UNIVERSITY OF CAMBRIDGE
Academic Division
Cambridge Admissions Office

Office for Fair Access (OFFA) Access Agreement 2017-18:
Admissions target based on Output Area Classification 2011

Summary

- The Output Area Classification (OAC) classifies geographical areas using census variables including socio-economic and occupation measures, and can be used to identify applicants to the University who live in areas with less advantaged socio-economic characteristics.

- As detailed in the companion paper "Use of Output Area Classification 2011 (OAC2011)", specific OAC groups were identified in our research as being particularly associated with relatively disadvantaged circumstances, and applicants to the University from areas classified into these groups have received a contextual "flag" for the attention of academic assessors in the collegiate University's admissions process since the 2012-13 cycle.

- This paper details the research (based on recent data from 2014 and 2015) which informed the collegiate University's decision to introduce a new OAC-related admissions target into the University's 2017-18 Access Agreement with the Office for Fair Access (OFFA), and which determined an appropriate target.

- We found that OAC-flagged Cambridge applicants typically had lower offer and acceptance rates and higher attrition rates (between offer and acceptance) compared to their non-flagged counterparts when A Level attainment was taken into account, although this varied by A Level attainment category and degree subject type, and there were several exceptions; for example, flagged applicants for Science or Arts subjects that achieved A*A*A had higher offer and acceptance rates than non-flagged applicants.

- These inequalities highlight the importance of introducing an OAC-related admissions target. An appropriate target proportion of admissions with the OAC flag was estimated, taking into account the banded A Level attainment of successful Cambridge applicants, the typical proportions of Cambridge applicants in each A Level attainment band with and without the OAC flag, and the type of subject applied for (Arts, Science, Mathematics).

- The resulting target estimate was that ~8.2% of admitted students should have the flag, which is above the present baseline of 7.3%. A caveat to this estimate is that we were not able to take into account factors including choice of A Level subjects, and applicants with qualifications other than A Levels.

- Consistent with the collegiate University's other 2017-18 Access Agreement targets, we proposed incremental annual milestones for progress from 7.3% to 8.2%, starting with a milestone of 7.5% in the first year.

- A similar analysis will be conducted with national A Level attainment data for OAC subgroups when such data are available.

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Introduction

Output Area Classification (OAC) 2011[1] was one of several indicators considered by the collegiate University as potential new targets for our 2017/18 Access Agreement[2] with the Office for Fair Access (OFFA)[3]. The collegiate University takes account of six types of contextual data in its admissions process; for each of these a "flag" may be appended to an application for the attention of academic assessors[4]. One type of data upon which a flag is based is OAC2011[5]. More information about OAC2011 can be found in the accompanying paper by Dr Horner and Dr Sumnall[6], but, briefly, it is a geodemographic segmentation system which classifies small geographical units ("output areas", each comprising ~125 households) into categories according to each area's average values for 60 census data variables, which include socio-economic and occupation measures. The flag based on OAC2011 is appended to an application if an applicant's postcode indicates that they are resident in an area with less advantaged socio-economic characteristics; the selection of the specific OAC2011 groupings which receive a flag is the subject of the accompanying paper by Dr Horner and Dr Sumnall.

The "flagged" OAC2011 groupings are an obvious potential basis for an admissions target, but despite the use of the OAC flag in the collegiate University's admissions process since 2012-13, the collegiate University had no formal admissions target in this area prior to the 2017/18 Access Agreement. For several years the collegiate University has had an admissions target relating to residents in POLAR3 quintiles 1 and 2 areas[7], which are geographical areas where residents are relatively unlikely to participate in Higher Education (HE). However, although this POLAR3 measure of relative disadvantage is obviously highly relevant to us as an HE provider, the OAC's basis upon multiple socio-economic and occupational measures means that it may provide a more nuanced indicator of relative disadvantage.

This paper details our analysis of applications, offers and acceptances of Cambridge applicants with and without the OAC2011 flag, and our calculation of an appropriate OAC2011 flag admissions target. The OAC target in the collegiate University's 2017/18 Access Agreement with OFFA is based on this work.

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[1] http://webarchive.nationalarchives.gov.uk/20160105160709/http:/www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/ns-area-classifications/ns-2011-area-classifications/index.html
[2] 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
[3] https://www.offa.org.uk/
[4] http://www.undergraduate.study.cam.ac.uk/applying/decisions/contextual-data
[5] It has been based on OAC2011 since application year 2014-15; it was based on OAC2001 in application years 2012-13 and 2013-14
[6] A. Horner & C. Sumnall, 2016, *Office for Fair Access (OFFA) Access Agreement 2017-18: Use of Output Area Classification 2011 (OAC2011)*
[7] For further information, please refer to the accompanying paper: A. Horner, 2016, *Office for Fair Access (OFFA) Access Agreement 2017-18: Re-evaluation of POLAR3 Q1 and Q2 admissions target*
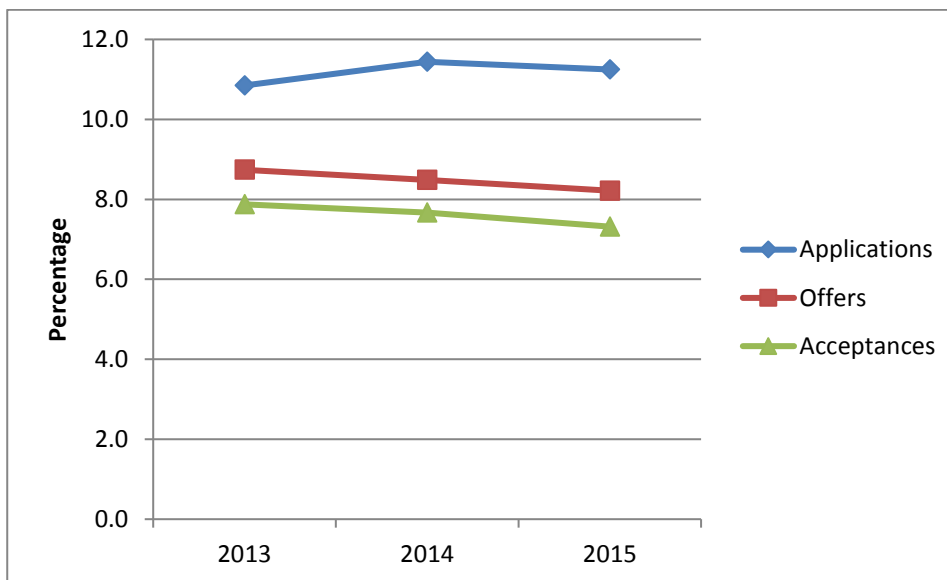
The OAC2011 flag has only been in use since 2014-2015, but was applied retrospectively for the purpose of these analyses. Postcodes receiving the OAC2011 flag in this analysis would not necessarily have received the previous OAC2001 flag during earlier applications. Finally, it is important to note that OAC and POLAR3 both categorise 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 OAC2011 flag group

As a first step towards defining an OAC admissions target, the numbers and proportions of applications, offers and acceptances attributed to those living in flagged and non-flagged OAC2011 postcodes in the last 3 cycles were summarised (Table 1, Figure 1).

	APPLICATIONS			OFFERS			ACCEPTANCES		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
Non-flag number	8292	8291	8169	2726	2761	2815	2328	2337	2356
Flag number	1009	1071	1035	261	256	252	199	194	186
Non-flag %	89.2	88.6	88.8	91.3	91.5	91.8	92.1	92.3	92.7
Flag %	10.8	11.4	11.2	8.7	8.5	8.2	7.9	7.7	7.3

Table 1: Cambridge applications, offers and acceptances, by year and OAC2011 flag. Applicants were excluded from these analyses if any of the following applied: i) they were not a Home[8] applicant; ii) they were applying for Graduate Medicine; iii) their OAC subgroup was unknown.

Figure 1: Percentage of Cambridge applications, offers and acceptances that were of candidates in flagged OAC2011 categories, by year.
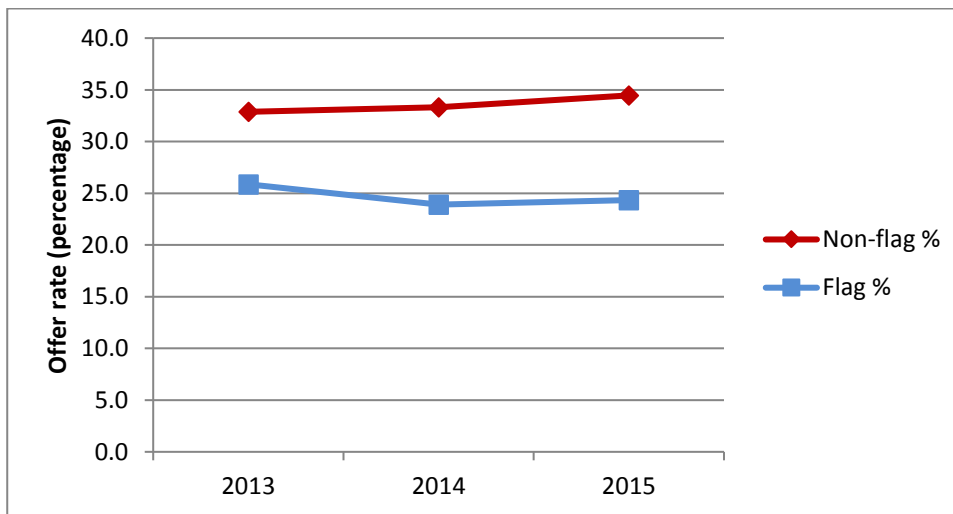
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[8] "Home" applicants are defined as UK nationals (i.e. citizenship "GBR") permanently resident in the UK (i.e. region of residence is not overseas). This is consistent with published Undergraduate Admissions Statistics.

The percentage of Cambridge offers achieved by OAC2011-flagged applicants was at its highest in 2013 (i.e., application year 2012-13) at 8.7%, but declined to 8.2% in 2015. In a similar vein, the percentage of Cambridge acceptances achieved by OAC2011-flagged applicants was at its highest in 2013 at 7.9%, but declined to 7.3% in 2015.

Based on these data, offer and acceptance rates were calculated (Table 2, Figures 2 and 3). The offer rate for flagged applicants was highest in 2013 at 25.9%, but declined to 24.3% in 2015. Similarly, acceptance rate was highest in 2013 at 19.7%, but declined to 18% in 2015.

	OFFER RATE			ACCEPTANCE RATE		
	2013	**2014**	**2015**	**2013**	**2014**	**2015**
Non-flag %	32.9	33.3	34.5	28.1	28.2	28.8
Flag %	25.9	23.9	24.3	19.7	18.1	18.0

Table 2: Offer rate (percentage of applicants receiving an offer) and acceptance rate (percentage of applicants ultimately accepted) of Cambridge applicants, by year and OAC2011 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 OAC subgroup was unknown.

Figure 2: Offer rate (percentage of applicants receiving an offer) of Cambridge applicants, by year and OAC2011 flag.
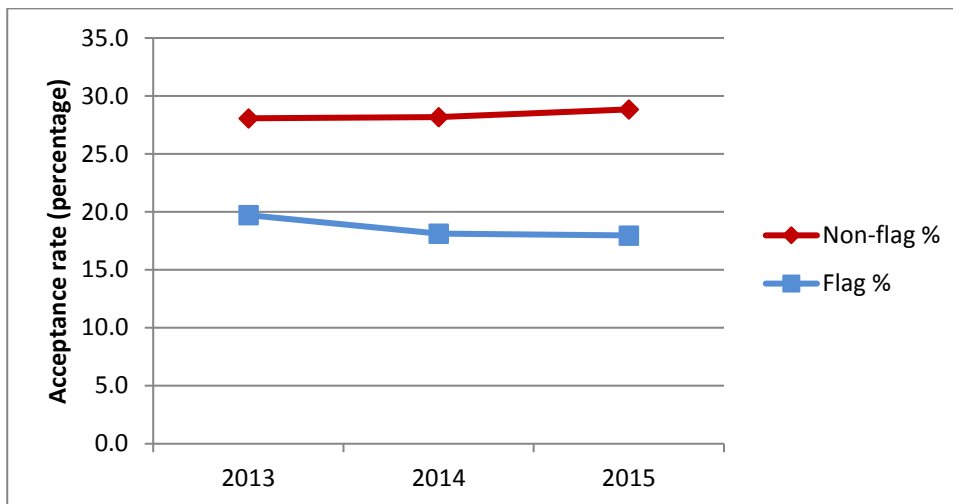
Figure 3: Acceptance rate (percentage of applicants ultimately accepted) of Cambridge applicants, by year and OAC2011 flag.

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.

Breakdown of applications, offers and acceptances by OAC2011 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 living in flagged and non-flagged OAC2011 postcodes 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, respectively[9]. Furthermore, we considered applications for Mathematics 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 OAC flag for each subject type; these are summarised later in Table 7.

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[9] 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	209	26	205	379	548	1367
	Flag	X	X	39	67	56	235
Sciences (excl. Maths)	Non-flag	934	570	1178	1379	2793	6854
	Flag	X	X	157	171	226	870
Arts	Non-flag	1327	666	1540	1533	1226	6292
	Flag	271	73	166	144	72	726
Total (excl. Maths)	Non-flag	2261	1236	2718	2912	4019	13146
	Flag	X	X	323	315	298	1596
Total (incl. Maths)	Non-flag	2470	1262	2923	3291	4567	14513
	Flag	571	162	362	382	354	1831
		Offers					
		<AAA	AAA	A*AA	A*A*A	A*A*A*+	Total
Mathematics	Non-flag	X	X	41	164	383	609
	Flag	X	X	6	25	38	75
Sciences (excl. Maths)	Non-flag	X	X	91	281	1572	1986
	Flag	X	X	14	41	107	167
Arts	Non-flag	152	171	563	728	812	2426
	Flag	35	20	58	73	40	226
Total (excl. Maths)	Non-flag	X	X	654	1009	2384	4412
	Flag	X	X	72	114	147	393
Total (incl. Maths)	Non-flag	190	196	695	1173	2767	5021
	Flag	44	22	78	139	185	468
		Acceptances					
		<AAA	AAA	A*AA	A*A*A	A*A*A*+	Total
Mathematics	Non-flag	X	X	X	57	219	282
	Flag	X	X	X	X	20	23
Sciences (excl. Maths)	Non-flag	X	X	X	257	1534	1847
	Flag	X	X	X	X	103	148
Arts	Non-flag	50	63	518	703	799	2133
	Flag	10	10	54	70	39	183
Total (excl. Maths)	Non-flag	X	X	X	960	2333	3980
	Flag	X	X	X	X	142	331
Total (incl. Maths)	Non-flag	59	66	568	1017	2552	4262
	Flag	11	10	64	107	162	354

*Table 3: Numbers of Cambridge applications, offers and acceptances, by A Level grade profile, subject category (Mathematics, Sciences, Arts) and OAC2011 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 OAC subgroup 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 (7.7%; 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 7.5% (380:4693 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 457 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 applicants achieving AAA or A*A*A had higher offer and acceptance rates, but again flagged applicants in the A*A*A*+ category had considerably lower offer and acceptance rates. In the case of Mathematics, flagged applicants had lower offer and acceptance rates in all 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 confirms the importance of the proposed admissions target in this area.

		Offer rate				
		<AAA	AAA	A*AA	A*A*A	A*A*A*+
Mathematics	**Non-flag**	X	X	20.0	43.3	69.9
	Flag	X	X	15.4	37.3	67.9
Sciences (excl. Maths)	**Non-flag**	X	X	7.7	20.4	56.3
	Flag	X	X	8.9	24.0	47.3
Arts	**Non-flag**	11.5	25.7	36.6	47.5	66.2
	Flag	12.9	27.4	34.9	50.7	55.6
Total (excl. Maths)	**Non-flag**	X	X	24.1	34.6	59.3
	Flag	X	X	22.3	36.2	49.3
Total (incl. Maths)	**Non-flag**	7.7	15.5	23.8	35.6	60.6
	Flag	7.7	13.6	21.5	36.4	52.3
		Acceptance rate				
		<AAA	AAA	A*AA	A*A*A	A*A*A*+
Mathematics	**Non-flag**	X	X	X	15.0	40.0
	Flag	X	X	X	X	35.7
Sciences (excl. Maths)	**Non-flag**	X	X	X	18.6	54.9
	Flag	X	X	X	X	45.6
Arts	**Non-flag**	3.8	9.5	33.6	45.9	65.2
	Flag	3.7	13.7	32.5	48.6	54.2
Total (excl. Maths)	**Non-flag**	X	X	X	33.0	58.0
	Flag	X	X	X	X	47.7
Total (incl. Maths)	**Non-flag**	2.4	5.2	19.4	30.9	55.9
	Flag	1.9	6.2	17.7	28.0	45.8

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 OAC2011 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, OAC-flagged applicants accounted for markedly lower percentages of acceptances than of offers in all 3 years; for example, they constituted 8.2% of offers in 2015, but only 7.3% 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. Flagged applicants typically had higher attrition

rates than equivalently qualified non-flagged applicants in 2014-15 (Table 5), particularly when they achieved A*A*A or A*A*A*+ at A Level (which the majority of offer-holders do). However, flagged offer-holders that achieved AAA or A*AA typically had lower attrition rates. 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	65.2	42.8
	Flag	X	X	X	X	47.4
Sciences (excl. Maths)	**Non-flag**	X	X	X	8.5	2.4
	Flag	X	X	X	X	3.7
Arts	**Non-flag**	67.1	63.2	8.0	3.4	1.6
	Flag	71.4	50.0	6.9	4.1	2.5
Total (excl. Maths)	**Non-flag**	X	X	X	4.9	2.1
	Flag	X	X	X	X	3.4
Total (incl. Maths)	**Non-flag**	68.9	66.3	18.3	13.3	7.8
	Flag	75.0	54.5	17.9	23.0	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 OAC2011 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.

What is an appropriate OAC2011 flag-based target?

We might ideally have based a target for the flagged percentage of acceptances on the national profile of applicants i.e. the national proportion of certain top A Level grade profiles achieved by students that would receive the OAC2011 flag. However, in the absence of this information (which was not available to us at the time of these analyses), we decided to base a target on the profiles of applicants to the University of Cambridge, reasoning that flagged 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 applicants.

% of A Level grade profiles achieved by flagged	<AAA	AAA	A*AA	A*A*A	A*A*A*	4 A*+
Mathematics	X	X	15.98	15.02	9.75	8.57
Science (excl. Maths)	X	X	11.76	11.03	7.73	7.19
Arts	16.96	9.88	9.73	8.59	6.19	3.20
Total (excl. Maths)	X	X	10.62	9.76	7.15	6.50
Total (incl. Maths)	18.78	11.38	11.02	10.40	7.45	6.77

Table 6: Proportion of each A Level grade profile achieved by (Home) applicants with the OAC2011 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). 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.

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 OAC 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 OAC 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 the Appendix.

Degree subject(s)	Target %	Actual %
Mathematics only	10.5	7.5
Sciences only	8.1	7.4
Arts only	8.0	7.9
All subjects excl. Maths (used subject information in calculation)	8.1	7.7
All subjects incl. Maths (used subject information in calculation)	8.2	7.7
All subjects excl. Maths (subject information disregarded in calculation)	(8.4)	7.7
All subjects incl. Maths (subject information disregarded in calculation)	(8.7)	7.7

Table 7: Estimated target percentages of acceptances that should have the OAC flag, for the given degree subject(s). Production of these estimates is detailed in the Appendix, 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 separately and combined ("All subjects excl. Maths"), a reasonable target is that approximately 8.0-8.1% of accepted students should have the OAC flag. The actual proportion of Arts acceptances was already close to this in 2014 and 2015 (7.9%), although it was lower for the Sciences (7.4%). The estimate for Mathematics was that 10.5% of accepted students should have the OAC flag, whereas only 7.5% 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 ~8.2% produced for "All subjects incl. Maths" might be slightly affected by this, but nonetheless we decided that this target figure was the most appropriate to take forward into 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 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 8.7%.

In conclusion, although there are several caveats (e.g., this does not take into account choice of A Level subject, takers of alternative KS5 qualifications, or STEP results for Mathematics applicants), we decided that a reasonable admissions target for OAC-flagged applicants based on 2014-15 Cambridge applicant data is approximately 8.2%.

Conclusion

Based on the profile of successful applications to the University, and typical A Level attainment of applicants with and without the OAC2011 flag, the present research found that a suitable

admissions target might currently be ~8.2% of admitted students having the flag. This constitutes a percentage increase of 12.3% from our present baseline of 7.3%. In the collegiate University's most recent 2017-18 Access Agreement with OFFA, we therefore introduced a target for OAC-flagged admissions of 8.2% by 2019-20. Consistent with the collegiate University's other targets in our Access Agreement, we proposed incremental annual milestones for progress from 7.3% to 8.2%, starting with a milestone of 7.5% in the first year.

It is important to note several caveats to this target estimate; it does not take into account choice of A Level subject, takers of alternative KS5 qualifications, or STEP results for Mathematics applicants. Furthermore, the reliability of this estimate suffers from small group sizes, particularly of flagged applicants. We must also bear in mind that OAC2011 is based on 2011 census data and that, as such, its accuracy in correctly identifying geographical areas of relative socio-economic disadvantage will decline with time. A similar analysis will be conducted with national A Level attainment data for OAC subgroups, if and when we are able to access them.

Dr Alexa Horner

Research Officer, CAO

October 2016

APPENDIX – Calculation of flagged acceptances target percentage based on Cambridge applicant profile

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**

	Mathematics acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	X	X	X	0.4
AAA	X	X	X	0.0
A*AA	X	X	15.984	0.1
A*A*A	X	X	15.022	3.0
A*A*A*	105	0.344	9.749	3.4
4 A*+	134	0.439	8.571	3.8
Total	305	1.000		**10.5**

b) **Target flagged acceptances % for SCIENCES only**

	Science acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	X	X	X	0.1
AAA	X	X	X	0.0
A*AA	X	X	11.760	0.3
A*A*A	X	X	11.032	1.6
A*A*A*	724	0.363	7.729	2.8
4 A*+	913	0.458	7.185	3.3
Total	1995	1.000		**8.1**

c) **Target flagged acceptances % for ARTS only**

	Arts acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	60	0.026	16.959	0.4
AAA	73	0.032	9.878	0.3
A*AA	572	0.247	9.730	2.4
A*A*A	773	0.334	8.587	2.9
A*A*A*	639	0.276	6.195	1.7
4 A*+	199	0.086	3.203	0.3
Total	2316	1.000		**8.0**

d) **Target flagged acceptances % for ALL SUBJECTS EXCLUDING MATHEMATICS**

		Science/Arts acceptances	Weighting	Flag %	Weighting x Flag %
Science	**<AAA**	X	X	X	0.0
	AAA	X	X	X	0.0
	A*AA	X	X	11.760	0.2
	A*A*A	X	X	11.032	0.7
	A*A*A*	724	0.168	7.729	1.3
	4 A*+	913	0.212	7.185	1.5
Arts	**<AAA**	60	0.014	16.959	0.2
	AAA	73	0.017	9.878	0.2
	A*AA	572	0.133	9.730	1.3
	A*A*A	773	0.179	8.587	1.5
	A*A*A*	639	0.148	6.195	0.9
	4 A*+	199	0.046	3.203	0.1
	Total	4311	1.000		**8.1**

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

		Acceptances	Weighting	Flag %	Weighting x Flag %
Maths	**<AAA**	X	X	X	0.0
	AAA	X	X	X	0.0
	A*AA	X	X	15.984	0.0
	A*A*A	X	X	15.022	0.2
	A*A*A*	105	0.023	9.749	0.2
	4 A*+	134	0.029	8.571	0.2
Science	**<AAA**	X	X	X	0.0
	AAA	X	X	X	0.0
	A*AA	X	X	11.760	0.2
	A*A*A	X	X	11.032	0.7
	A*A*A*	724	0.157	7.729	1.2
	4 A*+	913	0.198	7.185	1.4
Arts	**<AAA**	60	0.013	16.959	0.2
	AAA	73	0.016	9.878	0.2
	A*AA	572	0.124	9.730	1.2
	A*A*A	773	0.167	8.587	1.4
	A*A*A*	639	0.138	6.195	0.9
	4 A*+	199	0.043	3.203	0.1
	Total	4616	1.000		**8.2**

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 OAC 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

Note that this is an increase of ~0.3%.

	Total (excluding Maths) acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	X	X	X	0.3
AAA	X	X	X	0.2
A*AA	X	X	10.622	1.6
A*A*A	X	X	9.761	2.4
A*A*A*	1363	0.316	7.148	2.3
4 A*+	1112	0.258	6.499	1.7
Total	4311	1.000		**8.4**

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

Note that this is an increase of ~0.5%.

	Total (including Maths) acceptances	Weighting	Flag %	Weighting x Flag %
<AAA	70	0.015	18.777	0.3
AAA	76	0.016	11.376	0.2
A*AA	632	0.137	11.020	1.5
A*A*A	1124	0.244	10.400	2.5
A*A*A*	1468	0.318	7.455	2.4
4 A*+	1246	0.270	6.770	1.8
Total	4616	1.000		**8.7**