

Office for Fair Access (OFFA) Access Agreement 2017-18: Re-evaluation of POLAR3 Q1 and Q2 admissions target

Summary

- POLAR3 classifies small geographical areas into one of five quintiles depending on rate of participation in higher education (HE), with quintile 1 (or Q1) corresponding to areas with the lowest HE participation rates of young people, and Q5 to areas with the highest.
- In its 2016-17 Access Agreement with the Office for Fair Access (OFFA), the collegiate University set a target of 13% for the proportion of admitted applicants resident in Q1 and Q2 areas, aiming to reach this by 2019-20. The research findings summarised here were based on recent data from 2014 and 2015, and informed the collegiate University's decision to retain an ultimate target of 13% in the 2017-18 Access Agreement.
- We found that Cambridge applicants that were resident in POLAR3 Q1+Q2 areas typically had lower offer and acceptance rates and higher attrition rates (between offer and acceptance) compared to their counterparts from other quintiles when A Level attainment was taken into account, although this varied by A Level attainment category and degree subject type, and, for example, Q1+Q2 Science applicants that achieved A*AA or A*A*A actually had higher offer and acceptance rates and lower attrition rates.
- The research presented here produced estimates that a suitable POLAR3 Q1+Q2 admissions target for the collegiate University might be approximately 10.5% if based on the profile of Cambridge applicants (i.e. the pool of all applicants to the University, according to recent data), or approximately 12.5% if based more ambitiously on the national profile of HE applicants/accepted applicants. There are caveats to these target estimates, including that the national-based estimate does not take degree subject information into account, and that neither estimate takes choice of A Level subject or takers of qualifications other than A Levels into account.
- Although even the more ambitious estimated target is below the ultimate target of 13% in the collegiate University's 2016-17 Access Agreement with OFFA, the University nonetheless decided to maintain an ultimate target of 13% in its latest 2017-18 Access Agreement, starting with a milestone of 10.8% in the first year (2016-17).
- These findings will be referred to appropriate committees of the collegiate University.

Introduction

In the collegiate University's 2016-17 Access Agreement with the Office for Fair Access (OFFA)¹, the collegiate University set a target for our proportion of admissions from Participation of Local Areas (POLAR3)² quintiles 1 and 2 of 13.0%, aiming to reach this by 2019-20. This paper details our re-evaluation of this admissions target using recent Cambridge data from 2014 and 2015, and national data from the Universities and Colleges Admissions Service (UCAS)'s EXACT service³. The research presented here informed the collegiate University's decision to retain an ultimate target of 13.0% in its 2017-18 Access Agreement⁴.

POLAR3 is a Higher Education Funding Council for England (HEFCE)-constructed geodemographic classification in which small geographical areas (census area statistic wards) are classified into one of five quintiles depending on rate of participation in higher education (HE), with quintile 1 (or Q1) corresponding to areas with the lowest HE participation rates of young people, and Q5 to areas with the highest participation. POLAR is one of six types of contextual data that the collegiate University takes into account in its admissions process; for each of these six, a "flag" may be appended to an application for the attention of academic assessors⁵. Since the 2015-16 cycle applicants have received the POLAR flag if they are resident in POLAR3 Q1 or Q2 areas, where HE participation rates are by definition below average.

For the purpose of the analyses in this paper, the POLAR3 flag has been applied retrospectively to applicants whose postcodes are in POLAR3 Q1 and Q2. However, because the POLAR flag has previously been based on POLAR2 and has only applied to applicants resident in Q1⁶, postcodes receiving the POLAR flag in this analysis would not necessarily have received the POLAR flag during earlier applications. Finally, it is important to note that POLAR3 categorises individuals on the basis of their postcode, but of course individuals do not necessarily share characteristics with others in their postcode.

Breakdown of applications, offers and acceptances by POLAR3 quintile and flag

The numbers and proportions of applications, offers and acceptances attributed to those in flagged (Q1, Q2) and non-flagged (Q3, Q4, Q5) POLAR3 quintiles in the last 3 cycles were summarised (Table 1, Figure 1).

¹ <https://www.offa.org.uk/>

² <http://www.hefce.ac.uk/analysis/yp/POLAR/>

³ <https://www.ucas.com/corporate/data-and-analysis/analytical-data-services/exact>

⁴ University of Cambridge, 2016, *Access Agreement with the Office for Fair Access (OFFA) 2017-2018*
<https://www.offa.org.uk/agreements/University%20of%20Cambridge%201718.pdf>

⁵ <http://www.undergraduate.study.cam.ac.uk/applying/decisions/contextual-data>

⁶ The flag has been based on POLAR3 since the 2013-14 cycle; in the 2011-12 and 2012-13 cycles it was based on POLAR2. The flag has been applied to applicant resident in Q1 and Q2 since the 2015-16 cycle; in previous cycles, applicants only received the flag if they were resident in Q1 areas.

	APPLICATIONS			OFFERS			ACCEPTANCES		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Q1 (flag)	439	425	430	114	112	110	91	93	74
Q2 (flag)	809	816	798	208	213	212	163	165	156
Q3 (non-flag)	1366	1350	1351	404	396	412	332	319	328
Q4 (non-flag)	2210	2195	2135	686	660	674	572	547	565
Q5 (non-flag)	4475	4562	4488	1575	1632	1661	1369	1403	1420
Total	9299	9348	9202	2987	3013	3069	2527	2527	2543
Non-flag total	8051	8107	7974	2665	2688	2747	2273	2269	2313
Flag total	1248	1241	1228	322	325	322	254	258	230
Non-flag %	86.6	86.7	86.7	89.2	89.2	89.5	89.9	89.8	91.0
Flag %	13.4	13.3	13.3	10.8	10.8	10.5	10.1	10.2	9.0

Table 1: Cambridge applications, offers and acceptances, by year and POLAR3 flag. Applicants were excluded from these analyses if any of the following applied: i) they were not a Home⁷ applicant; ii) they were applying for Graduate Medicine; iii) their POLAR3 quintile was unknown.

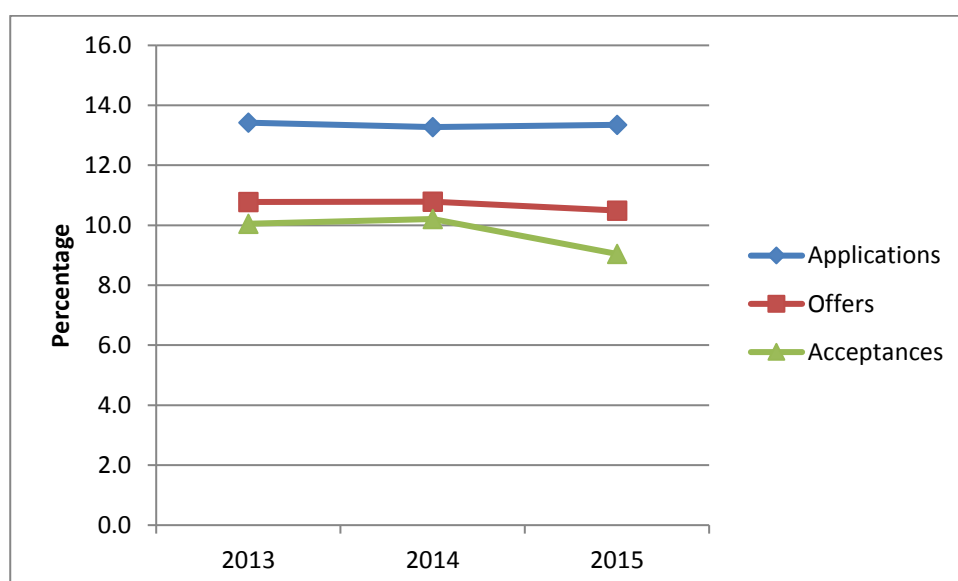


Figure 1: Percentage of Cambridge applications, offers and acceptances that were of candidates in flagged POLAR3 quintiles, by year.

In the last 3 years analysed, POLAR3 Q1 and Q2 applicants consistently composed 13.3-13.4% of our Home applications (for which POLAR3 quintile was known). The percentage of Cambridge offers achieved by POLAR3-flagged applicants was 10.8% in 2013 (i.e., application year 2012-13) and 2014, but declined to 10.5% in 2015. The percentage of Cambridge acceptances achieved by POLAR3-flagged applicants was 10.1-10.2% in 2013 and 2014, but declined to 9.0% in 2015.

⁷ “Home” applicants are defined as UK nationals (i.e. citizenship “GBR”) permanently resident in the UK (i.e. region of residence is not overseas). This is consistent with published Undergraduate Admissions Statistics.

Based on these data, offer and acceptance rates were calculated (Table 2, Figures 2 and 3). The offer rate for flagged applicants was 25.8% in 2013, which increased to 26.2% in 2015. However, the acceptance rate decreased from 20.4-20.8% in 2013 and 2014 to 18.7% in 2015. Offer and acceptance rates were notably lower for those with the flag than for those without, but this could simply have been because A Level attainment of those with the flag was lower. The next step was therefore to incorporate A Level attainment data into this analysis.

	OFFER RATE			ACCEPTANCE RATE		
	2013	2014	2015	2013	2014	2015
Non-flag %	33.1	33.2	34.4	28.2	28.0	29.0
Flag (Q1+Q2) %	25.8	26.2	26.2	20.4	20.8	18.7

Table 2: Offer rate (percentage of applicants receiving an offer) and acceptance rate (percentage of applicants ultimately accepted) of Cambridge applicants, by year and POLAR3 flag. Applicants were excluded from these analyses if any of the following applied: i) they were not a Home applicant; ii) they were applying for Graduate Medicine; iii) their POLAR3 quintile was unknown.

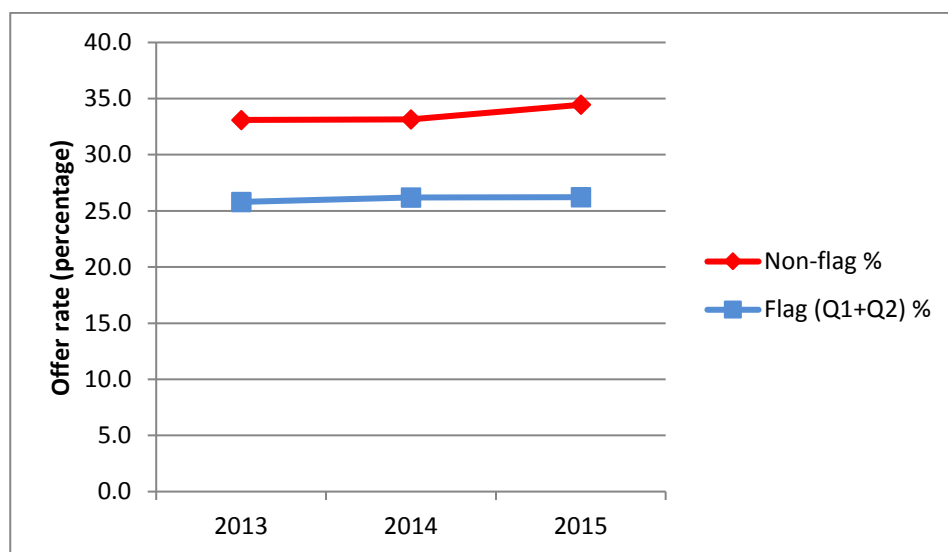


Figure 2: Offer rate (percentage of applicants receiving an offer) of Cambridge applicants, by year and POLAR3 flag.

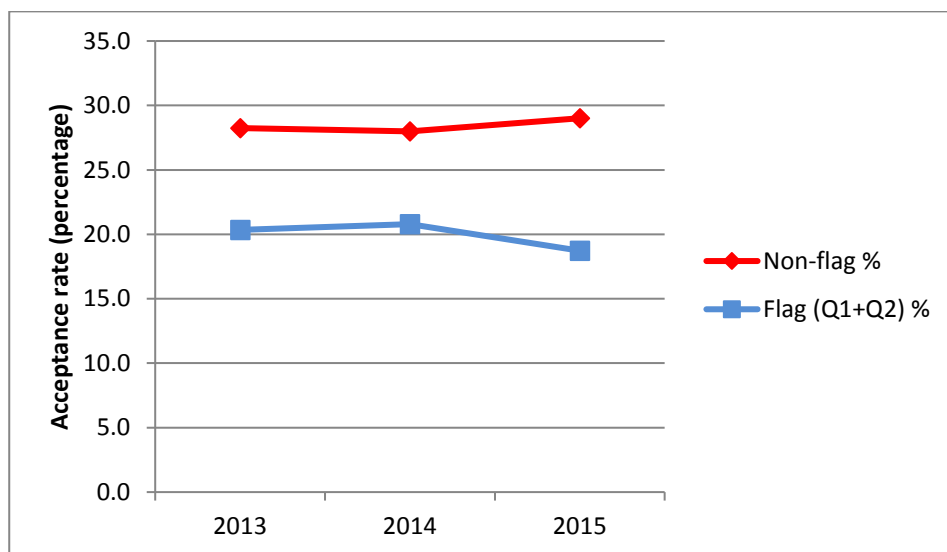


Figure 3: Acceptance rate (percentage of applicants ultimately accepted) of Cambridge applicants, by year and POLAR3 flag.

Breakdown of applications, offers and acceptances by POLAR3 flag group and A Level performance

Working with combined data for the last two cycles only (2014 and 2015), the numbers of applications, offers and acceptances attributed to those with specified A Level grade profiles in flagged and non-flagged POLAR3 quintiles were produced (Table 3). Applicants for Science and Arts subjects were considered separately because they have different typical offer levels of A*A*A and A*AA, respectively⁸. Furthermore, applications for Mathematics were considered separately from the rest of the Sciences subjects because of the unique and critical emphasis placed on the Sixth Term Examination Paper (STEP) for admission. The acceptances in Table 3 were used to calculate the proportions of acceptances attributed to applicants with and without the POLAR flag for each subject type; these are summarised later in Table 7.

⁸ At the time of writing, the only exception for 2016 entry was Psychological and Behavioural Sciences which has a typical offer level of A*AA instead of A*A*A.

		Applications					
		<AAA	AAA	A*AA	A*A*A	A*A*A*+	Total
Mathematics	Non-flag	203	18	198	363	516	1298
	Flag	76	11	46	83	87	303
Sciences (excl. Maths)	Non-flag	916	563	1120	1346	2685	6630
	Flag	247	93	215	203	334	1092
Arts	Non-flag	1308	648	1522	1528	1204	6210
	Flag	288	90	184	149	93	804
Total (excl. Maths)	Non-flag	2224	1211	2642	2874	3889	12840
	Flag	535	183	399	352	427	1896
Total (incl. Maths)	Non-flag	2427	1229	2840	3237	4405	14138
	Flag	611	194	445	435	514	2199
		Offers					
		<AAA	AAA	A*AA	A*A*A	A*A*A*+	Total
Mathematics	Non-flag	X	X	40	154	368	579
	Flag	X	X	7	35	52	104
Sciences (excl. Maths)	Non-flag	X	X	84	277	1511	1910
	Flag	X	X	21	45	169	245
Arts	Non-flag	156	168	550	732	790	2396
	Flag	31	23	72	69	62	257
Total (excl. Maths)	Non-flag	X	X	634	1009	2301	4306
	Flag	X	X	93	114	231	502
Total (incl. Maths)	Non-flag	190	189	674	1163	2669	4885
	Flag	45	29	100	149	283	606
		Acceptances					
		<AAA	AAA	A*AA	A*A*A	A*A*A*+	Total
Mathematics	Non-flag	X	X	X	52	213	270
	Flag	X	X	X	8	26	35
Sciences (excl. Maths)	Non-flag	X	X	X	248	1476	1777
	Flag	X	X	X	43	162	219
Arts	Non-flag	51	64	509	706	778	2108
	Flag	9	9	63	67	60	208
Total (excl. Maths)	Non-flag	X	X	X	954	2254	3885
	Flag	X	X	X	110	222	427
Total (incl. Maths)	Non-flag	59	66	557	1006	2467	4155
	Flag	11	10	75	118	248	462

Table 3: Numbers of Cambridge applications, offers and acceptances, by A Level grade profile, subject category (Mathematics, Sciences, Arts) and POLAR3 flag, for the 2014 and 2015 cycles combined. General Studies, Critical Thinking and Thinking Skills A Levels were excluded from consideration, as were A Levels taken before Summer 2010 (when A*s were first awarded). Applicants were excluded from these analyses if any of the following applied: i) they were not a Home applicant; ii) they were applying for Graduate Medicine; iii) they had less than 3 A Levels; iv)

their POLAR quintile was unknown. Where the number of students in any cell was 5 or less, the number was suppressed and replaced with “X”. Additional numbers were also removed and replaced with “X” as necessary to prevent calculation of the suppressed numbers.

It is notable that the overall proportion of flagged acceptances (10.0%; see Table 7; calculated from acceptances for “Total (incl. Maths)” in Table 3) is a little higher than that derived from Table 1 for the same years (2014 and 2015 combined), which would have been 9.6% (488:4582 flagged:non-flagged). This difference is explained by the fact that Table 1 included applicants with less than 3 A Levels, the majority of whom would have taken alternative qualifications such as the IB or Pre-U. In total, there were an additional 453 accepted applicants included in Table 1 with less than 3 A Levels, of which only 26 (5.7%) were flagged. However, in the absence of performance data for alternative qualifications taken, which was beyond the scope of this analysis, it is not possible to assess whether or not equivalently qualified flagged applicants with alternative qualifications had a success rate comparable to non-flagged applicants.

The vastly different sizes of the flagged and non-flagged groups in Table 3 make them hard to compare directly. Interpretation is facilitated by calculating offer and acceptance rates for each group (Table 4). Although factoring in A Level attainment does decrease the apparent disparity between flagged and non-flagged applicants, it is nonetheless evident that when applicants for all subjects are considered together (i.e. “Total” rows), flagged applicants were typically less successful than equivalently qualified non-flagged applicants in 2014-15. However, the most striking differences were between Science and Arts applicants, with applicants for Arts subjects having much higher offer and acceptance rates. Furthermore, the apparent disparity between flagged and non-flagged applicants decreases further still when applicants for Sciences and Arts subjects are considered separately. For Science subjects, flagged applicants achieving A*AA or A*A*A actually had higher offer and acceptance rates, although flagged applicants in the A*A*A*+ category (which contained more applicants than any other category) did have considerably lower offer and acceptance rates. For Arts subjects, flagged and non-flagged offer rates were generally more similar than for Sciences, and again there were individual A Level attainment categories (particularly A*AA) in which flagged applicants had higher rates. In the case of Mathematics, flagged applicants had much lower offer and acceptance rates than non-flagged in most of the A Level grade categories, although some of these rates were based on very low numbers of applicants, offers and acceptances, and the low rates could have been related to A Level subject choices or to performance in the highly critical STEP test, which were not accounted for. Nonetheless, overall, there appears to be some evidence of an inequality, particularly for applicants with A*A*A*+, which highlights the importance of having an ongoing admissions target in this area.

		Offer rate				
		<AAA	AAA	A*AA	A*A*A	A*A*A*+
Mathematics	Non-flag	X	X	20.2	42.4	71.3
	Flag	X	X	15.2	42.2	59.8
Sciences (excl. Maths)	Non-flag	X	X	7.5	20.6	56.3
	Flag	X	X	9.8	22.2	50.6
Arts	Non-flag	11.9	25.9	36.1	47.9	65.6
	Flag	10.8	25.6	39.1	46.3	66.7
Total (excl. Maths)	Non-flag	X	X	24.0	35.1	59.2
	Flag	X	X	23.3	32.4	54.1
Total (incl. Maths)	Non-flag	7.8	15.4	23.7	35.9	60.6
	Flag	7.4	14.9	22.5	34.3	55.1
		Acceptance rate				
		<AAA	AAA	A*AA	A*A*A	A*A*A*+
Mathematics	Non-flag	X	X	X	14.3	41.3
	Flag	X	X	X	9.6	29.9
Sciences (excl. Maths)	Non-flag	X	X	X	18.4	55.0
	Flag	X	X	X	21.2	48.5
Arts	Non-flag	3.9	9.9	33.4	46.2	64.6
	Flag	3.1	10.0	34.2	45.0	64.5
Total (excl. Maths)	Non-flag	X	X	X	33.2	58.0
	Flag	X	X	X	31.3	52.0
Total (incl. Maths)	Non-flag	2.4	5.4	19.6	31.1	56.0
	Flag	1.8	5.2	16.9	27.1	48.2

Table 4: Offer rate (percentage of applicants receiving an offer) and acceptance rate (percentage of applicants ultimately accepted) of Cambridge applicants, by A Level grade profile, subject category and POLAR3 flag, for the 2014 and 2015 cycles combined. Cells highlighted in blue indicate that the highest offer/acceptance rate for that subject and A Level grade category was achieved by flagged applicants, whilst red indicates it was achieved by non-flagged applicants. Rates based on low numbers of applications, offers and acceptances are relatively unreliable; to indicate this, cells containing offer and acceptances rates based on fewer than a (somewhat arbitrary) threshold of 10 offers or acceptances are highlighted in grey. Figures in this Table were removed and replaced with "X" if they were derived from 5 or fewer students, or as necessary to prevent calculation of the suppressed numbers in Table 3.

In Table 1, POLAR3-flagged applicants accounted for markedly lower percentages of acceptances than of offers in all 3 years; for example, they constituted 10.5% of offers in 2015, but only 9.0% of acceptances. This means that flagged applicants generally had a disproportionately high attrition rate between offer and acceptance. We calculated attrition rates for Cambridge applicants taking subject type and A Level attainment into account. When applicants for all subjects are considered

together (i.e. “Total” rows), flagged applicants typically had higher attrition rates than equivalently qualified non-flagged applicants in 2014-15 (Table 5). However, when Mathematics was not included, and when Arts and Sciences applicants were considered separately, there were exceptions where flagged applicants had lower attrition rates, particularly applicants in the A*A*A attainment category. Attrition rates were extremely high for Mathematics, most likely because offer-holders missed offers which included STEP.

		Conversion attrition rate (between offer and acceptance)				
		<AAA	AAA	A*AA	A*A*A	A*A*A*+
Mathematics	Non-flag	X	X	X	66.2	42.1
	Flag	X	X	X	77.1	50.0
Sciences (excl. Maths)	Non-flag	X	X	X	10.5	2.3
	Flag	X	X	X	4.4	4.1
Arts	Non-flag	67.3	61.9	7.5	3.6	1.5
	Flag	71.0	60.9	12.5	2.9	3.2
Total (excl. Maths)	Non-flag	X	X	X	5.5	2.0
	Flag	X	X	X	3.5	3.9
Total (incl. Maths)	Non-flag	68.9	65.1	17.4	13.5	7.6
	Flag	75.6	65.5	25.0	20.8	12.4

Table 5: Conversion attrition rate (percentage receiving an offer but not acceptance) of Cambridge applicants, by A Level grade profile, subject category and POLAR3 flag, for the 2014 and 2015 cycles combined. Cells highlighted in blue indicate that the lowest attrition rate for that subject and A Level grade category was achieved by flagged applicants, whilst red indicates it was achieved by non-flagged applicants. Rates based on low numbers of applications, offers and acceptances are relatively unreliable; to indicate this, cells containing attrition rates based on fewer than a (somewhat arbitrary) threshold of 10 offers or acceptances are highlighted in grey. Figures in this Table were removed and replaced with “X” if they were derived from 5 or fewer students, or as necessary to prevent calculation of the suppressed numbers in Table 3.

POLAR3 Q1+Q2 target estimate based on profile of Cambridge applicants

One approach to determining an appropriate POLAR3 Q1+Q2 target is to derive it from the A Level attainment profiles of recent (2014-15) applicants to the University of Cambridge, reasoning that POLAR Q1+Q2 applicants to Cambridge should be admitted in proportion to their achievement of the Cambridge A Level entry requirement. Table 6 shows the proportions of A Level grade profile categories which were achieved by flagged (Q1+Q2) applicants.

% of A Level grade profiles achieved by flagged	<AAA	AAA	A*AA	A*A*A	A*A*A*	4 A*+
Mathematics	27.24	37.93	18.85	18.61	15.92	12.24
Science (excl. Maths)	21.24	14.18	16.10	13.11	11.14	10.96
Arts	18.05	12.20	10.79	8.88	7.48	6.05
Total (excl. Maths)	19.39	13.13	13.12	10.91	9.76	10.12
Total (incl. Maths)	20.11	13.63	13.55	11.85	10.48	10.39

Table 6: Proportion of each A Level grade profile achieved by (Home) applicants with the POLAR3 flag, for 2014 and 2015 combined. These proportions are based on Table 3 Applications (but with the 3A+ category split further). General Studies, Critical Thinking and Thinking Skills A Levels were excluded from consideration, as were A Levels taken before Summer 2010 (when A*s were first awarded).*

Taken at face value, Cambridge A Level entry requirements (i.e. offer levels) are typically A*AA for Arts and A*A*A for Sciences. However, a minority of applicants are accepted with A Level grades below these standards, and the majority of successful applicants exceed them (see Acceptances in Table 3); there is no single Cambridge A Level entry requirement, or standard for a competitive application since our assessment is holistic and takes into account factors such as performance in tests, assessments and at interview. Thus, to produce a fair and accurate estimate for our POLAR3 flag admissions target, we took into account the flagged proportions of a range of A Level grade profiles, and we gave certain A Level grade profiles greater emphasis or weighting than others, depending on the typical proportion of successful Cambridge applicants achieving them. For example, Table 3 Acceptances show that very few applicants were accepted for Science subjects with A*AA or less, so the proportions of <AAA, AAA and A*AA applicants with the POLAR3 flag had very little influence on our target estimate, whereas the proportion of A*A*A*+ Science applicants with the flag had the greatest influence because this was the largest group. The appropriate weighting for each A Level grade profile was calculated for each degree subject type, and used to produce our target estimates; the resulting estimates are summarised here in Table 7, with details of the calculations provided in Appendix A.

Degree subject(s)	Target %	Actual %
Mathematics only	15.0	11.5
Sciences only	11.5	11.0
Arts only	9.1	9.0
All subjects excl. Maths (used subject information in calculation)	10.2	9.9
All subjects incl. Maths (used subject information in calculation)	10.5	10.0
All subjects excl. Maths (subject information disregarded in calculation)	(10.8)	9.9
All subjects incl. Maths (subject information disregarded in calculation)	(11.4)	10.0

Table 7: Estimated target percentages of acceptances that should have the POLAR3 flag, for the given degree subject(s). Production of these estimates is detailed in Appendix A, and was based on 2014 and 2015 data. The Actual proportions shown are based on Table 3 acceptances data for the same years, as discussed above.

These estimates indicate that for Sciences and Arts subjects, reasonable targets based on the recent pool of 2014-15 applicants are that 11.5% and 9.1% of accepted students should have the POLAR3 flag, respectively. For Sciences and Arts combined ("All subjects excl. Maths"), the figure is 10.2%. The actual proportion of admissions for Arts was already very close to the Arts target in 2014 and 2015 (difference of <0.1%), although for Sciences the actual proportion was approximately 0.5% below the target. The estimate for Mathematics only was that 15.0% of accepted students should have the POLAR3 flag, whereas only 11.5% of acceptances actually did have the flag in 2014-15, but the estimate did not take into account STEP which is of critical importance for Mathematics. The target of ~10.5% produced for "All subjects incl. Maths" might be slightly affected by this, but nonetheless we decided that this target figure was the most relevant to our Access Agreement with OFFA, because it covers admissions to the collegiate University for all subjects, including Mathematics.

The estimates for "All subjects" discussed in the above paragraph all used subject information in their calculation. By this, we mean that - although they apply to "All subjects" once calculated - information about degree subject was taken into account when calculating them (see Appendix A for further detail). However, if we had not had, or had not used, this information about degree subject applied for, we could nonetheless have produced a less accurate target estimate. As shown in Table 7, the less accurate estimated target (including Mathematics) would have been 11.4%.

In conclusion, although there are several caveats (e.g., this does not take into account choice of A Level subject, takers of alternative Key Stage 5 (KS5) qualifications, or STEP results for Mathematics applicants), when the typical A Level attainment of successful Cambridge applicants, and the typical proportions of Cambridge applicants in each A Level attainment band with and without the POLAR flag, and the type of subject applied for are all taken into account, a reasonable admissions target for POLAR-flagged applicants based on 2014-15 data is approximately 10.5%. This is actually very similar to the proportion of POLAR3-flagged admissions which was achieved by the collegiate University in 2014 (10.2%), although this declined considerably in 2015 (9.0%). Thus, in 2014 at least, (and probably also in 2013 when the admissions rate was very similar - 10.1%), the collegiate University was quite successful in admitting the proportion of flagged students that would have been expected based on the pattern of applications.

POLAR3 Q1+Q2 target estimate based on profile of national HE applicants

The target estimate above was based on the recent (2014-15) profile of applicants to Cambridge, which is a valid basis because this is the pool of all prospective students which the University actually has the opportunity to recruit from in each admissions round. However, the profile of Cambridge applicants is not necessarily the same as the profile of HE applicants nationally; indeed, the data reviewed here (below) show that highly attaining students in POLAR3 quintiles 1 and 2 actually seemed to be under-represented among Cambridge applicants in 2014-15 compared to

the pool of HE applicants nationally. The recent (2014-15) national profile of HE applicants can also be considered a valid basis for a target. This section details our investigation of the recent national profile of HE applicants using data purchased from UCAS, and the production of an alternative POLAR3-flagged admissions target based on this.

Aggregated data were purchased from UCAS' EXACT service for 18 year-old HE applicants and accepted applicants in the 2014 and 2015 application cycles that were domiciled in the UK (England, Wales and Northern Ireland only; data for Scotland were unavailable) and achieved at least AAA at A Level. Applicants and accepted applicants had been aggregated into POLAR3 quintiles (1, 2, 3, 4, 5, or "not assigned") and achieved A Level attainment categories (AAA, A*AA, A*A*A, A*A*A*+; both including and excluding General Studies and Critical Thinking)⁹. Using the aggregated total numbers of applicants and accepted applicants in each quintile and attainment category combination, we calculated the percentage of applicants/accepted applicants in each A Level attainment category of interest that were resident in POLAR3 Q1 and Q2 areas (Table 8). Target estimates were calculated in a similar manner to the target estimates based on the Cambridge applicant pool, with the importance of each grade category weighted according to the typical proportion of successful Cambridge applicants achieving it, although unfortunately information on degree subject type was not available and could not be taken into account. Details of the target calculations are available in Appendix B, and the resultant target estimates are summarised in Table 8. Four separate sets of figures are provided, for applicants and accepted applicants, and with General Studies and Critical Thinking A Levels both included and excluded from the achieved A Level grade profiles. In our view, the estimates which excluded General Studies and Critical Thinking A Levels are the most relevant, because these subjects do not usually form part of Cambridge offers¹⁰, although the exclusion of these subjects actually has demonstrably little impact. Whether a target should be based on applicant or accepted applicant figures is debatable, but also has demonstrably little impact (<0.3%).

⁹ The aggregated data were subject to standard Disclosure Controls. These were described in the EXACT reports from UCAS as follows: "Disclosure controls have been applied to the data to reduce the risk of disclosing personal data about identifiable individuals. These controls include reporting each cell to the nearest five. In particular cell counts of 1 and 2 are reported as 0. Rows that only report 0 are omitted from the output. These controls are applied to each cell independently so this may result in instances where totals do not equal the sum of the components."

¹⁰ <http://www.undergraduate.study.cam.ac.uk/applying/entrance-requirements/alevels>

	Applicants POLAR Q1+Q2 %		Acceptances POLAR Q1+Q2 %	
	Including GS/CT	Excluding GS/CT	Including GS/CT	Excluding GS/CT
AAA	15.399	15.325	15.656	15.540
A*AA	14.391	14.286	14.455	14.342
A*A*A	13.023	12.923	13.149	13.037
A*A*A*+	11.759	11.635	12.105	12.014
Target estimate	12.498	12.384	12.749	12.649

*Table 8: Percentage of UK (excluding Scotland) HE applicants and accepted applicants in each achieved A Level attainment category (AAA-A*A*A*+) that were resident in POLAR3 Q1 and Q2 areas, for the 2014 and 2015 application cycles combined. These data were produced with the A Level attainment categories both including and excluding General Studies and Critical Thinking (GS/CT). The POLAR3-flagged admissions target estimates (bottom row) were calculated using these data, as detailed in Appendix B.*

The resultant target estimates (excluding General Studies and Critical Thinking) are 12.384% or 12.649% (for applicants and acceptances, respectively), or approximately 12.5%, which is considerably higher than the estimate based on the profile of Cambridge applicants (10.5% if subject information is taken into account, or 11.4% in the more comparable estimate where it is not). This higher estimate is evidently due to the proportions of students in POLAR3 quintiles 1 and 2 in each of the A Level attainment categories considered having been lower among Cambridge applicants than among all HE applicants (or accepted applicants) in 2014-15; for example, 12.923% of A*A*A HE applicants (excluding GS/CT) were resident in POLAR3 quintile 1 or 2 (Table 8), compared to 11.85% of A*A*A Cambridge applicants (Table 6). The caveats to this target estimate of approximately 12.5% are similar to those for the estimate based on Cambridge applicants (e.g., it does not take into account choice of A Level subject, or takers of alternative KS5 qualifications). Furthermore, degree subject information was not taken into account, and the differential targets based on Cambridge applicants which did and did not take this information into account suggest that the target based on national HE applicants might have been ~1% lower if degree subject information were taken into account. Finally, we note that the national data from EXACT had different inclusion criteria compared to our Cambridge data, and this could also contribute to the disparity between the resultant estimates; for example, EXACT data were limited to 18 year olds whilst Cambridge data had no age restriction, and EXACT data were limited to UK domiciled applicants excluding Scotland (but including non-UK nationals) whilst Cambridge data were restricted to UK nationals resident in the UK.

Conclusion

The present research found some evidence of inequalities in favour of non-flagged applicants in the collegiate University's admissions process compared to their equivalently qualified flagged counterparts in 2014-15, in the form of typically higher offer and acceptance rates and lower attrition rates (although this was not the case for all of the A Level attainment categories considered). The research presented here also produced estimates that a suitable POLAR3-flagged admissions target for the collegiate University might be approximately 10.5% if based on the profile of Cambridge applicants with degree subject type taken into account, or approximately 12.5% if based on the national profile of HE applicants/accepted applicants (without degree subject type taken into account). The former indicates the proportion of POLAR3-flagged students that the University might reasonably aim to admit based on the recent (2014-15) pool of all applicants to the University, whilst the latter indicates the proportion that the University might more ambitiously aim to admit to more closely reflect the national profile of HE applicants. It should be noted, however, that there are caveats to the target estimates produced, including that the national-based estimate does not take degree subject information into account, and that neither estimate takes choice of A Level subject or takers of qualifications other than A Levels into account. The discrepancy of ~1% between the two target estimates that do not take degree subject into account (11.4% based on Cambridge applicants; 12.5% based on the national profile of HE applicants) shows that (highly attaining) POLAR3 quintile 1 and 2 students are under-represented among Cambridge applicants compared to national HE applicants; we speculate that the location of our University may at least partly explain this.

These findings, which indicate that applicants in POLAR3 quintiles 1 and 2 may be under-represented in the Cambridge applicant pool, and appear to be disadvantaged in the collegiate University's admissions process, will be referred to appropriate committees of the collegiate University for further consideration. The collegiate University's POLAR3 Q1+Q2 admissions target in its 2016-17 Access Agreement with OFFA was 13% by 2019-20, with milestones of 10.1% in 2015-16 and 10.8% in 2016-17. In light of the research presented here, which estimated that an ambitious but fair POLAR3 Q1+2 admissions target is 12.5%, the collegiate University nonetheless decided to maintain an ultimate target of 13% in its latest 2017-18 Access Agreement¹¹, noting that "this means admitting students disproportionately in relation to the national profile at the levels of attainment required by Cambridge".

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October 2016

¹¹ University of Cambridge, 2016, *Access Agreement with the Office for Fair Access (OFFA) 2017-2018*

APPENDIX A – Calculation of flagged acceptances target percentage based on percentage of Cambridge applicants in POLAR3 Q1 and Q2

The appropriate influence (“Weighting”) of each A Level performance category was determined from the number of 2014 and 2015 Cambridge acceptances in each category (from Table 3, but with the 3A*+ category split further). These weightings were then applied to the 2014-15 percentages of flagged Cambridge applicants (Flag %; based on Table 3, and as in Table 6) to calculate a target percentage of acceptances with the flag, for each degree subject type:

Target flagged acceptances % = (Weighting_{<AAA} x Flag %_{<AAA}) + (Weighting_{AAA} x Flag %_{AAA}) + ... + (Weighting_{4A*+} x Flag %_{4A*+})

Suppression (indicated “X”) was applied as described in the main paper. Please note that figures in the “Weighting x Flag %” columns are shown rounded to 1 decimal place, but unrounded figures were used in calculations (which may result in some figures appearing to be incorrect).

a) Target flagged acceptances % for MATHEMATICS only: 15.0%

	Mathematics acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	X	X	27.240	0.4
AAA	X	X	37.931	0.0
A*AA	X	X	18.852	0.1
A*A*A	60	0.197	18.610	3.7
A*A*A*	105	0.344	15.922	5.5
4 A*+	134	0.439	12.245	5.4
Total	305	1.000		15.0

b) Target flagged acceptances % for SCIENCES only: 11.5%

	Science acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	X	X	21.238	0.1
AAA	X	X	14.177	0.0
A*AA	X	X	16.105	0.5
A*A*A	291	0.146	13.105	1.9
A*A*A*	724	0.363	11.144	4.0
4 A*+	914	0.458	10.963	5.0
Total	1996	1.000		11.5

c) Target flagged acceptances % for ARTS only: 9.1%

	Arts acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	60	0.026	18.045	0.5
AAA	73	0.032	12.195	0.4
A*AA	572	0.247	10.785	2.7
A*A*A	773	0.334	8.885	3.0
A*A*A*	639	0.276	7.480	2.1
4 A*+	199	0.086	6.050	0.5
Total	2316	1.000		9.1

d) Target flagged acceptances % for ALL SUBJECTS EXCLUDING MATHEMATICS: 10.2%

		Science/Art acceptances	Weighting	Flag %	Weighting x Flag %
Science	<AAA	X	X	21.238	0.0
	AAA	X	X	14.177	0.0
	A*AA	X	X	16.105	0.2
	A*A*A	291	0.067	13.105	0.9
	A*A*A*	724	0.168	11.144	1.9
	4 A*+	914	0.212	10.963	2.3
Arts	<AAA	60	0.014	18.045	0.3
	AAA	73	0.017	12.195	0.2
	A*AA	572	0.133	10.785	1.4
	A*A*A	773	0.179	8.885	1.6
	A*A*A*	639	0.148	7.480	1.1
	4 A*+	199	0.046	6.050	0.3
Total		4312	1.000		10.2

e) Target flagged acceptances % for ALL SUBJECTS (including Mathematics): 10.5%

		Acceptances	Weighting	Flag %	Weighting x Flag %
Maths	<AAA	X	X	27.240	0.0
	AAA	X	X	37.931	0.0
	A*AA	X	X	18.852	0.0
	A*A*A	60	0.013	18.610	0.2
	A*A*A*	105	0.023	15.922	0.4
	4 A*+	134	0.029	12.245	0.4
Science	<AAA	X	X	21.238	0.0
	AAA	X	X	14.177	0.0
	A*AA	X	X	16.105	0.2
	A*A*A	291	0.063	13.105	0.8
	A*A*A*	724	0.157	11.144	1.7
	4 A*+	914	0.198	10.963	2.2
Arts	<AAA	60	0.013	18.045	0.2
	AAA	73	0.016	12.195	0.2
	A*AA	572	0.124	10.785	1.3
	A*A*A	773	0.167	8.885	1.5
	A*A*A*	639	0.138	7.480	1.0
	4 A*+	199	0.043	6.050	0.3
Total		4617	1.000		10.5

The above calculations produce estimates of the proportion of all acceptances for all degree subjects (with and without Mathematics; d and e) which should have the POLAR3 flag. Although the estimates produced are for all degree subjects, information about degree subject is taken into account when calculating them; applications and acceptances (which are used to calculate the numbers of Acceptances and the Flag %) are classified according to degree subject as well as A Level grade category. The alternative method used below for estimating an overall target for all degree subjects does not take into account information about degree subject in the calculation. The estimates produced in this way are less accurate.

f) Target flagged acceptances % for ALL SUBJECTS (excluding Mathematics) – using method which disregards degree subject: 10.8%

	Total (ex. Maths) acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	X	X	19.391	0.3
AAA	X	X	13.128	0.2
A*AA	X	X	13.121	1.9
A*A*A	1064	0.247	10.911	2.7
A*A*A*	1363	0.316	9.758	3.1
4 A*+	1113	0.258	10.116	2.6
Total	4312	1.000		10.8

g) Target flagged acceptances % for ALL SUBJECTS (including Mathematics) – using method which disregards degree subject: 11.4%

	Total (in. Maths) acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	70	0.015	20.112	0.3
AAA	76	0.016	13.633	0.2
A*AA	632	0.137	13.546	1.9
A*A*A	1124	0.243	11.846	2.9
A*A*A*	1468	0.318	10.483	3.3
4 A*+	1247	0.270	10.394	2.8
Total	4617	1.000		11.4

APPENDIX B – Calculation of flagged acceptances target percentage based on percentages of national HE applicants and acceptances in POLAR3 Q1 and Q2

The appropriate influence (“Weighting”) of each A Level performance category was determined from the number of 2014 and 2015 Cambridge acceptances in each category (from Table 3). These weightings were then applied to the 2014-15 percentages of national HE applicants/acceptances in A Level grade categories including/excluding General Studies and Critical Thinking that were in POLAR3 Q1 and Q2 (“National Q1+Q2 %”; from Table 8), to calculate a target percentage of acceptances with the flag:

Target flagged acceptances % = (Weighting_{AAA} x National Flag %_{AAA}) + (Weighting_{A*AA} x National Flag %_{A*AA}) + (Weighting_{A*A*A} x National Flag %_{A*A*A}) + (Weighting_{A*A*A*+} x National Flag %_{A*A*A*+})

a) Applicants; A Levels including General Studies and Critical Thinking

	Acceptances (Cambridge)	Weighting	National Q1+Q2 %	Weighting x Q1+Q2 %
AAA	76	0.017	15.399	0.257
A*AA	632	0.139	14.391	2.000
A*A*A	1124	0.247	13.023	3.219
A*A*A*+	2715	0.597	11.759	7.022
Total	4547	1.000		12.498

b) Applicants; A Levels excluding General Studies and Critical Thinking

	Acceptances (Cambridge)	Weighting	National Q1+Q2 %	Weighting x Q1+Q2 %
AAA	76	0.017	15.325	0.256
A*AA	632	0.139	14.286	1.986
A*A*A	1124	0.247	12.923	3.195
A*A*A*+	2715	0.597	11.635	6.947
Total	4547	1.000		12.384

c) Acceptances; A Levels including General Studies and Critical Thinking

	Acceptances (Cambridge)	Weighting	National Q1+Q2 %	Weighting x Q1+Q2 %
AAA	76	0.017	15.656	0.262
A*AA	632	0.139	14.455	2.009
A*A*A	1124	0.247	13.149	3.250
A*A*A*+	2715	0.597	12.105	7.228
Total	4547	1.000		12.749

d) Acceptances; A Levels excluding General Studies and Critical Thinking

	Acceptances (Cambridge)	Weighting	National Q1+Q2 %	Weighting x Q1+Q2 %
AAA	76	0.017	15.540	0.260
A*AA	632	0.139	14.342	1.993
A*A*A	1124	0.247	13.037	3.223
A*A*A*+	2715	0.597	12.014	7.173
Total	4547	1.000		12.649