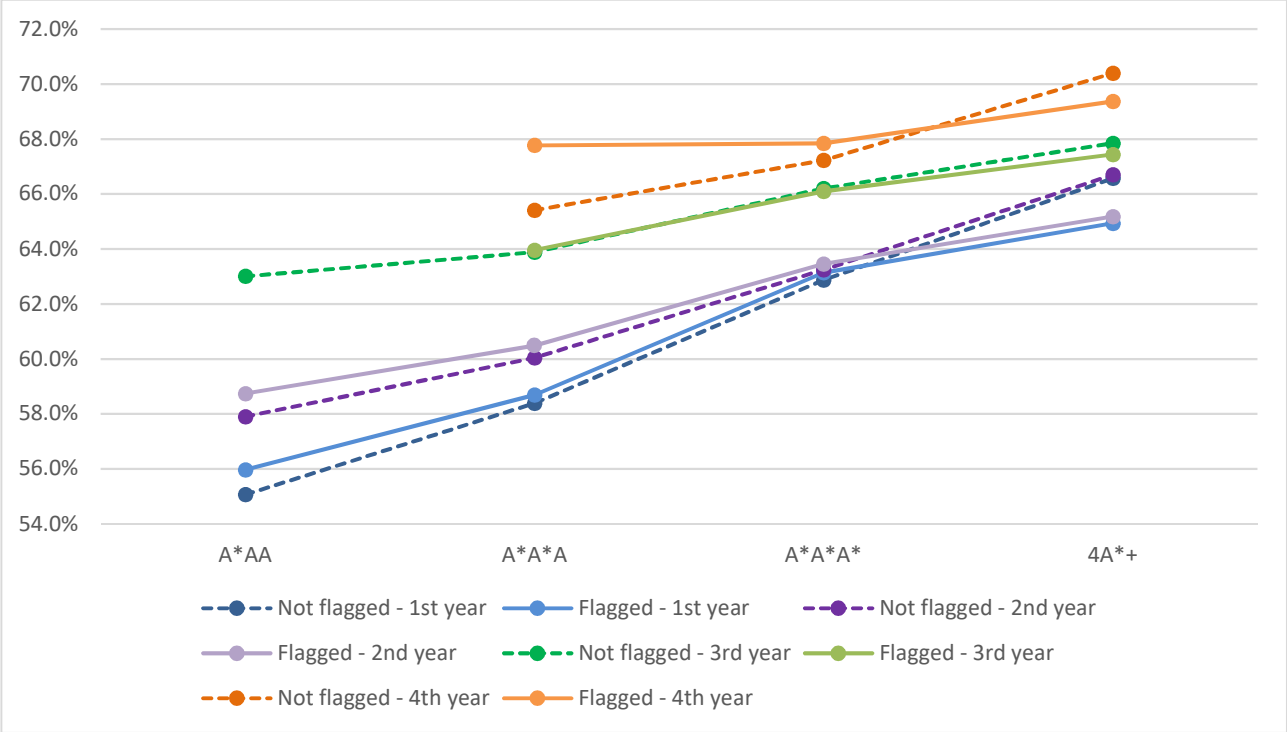
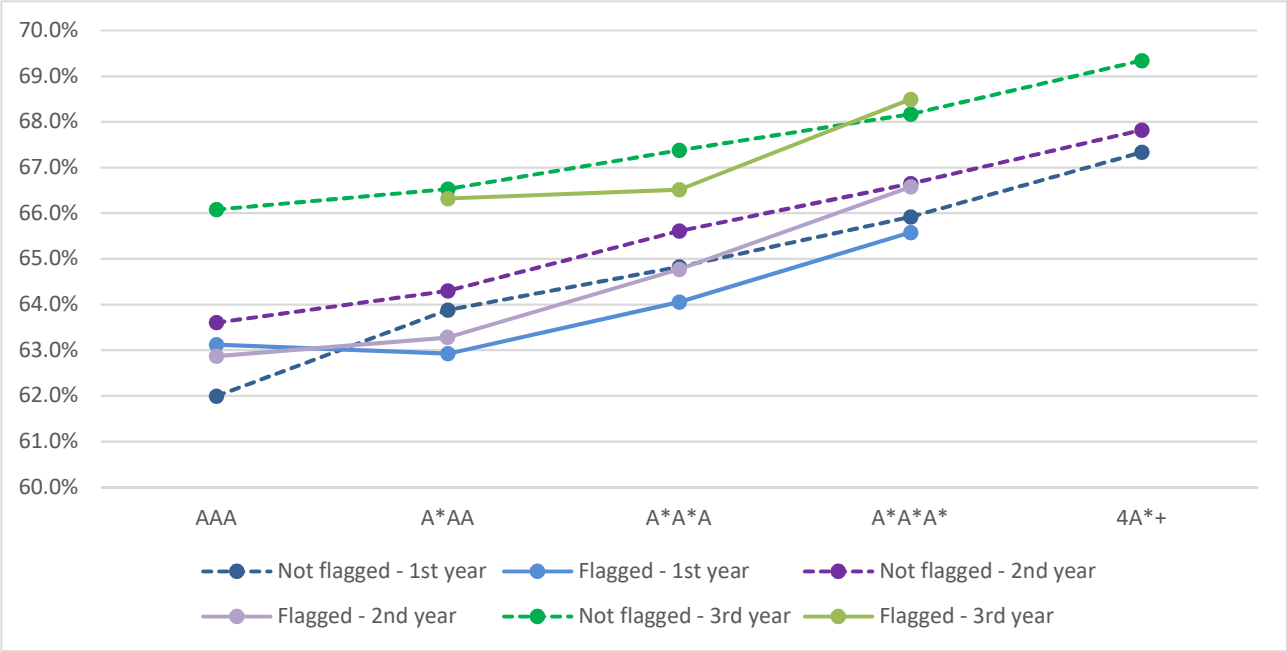


Figure 3.3.2.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by few recent Oxford/Cambridge offers school flag status (solid lines = flagged, dashed = not flagged). Data points based on under 30 individuals are not plotted.*



Interpretation

As shown in Table 3.3.2.a and Figure 3.3.2.a, for entrants to A*A*A courses, mean examination performance appears to be very similar numerically in each course year 1-3 for students with the same A Level attainment in the A*A*A and 3A* A Level attainment bands. In course years 1 and 2, the mean performance of flagged students with A*AA was nearly 1% above their non-flagged counterparts (although there were under 40 flagged students in each group), but conversely the mean performance of flagged students with 4A* was at least 1.5% below their non-flagged counterparts.

As shown in Table 3.3.2.a and Figure 3.3.2.b, for entrants to A*AA courses, mean examination performance in each course year for students with the same A Level attainment in the AAA to A*A*A A Level attainment bands was generally slightly higher for non-flagged students compared to flagged. The exception was flagged students with AAA in their first year compared to non-flagged counterparts (63.1% vs 62.0%), but there were only 32 flagged students in the group. Flagged and non-flagged students with 3A*s performed similarly to each other in all three years.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, despite one isolated exception, students with the few recent Oxford/Cambridge offers school flag do not appear to outperform peers with matched A Level attainment without the flag, but often have similar performance particularly for A*A*A courses.

3.3.3. *Participation of Local Areas (POLAR4) quintile*

Results

Table 3.3.3.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), POLAR4 quintile, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, Q5) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic (in this case, only Q1 or Q2, to focus on these rather than Q3 or Q4) are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	Q1	<10	-	14	56.9%	38	59.7%	76	62.3%	93	65.4%
	Q2	<10	-	22	57.2%	108	59.1%	168	62.3%	187	66.5%
	Q3	<10	-	35	54.2%	120	57.6%	284	63.1%	343	65.8%
	Q4	<10	-	51	53.9%	195	58.4%	477	63.4%	634	66.4%
	Q5	**<10**	**-**	**95**	**55.6%**	**482**	**58.4%**	**1320**	**62.8%**	**1883**	**66.7%**
Second year (A*A*A)	Q1	<10	-	10	57.3%	28	61.8%	61	64.2%	75	64.8%
	Q2	<10	-	21	59.4%	81	61.1%	136	62.9%	162	66.7%
	Q3	0	-	29	57.1%	97	58.6%	243	63.4%	285	65.7%
	Q4	<10	-	47	58.2%	160	60.1%	396	63.8%	536	66.6%
	Q5	**<10**	**-**	**81**	**58.0%**	**414**	**60.1%**	**1123**	**63.0%**	**1609**	**66.8%**
Third year (A*A*A)	Q1	0	-	<10	-	26	63.8%	44	66.7%	60	66.8%
	Q2	<10	-	17	61.3%	65	64.5%	106	65.5%	133	67.5%
	Q3	<10	-	27	62.0%	75	62.2%	200	66.4%	233	67.3%
	Q4	<10	-	37	63.1%	133	64.4%	317	66.7%	434	67.8%
	Q5	**<10**	**-**	**68**	**63.0%**	**333**	**63.9%**	**898**	**66.0%**	**1326**	**68.0%**
Fourth year (A*A*A)	Q1	0	-	<10	-	<10	-	11	68.0%	21	69.0%
	Q2	0	-	<10	-	19	66.6%	35	67.5%	50	71.2%
	Q3	<10	-	<10	-	25	65.4%	60	66.9%	75	69.7%
	Q4	0	-	11	67.5%	37	65.7%	99	67.7%	178	70.2%
	Q5	**0**	**-**	**12**	**66.6%**	**80**	**65.8%**	**280**	**67.2%**	**494**	**70.4%**
First year (A*AA)	Q1	<10	-	55	62.7%	75	64.3%	39	65.1%	10	67.3%
	Q2	14	66.1%	99	63.6%	127	64.9%	68	66.7%	27	68.1%
	Q3	32	60.8%	169	64.3%	222	64.8%	168	66.4%	32	66.3%
	Q4	43	61.5%	275	63.8%	343	64.5%	262	65.6%	61	67.3%
	Q5	**70**	**62.5%**	**684**	**63.7%**	**1046**	**64.8%**	**873**	**65.8%**	**226**	**67.4%**
Second year (A*AA)	Q1	<10	-	57	63.5%	71	65.0%	35	66.3%	10	67.8%
	Q2	20	65.1%	95	64.5%	136	65.5%	68	66.6%	27	68.5%
	Q3	33	62.8%	181	65.0%	244	65.3%	172	66.3%	41	66.0%
	Q4	51	62.4%	281	64.4%	384	65.4%	292	66.0%	77	68.0%
	Q5	**75**	**64.1%**	**707**	**63.9%**	**1173**	**65.7%**	**985**	**66.9%**	**258**	**67.8%**
Third year (A*AA)	Q1	<10	-	46	66.5%	59	66.4%	30	67.7%	<10	-
	Q2	14	67.5%	79	66.8%	109	66.7%	48	68.1%	22	69.7%
	Q3	26	66.0%	133	67.6%	195	67.0%	143	68.2%	37	68.0%
	Q4	37	65.4%	221	66.3%	284	67.1%	223	67.5%	62	69.4%
	Q5	**65**	**65.9%**	**553**	**66.3%**	**894**	**67.6%**	**761**	**68.4%**	**207**	**69.4%**

Figure 3.3.3.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by POLAR4 quintile (solid lines = Q1 or Q2, dashed = Q5; Q3 and Q4 not shown in order to focus on Q1 and Q2). Data points based on under 30 individuals are not plotted.*

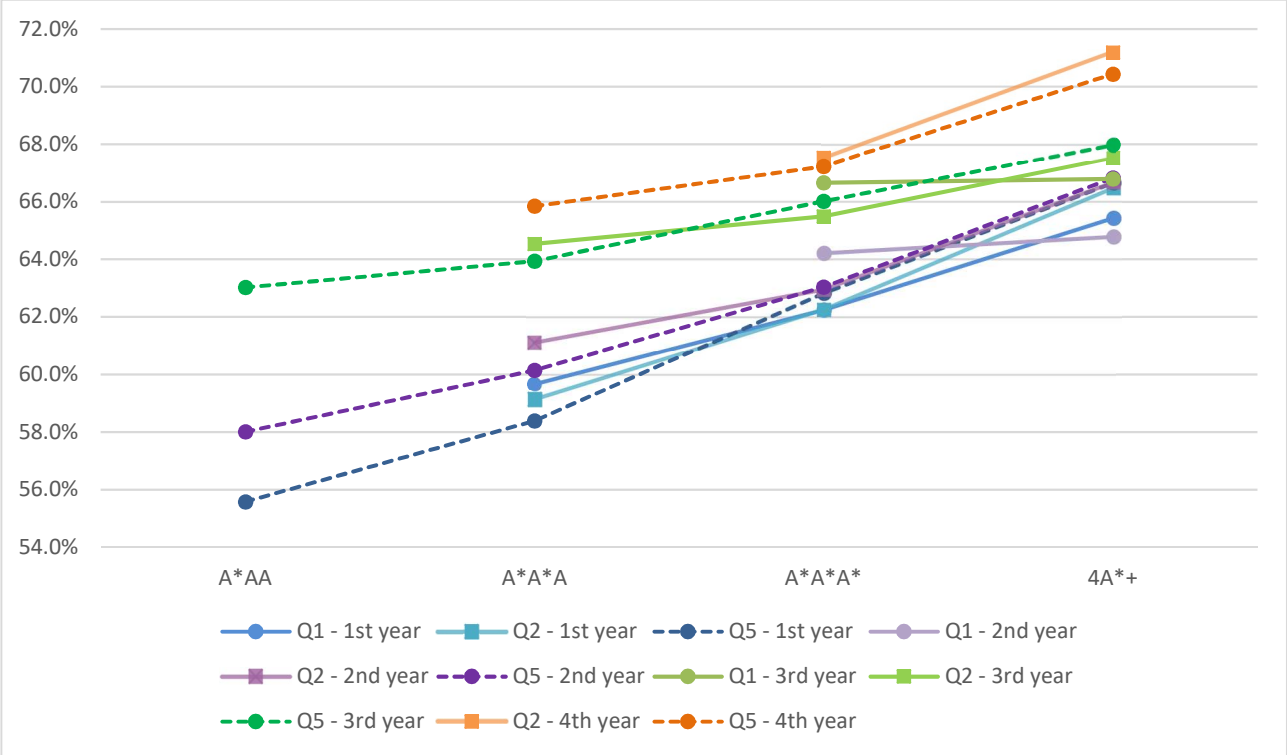
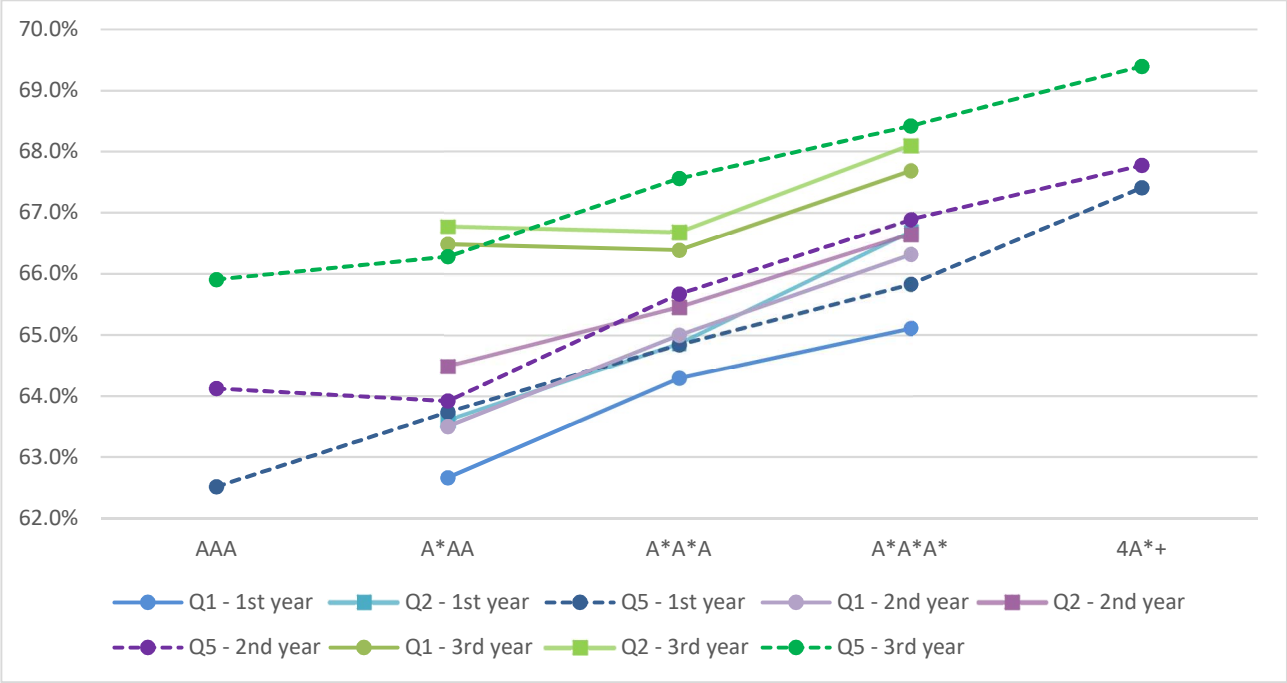


Figure 3.3.3.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by POLAR4 quintile (solid lines = Q1 or Q2, dashed = Q5; Q3 and Q4 not shown in order to focus on Q1 and Q2). Data points based on under 30 individuals are not plotted.*



Interpretation

As shown in Table 3.3.3.a and Figure 3.3.3.a, for entrants to A*A*A courses, there are insufficient numbers of students from POLAR4 Q1 and Q2 areas with AAA or A*AA at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*A*A, POLAR4 Q1 and Q2 entrants to A*A*A courses appear to slightly (by 0.6-1.3%) outperform their POLAR4 Q5 counterparts in course years 1-3 (where there is reliable data, although some of group sizes over 30 are still quite small), and this is true for POLAR4 Q1 entrants with 3A* too (by 0.7-1.2%), except for first year courses. For entrants with 4A*+, Q1 entrants instead underperformed relative to their Q5 counterparts in all course years by 1.2-2.3%, although Q2 entrants performed similarly to Q5.

As shown in Table 3.3.3.a and Figure 3.3.3.b, for entrants to A*AA courses, there are insufficient numbers of students from POLAR4 Q1 and Q2 areas with AAA or 4A*+ at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*AA, A*A*A or 3A*, POLAR4 Q1 entrants to A*AA courses usually appear to slightly underperform their POLAR4 Q5 counterparts in course years 1-3 (by 0.4-1.3%), the only exception being very slightly higher third year performances for entrants with A*AA. The picture for POLAR4 Q2 entrants with A*AA, A*A*A or 3A* compared to Q5 counterparts is more mixed, but with no examples of differences of at least 1.0%.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, students from POLAR4 Q1 and Q2 areas do not appear to reliably outperform Q5 peers with matched A Level attainment, although (with some caveats) they do in so by 0.6-1.3% for A*A*A courses when entering with A*A*A, and there are many examples where their performance is at least comparable to Q5 entrants.

3.3.4. *Regional Indices of Multiple Deprivation (IMD) quintile*

Results

Table 3.3.4.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), IMD quintile, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, Q5) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic (in this case, only Q1 or Q2, to focus on these rather than Q3 or Q4) are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	Q1	<10	-	15	52.0%	65	55.9%	96	59.7%	101	64.4%
	Q2	<10	-	27	53.9%	104	58.8%	229	63.2%	250	65.4%
	Q3	<10	-	45	54.0%	148	57.9%	378	62.8%	508	65.7%
	Q4	<10	-	42	57.2%	227	58.8%	627	63.3%	864	66.2%
	Q5	**0**	**-**	**88**	**55.8%**	**398**	**58.7%**	**999**	**63.0%**	**1416**	**67.2%**
Second year (A*A*A)	Q1	<10	-	11	52.3%	49	59.1%	76	60.8%	84	63.9%
	Q2	<10	-	23	60.4%	81	59.5%	185	63.5%	209	65.3%
	Q3	<10	-	38	57.0%	127	60.4%	315	63.1%	436	65.9%
	Q4	<10	-	38	58.4%	189	60.6%	536	63.7%	739	66.6%
	Q5	**0**	**-**	**78**	**58.5%**	**333**	**60.0%**	**851**	**63.2%**	**1198**	**67.3%**
Third year (A*A*A)	Q1	<10	-	<10	-	40	61.5%	49	64.7%	63	65.6%
	Q2	<10	-	14	62.1%	67	63.7%	139	66.3%	175	67.0%
	Q3	<10	-	33	61.9%	101	64.3%	241	66.5%	365	67.4%
	Q4	<10	-	32	62.5%	151	64.4%	435	66.2%	590	67.6%
	Q5	**0**	**-**	**69**	**63.5%**	**273**	**63.9%**	**704**	**66.2%**	**993**	**68.4%**
Fourth year (A*A*A)	Q1	<10	-	<10	-	<10	-	17	66.7%	21	68.9%
	Q2	0	-	<10	-	<10	-	40	66.6%	60	70.1%
	Q3	0	-	<10	-	29	66.8%	79	67.3%	136	70.8%
	Q4	0	-	<10	-	44	65.9%	130	67.4%	223	70.1%
	Q5	**0**	**-**	**12**	**68.0%**	**71**	**65.8%**	**220**	**67.5%**	**378**	**70.4%**
First year (A*AA)	Q1	17	61.6%	63	62.3%	85	63.3%	46	65.6%	<10	-
	Q2	21	63.0%	144	63.8%	196	64.7%	134	66.1%	24	67.1%
	Q3	28	61.1%	225	64.1%	327	64.8%	233	65.8%	67	67.6%
	Q4	46	61.5%	331	63.7%	489	64.8%	389	66.1%	122	67.4%
	Q5	**56**	**63.2%**	**519**	**63.9%**	**716**	**64.9%**	**609**	**65.8%**	**136**	**67.2%**
Second year (A*AA)	Q1	13	64.4%	74	63.5%	89	64.7%	45	65.6%	12	68.4%
	Q2	26	63.7%	137	64.0%	174	65.1%	138	66.7%	27	68.0%
	Q3	31	62.7%	239	64.6%	372	65.9%	265	66.4%	69	67.8%
	Q4	52	62.8%	330	63.8%	549	65.5%	447	66.8%	143	67.5%
	Q5	**65**	**64.1%**	**541**	**64.4%**	**825**	**65.5%**	**658**	**66.7%**	**162**	**67.7%**
Third year (A*AA)	Q1	10	68.6%	55	65.6%	71	66.0%	33	67.5%	<10	-
	Q2	18	66.2%	113	66.5%	151	67.0%	102	68.2%	26	69.9%
	Q3	24	65.0%	192	67.1%	267	67.3%	204	68.4%	56	69.1%
	Q4	45	65.6%	259	66.4%	435	67.4%	351	68.2%	117	68.7%
	Q5	**53**	**66.1%**	**413**	**66.4%**	**618**	**67.5%**	**515**	**68.2%**	**130**	**69.7%**

Figure 3.3.4.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by IMD quintile (solid lines = Q1 or Q2, dashed = Q5; Q3 and Q4 not shown in order to focus on Q1 and Q2). Data points based on under 30 individuals are not plotted.*

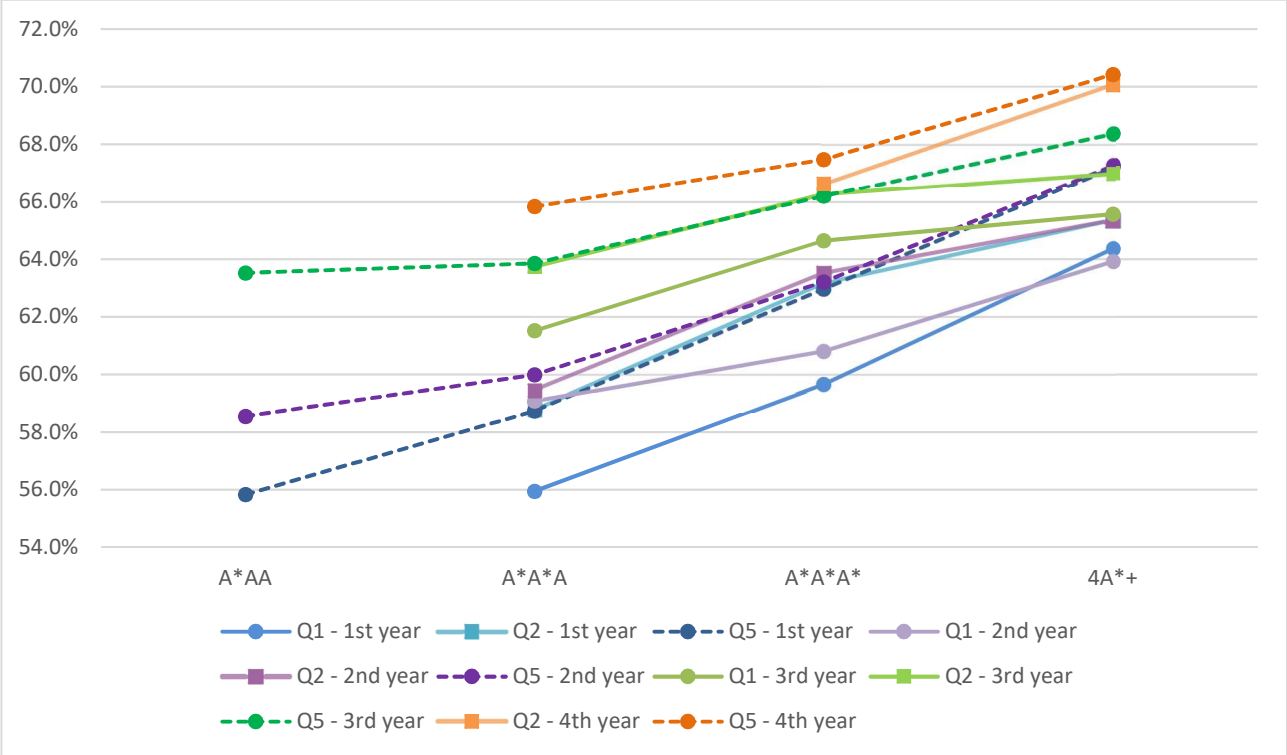
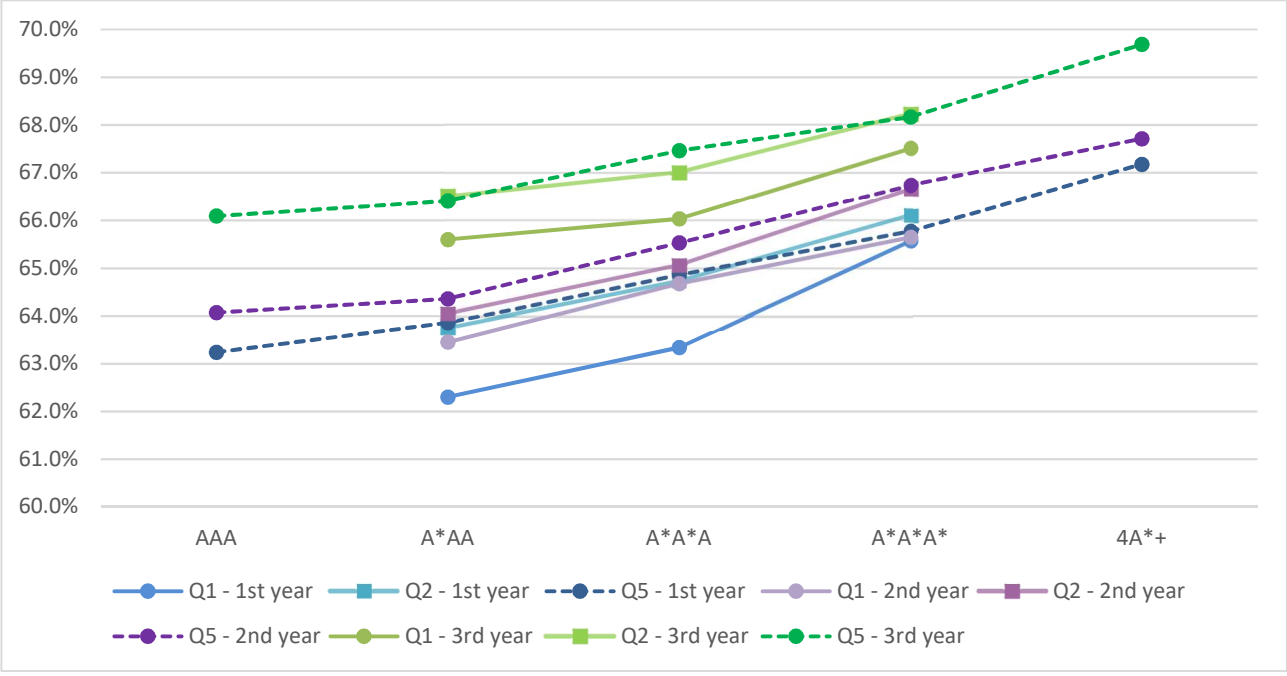


Figure 3.3.4.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by IMD quintile (solid lines = Q1 or Q2, dashed = Q5; Q3 and Q4 not shown in order to focus on Q1 and Q2). Data points based on under 30 individuals are not plotted.*



Interpretation

As shown in Table 3.3.4.a and Figure 3.3.4.a, for entrants to A*A*A courses, there are insufficient numbers of students from IMD Q1 and Q2 areas with AAA or A*AA at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*A*A, 3A* or 4A*+, IMD Q1 entrants to A*A*A courses appear to underperform Q5 counterparts in all course years, by 0.9-3.4% in their examination performance mean. IMD Q2 entrants with A*A*A or 3A* had similar performance to Q5 counterparts, but with 4A* they underperformed compared to Q5 counterparts with the same A Level profile by 1.4-2.0%.

As shown in Table 3.3.4.a and Figure 3.3.4.b, for entrants to A*AA courses, there are insufficient numbers of students from IMD Q1 and Q2 areas with AAA or 4A*+ at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*AA, A*A*A or 3A*, IMD Q1 entrants to A*AA courses slightly underperform their IMD Q5 counterparts in course years 1-3 by 0.2-1.6% in their examination performance mean, whilst IMD Q2 entrants perform similarly to Q5 entrants with matched A Level attainment.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, students from IMD Q1 areas appear to underperform Q5 peers with matched A Level attainment, particularly on A*A*A courses, and students from Q2 areas do not appear to outperform Q5 peers although their performance is usually comparable.

3.3.5. *Ethnicity*

Results

Table 3.3.5.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), ethnicity group, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, White are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic (in this case, Asian, Black, Chinese or Mixed and Other) are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	Asian	<10	-	20	53.2%	138	56.9%	321	61.9%	439	66.4%
	Black	<10	-	<10	-	20	57.8%	43	58.1%	32	64.9%
	Chinese	0	-	<10	-	29	59.6%	88	62.7%	184	65.9%
	Mixed&Other	<10	-	17	52.2%	72	57.6%	159	62.9%	202	66.2%
	White	**<10**	**-**	**166**	**56.1%**	**682**	**58.8%**	**1708**	**63.2%**	**2264**	**66.6%**
Second year (A*A*A)	Asian	0	-	18	55.1%	107	57.7%	264	62.3%	352	66.2%
	Black	<10	-	<10	-	13	58.9%	31	60.4%	26	66.2%
	Chinese	0	-	<10	-	26	61.8%	72	62.2%	157	66.0%
	Mixed&Other	0	-	13	59.0%	56	60.1%	137	62.2%	174	66.4%
	White	**<10**	**-**	**147**	**58.4%**	**576**	**60.5%**	**1451**	**63.7%**	**1945**	**66.8%**
Third year (A*A*A)	Asian	<10	-	13	61.1%	76	62.3%	218	65.1%	285	67.1%
	Black	<10	-	<10	-	13	61.0%	21	62.0%	20	66.5%
	Chinese	0	-	<10	-	21	63.7%	53	65.5%	126	67.2%
	Mixed&Other	0	-	<10	-	45	63.4%	109	65.0%	145	67.7%
	White	**<10**	**-**	**127**	**63.1%**	**476**	**64.3%**	**1159**	**66.6%**	**1602**	**68.0%**
Fourth year (A*A*A)	Asian	<10	-	<10	-	11	62.5%	29	65.0%	59	69.8%
	Black	0	-	<10	-	<10	-	<10	-	<10	-
	Chinese	0	-	0	-	<10	-	16	65.1%	31	66.8%
	Mixed&Other	0	-	<10	-	11	68.9%	33	66.3%	50	69.1%
	White	**0**	**-**	**30**	**66.5%**	**137**	**65.9%**	**402**	**67.7%**	**665**	**70.7%**
First year (A*AA)	Asian	14	58.1%	62	61.8%	82	63.2%	61	65.9%	13	66.7%
	Black	<10	-	28	60.8%	40	62.3%	14	64.1%	<10	-
	Chinese	0	-	13	64.7%	23	63.9%	18	65.7%	<10	-
	Mixed&Other	<10	-	96	62.4%	131	64.4%	103	64.8%	20	66.9%
	White	**134**	**62.7%**	**1078**	**64.1%**	**1531**	**65.0%**	**1207**	**66.0%**	**308**	**67.4%**
Second year (A*AA)	Asian	11	60.5%	64	61.6%	79	64.5%	65	66.5%	17	67.8%
	Black	<10	-	28	61.6%	35	62.6%	13	64.6%	<10	-
	Chinese	0	-	12	64.6%	24	65.2%	20	66.2%	<10	-
	Mixed&Other	13	64.1%	85	62.9%	141	64.8%	109	66.1%	27	67.3%
	White	**151**	**63.7%**	**1128**	**64.5%**	**1721**	**65.7%**	**1337**	**66.7%**	**352**	**67.7%**
Third year (A*AA)	Asian	<10	-	52	65.4%	60	66.8%	52	67.8%	13	69.6%
	Black	<10	-	19	63.4%	29	63.9%	<10	-	<10	-
	Chinese	0	-	12	66.0%	21	66.7%	16	67.3%	<10	-
	Mixed&Other	10	66.7%	68	64.8%	112	66.7%	84	67.8%	23	68.2%
	White	**123**	**66.1%**	**874**	**66.8%**	**1311**	**67.5%**	**1041**	**68.3%**	**287**	**69.3%**

Figure 3.3.5.a.i.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by ethnicity group (solid lines = Asian or Black, dashed = White). Data points based on under 30 individuals are not plotted.*

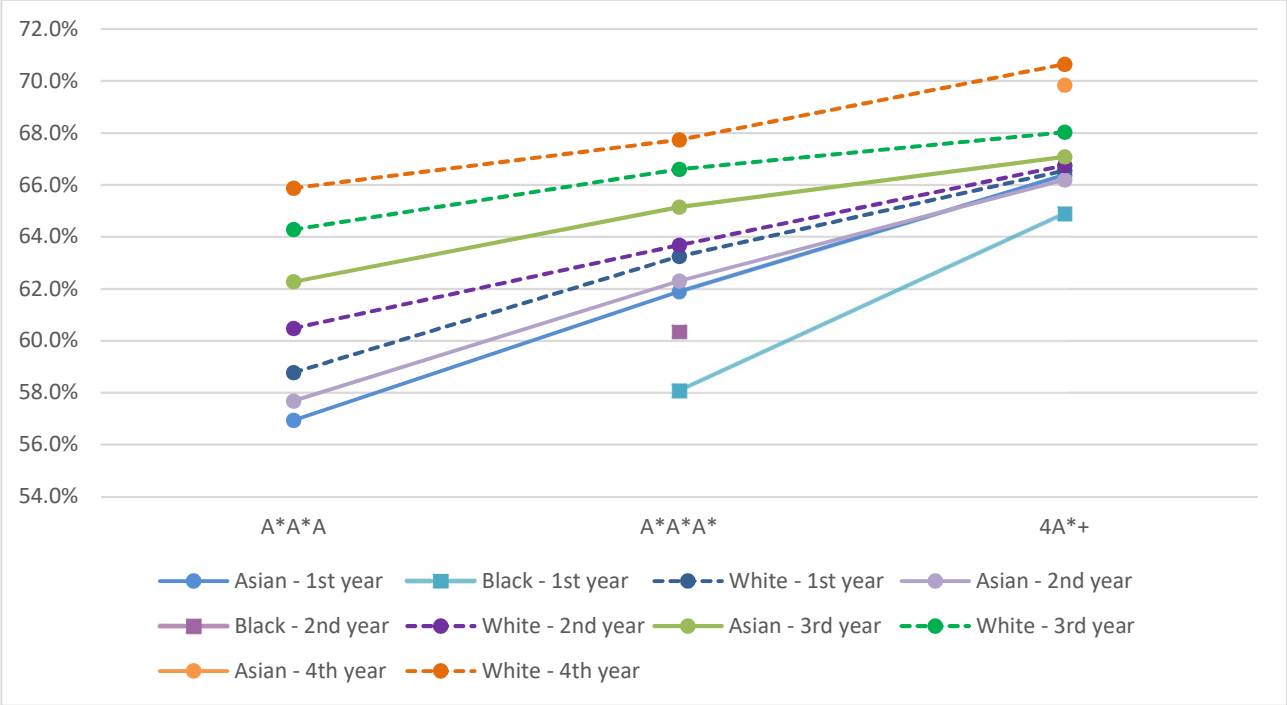


Figure 3.3.5.a.ii

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by ethnicity group (solid lines = Chinese or Mixed & Other, dashed = White). Data points based on under 30 individuals are not plotted.*

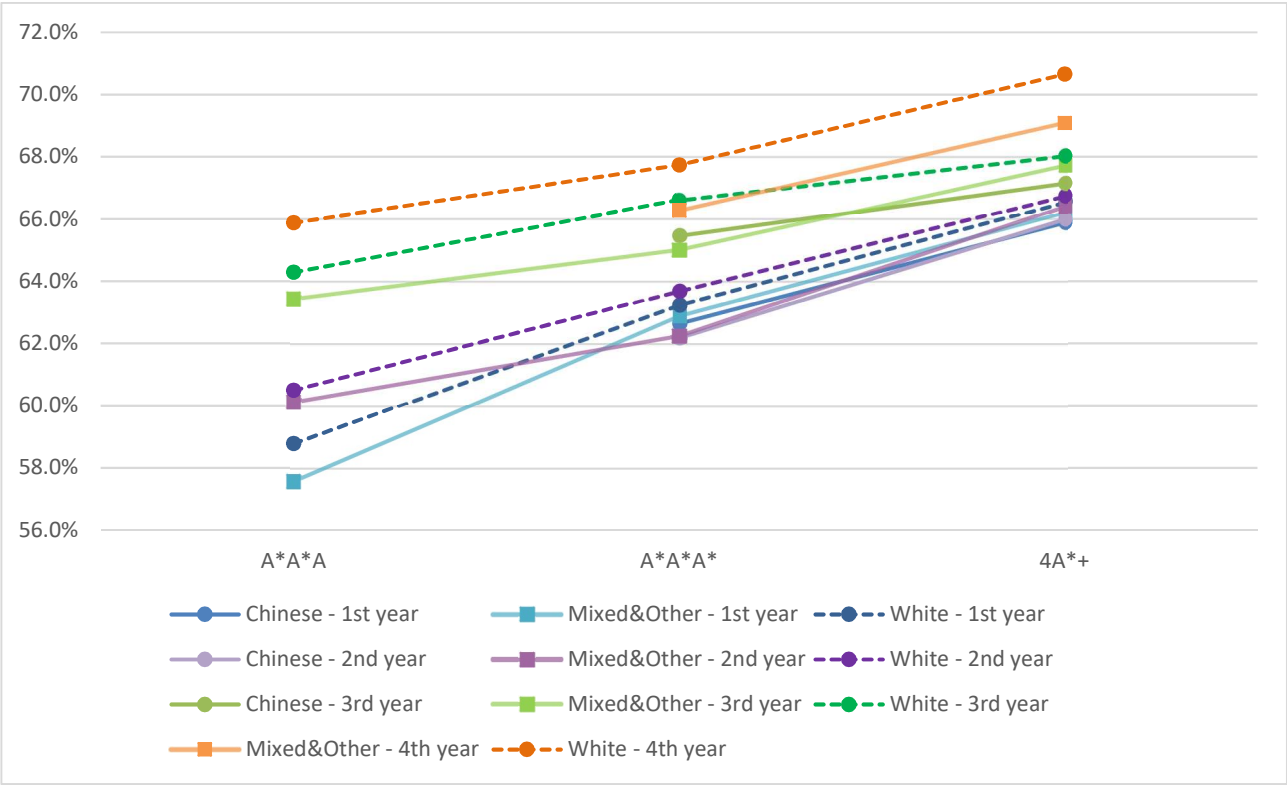


Figure 3.3.5.b.i.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by ethnicity group (solid lines = Asian or Black, dashed = White). Data points based on under 30 individuals are not plotted.*

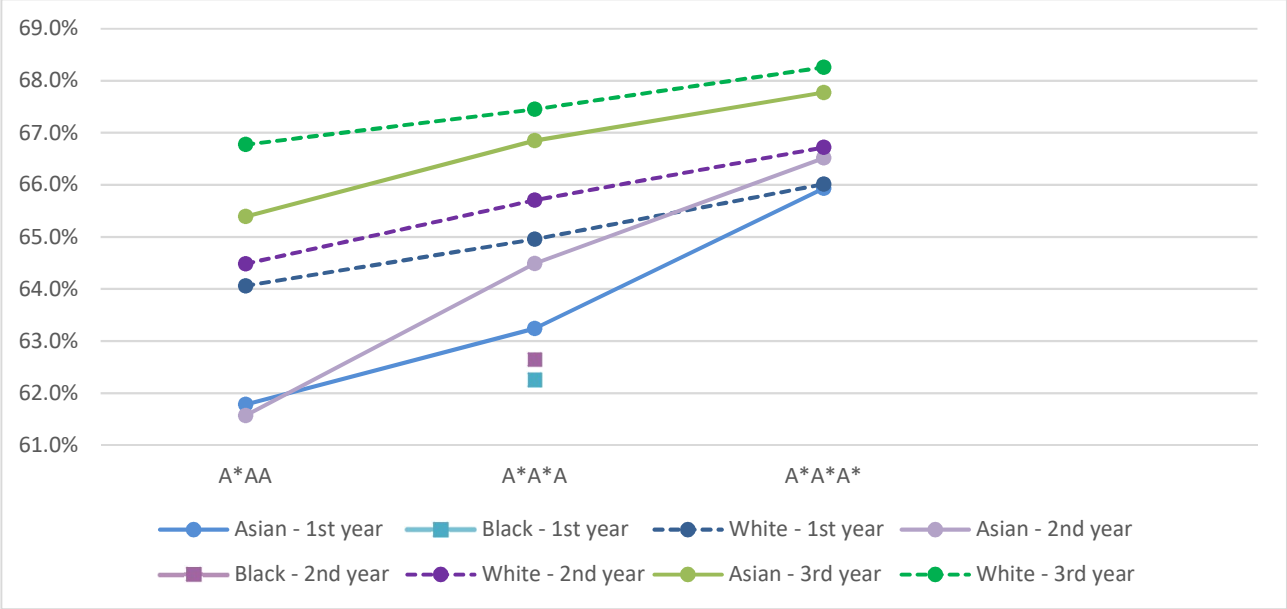
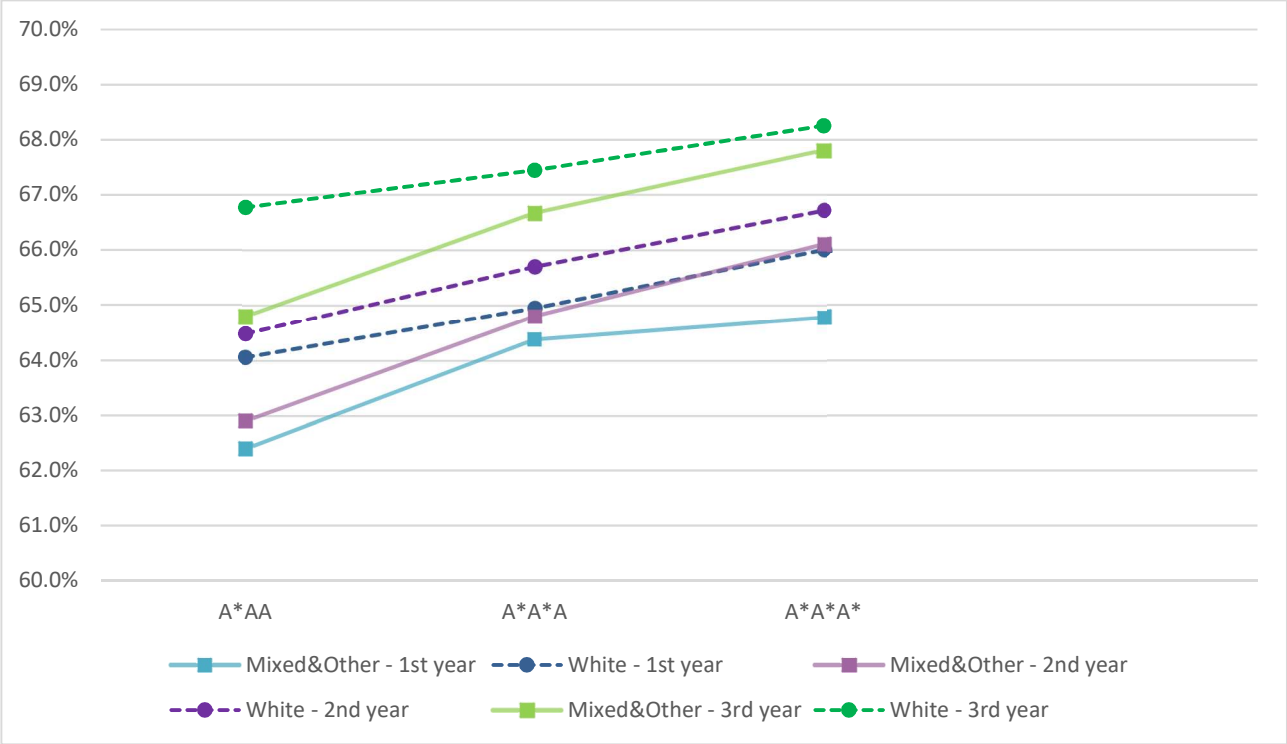


Figure 3.3.5.b.ii.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by ethnicity group (solid lines = Mixed & Other, dashed = White). Data points based on under 30 individuals are not plotted, which includes all data for the Chinese ethnicity group.*



Interpretation

As shown in Table 3.3.5.a and Figures 3.3.5.a.i. and ii., for entrants to A*A*A courses, there are insufficient numbers of students with AAA or A*AA at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*A*A or 3A*, where there are sufficient student numbers for reliable means to be calculated, White students consistently outperform students from all other ethnicity groups in all course years 1-3 by 0.3-5.1% in their examination performance mean when matched on A Level attainment, with differences often exceeding 1.0%. Examination performances are more similar for entrants with 4A*+, particularly if the example with a group size of 32 is disregarded.

As shown in Table 3.3.5.a and Figures 3.3.5.b.i and ii., for entrants to A*AA courses, there are insufficient numbers of students with AAA or 4A*+ at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*AA or A*A*A, where there are sufficient student numbers for reliable means to be calculated, White students consistently outperform students from all other ethnicity groups in all course years by 0.6-3.1% in their examination performance mean when matched on A Level attainment, with differences often exceeding 1.0%. Examination performances are more similar for entrants with 3A*.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, although this analysis is constrained by low numbers of students in some groups, it is nonetheless apparent that students of Asian, Black, Chinese and Mixed or Other ethnicity underperform White ethnicity peers with matched A Level attainment.

3.3.6. *Declared disability*

Results

Table 3.3.6.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), whether or not they declared a disability, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, No Disability) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic (in this case, Disability) are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	**No Disability**	**11**	**49.2%**	**205**	**55.2%**	**891**	**58.4%**	**2213**	**63.0%**	**2990**	**66.5%**
	Disability	0	-	12	54.9%	53	58.5%	119	61.6%	154	65.6%
Second year (A*A*A)	**No Disability**	**<10**	**-**	**182**	**57.9%**	**741**	**60.1%**	**1869**	**63.4%**	**2548**	**66.6%**
	Disability	0	-	<10	-	40	61.1%	96	59.7%	123	66.4%
Third year (A*A*A)	**No Disability**	**<10**	**-**	**151**	**62.6%**	**600**	**64.0%**	**1507**	**66.3%**	**2090**	**67.8%**
	Disability	0	-	<10	-	33	62.6%	62	64.6%	100	67.4%
Fourth year (A*A*A)	**No Disability**	**<10**	**-**	**34**	**66.3%**	**154**	**66.0%**	**470**	**67.3%**	**787**	**70.3%**
	Disability	0	-	0	-	<10	-	17	66.6%	34	71.9%
First year (A*AA)	**No Disability**	**153**	**62.1%**	**1181**	**63.8%**	**1683**	**64.8%**	**1310**	**66.0%**	**335**	**67.4%**
	Disability	15	63.5%	104	63.2%	135	64.7%	102	64.8%	22	65.9%
Second year (A*AA)	**No Disability**	**168**	**63.4%**	**1232**	**64.2%**	**1876**	**65.6%**	**1457**	**66.7%**	**392**	**67.8%**
	Disability	19	63.9%	92	63.3%	137	65.1%	97	65.8%	22	65.6%
Third year (A*AA)	**No Disability**	**135**	**65.8%**	**961**	**66.5%**	**1450**	**67.4%**	**1128**	**68.2%**	**321**	**69.3%**
	Disability	15	67.7%	71	66.1%	94	66.2%	78	67.6%	17	69.5%

Figure 3.3.6.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by whether or not they declared a disability (solid lines = disability, dashed = no disability). Data points based on under 30 individuals are not plotted.*

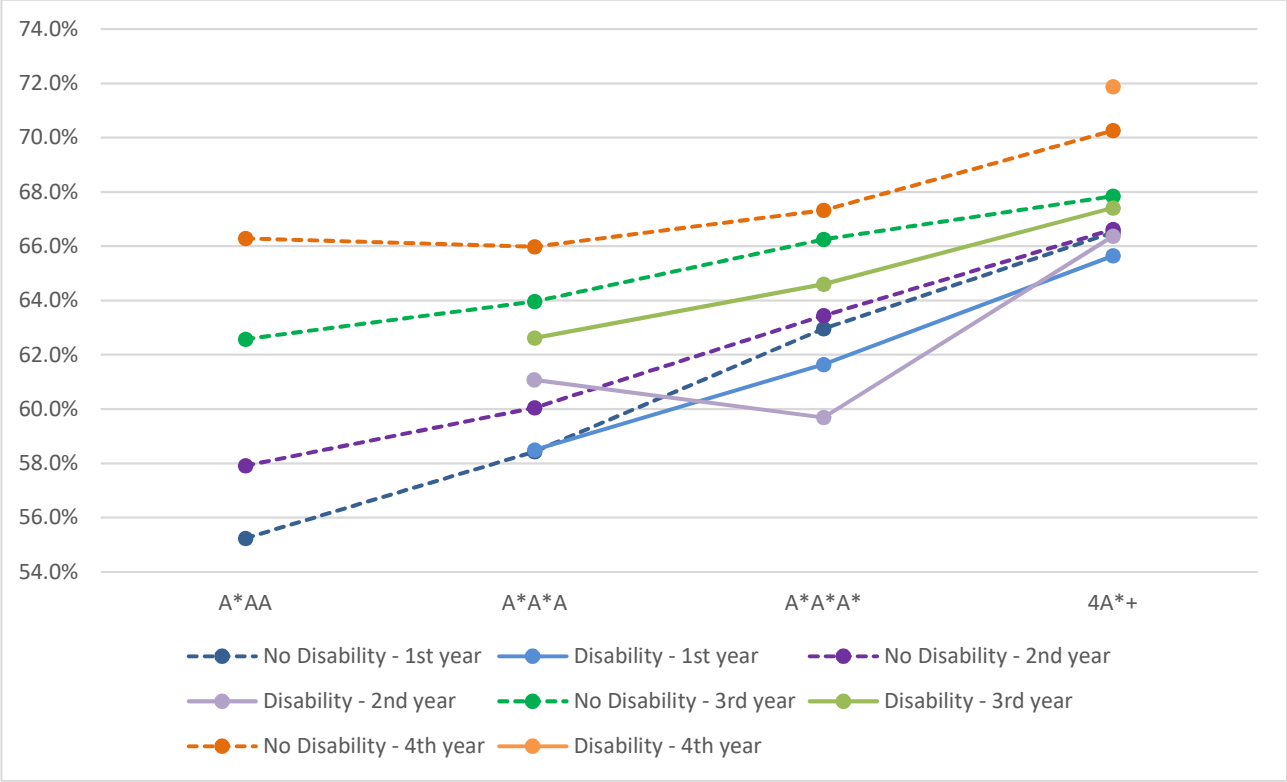
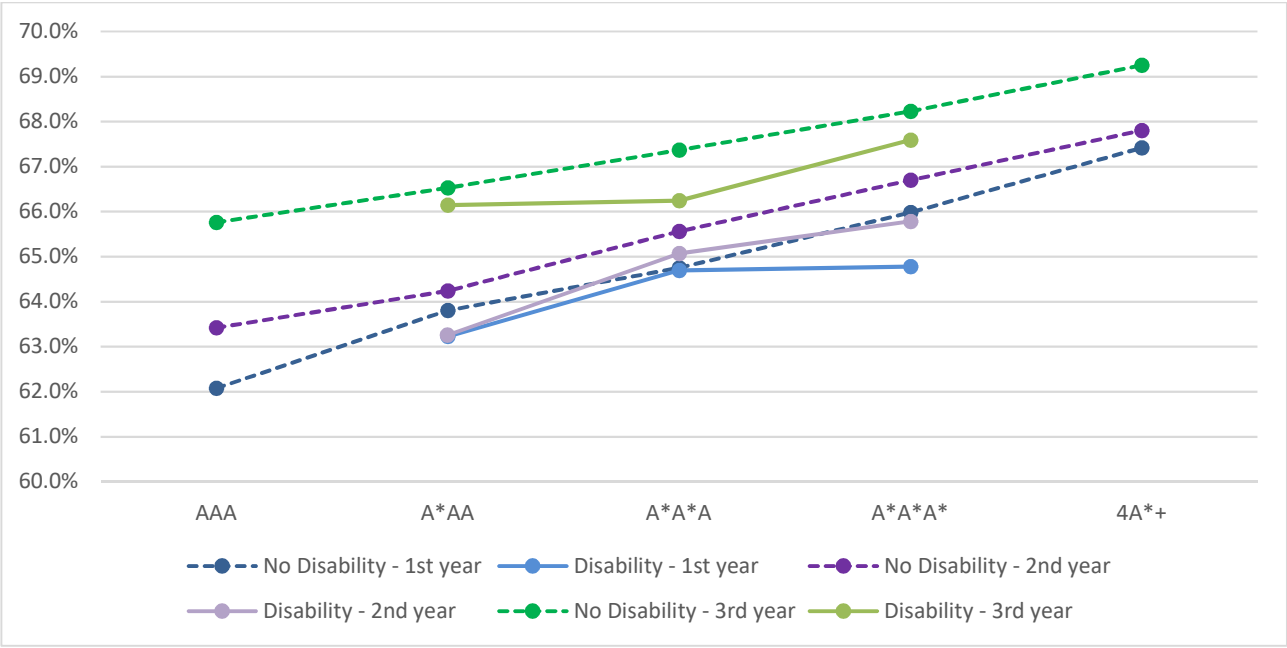


Figure 3.3.6.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by whether or not they declared a disability (solid lines = disability, dashed = no disability). Data points based on under 30 individuals are not plotted.*



Interpretation

As shown in Table 3.3.6.a and Figure 3.3.6.a, for entrants to A*A*A courses, there are insufficient numbers of students with AAA or A*AA at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*A*A, students with a declared disability outperform their peers without a declared disability in course year two (by 1.0%), but then underperform in course year 3 by 1.4% (with the caveat that the numbers of students with a declared disability are relatively small in both years). For entrants with 3A*, students with a declared disability underperform their peers without a declared disability in course years 1-3 by 1.4-3.7% in their examination performance mean. There are no differences of 1.0% or more for entrants with 4A*+.

As shown in Table 3.3.6.a and Figures 3.3.6.b, for entrants to A*AA courses, there are insufficient numbers of students with AAA or 4A*+ at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*AA, A*A*A and 3A*, students without a declared disability consistently slightly outperform students with a declared disability in all course years, but only by 0.1-1.2% in their examination performance mean, when matched on A Level attainment.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, despite one isolated exception of overperformance, students with a declared disability often appear to at least slightly underperform compared to counterparts with matched A Level attainment without a declared disability.

3.3.7. *Interaction of POLAR4 and IMD*

Results

Table 3.3.7.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), their POLAR4 and IMD quintile grouping, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, neither in Q1/2) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	**Neither Q1/2**	**<10**	**-**	**153**	**55.5%**	**696**	**58.5%**	**1868**	**63.0%**	**2606**	**66.6%**
	IMD Q1/2 only	<10	-	28	51.2%	100	56.7%	213	62.7%	254	65.1%
	POLAR Q1/2 only	<10	-	22	56.9%	77	59.5%	133	63.2%	182	66.8%
	Both Q1/2	<10	-	14	57.4%	69	59.1%	111	61.2%	97	65.0%
Second year (A*A*A)	**Neither Q1/2**	**<10**	**-**	**135**	**58.2%**	**591**	**60.1%**	**1593**	**63.3%**	**2219**	**66.8%**
	IMD Q1/2 only	<10	-	22	56.3%	79	58.1%	169	62.8%	211	65.0%
	POLAR Q1/2 only	<10	-	19	57.7%	58	61.3%	106	63.9%	154	66.8%
	Both Q1/2	<10	-	12	60.5%	51	61.2%	91	62.7%	82	64.9%
Third year (A*A*A)	**Neither Q1/2**	**<10**	**-**	**118**	**63.0%**	**475**	**64.1%**	**1293**	**66.3%**	**1819**	**68.0%**
	IMD Q1/2 only	<10	-	14	61.4%	66	61.8%	122	65.8%	174	66.6%
	POLAR Q1/2 only	<10	-	16	62.1%	50	64.0%	85	65.7%	129	67.6%
	Both Q1/2	0	-	<10	-	41	64.8%	65	66.0%	64	66.7%
Fourth year (A*A*A)	**Neither Q1/2**	**0**	**-**	**23**	**66.9%**	**131**	**66.0%**	**401**	**67.4%**	**686**	**70.4%**
	IMD Q1/2 only	<10	-	<10	-	11	62.6%	38	66.5%	61	69.7%
	POLAR Q1/2 only	0	-	<10	-	13	66.5%	28	68.0%	51	70.8%
	Both Q1/2	0	-	<10	-	<10	-	18	67.1%	20	70.0%
First year (A*AA)	**Neither Q1/2**	**123**	**62.2%**	**989**	**63.9%**	**1422**	**64.8%**	**1169**	**65.9%**	**301**	**67.3%**
	IMD Q1/2 only	22	59.9%	139	63.3%	189	64.4%	134	65.8%	18	67.1%
	POLAR Q1/2 only	<10	-	86	63.2%	110	65.0%	61	65.9%	24	67.9%
	Both Q1/2	16	65.7%	68	63.4%	92	64.2%	46	66.3%	13	67.8%
Second year (A*AA)	**Neither Q1/2**	**141**	**63.4%**	**1025**	**64.3%**	**1619**	**65.6%**	**1311**	**66.7%**	**350**	**67.6%**
	IMD Q1/2 only	18	62.2%	144	63.8%	182	64.9%	138	66.4%	26	68.4%
	POLAR Q1/2 only	<10	-	85	64.3%	126	65.5%	58	66.6%	24	68.8%
	Both Q1/2	21	65.3%	67	63.9%	81	65.0%	45	66.5%	13	67.5%
Third year (A*AA)	**Neither Q1/2**	**117**	**65.9%**	**795**	**66.6%**	**1219**	**67.5%**	**1022**	**68.2%**	**283**	**69.1%**
	IMD Q1/2 only	11	64.2%	112	65.8%	154	66.8%	105	68.2%	23	70.2%
	POLAR Q1/2 only	<10	-	69	66.4%	100	66.6%	48	68.3%	20	70.0%
	Both Q1/2	17	68.9%	56	67.0%	68	66.5%	30	67.4%	11	69.3%

Figure 3.3.7.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by their POLAR and IMD grouping (solid lines = in POLAR Q1/2 only or IMD Q1/2 only or in both of these, dashed = in Q3/4/5 of both). Data points based on under 30 individuals are not plotted.*

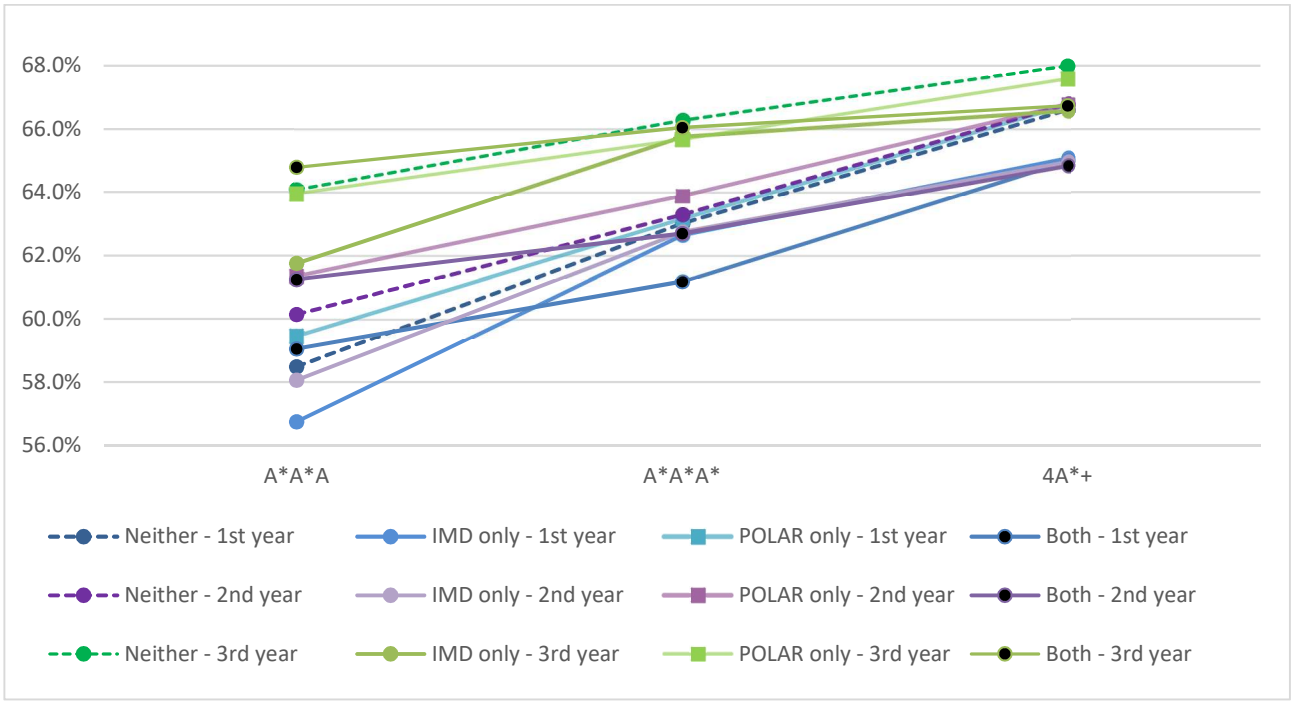
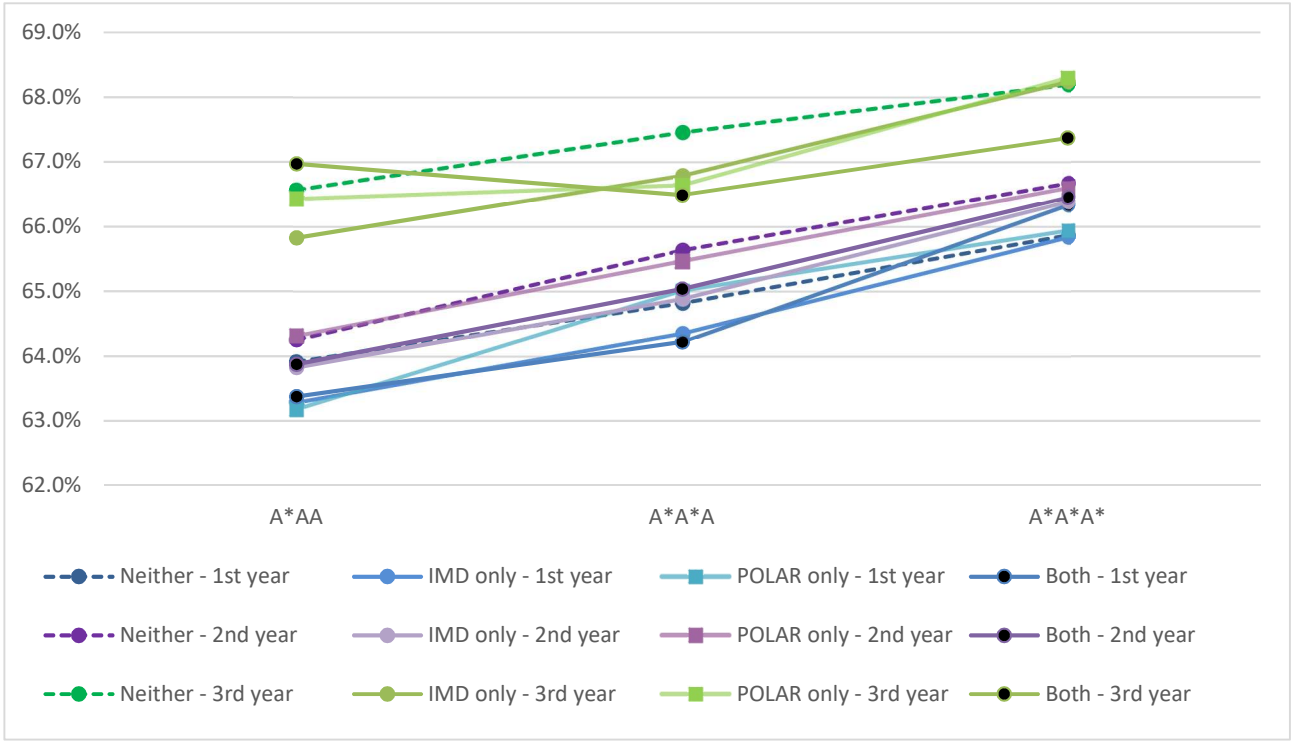


Figure 3.3.7.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by their POLAR and IMD (solid lines = in POLAR Q1/2 only or IMD Q1/2 only or in both of these, dashed = in Q3/4/5 of both). Data points based on under 30 individuals are not plotted.*



Interpretation

As shown in Table 3.3.7.a and Figure 3.3.7.a, for entrants to A*A*A courses, there are insufficient numbers of students with AAA or A*AA at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*A*A, students in POLAR4 Q1/2 only or in Q1/2 for both POLAR4 and IMD appear to slightly outperform their peers in Q1/2 for neither by 0.6-1.2% (except POLAR Q1/2 in year 3, and with the caveat that the number of students in some groups is relatively low), whilst students in IMD Q1/2 only underperform by 1.8-2.3% in their examination performance mean. For entrants with 3A*, the only difference exceeding 1.0% was an example of underperformance for students in Q1/2 for both POLAR4 and IMD, with performance 1.8% lower than counterparts in Q1/2 for neither. For entrants with 4A*+, the POLAR Q1/2 only group performed similarly to the neither group, but both the IMD Q1/2 only group and the group in Q1/2 for both POLAR4 and IMD underperformed in all three years (by 1.3-1.9%).

As shown in Table 3.3.7.a and Figure 3.3.7.b, for entrants to A*AA courses, there are insufficient numbers of students with AAA or 4A*+ at A Level for reliable examination performance means to be calculated for any course year. For entrants with A*AA-A*A*A*, all three disadvantaged groups sometimes slightly underperformed compared to students in Q1/2 for neither POLAR4 nor IMD, but this was never by more than 1.0%.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Entrants in POLAR4 Q1/2 (only) slightly overperform compared to counterparts in the neither Q1/2 group in course years 1 and 2 when admitted to A*A*A courses with A*A*A (although group sizes are quite small), but otherwise perform similarly. Entrants in both Q1/2 groups slightly overperform compared to counterparts in neither Q1/2 group in course year 2 when admitted to A*A*A courses with A*A*A, but often underperform when admitted with 3A* or 4A*+. Entrants in IMD Q1/2 (only) underperform compared to counterparts in neither Q1/2 group in all course years when admitted to A*A*A courses with A*A*A or 4A* (but not with 3A*). The three disadvantaged groups all perform quite similarly to the neither Q1/2 group for A*AA courses though.

3.3.8. *Interaction of school type and POLAR4*

Results

Table 3.3.8.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), their school type (Independent or Maintained) and POLAR4 quintile grouping, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, Independent school students from POLAR4 Q3/4/5 areas) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	Ind Q1/2	0	-	<10	-	14	60.4%	25	61.2%	57	66.4%
	Ind Q3/4/5	**0**	**-**	**42**	**56.0%**	**194**	**58.2%**	**649**	**63.0%**	**1152**	**66.9%**
	Main Q1/2	<10	-	35	57.1%	132	59.2%	219	62.4%	222	66.0%
	Main Q3/4/5	<10	-	138	54.5%	600	58.3%	1426	63.0%	1699	66.2%
Second year (A*A*A)	Ind Q1/2	0	-	0	-	11	61.3%	22	62.0%	48	65.6%
	Ind Q3/4/5	**0**	**-**	**35**	**57.6%**	**162**	**60.1%**	**559**	**63.3%**	**1003**	**66.6%**
	Main Q1/2	<10	-	31	58.8%	98	61.3%	175	63.5%	188	66.1%
	Main Q3/4/5	<10	-	121	58.0%	507	59.8%	1197	63.2%	1420	66.7%
Third year (A*A*A)	Ind Q1/2	0	-	0	-	12	64.1%	14	64.7%	37	67.5%
	Ind Q3/4/5	**0**	**-**	**31**	**63.4%**	**132**	**64.1%**	**456**	**66.5%**	**825**	**68.1%**
	Main Q1/2	<10	-	25	61.9%	79	64.4%	136	66.0%	156	67.2%
	Main Q3/4/5	<10	-	100	62.6%	408	63.7%	953	66.1%	1162	67.7%
Fourth year (A*A*A)	Ind Q1/2	0	-	0	-	0	-	<10	-	<10	-
	Ind Q3/4/5	**0**	**-**	**<10**	**-**	**21**	**65.9%**	**123**	**66.5%**	**313**	**70.2%**
	Main Q1/2	0	-	<10	-	20	66.8%	41	68.0%	64	70.4%
	Main Q3/4/5	<10	-	19	66.0%	119	65.8%	316	67.6%	431	70.3%
First year (A*AA)	Ind Q1/2	<10	-	21	62.8%	20	63.7%	22	66.1%	<10	-
	Ind Q3/4/5	**18**	**63.4%**	**349**	**63.8%**	**592**	**65.1%**	**554**	**65.9%**	**147**	**67.7%**
	Main Q1/2	22	63.9%	132	63.3%	180	64.7%	83	66.1%	29	68.2%
	Main Q3/4/5	125	61.8%	770	63.8%	1010	64.6%	743	65.8%	168	66.9%
Second year (A*AA)	Ind Q1/2	<10	-	21	65.1%	24	64.2%	24	66.2%	<10	-
	Ind Q3/4/5	**20**	**65.5%**	**354**	**64.3%**	**672**	**65.9%**	**629**	**66.9%**	**178**	**68.1%**
	Main Q1/2	27	63.9%	130	64.0%	181	65.4%	78	66.6%	28	68.6%
	Main Q3/4/5	138	63.0%	809	64.1%	1121	65.3%	813	66.5%	194	67.3%
Third year (A*AA)	Ind Q1/2	<10	-	18	67.0%	17	66.9%	19	68.6%	<10	-
	Ind Q3/4/5	**15**	**66.3%**	**281**	**67.1%**	**523**	**67.7%**	**504**	**68.4%**	**144**	**69.5%**
	Main Q1/2	21	66.3%	106	66.7%	150	66.5%	58	67.6%	23	69.9%
	Main Q3/4/5	112	65.8%	622	66.2%	842	67.2%	617	68.0%	159	69.1%

Figure 3.3.8.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by their school type and POLAR4 grouping (dashed lines = Independent school pupils from POLAR4 Q3/4/5 areas). Data points based on under 30 individuals are not plotted.*

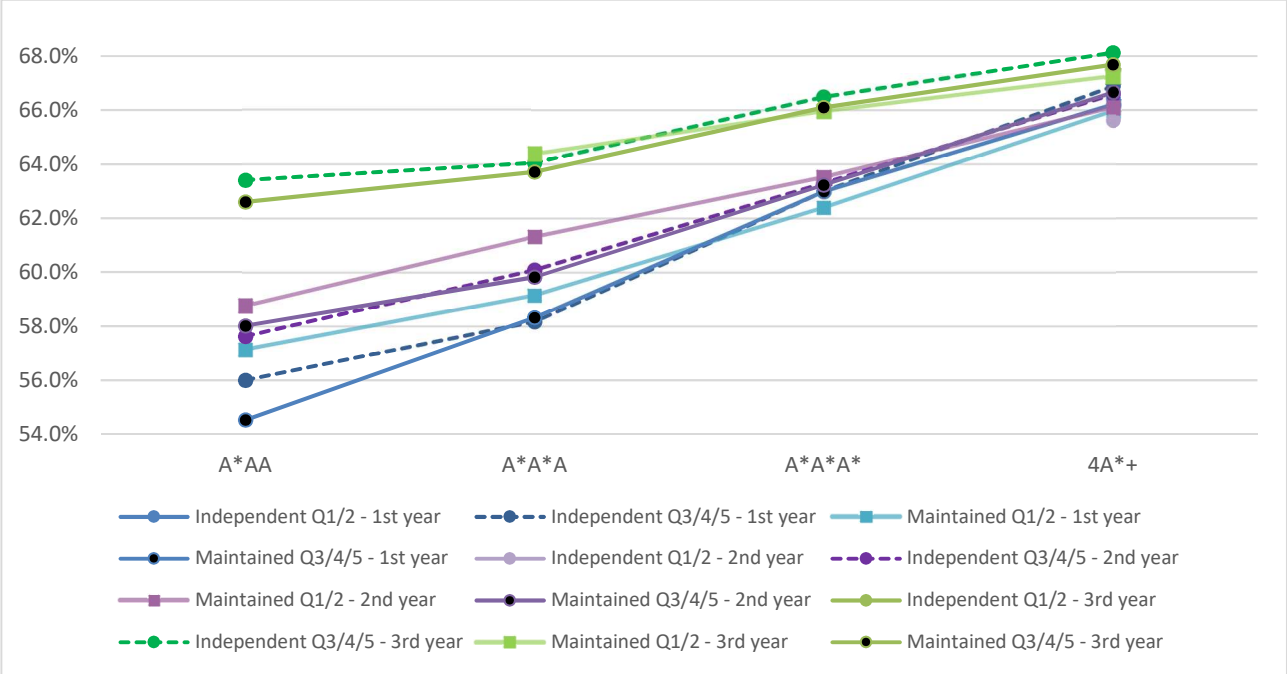
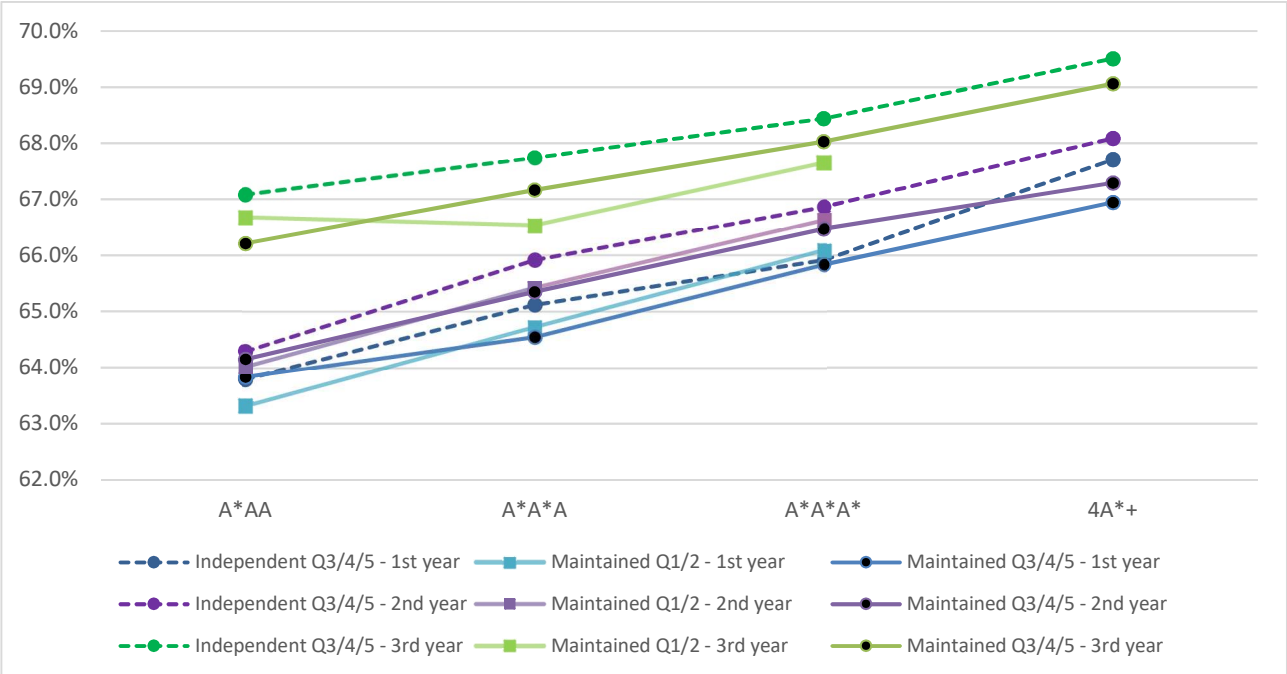


Figure 3.3.8.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by their school type and POLAR4 grouping (dashed lines = Independent school pupils from POLAR4 Q3/4/5 areas). Data points based on under 30 individuals are not plotted, which includes all data for Independent school students from POLAR4 Q1/2 areas.*



Interpretation

As shown in Table 3.3.8.a and Figure 3.3.8.a, for entrants to A*A*A courses, there are insufficient numbers of students with AAA at A Level for reliable examination performance means to be calculated for any course year. There are also insufficient numbers of independent school students from Q1/2 areas for any course year, except in the 4A* band where numbers are still relatively low, so no comment will be made on this group. Students from the most disadvantaged group – maintained school students from POLAR4 Q1/2 areas – overperform by 1.0-1.2% in years 1 and 2 compared to the most advantaged reference group (independent school students from Q3/4/5 areas) when they enter with A*AA or A*A*A, but this is not the case in their third year, or when they enter with 3A* or 4A*+. Maintained school students from more advantaged POLAR4 Q3/4/5 areas usually perform similarly to independent school students from these areas in all course years for all levels of matched A Level attainment, although they underperform by 1.5% in year 1 when they enter with A*AA.

As shown in Table 3.3.8.a and Figure 3.3.8.a, for entrants to A*AA courses, there are insufficient numbers of students with AAA at A Level for reliable examination performance means to be calculated for any course year, and for independent school students from Q1/2 areas with any A Level profile and for any course year. For entrants with A*AA-3A* in all course years, students from the most disadvantaged group – maintained school students from POLAR4 Q1/2 areas – often appear to have similar performance to those in the most advantaged reference group (independent school students from Q3/4/5 areas), and at most underperform by 1.2% relative to them. For entrants with A*AA-4A*+ in all course years, maintained school students from more advantaged POLAR4 Q3/4/5 areas also usually performed comparably to those in the most advantaged reference group, and at most underperformed by 0.9%.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, students from the maintained sector, from either POLAR4 Q1/2 or Q3/4/5 areas, do not appear to reliably outperform counterparts from independent schools and Q3/4/5 areas with matched A Level attainment, with the exception that they do outperform by 1.0-1.2% in the specific case of maintained school students from POLAR4 Q1/2 areas in years 1 and 2 of A*A*A courses when they enter with A*AA or A*A*A. However, they do not usually underperform by much either.

3.3.9. *Interaction of school type and IMD*

Results

Table 3.3.9.a.

*Students and their examination results have been grouped by course year (first, second, third or fourth), course type (typical A Level entry requirement of A*AA or A*A*A), their school type (Independent or Maintained) and IMD quintile grouping, and attainment in best 3 or 4 A Levels. For each group, the number of students and their mean examination percentage is shown. Groups with less than 30 individuals are shaded in grey. The rows for those with the most advantaged characteristic (in this case, Independent school students from Q3/4/5 areas) are in bold, and the mean examination percentage for others in the same group but with a more disadvantaged characteristic are in orange font if at least 1.0% lower or blue if at least 1.0% higher.*

		A Level best 3 (or 4) attainment band									
		AAA		A*AA		A*A*A		3A*		4A*+	
Course year and group	**Characteristic**	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*	*n*	*exam mean*
First year (A*A*A)	Ind Q1/2	0	-	<10	-	24	61.3%	71	63.7%	112	65.9%
	Ind Q3/4/5	**0**	**-**	**38**	**56.0%**	**184**	**57.9%**	**604**	**62.8%**	**1097**	**67.0%**
	Main Q1/2	<10	-	36	52.9%	143	57.3%	253	61.6%	238	64.7%
	Main Q3/4/5	<10	-	137	55.6%	588	58.8%	1395	63.1%	1682	66.4%
Second year (A*A*A)	Ind Q1/2	0	-	<10	-	22	61.6%	60	62.9%	97	65.1%
	Ind Q3/4/5	**0**	**-**	**32**	**57.6%**	**151**	**60.0%**	**522**	**63.3%**	**954**	**66.7%**
	Main Q1/2	<10	-	30	57.8%	107	58.9%	200	62.7%	195	64.9%
	Main Q3/4/5	<10	-	122	58.3%	497	60.3%	1175	63.4%	1412	66.8%
Third year (A*A*A)	Ind Q1/2	0	-	<10	-	23	65.2%	41	66.2%	80	67.2%
	Ind Q3/4/5	**0**	**-**	**28**	**63.3%**	**121**	**63.8%**	**430**	**66.5%**	**782**	**68.2%**
	Main Q1/2	<10	-	19	60.7%	84	62.3%	146	65.7%	157	66.3%
	Main Q3/4/5	<10	-	106	62.8%	403	64.1%	945	66.1%	1161	67.8%
Fourth year (A*A*A)	Ind Q1/2	0	-	<10	-	<10	-	13	65.3%	30	71.4%
	Ind Q3/4/5	**0**	**-**	**<10**	**-**	**20**	**65.9%**	**115**	**66.5%**	**290**	**70.1%**
	Main Q1/2	<10	-	<10	-	16	64.8%	44	67.1%	50	68.8%
	Main Q3/4/5	0	-	24	66.2%	123	66.1%	314	67.7%	445	70.5%
First year (A*AA)	Ind Q1/2	<10	-	35	63.4%	67	64.9%	53	66.8%	<10	-
	Ind Q3/4/5	**16**	**63.4%**	**335**	**63.8%**	**545**	**65.1%**	**523**	**65.8%**	**147**	**67.7%**
	Main Q1/2	33	62.7%	171	63.3%	213	64.1%	127	65.6%	23	67.9%
	Main Q3/4/5	114	62.0%	731	63.9%	977	64.7%	700	65.9%	174	67.0%
Second year (A*AA)	Ind Q1/2	<10	-	41	64.7%	64	65.7%	65	66.9%	13	68.7%
	Ind Q3/4/5	**18**	**65.5%**	**334**	**64.3%**	**633**	**65.9%**	**588**	**66.8%**	**174**	**68.0%**
	Main Q1/2	35	63.6%	169	63.7%	198	64.7%	118	66.1%	26	67.8%
	Main Q3/4/5	130	63.1%	770	64.2%	1104	65.5%	774	66.5%	196	67.4%
Third year (A*AA)	Ind Q1/2	<10	-	33	66.8%	54	67.7%	48	68.5%	12	71.4%
	Ind Q3/4/5	**14**	**66.4%**	**266**	**67.1%**	**487**	**67.7%**	**475**	**68.4%**	**140**	**69.3%**
	Main Q1/2	26	66.6%	133	66.1%	168	66.4%	87	67.8%	22	69.1%
	Main Q3/4/5	107	65.7%	595	66.3%	824	67.2%	588	68.0%	160	69.2%

Figure 3.3.9.a.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*A*A**, shown separately for each course year and split by their school type and IMD grouping (dashed lines = Independent school pupils from IMD Q3/4/5 areas). Data points based on under 30 individuals are not plotted.*

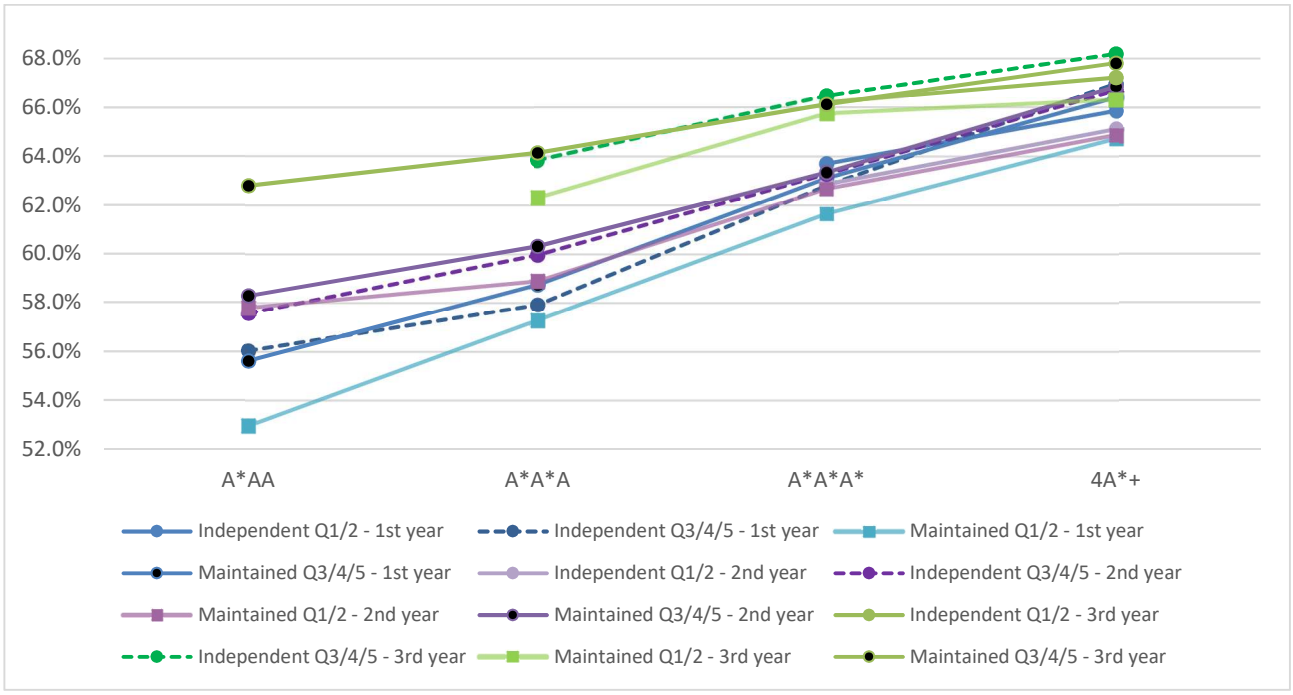
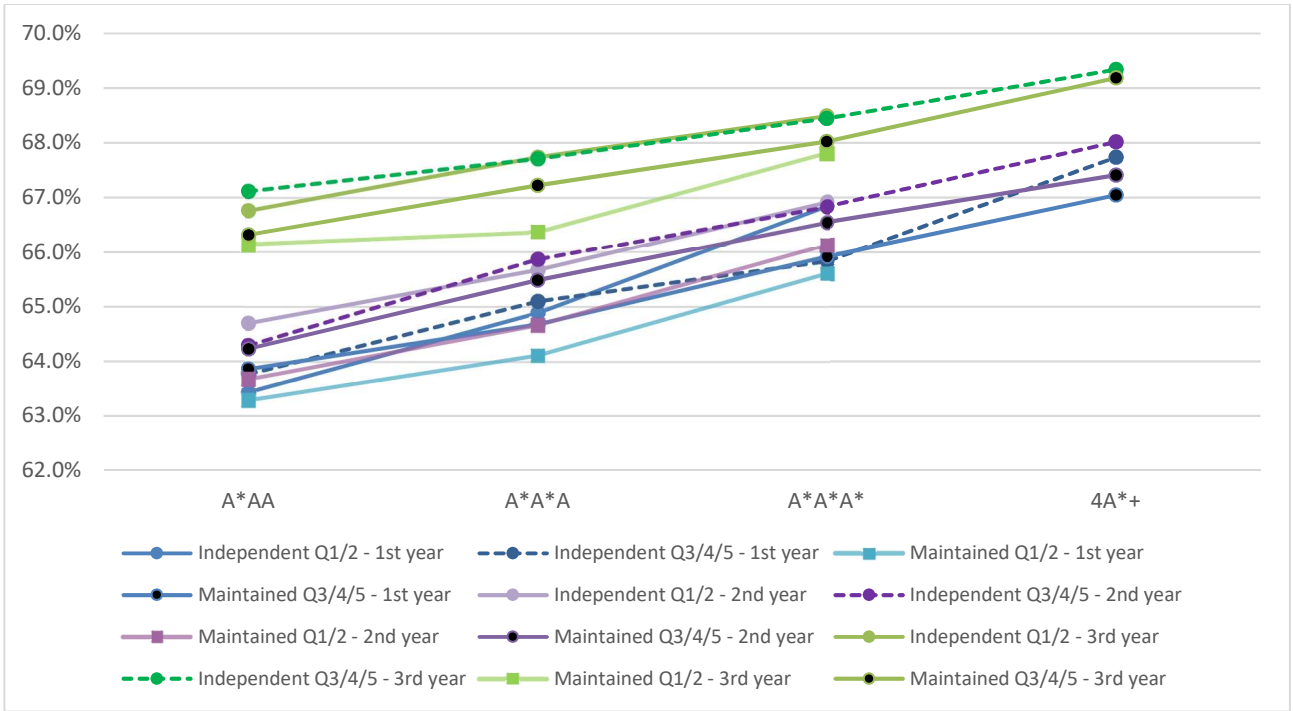


Figure 3.3.9.b.

*The mean examination percentages (y-axis) for students with different levels of attainment in their best 3 or 4 A Levels (x-axis) that entered **courses with a typical A Level entry requirement of A*AA**, shown separately for each course year and split by their school type and IMD grouping (dashed lines = Independent school pupils from IMD Q3/4/5 areas). Data points based on under 30 individuals are not plotted.*



Interpretation

As shown in Table 3.3.9.a and Figure 3.3.9.a, for entrants to A*A*A courses, there are insufficient numbers of students with AAA at A Level for reliable examination performance means to be calculated for any course year, and the same is true for students with A*AA at A Level for third year examination performance. Students from the most disadvantaged group – maintained school students from IMD Q1/2 areas – underperform in all course years by 0.5-3.1% compared to the most advantaged reference group (independent school students from Q3/4/5 areas) when they enter with A*AA-4A*+, with only one exception of very slight overperformance (where group size is small). Maintained school students from more advantaged IMD Q3/4/5 areas usually perform similarly to independent school students from these areas in all course years for all levels of matched A Level attainment, with no differences in performance of more than 1.0%. Where there is fairly reliable data for comparison, entrants from independent schools and Q1/2 areas performed similarly to counterparts from more advantaged Q3/4/5 areas with 3A*s, but underperformed by 1.0-1.6% with 4A*+.

As shown in Table 3.3.9.a and Figure 3.3.9.b, for entrants to A*AA courses, there are insufficient numbers of students with AAA at A Level for reliable examination performance means to be calculated for any course year. Students from the most disadvantaged group – maintained school students from IMD Q1/2 areas – slightly underperform by 0.2-1.3% in all course years compared to the most advantaged reference group (independent school students from Q3/4/5 areas) when they enter with A*AA-3A* (there is insufficient data at the 4A*+ level). Maintained school students from more advantaged IMD Q3/4/5 areas perform similarly to independent school students from these areas in all course years for all levels of matched A Level attainment. Entrants from independent schools and Q1/2 areas perform similarly to independent school students from Q3/4/5 areas in all course years for all levels of matched A Level attainment (noting there is insufficient data at the 4A*+ level for comparison), except that they overperform in the first year by 1.0% when admitted with 3A*.

Again, average marks appear to generally increase as course year increases, and as the student's A Level attainment increases.

Conclusion: Overall, students from the maintained sector, from either IMD Q1/2 or Q3/4/5 areas, do not appear to outperform counterparts from independent schools and Q3/4/5 areas with matched A Level attainment (and in fact those from Q1/2 areas often underperform). With one isolated exception, students from independent schools and IMD Q1/2 areas do not overperform compared to counterparts from independent schools and Q3/4/5 areas with matched A Level attainment, but often perform similarly.

3.4. Conclusions

Overperformance is only seen for disadvantaged groups in a few isolated cases, and is insufficient to justify making reduced differential offers

Disadvantaged groups were found to outperform relatively advantaged counterparts by 1.0% or more in the following cases only (although it should be noted that comparisons could not be made in all cases due to small group sizes, and performance in Year 4 was not considered):

- Entrants from comprehensive schools compared to independent, only in the second year of A*A*A courses having entered with A*AA, by 1.0% (note: the number of independent school

students was relatively low), and in the first year of A*AA courses having entered with 4A*+, by 1.3%

- Entrants from grammar schools compared to independent, only in the first year of A*A*A courses having entered with A*A*A, by 1.1%
- Entrants with the few recent Oxford/Cambridge offers flag compare to those without, only in the first year of A*AA courses having entered with AAA, by 1.1% (note: the number of flagged students was relatively low)
- Entrants from POLAR4 Q1 areas compared to those from Q5 areas, only in the first year of A*A*A courses having entered with A*A*A, by 1.3% (note: the number of Q1 students was relatively low), and in the second year of A*A*A courses having entered with 3A*, by 1.2%
- Entrants from POLAR4 Q2 areas compared to those from Q5 areas, in the second year of A*A*A courses having entered with A*A*A, by 1.0%
- Entrants with a declared disability compared to those without, only in the second year of A*A*A courses having entered with A*A*A, by 1.0% (note: the number of students with a declared disability was relatively low)
- Entrants from POLAR4 Q1/2 areas (only) compared to those from Q1/2 areas for neither POLAR4 nor IMD, only in the first and second years of A*A*A courses having entered with A*A*A, by 1.0-1.2%
- Entrants from Q1/2 areas for both POLAR4 and IMD compared to those from Q1/2 areas for neither POLAR4 nor IMD, only in the second year of A*A*A courses having entered with A*A*A, by 1.1%
- Entrants from maintained sector schools and POLAR4 Q1/2 areas compared to those from independent schools and Q3/4/5, only in the first and second years of A*A*A courses having entered with A*AA or A*A*A, by 1.0-1.2%
- Entrants from independent sector schools and IMD Q1/2 areas compared to those from independent schools and Q3/4/5, only in the first year of A*AA courses having entered with 3A*, by 1.0%

The isolated and inconsistent nature of these examples of overperformance is a constraint in using them to justify differential offers, even just for the specific groups in question, partly because it reduces the general credibility of the findings of overperformance. Also, overperformance of 1.0% or more is never seen in the third year, which arguably is the most important in terms of ultimate potential to succeed academically at Cambridge. But probably the greatest obstacle is the fact that each of these examples is by little more than 1.0%, and there are no instances at all of a disadvantaged group's overperformance being to the extent that they attained as well in Cambridge examinations as more advantaged counterparts with a higher grade profile – which would be necessary to straightforwardly justify a differential offer one grade lower for a disadvantaged group.

Although there are numerous examples of disadvantaged groups performing similarly to more advantaged counterparts with matched A Level attainment, several disadvantaged groups quite consistently underperform

In addition to the examples above of disadvantaged groups that outperform more advantaged counterparts with matched A Level attainment in terms of examination performance, the findings presented here include many examples of disadvantaged groups performing similarly. However, there are also instances of disadvantaged groups that quite consistently underperform. Some groups where this effect is particularly large and/or consistent are:

- Entrants from IMD Q1 compared to those from Q5, for A*A*A courses having entered with A*A*A-4A*+, by 0.9-3.4%
- Entrants from Asian, Chinese, Black, and Mixed and Other ethnicity groups compared to those from the White group, for A*A*A courses having entered with A*A*A or 3A*, by 0.3-5.1% (with differences often over 1.0%); and for A*AA courses having entered with A*AA or A*A*A, by 0.6-3.1% (with differences often over 1.0%).
- Entrants with a declared disability compared to those without, for A*A*A courses having entered with 3A*, by 1.4-3.7%
- Entrants from IMD Q1/2 only (i.e. not in POLAR4 Q1/2) compared to those from Q3/4/5 for both IMD and POLAR4, for A*A*A courses having entered with A*A*A or 4A* (but not with 3A*), by 1.4-2.3%
- Entrants from maintained sector schools and IMD Q1/2 compared to those from independent schools and Q3/4/5, for A*A*A courses having entered with A*AA-4A*+ (with one exception), by 0.5-3.1%

*Some relatively extreme group differences and exceptions are seen for entrants to A*A*A courses with matched 4A*+ attainment*

Some examples of this are seen in the comparison of the following entrant groups:

- Those with and without the few Oxford/Cambridge offers flag – the flagged group with 4A*+ underperforms by c1.5% in the first two course years, instead of similar performance
- Those from IMD Q2 and Q5 areas – the Q2 group with 4A*+ underperforms by 1.4-2.0%, instead of performing similarly
- Those from Asian and White ethnicities – the Asian group with 4A* perform similarly, instead of underperforming by 1.3-2.8%

This is probably because the 4A*+ attainment band is a mixed group – comprising those with 4, 5, 6, etc. A*s – and this distinction makes a difference for performance on A*A*A courses. When next refreshing this analysis, it may be wise to at least make a distinction between the 4A* and 5A*+ groups, and this distinction has been made in the analysis in the next Section.

Section 4: Multiple linear regression analyses to identify non-academic characteristics which are predictive of Cambridge examination performance when A Level attainment and other characteristics are taken into account

4.1. Introduction

The review of pre-existing relevant analysis in Section 2 noted that two broad methodologies have been used. One of these – a simple comparison of group means, with groups matched on A Level attainment but differing in respect of a characteristic of interest – was employed in Section 3 above. The other, which will be utilised in this Section, is to fit multiple regression models predicting degree outcome from potential explanatory variables including A Level attainment and multiple non-academic characteristics associated with disadvantage. These models can show the specific effect of each significant explanatory variable when all the others (including A Level attainment) are controlled for. This methodological approach was utilised by both Vidal Rodeiro and Zanini (2015) and Samoylova and Hall (2020), but as discussed in Section 2, these studies both had limitations

from the present perspective of interest. For example, Vidal Rodeiro and Zanini (2015) used relatively non-discriminative degree outcome measures (1st or not, at least 2.1 or not), included all Russell Group institutions, and included only a few limited characteristics related to disadvantage, whilst Samoylova and Hall (2020)'s study was difficult to interpret from the present perspective of interest because a relatively heterogenous population was included (not just UK-domiciled A Level takers) and first year examination results were included as a potential explanatory factor of final degree attainment. There is therefore a gap for a Cambridge-specific analysis of this nature to be conducted, using examination percentage as a more discriminative outcome measure, incorporating more characteristics of interest as potential explanatory factors, including only UK-domiciled A Level takers, and considering each course year separately. Methodologically, this research is similar to an unpublished study conducted by Dr Catherine Sumnall in 2015[33], which was not included in the literature review in Section 2 because it used AS Level UMS marks instead of A Level A* grades.

4.2. Methodology

Population

The population included was the same as described in Section 3. As before, examination results for each course year were considered separately, and the population was divided into entrants to courses with a typical A Level offer level of A*AA or of A*A*A. Additionally, the populations of three specific courses within these were looked at individually as examples[34]: Natural Sciences (which has the most observations in this dataset among A*A*A courses), History (which has the most observations in this dataset among A*AA courses, but is relatively unusual in that first year examinations are preliminary ones rather than Tripos), and Law (which has the most observations in this dataset among A*AA courses for which there are Tripos examination results in each of the three course years).

Analysis conducted

Simple linear regression was first conducted to fit a model of the relationship between an academic "explanatory" variable (also known as an "independent" or "predictor" variable; in this case the number of A*s at A Level, with differentiation of the 4A*+ group, see Figure C), and a "response" outcome variable (also known as the "dependent" variable; in this case, examination performance, expressed as a percentage). Models were fitted separately for each year of examination results (not including 4th year results for entrants to A*AA courses due to small numbers), both for the two course types (A*AA or A*A*A) - giving a total of 7 separate analyses/models, and for the three individual courses (Natural Sciences, Law and History) – giving another 11 models. Unlike Sumnall's study, GCSE information was not taken into account as an academic variable. This is because the purpose of the present study is to explore whether differential offers are justifiable for those with certain characteristics and A Level grades, regardless of GCSE grades, so only A Level grades should be taken into account.

[33] C. Sumnall (July 2015) *The inclusion of non-academic variables in regressions using UMS and GCSE*. University of Cambridge, unpublished.

[34] This was based on course of entry, which in a small number of cases will not have been the same as the course that examinations were ultimately taken in each year (but if differential offers were made they would be based upon the course of entry).

Multiple linear regression[35] was then conducted in each case to fit models which additionally included 12 non-academic explanatory variables (see Figure C). These variables are all categorical, so were converted into binary "dummy" variables for entry into the regression models, as detailed in the "values" column. For this reason, the variables used were in most cases binary, although it was felt important not to group all four 'other than White' ethnicity groups together, so a series of four dummy variables were used so that these could be entered into the models separately, with White as the reference group that each other group is effectively compared to. For ease of interpretation, the reference group which is coded 0 is always the least disadvantaged. In addition to the characteristics from Section 3, a few additions here are the flag for care experience, gender, and age.

Figure C
Explanatory variables

Variable	Type	Values
Academic variables (included in Models 1 and 2)		
Number of A*s at A Level	Continuous[36] (discrete)	0 (AAA best 3 only), 1 (A*AA only), 2 (A*A*A only), 3 (3A*), 4 (4A*), 5 (5A*), 6 (6A*), 7 (7A*), 8 (8A*)
Non-academic characteristics (included in Model 2)		
School type	Categorical	0 (Independent), 1 (Maintained)
Flag for few recent Ox/Cam offers	Categorical	0 (no flag), 1 (flag)
Flag for POLAR4	Categorical	0 (no flag, Q3-5), 1 (flag, Q1-2)
Flag for IMD	Categorical	0 (no flag, Q3-5), 1 (flag, Q1-2)
Ethnicity	Categorical	#1: 0 (White, Black, Chinese, Mixed/Other), 1 (Asian) #2: 0 (White, Asian, Chinese, Mixed/Other), 1 (Black) #3: 0 (White, Asian, Black, Mixed/Other), 1 (Chinese) #4: 0 (White, Asian, Black, Chinese), 1 (Mixed/Other)
Disability declared	Categorical	0 (no disability declared), 1 (disability declared)
Gender	Categorical	0 (male), 1 (female)
Flag for care experience	Categorical	0 (no flag), 1 (flag)
Age on entry	Categorical	0 (young), 1 (mature)

For inclusion in the regression analyses, each individual needs to have data for every variable, so individuals with missing data for any variable must be excluded. Figure D shows the number of observations remaining for each year of each course type when individuals without data have been excluded. 1-2% of the observations in each of the 7 groups in the table have been excluded compared to Figure B, so the composition of the groups is not severely affected.

[35] The "enter" method was used, in which all variables are entered into the model, and none removed regardless of their significance. This means they are all retained in the final model, and the effect of each can be seen in the output, even if not significant. The assumptions of normality and non-collinearity were checked for each model.
[36] Treating this as a continuous variable assumes a *linear* relationship between number of A*s and the outcome, which is not necessary correct.

Figure D

*The number of entrants per year with a first, second, third and/or fourth year examination percentage result included in analysis, shown separately for those than entered courses with a standard A Level offer of A*AA and A*A*A.*

	Entry year							
	2012	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2012-18*
First year (A*A*A)	941	943	976	975	953	893	891	6572
First year (A*AA)	751	790	497	766	773	643	735	4955
Second year (A*A*A)	922	925	957	964	929	853	0	5550
Second year (A*AA)	821	811	911	928	959	975	0	5405
Third year (A*A*A)	889	904	929	902	884	0	0	4508
Third year (A*AA)	809	915	932	830	716	0	0	4202
Fourth year (A*A*A)	306	381	394	401	0	0	0	1482

For each model, the following outputs were noted and have been presented:

- **R^2**: A value between 0 and 1 which indicates the amount of the variance in the outcome variable that is explained by the model
- **p**: A value between 0 and 1 which indicates the statistical significance of the F value (not shown – but this is based on the ratio of how much variance in the outcome the model explains compared to how much it does not explain); a value of 0.05 or less indicates statistical significance.

Additionally, for each of the multiple linear regression models, the output includes a list of all of the academic and non-academic explanatory variables, along with the **unstandardised regression coefficient**, *b*, for each, which shows the variable's effect on examination performance when all the other variables are controlled for, including the direction and magnitude of the effect. There is also a p value which indicates the statistical significance of each variable's effect. It should be noted that the underlying mechanism and causality of each variable's apparent effect is unknown; if there is an apparent effect of a variable on the examination performance outcome, this means that variable is statistically associated with a difference in the outcome, not that it is necessarily the cause of that difference.

Fourth year results are shown for A*A*A courses and Natural Sciences, but not discussed because fourth years of courses are often optional and only available for a minority of courses, so the populations doing them may not be representative.

4.3. Findings

Results

Table 4.3.a

This table shows the R^2 (how much variance in the outcome the model explains) and p (statistical significance, where $p < 0.05$ is significant) values for each of the regression models. There are two models for each course year and type: Model 1 with only A Level A count as a predictor variable, and Model 2 with non-academic characteristic variables also included. The significant (or nearly significant) explanatory variables in Model 2 are listed, with predictors of higher examination performance in blue, and predictors of lower performance in orange. The table on the next page provides the unstandardized regression coefficients for these variables.*

Course type	Course year	n	Model 1 (A Levels only)		Model 2 (A Levels and characteristics)		Significant variables (p < 0.05 unless otherwise stated)
			R^2	p	R^2	p	
A*A*A	Year 1	6572	0.144	<0.001	0.166	<0.001	A* count; maintained; mature; IMD flag; female; Asian or Black; disability declared
	Year 2	5550	0.097	<0.001	0.114	<0.001	A* count; mature; IMD flag; female; Asian; disability declared
	Year 3	4508	0.053	<0.001	0.065	<0.001	A* count; maintained; IMD flag; Asian or Black or Chinese (p = 0.053) or Mixed/Other; disability declared
	Year 4	1482	0.060	<0.001	0.079	<0.001	A* count; Asian or Black or Chinese
A*AA	Year 1	4955	0.042	<0.001	0.056	<0.001	A* count; few OxCam offers flag; female; Asian or Black or Mixed/Other; disability declared; care experience flag
	Year 2	5405	0.048	<0.001	0.062	<0.001	A* count; few OxCam offers flag; maintained; Asian or Black or Mixed/Other; disability declared
	Year 3	4202	0.036	<0.001	0.052	<0.001	A* count; maintained; mature; Asian or Black or Mixed/Other; disability declared (p = 0.053); care experience flag (p = 0.057)

Table 4.3.b

This table lists the unstandardized regression coefficients for each non-academic explanatory variable in each regression model, if they are either statistically significant (or nearly so, as listed in table a) or not statistically significant but have a magnitude of at least +/-1.0 (in which case they are in grey, because they may be unreliable and based on a very small number of individuals). Because all of the variables are binary, the unstandardized regression coefficients are simple to interpret: a value of -1.0 means that variable has an average impact on examination performance of -1.0%.

Course type	Course year	n	Few OxCam offers flag	Maintained school	POLAR4 flag	IMD flag	Asian ethnicity	Black ethnicity	Chinese ethnicity	Mixed/Other ethnicity	Disability declared	Mature	Female	Care flag
A*A*A	Year 1	6572		-0.4		-0.9	-1.0	-2.4			-1.0	-6.6	-2.2	+1.3
	Year 2	5550				-1.0	-1.3	-1.6			-1.4	-7.4	-1.7	-1.1
	Year 3	4508		-0.4		-0.7	-1.3	-2.8	-0.9	-0.8	-1.1			-4.5
	Year 4	1482					-1.5	-4.4	-2.9			-7.7		-7.6
A*AA	Year 1	4955	-0.5				-1.5	-2.7		-1.0	-0.6	-1.1	-0.3	-2.9
	Year 2	5405	-0.6	-0.4			-1.4	-2.4		-0.8	-0.7	-1.3		-1.6
	Year 3	4202		-0.6			-0.8	-2.6		-0.9	-0.5	-1.8		-2.1

Table 4.3.c

This table shows the R^2 (how much variance in the outcome the model explains) and p (statistical significance, where $p < 0.05$ is significant) values for each of the regression models. There are two models for each course year and type: Model 1 with only A Level A count as a predictor variable, and Model 2 with non-academic characteristic variables also included. The significant (or nearly significant) explanatory variables in Model 2 are listed, with predictors of higher examination performance in blue, and predictors of lower performance in orange. The table on the next page provides the unstandardized regression coefficients for these variables.*

Course	Course year	n	Model 1 (A Levels only)		Model 2 (A Levels and characteristics)		Significant variables (p < 0.05 unless otherwise stated)
			R^2	p	R^2	p	
Natural Sciences	Year 1	2780	0.167	p<0.001	0.183	p<0.001	A* count; mature; IMD flag; female; Asian; disability declared
	Year 2	2357	0.100	p<0.001	0.115	p<0.001	A* count; mature; IMD flag; female; Asian; disability declared
	Year 3	1919	0.049	p<0.001	0.062	p<0.001	A* count; IMD flag (p = 0.058); Asian or Chinese; disability declared
	Year 4	745	0.059	p<0.001	0.084	p<0.001	A* count; Chinese or Mixed/Other (p = 0.052)
Law	Year 1	658	0.103	p<0.001	0.137	p<0.001	A* count; Black or Mixed/Other
	Year 2	569	0.122	p<0.001	0.145	p<0.001	A* count; disability declared
	Year 3	485	0.081	p<0.001	0.098	p<0.001	A* count; Mixed/Other
History	Year 1	807	0.078	p<0.001	0.104	p<0.001	A* count; maintained; Mixed/Other; disability declared (p = 0.053)
	Year 2	860	0.086	p<0.001	0.171	p<0.001	A* count; maintained; IMD flag; female; Asian or Black or Mixed/Other; disability declared
	Year 3	726	0.090	p<0.001	0.134	p<0.001	A* count; maintained; IMD flag; female (p = 0.050)

Table 4.3.d

This table lists the unstandardized regression coefficients for each non-academic explanatory variable in each regression model, if they are either statistically significant (or nearly so, as listed in table c) or not statistically significant but have a magnitude of at least +/-1.0 (in which case they are in grey, because they may be unreliable and based on a very small number of individuals). Because all of the variables are binary, the unstandardized regression coefficients are simple to interpret: a value of -1.0 means that variable has an average impact on examination performance of -1.0%.

Course	Course year	n	Few OxCam offers flag	Maintained school	POLAR4 flag	IMD flag	Asian ethnicity	Black ethnicity	Chinese ethnicity	Mixed/Other ethnicity	Disability declared	Mature	Female	Care flag
Natural Sciences	Year 1	2780				-1.0	-1.9	-3.2	-1.2		-1.6	-8.3	-1.2	
	Year 2	2357				-1.1	-1.8	-3.3	-1.1		-1.5	-9.7	-0.9	-5.0
	Year 3	1919				-1.0	-1.8		-2.3		-1.9	-1.6		-3.2
	Year 4	745			+1.1			+1.4	-3.0	-1.9		-8.4		
Law	Year 1	658						-2.2	+1.4	-1.2	-1.3	+2.0		+3.5
	Year 2	569						-1.3	+1.6		-1.9			+1.4
	Year 3	485						-1.6		-1.3		+2.0		+3.8
History	Year 1	807		-0.6					-1.0	-1.5	-1.0			
	Year 2	860		-0.8		-1.0	-1.1	-2.2		-0.9	-0.9		-1.0	-1.8
	Year 3	726		-0.5		-1.0		-1.6				-1.3	-0.4	

Interpretation

Predictive value of the regression models

The R^2 values in tables 4.3.a. and c. show that when only the A Level A* count is included in the regression model (in Model 1) for each course type and year as an explanatory variable, 3.6-16.7% of the variance in examination performance can be explained. Sometimes this decreases with course year, which would intuitively be expected as time from A Level examinations increases – this is seen for A*A*A courses, and Natural Sciences specifically. However, this does not appear to be the case for A*AA courses, and Law or History specifically. More of the variance in examination performance tends to be explained in the single course models than in the models for a group of courses, particularly for Law and History compared to A*AA courses, which makes sense because there will be no variability in the examination performance due to course in the single course models.

Adding the 12 binary variables that represent differences in 9 non-academic characteristics (in Model 2) improves the amount of variance in examination performance that is explained for every course type and year, but only by a modest 1.2-3.4% in most cases (the two exceptions being course years 2 and 3 of History). At best the resulting models explain only 18.3% of variance in examination performance (and as little as 5.2%), so the majority of the variance in examination performance is still unexplained, and many other factors must be involved.

School explanatory variables

Tables 4.3.b. and d. show that both of the school variables sometimes have small but significant negative effects on examination performance (when all the other factors are controlled for in Model 2), but not for all course types and years. Having attended a **school with few recent Oxford/Cambridge offers** only has a significant effect on examination performance of -0.5 or -0.6% for A*AA courses in Years 1 and 2, with no other effects either significant or of magnitude greater than 1.0% for A*A*A courses or any of the three individual courses.

Having attended a **maintained sector school** has a significant effect on examination performance of -0.4% for A*A*A courses in Years 1 and 3 (when all the other factors are controlled for in Model 2), but no effects either significant or of magnitude greater than 1% for Natural Sciences in any Year. Having attended a maintained sector school also has a significant effect on examination performance of -0.4 or -0.6% for A*AA courses in Years 2 and 3 and of -0.5 to -0.8% for History in all three Years, but no effects either significant or of magnitude greater than 1% for Law.

Geodemographic explanatory variables

Having been resident in an area with a relatively low propensity for young people to enter HE (i.e. having the **POLAR4 flag**) does not have an effect on examination performance for any course type or year (when all the other factors are controlled for in Model 2), either a significant one or of magnitude greater than 1%[37].

By contrast, having been resident in an area associated with relatively high socioeconomic disadvantage (i.e. having the **IMD flag**) has a significant effect on examination performance of -0.7

[37] Except for Year 4 of Natural Sciences, which will not be discussed for reasons explained in the methodology.

to -1.1% for A*A*A courses and Natural Sciences specifically in Years 1-3 (when all the other factors are controlled for in Model 2), and also of -1.0% for History in Years 2 and 3, although it has no effects either significant or of magnitude greater than 1% for A*AA courses overall or Law.

Ethnicity explanatory variables

Being of **Asian** ethnicity (compared to White ethnicity) has a significant effect on examination performance of -1.0% to -1.3% for A*A*A courses in Years 1-3 and of -1.8% to -1.9% for Natural Sciences specifically (when all the other factors are controlled for in Model 2). For A*AA courses this factor has a significant effect of -1.5% in Year 1 reducing to -0.8% by Year 3, although only has a significant effect on History performance in Year 2 (of -1.1%), with no other effects either significant or of magnitude greater than 1% for Law or History.

Being of **Black** ethnicity (compared to White ethnicity) has effects on examination performance with a magnitude greater than 1% (though not necessarily statistically significant[38]) of -1.6% to -2.8% for A*A*A courses in Years 1-3 (when all the other factors are controlled for in Model 2), and of -3.2 or -3.3% for Natural Sciences specifically (but not in Year 3). This factor also has effects with a magnitude greater than 1% in Years 1-3 for A*AA courses (-2.4% to -2.7%) and for Law (-1.3% to -2.2%) and History specifically (-1.6% to -2.2%, but no effect in Year 1), though again not always significantly.

Being of **Chinese** ethnicity (compared to White ethnicity) only has a significant effect on examination performance for A*A*A courses in Year 3 (-0.9%) (when all the other factors are controlled for in Model 2), with no other effects for these courses that are significant or with a magnitude greater than 1%, although for Natural Sciences specifically such effects are seen for all Years 1-3 (-1.1% to -2.3%). This factor has no effects either significant or of magnitude greater than 1% for A*AA courses overall, but non-significant effects with a magnitude greater than 1% are seen for History in Year 1 (-1.0%) and Law in Years 1 and 2 (**+**1.4% or 1.6%).

Being of **Mixed or Other** ethnicity (compared to White ethnicity) only has a significant effect on examination performance for A*A*A courses in Year 3 (-0.8%) (when all the other factors are controlled for in Model 2), with no other effects for these courses or for Natural Sciences specifically that are either significant or with a magnitude greater than 1%. This factor also has significant effects in Years 1-3 for A*AA courses (-0.8% to -1.0%) and in some years for Law (-1.2% or -1.3%, but no effect in Year 2) and History specifically (-0.9% or -1.5%, but no effect in Year 3).

Disability declared explanatory variable

Having a **declared disability** has a significant effect on examination performance for A*A*A courses (of -1.0% to -1.4%) and Natural Sciences specifically (-1.5% to -1.9%) in Years 1-3 (when all the other factors are controlled for in Model 2). This factor also has a significant effect on examination performance for A*AA courses (of -0.5% to -0.7%) in Years 1-3, and in Years 1 and 2 only for Law (-1.3% or -1.9%, but not significant in Year 1) and History specifically (-0.9% or -1.0%).

[38] These non-significant effects have still been shown and discussed if their magnitude is greater than 1% because the lack of statistical significance may be due to a lack of statistical power – particularly for variables where relatively few people are in a category such as Black ethnicity or having the care experience flag – rather than because there is not a true effect. However, these non-significant results should be treated with caution, as they are more likely to be unreliable.

Age explanatory variable

Being a **mature** student (i.e. aged 21 or over on entry) has a large and significant negative effect on examination performance in Years 1 and 2 for A*A*A courses (of -6.6% or -7.4%) and Natural Sciences specifically (-8.3% or -9.7%) (when all the other factors are controlled for in Model 2), although interestingly these effects are not seen in Year 3, where there is just a non-significant effect of magnitude greater than 1% for Natural Sciences (of -1.6%). This factor also has effects with a magnitude greater than 1% (though often not significant) in Years 1-3 for A*AA courses (-1.1% to -1.8%), and for History specifically in Year 3 only (-1.3%). For Law, interestingly, being a mature student instead has a positive though non-significant effect on examination performance in Years 1 and 3 (**+**2.0%).

Gender explanatory variable

Being a **female** student has a significant negative effect on examination performance in Years 1 and 2 for A*A*A courses (of -1.7% or -2.2%) and Natural Sciences specifically (of -0.9% or -1.2%) (when all the other factors are controlled for in Model 2), although interestingly no effects that are significant or of magnitude greater than 1% are seen in Year 3. For A*AA courses, being female has a small but significant effect in Year 1 only (-0.3%), whilst for History there are small significant effects in Year 2 and 3 (-0.4% or -1.0%), but for Law there are no effects either significant or of magnitude greater than 1%.

Care experience explanatory variable

Having been in Local Authority care (for any length of time) and therefore having the **care experience flag** rarely has significant effects on examination performance, but that is unsurprising given the small number of such students at Cambridge which will limit the power to detect statistically significant effects. There are many effects with magnitude greater than 1% though. For A*A*A courses, this flag interestingly has a positive effect on examination performance in Year 1 (**+**1.3%) (when all the other factors are controlled for in Model 2), but then increasingly negative effects in Year 2 (-1.1%) and Year 3 (-4.5%). In Natural Sciences specifically there is no effect with magnitude greater than 1% in Year 1, but in Years 2 and 3 this factor has a negative effect (-5.0% in Year 2, -3.2% in Year 3). For A*AA courses, this flag has a negative effect in all three Years (of -1.6% to -2.9%). For History specifically, there is only an effect with magnitude greater than 1% in Year 2, but it is also negative (-1.8%). In contrast, for Law specifically, there are interesting positive effects in all three years instead (of **+**1.4% to +3.8%).

4.4. Conclusions

It is very rare that any characteristic associated with disadvantage appears to have a positive effect on examination performance, and none of these are significant

There are only a few cases where a characteristic associated with disadvantage appears to have a positive effect on examination performance, when the effects of other characteristics and A Level attainment are controlled for in the model. This is seen mainly for Law - for Chinese students, mature students and care experienced students – but also for care experienced students in Year 1 of A*A*A courses. However, none of these effects are statistically significant, and they are all based on a very small number of individuals in the disadvantaged group: depending on the course year, there are

examination results for 20-21 Chinese Law students, 2-4 mature[39] Law students, 2 care experienced Law students, and 9 care experienced Year 1 A*A*A course students. This means each of the few individuals in the disadvantaged category has a relatively large influence on the group's outcome, and the finding is unlikely to be reliable and generalizable. In short, these apparent effects are not a safe foundation for considering differential offers, even aside from issues for practical applicability due to the specificity of the effect (to mainly Law) and that these effects have only been revealed when many other characteristics are controlled for.

Most characteristics associated with disadvantage appear to sometimes have a negative effect on examination performance

With the exception only of the POLAR4 flag, every characteristic associated with disadvantage which was considered here was sometimes (i.e. for at least one year of one course type) found to have a significant negative effect on examination performance, when the effects of other characteristics and A Level attainment are controlled for in the model. This suggests that each type of disadvantage may, at least in some circumstances, individually contribute to a constraining impact on the translation of a student's potential to succeed academically into their actual examination performance, which is something that it was not possible to tell from the analysis in Section 3 (where characteristics were looked at more simply without the effects of all of the others taken into account). However, that said, it is worth bearing in mind the point made previously (in the methodology) that this only means each variable has sometimes been found to be statistically associated with a lower examination performance outcome when others were taken into account, not that is was necessarily the cause of that difference. Furthermore, the entire contribution in each model of all the non-academic characteristics combined together towards explaining the variation in examination performance is usually only a few percent, and for each year of each course type the vast majority of variation remains unexplained by these variables and A Level performance, so there are clearly many other important factors.

The largest significant negative effects were seen for mature students in Years 1 and 2 of A*A*A courses and Natural Sciences specifically, of up to -9.7%; the absence of this effect in Year 3 could be very positive if it means that final year attainment (arguably the most important outcome) was not similarly affected, although only if the vast majority of mature students were retained into Year 3. Similar is seen for female students on A*A*A courses and Natural Sciences, but overall this does not appear to be a common pattern in the present findings.

Section 5: Overall conclusions

Differential offers were not justified by the comparison of group means in Section 3

The analysis in Section 3 grouped students and their examination results by course year, course type (typical A Level entry requirement of A*AA or A*A*A), their group within a characteristic of interest (e.g. Q1 or Q5 within POLAR4 quintile), and attainment in best 3 or 4 A Levels, and then calculated the mean examination percentage for each group. Relative overperformance of at least 1% in Cambridge examinations for disadvantaged groups with A Level attainment matched to more advantaged counterparts – which could indicate that their potential to succeed academically at

[39] Only A Level-taking mature Law students have been included here, whereas most mature students are not in this category (i.e. A Level-taking)

Cambridge is underestimated by their KS5 attainment – was seen for a few groups in isolated cases, usually for A*A*A courses, and always in year 1 and/or 2. However, even in these few specific cases, the fact the effect was not seen in the third year, and that it was never to the extent that disadvantaged entrants attained as well in Cambridge examinations as more advantaged counterparts with a higher grade profile, meant that this finding could not justify differential offers on the basis of examination attainment. Furthermore, although it was also often the case that disadvantaged groups performed similarly to more advantaged counterparts with matched A Level attainment, several disadvantaged groups quite consistently underperformed, including those in low IMD quintiles, of any ethnicity other than White, and those with a declared disability.

Differential offers were not justified by the multiple linear regression analysis in Section 4

The analysis in Section 4 fitted multiple linear regression models to predict examination performance from A Level A* count and 12 binary variables that represent differences in 9 non-academic characteristics, and this was done for each year of each course type separately (A*AA or A*A*A again, and also three single courses). In each case this analysis revealed which of the non-academic variables appeared to have significant effects on examination performance, when all of the other non-academic variables and A Level A* count were controlled for. There were no examples of any non-academic characteristic associated with disadvantage having a significant positive effect on examination performance. Rather, each of the non-academic characteristics associated with disadvantage which were considered (except POLAR4) was at least sometimes found to have a significant negative effect on examination performance. This included students in the following relatively disadvantaged categories: from maintained schools or ones with few recent Oxford/Cambridge offers, from low IMD quintile areas, ethnicities other than White, declared disability, mature, female, and care experienced. This suggests that each type of disadvantage may, at least in some circumstances, individually contribute to a constraining impact on the translation of a student's potential to succeed academically into their actual examination performance, which is something that it was not possible to tell from the analysis in Section 3 (where characteristics were looked at more simply without the effects of all of the others taken into account). Clearly this again does not provide any justification for differential offers.

Both methodological approaches utilised in this paper have in common the limitation that Cambridge examination performance is only available for entrants, and it is impossible to know for certain what the Cambridge examination performance would have been for the many other disadvantaged (and indeed more advantaged) applicants to Cambridge who were not admitted. This includes both applicants in the attainment range considered here who were not offered admission, but also applicants that attained lower A Level grade profiles. However, there is no reason to think that the non-admitted disadvantaged students would have had greater academic potential than those who were admitted, so even without this limitation it seems unlikely that convincing evidence in support of differential offers would have been found.

The present findings are unsurprising in the context of prior analysis and research

The two school-related indicators of disadvantage considered (school type, and school with few recent Oxford/Cambridge offers) were associated with relatively minimal performance differences in Sections 3 and 4 (albeit some statistically significant negative ones in Section 4). This is unsurprising

given that (as discussed in Section 2) Sumnall[40] previously found no significant effect of school type on first year Tripos performance, and Sumnall also found no effect of maintained or independent school type or of school with few recent Oxford/Cambridge offers in her unpublished multiple regression analysis which is methodologically similar to that in Section 4[41].

The fact that considerable underperformance was seen in Section 3 for those from flagged IMD areas but not for those from POLAR4 flagged areas, and that the POLAR4 flag was never found to have a significant negative effect on examination performance in Section 4 whereas the IMD flag sometimes was, makes sense considering what these measures are each based on. IMD is a composite measure of many types of socioeconomic disadvantage in an area a student is from, which one could imagine might constrain degree performance. On the other hand, POLAR4 is a measure of one particular type of disadvantage in an area - low propensity for young adults to enter higher education - which clearly has been largely overcome already by the time a student is at Cambridge, and seems less likely to have ongoing impacts (at least in and of itself). These findings are also consistent with negative attainment gaps reported in the University's current Access and Participation Plan (APP)[42] for English IMD Q1, but not for POLAR4 Q1 or Q2, and the fact that Sumnall's multiple regression analysis[41] only found a significant effect of POLAR flag in Social Sciences Year 1 (where it was positive). Sumnall's analysis did not include IMD as a factor.

The underperformances seen in Section 3 for each ethnicity group other than White and (inconsistently) for the declared disability group are unsurprising given that attainment gaps for these groups were evident in the University's current APP[42], except for Mixed ethnicity students. However, the present analysis shows that underperformance at Cambridge exists for them even when A Level attainment is matched. Section 4 further shows that these characteristics appear to often have significant negative contributing effects on examination performance when many other characteristics are controlled for (as well as A Level attainment). This is partially consistent with Sumnall's multiple regression analysis[41], where being from the aggregated 'other than White' group was consistently associated with a significant negative impact on examination attainment in all subject groups and years, although in contrast Sumnall found that having a declared disability was only associated with a significant negative impact in first year Social Sciences examinations.

The significant negative effects of being female or care experienced on examination performance that were sometimes found in Section 4 are consistent with significant negative effects of these sometimes being found in Sumnall's multiple regression analysis too[41] (although not necessarily in the same course groups and years). Finally, the significant negative effect of being a mature student on examination performance which was sometimes found in Section 4 is consistent with attainment gaps for mature students evident in the current APP[42], although again shows that this effect exists even when many other characteristics are controlled for (as well as A Level attainment).

The present findings underscore the importance of supporting disadvantaged students at Cambridge

Given that the present analyses took prior A Level attainment into account, the examples of underperformance in Section 3 for many disadvantaged groups, and the finding in Section 4 that

[40] C. Sumnall (July 2015) *ANOVA on A*s at A-level and Tripos performance* [Link]
[41] C. Sumnall (July 2015) *The inclusion of non-academic variables in regressions using UMS and GCSE.* University of Cambridge, unpublished.
[42] https://www.undergraduate.study.cam.ac.uk/files/publications/university_of_cambridge_app_2020_25.pdf

many characteristics associated with disadvantage appear sometimes to contribute negatively to the prediction of examination performance, are most likely due to ongoing impacts of a student's disadvantaged circumstances during their degree, rather than to their having lower potential to succeed academically at Cambridge. The collegiate University is increasingly engaged in providing support and interventions to support disadvantaged students at Cambridge – with examples including a recently expanded bursary provision to students from households with intermediate income levels (between £42620 and £62215) and an additional award for pupils eligible for free school meals[43]; the work of the Cambridge Centre for Teaching and Learning[44] which is leading on a variety of projects promoting and supporting Inclusive Teaching, Learning and Assessment[45]; and a recently expanded range of student support services[46]. It is hopeful that these interventions and other modes of support will reduce the ongoing impacts of disadvantage that many students at Cambridge face, and progress the collegiate University further towards a level playing field in which each student has a good chance of being able to realise their potential. It will therefore be informative to repeat similar analysis in a few years' time to see if there has been a discernible impact of these initiatives yet, and to reassess the evidence for differential offers.

Alexa Horner – Senior Researcher (Admissions and Widening Participation)
Cambridge Admissions Office

With thanks to Rachel Sequeira and Matt Wheatley for assistance with data preparation

Originally written May 2022
Prepared for publication in January 2024

[43] Cambridge Bursary Scheme For New Undergraduate Entrants From 2021 Onwards | Cambridge students
[44] Cambridge Centre for Teaching and Learning |
[45] Inclusive Teaching, Learning & Assessment | Cambridge Centre for Teaching and Learning
[46] Student Support

JANUARY 2024 ADDENDUM

In light of the finding that differential offers are not presently supported by the available evidence, the University's Admissions Research Steering Group proposed exploring differential 'cover ratios' as an alternative. Making differential offers would mean applicants from certain disadvantaged backgrounds might be offered admittance to the University conditional on achieving slightly lower grades than standard (for example, A*AA at A Level instead of A*A*A). In contrast, the idea of differential 'cover ratios' is that applicants from disadvantaged backgrounds would be offered admittance conditional on achieving the same grades, but that the Colleges would apply a higher 'cover ratio' during decisions about how many offers to make to applicants from such groups. It is standard practice for the Colleges to apply some extent of 'cover ratio' when making offers to applicants (i.e. to make slightly more offers than there are places available, in the knowledge that not all applicants will meet the conditions of their offer), but this means that the ratio of offers made to places one expects to fill would be higher for applicants from disadvantaged backgrounds compared to their peers.

Guidance on cover ratios for different groups of applicants, based on the odds of each group being successful in attaining the standard A Level offer for their course, has been produced and shared with the Colleges via the Admissions Forum and the Director of Undergraduate Admissions in two application cycles so far (2022-23 and 2023-24), and this is intended to continue.