

Analysis of degree classifications over time

Changes in graduate attainment from
2010-11 to 2017-18

Reference OfS 2019.28

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Summary

1. The proportion of UK-domiciled, full-time first degree graduates attaining a first class honours degree from an English higher education provider has increased from 16 per cent in 2010-11 to 29 per cent in 2017-18, an overall increase of roughly 80 per cent over the period. For the same graduate population, the proportion attaining a first or an upper second class degree has increased from 67 per cent in 2010-11 to 79 per cent in 2017-18.
2. In December 2018, the Office for Students (OfS) published 'Analysis of degree classifications with time: Changes in graduate attainment' (OfS 2018.54), which uses statistical modelling to investigate changes in the proportions of graduates attaining first or upper second class degrees over the academic years from 2010-11 to 2016-17¹. The UK Standing Committee for Quality Assessment also published an analysis investigating this issue in November 2018². Both reports concluded that the growing proportion of the first and upper second class degrees awarded cannot be fully explained by factors linked with degree attainment, whether graduate or higher education provider characteristics.
3. This report builds on OfS 2018.54 by expanding the time and the domicile scope of the graduate population considered to all UK-domiciled³ graduates who qualified in academic years from 2010-11 to 2017-18 inclusive. Improvements in classifying the equivalent entry qualifications of individuals have also been made. These changes mean that the results presented in this report differ in some cases from those published in OfS 2018.54. While the results in each report are thus not directly comparable, the changes do not affect the overall conclusions of either report.
4. Our new analysis finds that in 2017-18, across the 148 providers considered, 13.9 percentage points' worth of first class degree attainment is unexplained⁴ by changes in the graduate population since 2010-11, an increase of 2.4 percentage points from the unexplained attainment in 2016-17.
5. In respect of first class degree attainment, the new analysis shows that in 2017-18:

¹ Available at www.officeforstudents.org.uk/publications/analysis-of-degree-classifications-over-time-changes-in-graduate-attainment/.

² 'The drivers of degree classifications', available at <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/degree-classification.aspx>.

³ In OfS 2018.54 the graduates included in the analysis were England-domiciled only. This has been changed to UK-domiciled to align with the Office for Students' Key Performance Measures.

⁴ The term 'unexplained' in this context means that changes in attainment over the time period cannot be accounted for by changes in the characteristics of the graduating cohort in terms of the explanatory variables included in the statistical modelling. It is not possible to deduce from this analysis what factors not included in the modelling (such as improvements in teaching quality, more diligent students or changes to assessment approaches) are driving the observed changes in degree attainment.

- a. 71 per cent of providers (105 providers) show a statistically significant unexplained increase relative to both the sector and their own level in 2010-11. In 2016-17, 55 per cent of those providers (82) showed a statistically significant unexplained increase relative to both the sector and their own level in 2010-11.
 - b. A further 8 per cent of providers (12) show a statistically significant unexplained level of attainment above that of the sector in 2010-11, but no significant change relative to their own level in 2010-11. In 2016-17, this number was 16 per cent (23).
 - c. Another 15 per cent of providers (22) show a statistically significant unexplained increase relative to their own level in 2010-11, but attainment not significantly above the sector level in 2010-11. In 2016-17, this number was 18 per cent (26).
 - d. The remaining 6 per cent of providers (nine) showed no significant unexplained increase in attainment relative to their own level in 2010-11 and attainment not significantly above that in the sector in 2010-11. In 2016-17, this number was 11 per cent (17).
6. We performed additional analysis to try to address comments made after the release of OfS 2018.54. Its findings include:
- a. Sector-level results of additional modelling where 'additional contextual variables' for graduates (ethnicity, sex, declared disability status and Participation of Local Areas (POLAR4) quintile) are omitted as explanatory variables in the modelling.
 - b. The effect of closing (reducing to zero) attainment gaps between individuals of differing sex, ethnicity, declared disability status and POLAR4 quintile on the sector-level unexplained attainment of first or upper second class degrees combined, and first class degrees alone. In a hypothetical sector where attainment gaps within the aforementioned groups do not exist the sector-level unexplained attainment of first and upper second class degrees combined in 2017-18 is estimated to be 6.0 percentage points (compared with 13.3 percentage points for the sector where attainment gaps exist). In this same scenario, for first class degrees alone the unexplained sector-level attainment in 2017-18 is estimated to be 10.9 percentage points (compared with 13.9 percentage points for the sector where attainment gaps exist).

Introduction

7. This report sets out the results of our analysis of changes in the proportion of first and upper second class degrees awarded between 2010-11 and 2017-18. We report on how graduate attainment has changed over this time period, and the extent to which these changes can be accounted for by changes in certain characteristics of the graduate population. This analysis has been undertaken at both the sector level and the provider level. The sector-level analysis and a summary of the provider-level analysis are in the main body of this report, with detailed results of the provider-level analysis available separately (in Annex A and in full provider tables available at www.officeforstudents.org.uk/publications/analysis-of-degree-classifications-over-time/).
8. The graduate population considered in this report comprises UK-domiciled first degree graduates⁵ who studied full-time, were registered at higher education providers in England and graduated in the academic years from 2010-11 to 2017-18.
9. We further limit the graduate population included in this analysis to only include those who qualified from English providers awarding at least 10 classified honours degrees in each of the academic years considered, in total including 1,954,445 graduates⁶ from 148 providers (hereafter collectively referred to as 'the sector', for the purposes of this report only). Comparisons of key aspects of this population with the population of graduates from all English providers are presented in Annex B.
10. We have used statistical modelling of individual-level graduate data to predict expected patterns in degree classification attainment between 2010-11 to 2017-18, accounting for following graduate characteristics (explanatory variables):
 - the provider at which the graduate was registered
 - year of graduation
 - subject studied
 - qualifications on entry into higher education
 - age
 - additional contextual variables:

⁵ Limited to those receiving a classified honours degree.

⁶ The total number of unique 'observations' used in this analysis totalled 2,330,615. This number is greater than the number of graduates in the population considered, as each observation has an associated weight of: $0 < \text{weight} \leq 1$ full person equivalent (FPE), to account for combinations of subject of study for individuals. The total weight of these observations sums to the number of graduates (FPE).

- declared disability status
 - ethnicity
 - sex
 - Participation of Local Areas (POLAR4) quintile.
11. We present sector-level results from modelling where the additional contextual variables have been included (the 'full model') and omitted (the 'simplified model') as explanatory variables (see Annex D for details).
 12. The modelling predicts little variation in the proportion of students attaining first and upper second class degrees between 2010-11 and 2017-18, meaning that the sector-level increase of 13.6 percentage points in first class degree attainment over this time period is considered unexplained by these factors alone.
 13. The term 'unexplained' in this context means that changes in attainment over the time period cannot be accounted for by changes in the characteristics of the graduating cohort in terms of the explanatory variables included in the statistical modelling. It is not possible to deduce from this analysis what factors not included in the modelling (such as improvements in teaching quality, more diligent students or changes to assessment approaches) are driving the observed changes in degree attainment.
 14. We first present a sector-level overview of the changes in the observed proportion of graduates who attained a first or an upper second class degree, and of those who attained a first class degree, in the academic years 2010-11 to 2017-18. We then disaggregate these changes and present the attainment of graduates by qualifications held on entry into higher education.
 15. We then present sector-level findings from statistical modelling and the associated analysis that allows us to determine how much of the observed increase in attainment of first and upper second degree classifications over time can be attributed to changes in the characteristics (explanatory variables) of the graduate population, and how much remains unexplained, as defined in paragraph 13.
 16. Next, we present estimates of the unexplained attainment of first and upper second class degrees combined, and of first class degrees alone, in a 'hypothetical' sector where attainment gaps between individuals of differing sex, ethnicity, declared disability status and POLAR4 quintile do not exist in the academic year 2017-18 (see Annex C for details).
 17. Finally, summaries of the provider-level analysis are presented (based on the full model, see paragraph 11), where for all academic years and for first and upper second class degrees combined, and for first class degrees alone, we have flagged providers where the unexplained attainment levels are statistically significantly below or above, firstly the average level of the sector in 2010-11, and secondly the level at the same provider in 2010-11.

Results

Sector-level analysis

Sector overview

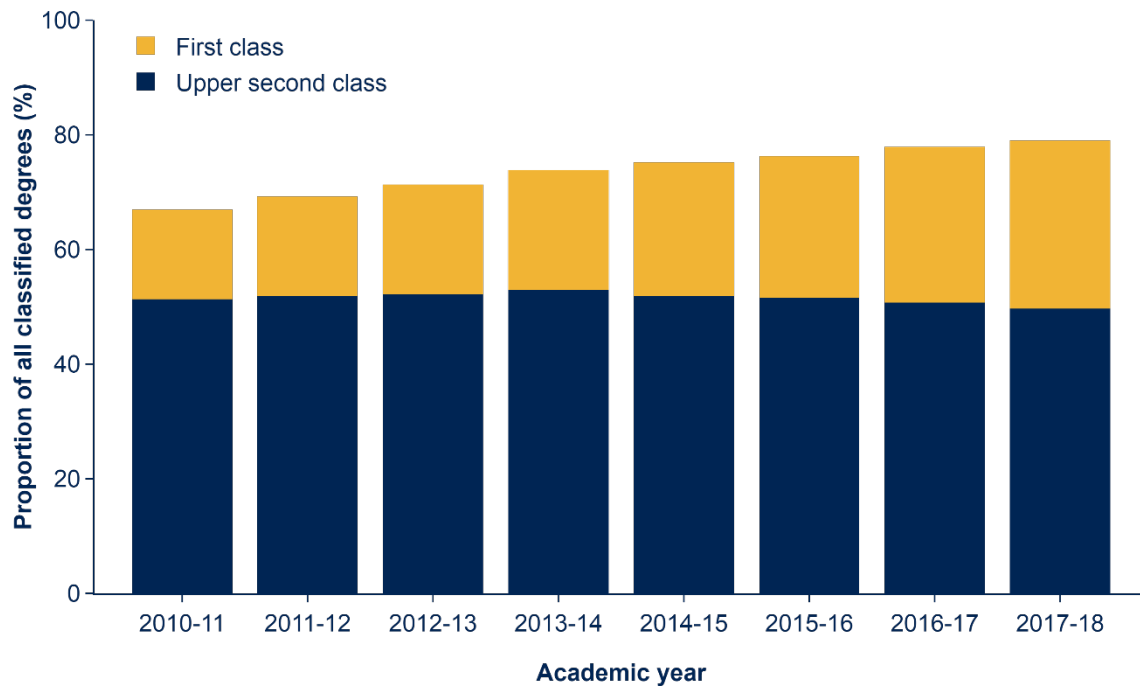
18. Table 1 shows a breakdown of the proportions of graduates attaining different classified degrees in the academic years 2010-11, 2016-17 and 2017-18. The proportion of graduates attaining a first class degree in 2017-18 is 13.6 percentage points higher than in 2010-11, a relative increase of 87 per cent. The proportion of graduates attaining an upper second class degree in 2017-18 is 1.6 percentage points lower than in 2010-11.

Table 1: Degree classifications summary for academic years 2010-11, 2016-17 and 2017-18

Degree classification	2010-11 number	2010-11 proportion	2016-17 number	2016-17 proportion	2017-18 number	2017-18 proportion
First	34,910	15.7%	68,990	27.2%	75,840	29.3%
Upper second	114,075	51.3%	128,550	50.7%	128,800	49.7%
Other classifications	73,445	33.0%	56,030	22.1%	54,545	21.0%
Total	222,430	100.0%	253,565	100.0%	259,185	100.0%

19. Figure 1 shows the changes in the proportions of all classified honours degrees awarded as first and upper second class from 2010-11 to 2017-18. It demonstrates further that the proportion of graduates attaining an upper second class degree over the period has remained relatively constant at around 50 per cent, while the proportion attaining a first class degree has risen steadily. The increase in the proportion of graduates attaining a first or an upper second over the period therefore appears to be driven by the increase in attainment of first class degrees.

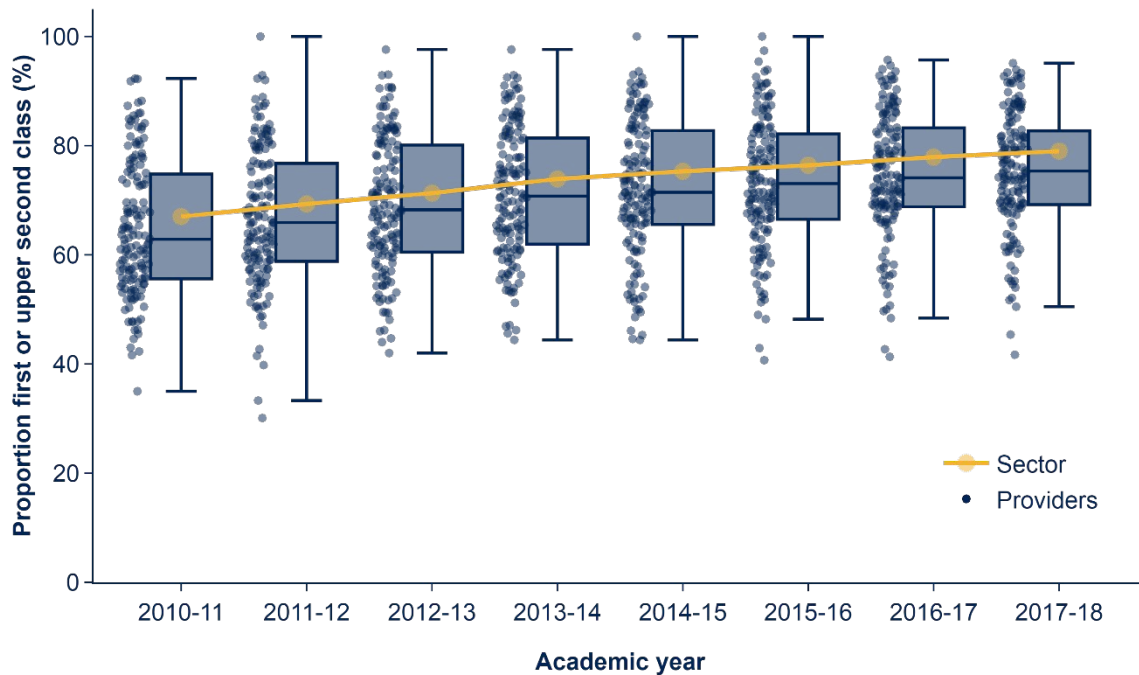
Figure 1: Changes in proportions of classified degrees awarded as first and upper second class from 2010-11 to 2017-18



20. Figures 2 to 5 present ‘box-and-whisker’ summary plots of degree attainment at individual providers and across the sector. In each of these figures the solid horizontal line spanning the interior of the shaded box indicates the median attainment across all the providers, while the upper and lower bounds of the shaded box indicate the third (Q3) and first (Q1) quartiles of attainment across providers, respectively. The shaded region indicates the inter-quartile range (IQR) of attainment across providers, and the caps on the ‘whiskers’ (vertical lines extending out from the shaded box) indicate the value of the data point nearest to, but lower than $Q3+1.5*IQR$ for the upper whisker cap (also known as the upper fence), and nearest to but greater than $Q1-1.5*IQR$ for the lower whisker cap (also known as the lower fence). Data points outside the range between the upper and lower whisker caps are considered ‘outliers’.

21. Figure 2 shows a summary of the proportion of classified degrees awarded as first or upper second class for academic years 2010-11 to 2017-18 across the 148 providers included in this analysis. The mean attainment across the sector is also indicated. There is large variation in attainment of upper second and first class degrees across providers, but a consistent shift to higher rates of attainment and a reduction in the variation across providers during the time series. There are few outliers, all exhibiting attainment levels below the lower whisker cap of the respective year.

Figure 2: Provider-level summary distributions for proportions of first or upper second class degrees from 2010-11 to 2017-18



22. Figure 3 shows the equivalent summary, for attainment of first class degrees only, over the same time period, showing that there is a large variation in the attainment of such degrees across providers, a consistent shift to higher rates of attainment across the time series, and an increase in the variation across providers. There are more outliers and the vast majority of these exhibit attainment of first class degrees higher than the upper whisker cap.

23. Figure 4 shows the year-on-year changes in the attainment of upper second or first class degrees for the 148 providers and the mean for the sector. The year-on-year increase for the sector is around 2.3 percentage points for 2010-11 to 2013-14, after which it drops to around 1.3 percentage points. The figure also shows that the year-on-year changes within providers exhibit a lower variation than the attainment in Figure 2, but with more outliers. The greatest fluctuations in year-on-year attainment changes occur in providers with small numbers, where changes in the outcomes for a small number of students can greatly change the proportion attaining a particular degree outcome⁷.

⁷ Note: The y-axis range in Figures 4 and 5 has been selected to focus on the majority of providers. A small number of providers exhibit year-on-year attainment changes outside this range so do not appear in the plots.

Figure 3: Provider-level summary distributions for proportions of first class degrees awarded from 2010-11 to 2017-18

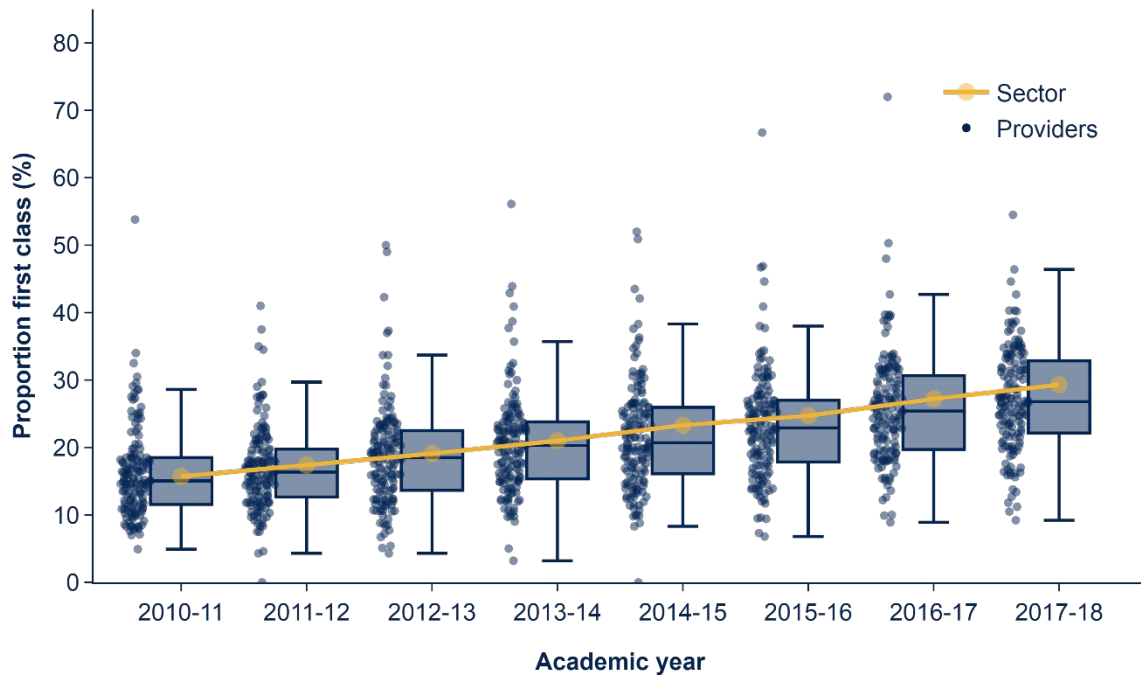
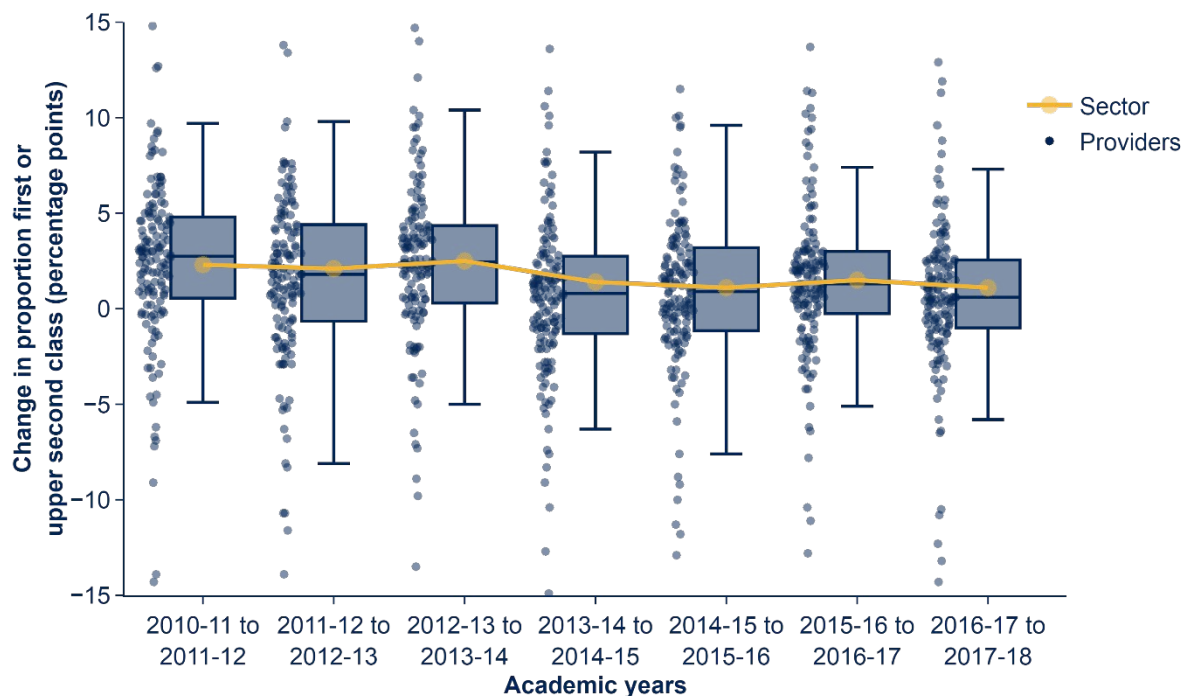
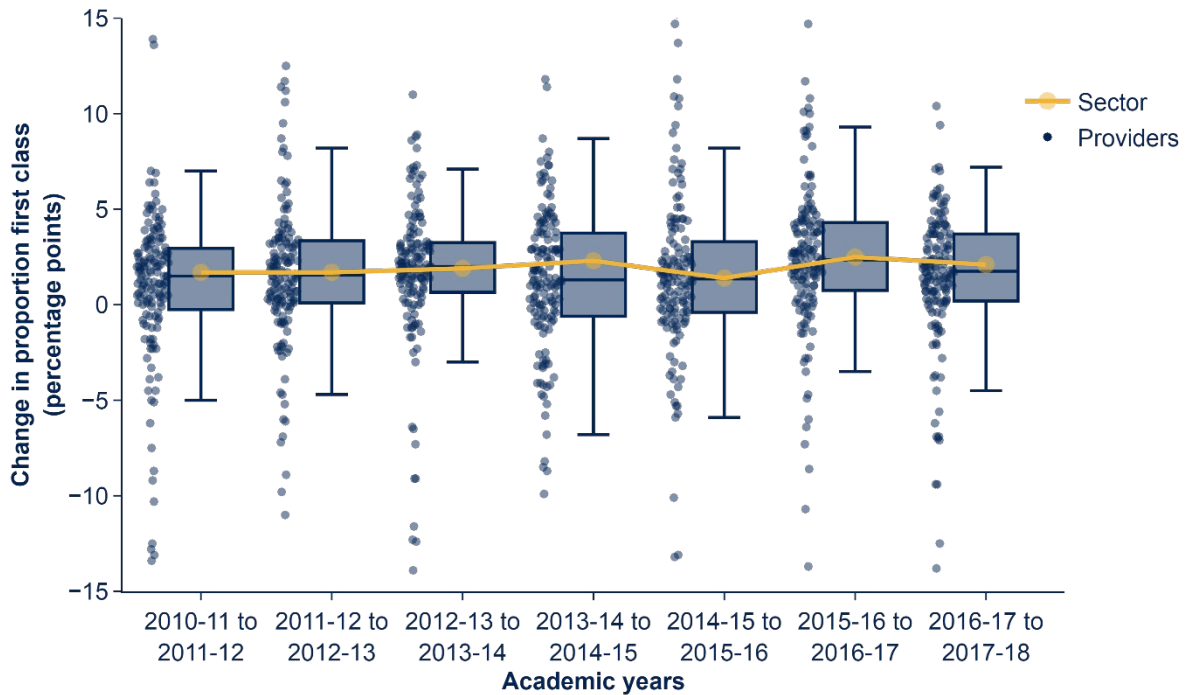


Figure 4: Provider-level summaries year-by-year changes in proportions of first or upper second class degrees awarded from 2010-11 to 2017-18



24. Figure 5 shows the same data as Figure 4 but for first class degrees alone, exhibiting similar features. The year-on-year increase for the sector is around 2.0 percentage points across all years.

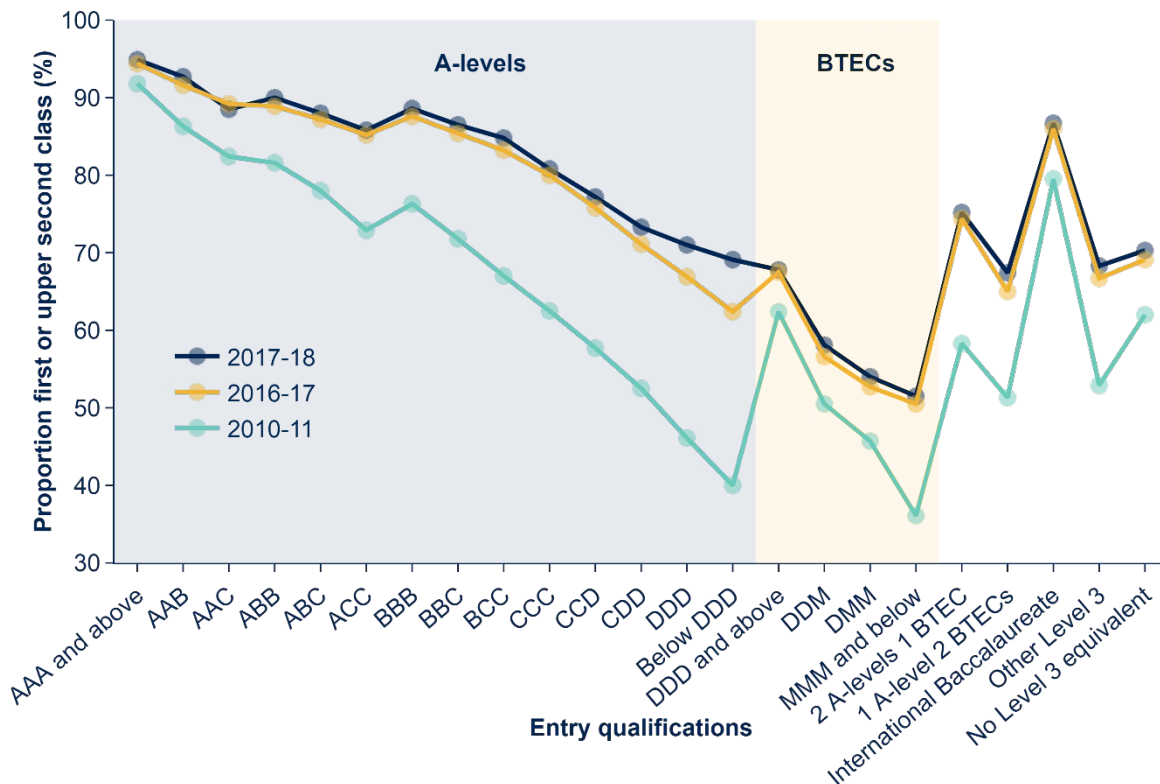
Figure 5: Provider-level summaries for year-by-year changes in proportions of first class degrees awarded from 2010-11 to 2017-18



Changes by entry qualifications

25. Figure 6 presents the changes in attainment of first and upper second class degrees combined in relation to graduates' entry qualifications for the academic years 2010-11, 2016-17 and 2017-18. A mean increase in attainment of 13.3 percentage points for all entry qualifications is observed from 2010-11 to 2017-18, and a mean increase in attainment of 1.4 percentage points is observed from 2016-17 to 2017-18.
26. Figure 6 shows that there has been little change in attainment for graduates who entered higher education with high A-levels or equivalent qualifications. As attainment for these groups was already very high, there is less scope for significant increase. Graduates who entered higher education with three A grades at A-level (or equivalent) have seen an increase in first or upper second class degrees of 3.1 percentage points from 2010-11 to 2017-18, and an increase of 0.5 percentage points from 2016-17 to 2017-18. The greatest increase in attainment is observed for graduates who entered higher education with the equivalent of below DDD at A-level, with a 29.1 percentage point increase (a relative increase of 73 per cent) from 2010-11 to 2017-18, and a 6.7 percentage point increase (a relative increase of 11 per cent) from 2016-17 to 2017-18.

Figure 6: First and upper second class degree attainment by entry qualifications for academic years 2010-11, 2016-17 and 2017-18

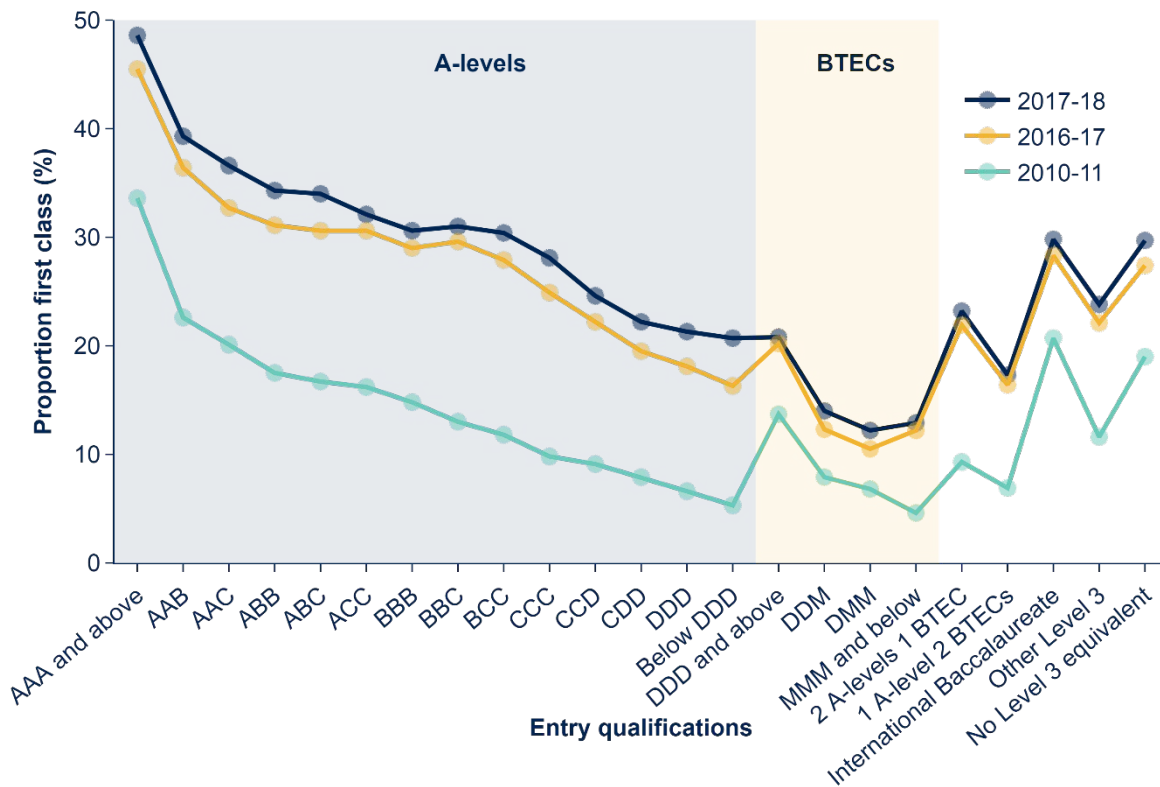


27. Figure 7 shows first class degree attainment only by entry qualifications.

28. The largest absolute increase from 2010-11 to 2017-18, of 18.6 percentage points, is seen among graduates who entered with BCC at A-level (or equivalent). In terms of relative change, for some entry qualification groups the percentage point increases equate to more than a tripling in the proportion of graduates attaining a first class degree in 2017-18 compared with 2010-11. For example, graduates who entered with grades below DDD at A-level (or equivalent) were almost four times as likely to receive a first class degree in 2017-18 as they were in 2010-11. The likelihood for those entering with the following entry qualifications (or equivalent) at least doubled from 2010-11 to 2017-18: ABC, BBB, BBC, BCC, CCC, CCD, CDD, DDD and below at A-level; BTEC MMM and below; combinations of A-levels and BTECs; and other Level 3 qualifications.

29. In terms of the change in attainment from 2016-17 to 2017-18, all entry qualifications show at least a slight increase, with the greatest increase for the A-levels and in particular grades below DDD at A-level (or equivalent), which saw an increase of 4.4 percentage points, a relative increase of 27 per cent.

Figure 7: First class degree attainment by entry qualifications for academic years 2010-11, 2016-17 and 2017-18



Results from statistical modelling

30. Tables 2 and 3 present sector-level changes in the attainment of first and upper second class degrees combined and of first class degrees alone, respectively, from 2010-11 through to 2017-18. The tables show the observed proportion of graduates attaining the respective degree classification ('Observed'), the percentage point ('pp') change in the observed attainment relative to 2010-11 ('Change from 2010-11') and the percentage point change which is unexplained once changes in the characteristics of the graduate population included in the modelling have been accounted for ('Unexplained change'). These results are shown for the modelling where additional contextual variables have been included ('full model') and when they have been omitted ('simplified model'). Details of the methodology used to determine unexplained attainment can be found in Annex C. Full model specifications can be found in Annex D.

Table 2: Summary of observed and unexplained sector-level changes in first and upper second class degree attainment combined for the ‘full’ and ‘simplified’ models

Academic year	Observed (%)	Change from 2010-11 (pp)	Unexplained change (full model) (pp)	Unexplained change (simplified model) (pp)
2010-11 (ref.)	67.0	0.0	0.0	0.0
2011-12	69.3	2.3	2.4	2.3
2012-13	71.3	4.3	4.1	4.0
2013-14	73.9	6.9	6.4	6.1
2014-15	75.3	8.3	8.2	7.6
2015-16	76.4	9.4	9.8	9.2
2016-17	77.9	10.9	11.9	11.3
2017-18	79.0	12.0	13.3	12.6

Table 3: Summary of observed and unexplained sector-level changes in first class degree attainment for the ‘full’ and ‘simplified’ models

Academic Year	Observed (%)	Change from 2010-11 (pp)	Unexplained change (full model) (pp)	Unexplained change (simplified model) (pp)
2010-11 (ref.)	15.7	0.0	0.0	0.0
2011-12	17.4	1.7	1.6	1.6
2012-13	19.1	3.4	3.0	2.9
2013-14	21.0	5.3	4.7	4.5
2014-15	23.3	7.6	7.0	6.7
2015-16	24.7	9.0	8.8	8.6
2016-17	27.2	11.5	11.5	11.3
2017-18	29.3	13.6	13.9	13.5

31. From 2011-12 to 2015-16, the unexplained percentage point increase in attainment for both models is higher for first and upper second class degrees combined than for first class degrees alone. In all years the majority of the observed change in percentage point increase is unexplained.

32. Table 2 shows an unexplained percentage point increase in attainment of 13.3 for first and upper second class degrees in 2017-18 (full model), compared with the observed change of 12.0 percentage points. This shows that the full model predicts that the overall proportion of graduates attaining these degree classifications in 2017-18 will be lower

than in 2010-11. This also applies to 2015-16 and 2016-17, where the unexplained percentage point change is also greater than the observed change.

33. The simplified models also show that the majority of increases in attainment over the time period are unexplained by changes in the graduating cohorts, though the unexplained proportion is lower across all years compared with the full model.
34. Table 3 shows that the 11.5 percentage point increase in first class degree attainment from 2010-11 to 2016-17 is entirely unexplained by the changes in the combined effects of the factors included in the full model. The results from the full model also show that the attainment of first class degrees in 2017-18 is predicted to be lower than in 2010-11.

Additional analysis – hypothetically closed attainment gaps

35. We have produced estimates of the effect of closing (reducing to zero) the existing attainment gaps between individuals of differing sex, ethnicity, disability and POLAR4 quintile (additional contextual variable groups) on the sector-level unexplained attainment of first or upper second class degrees combined, and first class degrees alone, for 2017-18 (see Annex C for details)⁸.
36. The highest attaining individual characteristics in the additional contextual variable groups were considered to be those showing the greatest (most positive) regression coefficient estimates in the full model⁹ (regression coefficient estimates can be found in Annex D).
37. For upper second and first class degrees combined, the highest attaining graduates in the additional contextual variable groups are white, non-disabled women from POLAR4 quintile 5 areas.
38. If all graduates attained at the levels predicted by these characteristics in 2017-18, the estimated 2017-18 sector unexplained attainment of first or upper second class degrees combined is estimated to be 6.0 percentage points. This is compared with 13.3 percentage points of attainment being ‘unexplained’ where the attainment gaps exist in the sector.
39. For first class degrees alone, the highest attaining graduates in the additional contextual variable groups are white, non-disabled women from POLAR4 quintile 4 areas.

⁸ These attainment gaps exist in the sector (see, for example www.officeforstudents.org.uk/publications/a-new-approach-to-regulating-access-and-participation-in-english-higher-education-consultation-outcomes/), and are apparent from these groups having significantly different regression coefficients in our statistical modelling. The unexplained attainment estimates produced here are based on a hypothetical sector where we have used our statistical modelling to artificially close the attainment gaps.

⁹ We recognise that the highest attaining individual characteristics in the additional contextual variable groups for the sector may not be the same as the highest attaining groups at an individual provider. This figure is included as a guide only.

40. If all graduates attained at the levels predicted by these characteristics, the estimated 2017-18 sector unexplained attainment of first class degrees alone is estimated to be 10.9 percentage points. This is compared with 13.9 percentage points of attainment being unexplained where the attainment gaps exist in the sector.

Provider-level summaries

Changes in attainment at providers relative to the sector in 2010-11

41. We have also investigated changes in graduate attainment at individual providers, relative both to the mean graduate attainment in the sector in 2010-11 and to the same provider in 2010-11.
42. Tables 4 and 5 present the number of providers showing unexplained graduate attainment for the years 2010-11 to 2017-18, for first and upper second class degrees combined and first class degrees alone respectively, relative to the mean graduate attainment in the sector in 2010-11, as derived from the 'full model'. In these tables providers are flagged ('Sector 2010-11 flag') as showing unexplained graduate attainment either significantly above, the same as or significantly below that of the mean graduate attainment in the sector in 2010-11 (see Annex E).
43. Tables 4 and 5 demonstrate, as expected, that in 2010-11 (the reference academic year) the majority of providers show attainment not significantly different from the sector average. In each subsequent year, there is a year-on-year increase in the number of providers flagged above the mean graduate attainment in the sector in 2010-11.

Table 4: Number of providers with unexplained graduate attainment significance flags (relative to the 2010-11 sector) for first and upper second class degrees

Sector 2010-11 flag	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Below	8	6	1	0	0	0	0	0
Same	124	117	108	88	66	60	41	32
Above	16	25	39	60	82	88	107	116

Table 5: Number of providers with unexplained graduate attainment significance flags (relative to the 2010-11 sector) for first class degrees

Sector 2010-11 flag	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Below	17	9	6	4	0	0	0	0
Same	117	112	100	90	79	63	43	31
Above	14	27	42	54	69	85	105	117

44. Since 2013-14, no providers have been flagged below the mean graduate attainment in the sector in 2010-11 for first or upper second class degrees combined. For first class degrees alone, no provider has been flagged as having attainment below the mean sector attainment in 2010-11 from 2014-15 onwards.
45. By 2017-18, 78 per cent (116) and 79 per cent (117) of the 148 providers are respectively flagged as showing unexplained graduate attainment significantly above that of the sector in 2010-11 for upper second and first class degrees combined and for first class degrees alone.

Changes in attainment at providers relative to the provider in 2010-11

46. Tables 6 and 7 present the numbers of providers showing unexplained changes in graduate attainment for the years 2010-11 to 2017-18, for first and upper second class degrees combined and first class degrees alone respectively, relative to the mean graduate attainment at the same provider in 2010-11, as derived from the 'full model'.
47. In these tables providers are flagged ('Provider 2010-11 flag') as showing unexplained graduate attainment either significantly above, the same as or significantly below that of the mean graduate attainment at the same provider in 2010-11 (see Annex E).

Table 6: Number of providers with unexplained graduate attainment change significance flags (relative to the 2010-11 provider) for first and upper second class degrees

Provider 2010-11 flag	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Below	0	0	0	0	0	0	0	0
Same	148	145	133	110	76	65	50	37
Above	0	3	15	38	72	83	98	111

Table 7: Number of providers with unexplained graduate attainment change significance flags (relative to the 2010-11 provider) for first class degrees

Provider 2010-11 flag	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Below	0	0	0	0	0	0	0	0
Same	148	144	136	116	93	75	40	21
Above	0	4	12	32	55	73	108	127

48. Tables 6 and 7 demonstrate that none of the 148 providers have been flagged as having an unexplained decrease in graduate attainment either of first and upper second class degrees combined, or of first class degrees alone, relative to their own levels in 2010-11.
49. Over time, there is a consistent increase in the number of providers showing unexplained graduate attainment significantly above their own levels in 2010-11.

50. The increase in providers flagged above their 2010-11 position is most pronounced in the first class degrees, with 86 per cent (127) of the providers exhibiting an unexplained increase in graduate attainment in 2017-18 compared with attainment at the same provider in 2010-11.

Summary of changes in attainment at the provider level from 2010-11 to 2017-18

51. In each year providers can be classified as having significant unexplained graduate attainment relative to the sector or to themselves in 2010-11. By 2017-18, in terms of graduate attainment of first or upper second class degrees combined, 68 per cent (100) of the 148 providers are flagged as significantly above both the sector and themselves; 11 per cent (16) were flagged as higher than the sector, but not themselves; 7 per cent (11) showed a significant unexplained increase relative to themselves, but not the sector; and 14 per cent (21) showed no significant unexplained change relative to the sector or themselves.

52. In terms of graduate attainment of first class degrees alone in 2017-18 compared with 2010-11, 71 per cent (105) of the 148 providers showed a significant unexplained increase relative to both the sector and themselves in 2010-11; 8 per cent (12) were flagged as higher than the sector, but not themselves; 15 per cent (22) showed a significant unexplained increase relative to themselves, but not the sector; and 6 per cent (nine) showed no significant unexplained change relative to the sector or themselves.

Annex A: Provider-level results for academic years 2010-11 and 2017-18

1. This annex contains the provider-level graduate attainment modelling results for the academic years 2010-11 and 2017-18 for all 148 providers considered in this report. Complete findings for years 2010-11 to 2017-18, along with the sector 2010-11 and provider 2010-11 flag Z-scores (see Annex E), are available in full provider tables at www.officeforstudents.org.uk/publications/analysis-of-degree-classifications-over-time/.
2. Table A1 contains the provider-level results for first and upper second class degrees combined. Table A2 contains the provider-level results for first class degrees alone. The results in these tables are produced using the 'full model' given in Equation D1 in Annex D.
3. The table headings are as follows:
 - a. **Number** – The number of graduates attaining a classified degree from the provider.
 - b. **Observed (%)** – The proportion of these graduates attaining the specified degree classifications.
 - c. **Sector 2010-11 flag** – Whether attainment at the provider was statistically significantly above (1), below (-1) or no different from (0) the attainment in the sector in 2010-11, with the effect of all explanatory variables accounted for (see Annex E).
 - d. **Provider 2010-11 flag** – Whether attainment at the provider was statistically significantly above (1), below (-1) or no different from (0) the attainment at the same provider in 2010-11, with the effect of all explanatory variables accounted for (see Annex E).
 - e. **[Updated] Unexplained (pp)** – The unexplained attainment at the provider relative to the attainment in the sector in 2010-11 (calculated using only the fixed effects of the 'simplified' mixed-effect logistic regression model presented in Annex D). A negative number of percentage points (pp) here indicates that attainment at the provider is beneath that of the average sector attainment in 2010-11 with the effect of explanatory variables accounted for.

Table A1: Provider-level results for first and upper second class degrees combined in academic years 2010-11 and 2017-18

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Anglia Ruskin University Higher Corporation	1,950	57.8	0	0.6	3,180	75.4	1	1	21.2
Arts University Bournemouth, the	615	61.0	-1	-6.3	915	67.6	0	1	0.8
University of the Arts, London	2,170	69.6	0	1.1	2,100	75.3	1	1	7.9
Askham Bryan College*	35	60.6	0	3.4	80	79.3	1	1	24.3
Aston University	1,305	73.8	1	0.9	1,685	87.1	1	1	17.1
The University of Bath	1,625	84.5	0	2.6	2,295	89.8	1	1	5.9
Bath Spa University	1,265	68.4	0	4.2	1,590	81.5	1	1	17.3
University of Bedfordshire	1,485	57.3	0	3.2	1,620	68.5	1	1	16.6
The University of Birmingham	3,990	77.7	0	-2.1	4,515	88.6	1	1	6.7
University College Birmingham	475	45.5	0	-9.3	820	61.6	1	1	7.9
Birmingham City University	2,865	65.0	1	6.6	4,095	73.7	1	1	16.8
Bishop Burton College*	60	35.0	-1	-13.0	95	41.7	0	0	-9.6
Bishop Grosseteste University	430	56.0	0	-4.4	530	69.5	0	1	10.1
Blackburn College*	270	52.4	0	-3.9	370	50.5	0	0	-3.5
Blackpool and the Fylde College*	245	61.7	0	3.9	410	61.1	0	0	6.3
The University of Bolton	635	49.9	0	-4.5	755	60.6	1	1	8.1
Bournemouth University	2,260	68.2	0	5.5	2,930	81.1	1	1	18.9
The University of Bradford	1,270	47.8	0	-9.5	1,350	79.3	1	1	24.1

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Bradford College*	315	43.0	0	-10.6	315	55.7	0	1	3.5
University of Brighton	2,565	64.5	0	1.7	3,130	74.3	1	1	12.4
University of Bristol	2,620	86.0	0	-0.6	3,565	92.4	1	1	6.0
Brunel University London	2,250	67.3	1	2.4	1,975	78.5	1	1	13.1
The University of Buckingham	80	53.7	0	-2.8	125	81.5	1	1	19.8
Buckinghamshire New University	915	47.7	0	-6.5	1,370	60.2	0	1	6.1
University of Cambridge	2,355	87.3	0	-3.2	2,045	93.9	1	1	4.0
Canterbury Christ Church University	1,815	60.1	0	2.5	2,480	69.1	1	1	13.1
University of Central Lancashire	3,575	57.4	0	0.9	3,355	72.0	1	1	16.8
University of Chester	1,510	60.8	0	1.5	2,400	71.6	1	1	13.5
The University of Chichester	895	60.2	0	2.5	1,175	74.9	1	1	17.4
City, University of London	1,270	66.5	0	-1.2	1,500	72.7	1	0	4.5
The Conservatoire for Dance and Drama*	105	83.5	1	18.4	120	78.7	1	0	11.4
Courtauld Institute of Art*	50	91.8	0	1.5	45	91.5	1	0	4.8
Coventry University	2,360	68.4	1	10.1	3,825	81.7	1	1	23.4
University for the Creative Arts	1,045	47.8	-1	-14.1	1,025	75.1	1	1	15.1
The University of Cumbria	1,330	61.4	0	2.0	1,215	68.8	1	1	11.7
De Montfort University	2,825	53.0	0	-4.8	3,980	75.7	1	1	19.8
University of Derby	2,265	53.6	0	-0.4	2,515	68.9	1	1	14.7

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
DN Colleges Group*	160	53.5	0	-3.0	310	54.0	0	0	-1.0
University of Durham	2,825	83.4	0	-3.2	2,970	93.4	1	1	7.2
The University of East Anglia	2,260	73.4	0	0.8	2,475	91.0	1	1	17.8
University of East London	1,940	51.7	0	-3.2	1,980	70.1	1	1	16.9
Edge Hill University	1,940	54.7	0	-0.2	2,905	74.1	1	1	16.9
The University of Essex	1,665	64.8	0	1.0	2,045	76.7	1	1	14.1
University of Exeter	2,935	85.5	0	4.8	4,005	91.4	1	1	9.1
Falmouth University	765	63.6	0	-2.6	1,270	78.3	1	1	11.3
Farnborough College of Technology*	85	54.2	0	-4.1	85	60.5	0	0	4.5
Gateshead College*	20	61.9	0	7.1	45	72.7	1	0	15.5
University of Gloucestershire	1,240	72.8	1	12.1	1,680	74.6	1	0	15.2
Goldsmiths' College	1,105	69.6	0	0.0	1,215	81.6	1	1	13.5
Greater Brighton Metropolitan College*	170	67.6	0	9.1	140	73.9	1	0	14.7
University of Greenwich	2,475	55.7	0	-0.7	2,860	79.6	1	1	21.6
Grimsby Institute of Further and Higher Education*	195	52.3	0	-4.0	220	61.0	0	0	4.9
Guildhall School of Music & Drama*	100	88.2	1	16.2	125	92.8	1	0	19.7
Harper Adams University	255	53.1	0	-9.9	355	76.2	0	1	11.4

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Havering College of Further and Higher Education*	125	61.0	0	6.1	70	65.2	1	0	9.2
Hereford College of Arts*	85	63.5	0	5.7	90	73.6	1	1	15.4
University of Hertfordshire	2,945	67.2	1	9.3	3,555	69.5	1	0	11.7
Heythrop College*	115	72.6	0	-0.8	15	82.4	1	1	14.9
The University of Huddersfield	2,460	57.9	0	-0.2	2,715	81.3	1	1	22.5
The University of Hull	2,570	57.2	0	-5.2	2,565	72.9	1	1	13.6
Hull College*	215	57.4	0	-0.3	145	51.7	0	0	-2.6
Imperial College of Science, Technology and Medicine	1,295	84.8	0	-3.4	1,155	93.3	1	1	3.7
University of Keele	1,120	67.8	0	3.9	1,555	79.7	1	1	15.9
The University of Kent	2,930	69.6	0	2.7	3,325	80.3	1	1	12.9
King's College London	2,180	80.6	0	-1.0	2,595	88.1	1	1	6.9
Kingston University	3,150	62.0	1	3.9	2,915	74.2	1	1	17.6
Kirklees College*	25	52.0	0	-5.8	15	61.5	0	0	5.3
The University of Lancaster	2,100	76.6	0	-0.8	1,875	84.2	1	1	6.6
The University of Leeds	5,165	80.2	0	-0.2	4,955	89.1	1	1	8.3
Leeds Arts University*	290	66.7	0	3.9	430	79.9	1	1	12.7
Leeds Beckett University	4,245	55.8	0	-3.1	4,200	71.7	1	1	14.7
Leeds College of Music*	205	87.9	1	18.5	270	79.2	1	0	15.3
Leeds Trinity University	540	44.6	-1	-13.7	820	79.2	1	1	22.2

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
The University of Leicester	2,015	73.8	0	0.4	2,160	81.8	1	1	9.0
University of Lincoln	2,140	58.0	0	-1.1	2,735	78.0	1	1	16.4
The University of Liverpool	2,730	74.3	0	0.9	3,480	87.4	1	1	13.1
Liverpool Hope University	1,130	65.3	0	7.4	1,050	68.5	1	0	10.7
The Liverpool Institute for Performing Arts*	165	84.9	1	15.6	185	92.3	1	1	25.8
Liverpool John Moores University	3,935	61.1	0	3.5	4,485	76.0	1	1	16.5
University College London	2,275	84.1	0	-0.7	2,635	91.9	1	1	5.8
London Metropolitan University	1,855	55.4	0	-0.8	1,490	63.8	1	1	9.8
The London School of Economics and Political Science	670	83.0	0	-5.6	700	91.6	1	1	3.7
London South Bank University	1,545	53.8	0	-2.2	1,895	71.4	1	1	17.0
Loughborough College*	110	51.8	0	-2.7	150	45.4	0	0	-7.4
Loughborough University	2,780	72.9	0	-1.9	2,715	85.6	1	1	8.6
The University of Manchester	5,505	75.2	-1	-5.8	5,055	87.1	1	1	6.8
Manchester Metropolitan University	5,295	59.6	0	-0.3	6,305	73.8	1	1	13.8
Middlesex University	2,240	57.0	0	1.6	2,255	69.8	1	1	15.7
Moulton College*	35	62.2	0	9.5	85	55.2	0	0	3.0
Nelson and Colne College*	10	63.6	0	12.9	35	68.6	0	0	16.4
New College Durham*	105	42.3	-1	-13.6	130	63.4	0	1	9.1
University of Newcastle upon Tyne	3,095	78.0	0	-1.2	3,620	86.2	1	1	7.6

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Newman University	490	48.2	0	-9.1	475	62.1	1	1	5.6
North East Surrey College of Technology (NESCOT)*	25	77.8	0	19.7	35	69.4	0	0	10.6
University of Northampton, The	1,710	65.4	1	8.9	1,900	74.5	1	1	18.7
The Northern School of Art*	115	54.9	0	-3.7	125	68.0	0	1	7.9
University of Northumbria at Newcastle	3,735	64.6	0	1.7	4,535	81.8	1	1	20.0
Norwich University of the Arts	405	62.8	0	0.0	550	71.4	0	0	6.8
Nottingham Trent University	4,205	57.5	0	-4.1	5,360	76.5	1	1	15.1
University of Nottingham, The	4,115	78.6	0	-2.0	5,275	87.9	1	1	7.4
The School of Oriental and African Studies*	475	81.4	0	2.1	510	82.5	1	0	6.9
University of Oxford	2,695	92.2	0	1.7	2,470	95.1	1	1	5.6
Oxford Brookes University	2,030	73.1	0	6.2	2,475	80.2	1	1	15.2
University of Plymouth	3,735	62.9	0	4.3	3,765	74.9	1	1	16.1
Plymouth College of Art*	155	59.2	0	1.0	335	55.2	0	0	-1.9
University of Portsmouth	3,555	58.5	0	-1.6	3,635	79.1	1	1	20.3
Queen Mary University of London	2,090	63.7	0	-7.8	2,490	85.1	1	1	8.3
Ravensbourne University London*	285	60.8	0	2.0	565	62.7	0	0	2.7
The University of Reading	2,100	75.9	0	2.9	2,490	83.6	1	1	10.1
Roehampton University	1,485	55.6	0	-3.8	1,515	69.8	1	1	12.6

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Rose Bruford College of Theatre and Performance*	180	77.2	1	14.2	165	79.3	1	0	15.5
The Royal Academy of Music*	50	92.3	1	22.6	55	92.7	1	0	16.2
The Royal Agricultural University	215	41.6	-1	-19.7	255	65.9	0	1	6.1
The Royal Central School of Speech and Drama	155	85.9	1	13.1	200	87.6	1	0	17.7
Royal College of Music	40	80.0	0	1.9	70	84.3	1	0	9.5
Royal Holloway and Bedford New College	1,490	76.5	0	-1.4	1,565	87.0	1	1	12.1
Royal Northern College of Music	65	74.6	0	4.1	115	88.0	1	1	11.4
The Royal Veterinary College	70	75.7	0	-1.5	120	54.6	0	0	-17.9
University of Salford, The	2,600	58.3	0	-0.1	3,345	73.9	1	1	16.4
The University of Sheffield	3,525	78.3	0	-1.2	3,595	86.6	1	1	5.5
Sheffield Hallam University	4,500	67.9	0	8.5	5,530	77.4	1	1	18.9
Solent University	2,065	50.5	0	-6.2	2,015	72.5	1	1	18.9
University of Southampton	3,050	80.2	0	2.1	3,790	87.6	1	1	11.0
Sparsholt College*	60	58.3	0	3.4	90	58.0	0	0	3.8
University of St Mark & St John	555	50.3	0	-3.2	470	76.8	1	1	23.2
St Mary's University, Twickenham	725	54.7	0	-3.2	995	76.9	1	1	20.1
St. George's Hospital Medical School	300	60.0	0	-10.7	380	80.8	1	1	6.5

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Staffordshire University	1,850	54.6	0	-2.0	1,905	69.9	1	1	16.9
University of Suffolk*	560	46.3	-1	-10.2	815	67.3	1	1	11.1
University of Sunderland	1,670	56.7	0	1.5	1,950	69.3	1	1	12.8
The University of Surrey	1,535	75.0	0	4.4	2,190	88.0	1	1	14.6
University of Sussex	1,890	81.7	0	4.8	2,020	85.2	1	1	11.2
Teesside University	1,645	55.3	0	0.1	2,475	68.9	1	1	15.6
The Trafford College Group*	120	53.4	0	-3.4	95	61.9	0	0	4.6
Trinity Laban Conservatoire of Music and Dance*	140	80.9	0	8.6	155	87.7	1	1	16.3
The University of Warwick	2,395	83.7	0	-2.0	2,700	86.6	0	1	1.1
Warwickshire College*	40	68.3	0	8.9	100	57.1	0	0	1.7
The University of West London	1,035	52.0	0	-4.7	1,640	73.8	1	1	19.0
University of the West of England, Bristol	4,035	67.7	0	7.0	3,970	80.4	1	1	19.7
The University of Westminster	2,160	63.1	1	2.3	2,395	74.4	1	1	14.7
Wiltshire College and University Centre*	15	46.2	0	-10.0	35	67.6	0	0	11.5
University of Winchester	1,100	65.1	0	2.3	1,600	77.4	1	1	15.1
University of Wolverhampton	2,085	55.6	0	1.6	3,050	70.4	1	1	18.1
University of Worcester	1,110	59.0	0	1.4	1,810	70.7	1	1	13.2
Writtle University College*	130	47.7	0	-6.5	140	52.1	0	0	-4.5

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
University of York	2,165	77.4	0	-3.9	3,020	82.9	0	1	3.9
York College*	30	56.3	0	-2.5	65	71.6	1	1	16.8
York St John University	1,050	59.2	0	-2.9	1,175	70.0	0	1	8.3

Note: * indicates the provider did not have degree awarding powers in 2010.

Table A2: Provider-level results for first class degrees in academic years 2010-11 and 2017-18

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Anglia Ruskin University Higher Corporation	1,950	14.5	0	3.0	3,180	34.9	1	1	23.8
Arts University Bournemouth, the	615	12.0	0	-3.7	915	19.8	1	1	5.5
University of the Arts, London	2,170	17.9	0	0.7	2,100	28.7	1	1	13.1
Askham Bryan College*	35	9.1	0	-5.0	80	20.7	0	1	7.4
Aston University	1,305	17.9	0	-3.1	1,685	30.3	1	1	13.0
The University of Bath	1,625	27.5	-1	-5.8	2,295	36.0	0	0	-0.5
Bath Spa University	1,265	9.9	0	-2.7	1,590	17.0	0	1	4.9
University of Bedfordshire	1,485	8.9	0	-1.2	1,620	23.6	1	1	13.7
The University of Birmingham	3,990	16.8	-1	-6.5	4,515	33.7	1	1	6.7
University College Birmingham	475	10.9	0	-0.6	820	30.1	1	1	19.4
Birmingham City University	2,865	18.5	1	6.5	4,095	29.1	1	1	17.7

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Bishop Burton College*	60	8.3	0	0.1	95	15.6	0	1	5.2
Bishop Grosseteste University	430	8.6	0	-2.7	530	19.7	1	1	9.4
Blackburn College*	270	14.0	0	2.0	370	13.8	0	0	3.2
Blackpool and the Fylde College*	245	19.8	0	6.9	410	25.2	1	1	13.9
The University of Bolton	635	11.6	0	-0.6	755	20.2	1	1	9.1
Bournemouth University	2,260	11.1	0	-2.4	2,930	22.4	1	1	9.1
The University of Bradford	1,270	10.8	0	-1.9	1,350	34.0	1	1	22.3
Bradford College*	315	10.5	0	-0.8	315	16.2	1	1	6.4
University of Brighton	2,565	15.0	0	1.4	3,130	23.9	1	1	11.0
University of Bristol	2,620	23.6	-1	-10.9	3,565	33.2	0	1	-1.3
Brunel University London	2,250	17.4	1	2.9	1,975	26.9	1	1	11.9
The University of Buckingham	80	15.9	0	5.5	125	34.7	1	1	22.7
Buckinghamshire New University	915	12.1	0	1.3	1,370	18.7	1	1	7.5
University of Cambridge	2,355	26.0	-1	-13.0	2,045	34.8	0	1	-3.9
Canterbury Christ Church University	1,815	15.2	0	4.2	2,480	22.1	1	1	11.9
University of Central Lancashire	3,575	10.4	0	-0.7	3,355	30.6	1	1	19.6
University of Chester	1,510	11.1	0	0.1	2,400	25.2	1	1	14.6
The University of Chichester	895	7.8	0	-1.9	1,175	17.1	1	1	7.7
City, University of London	1,270	14.5	0	-3.8	1,500	23.3	1	1	5.5

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
The Conservatoire for Dance and Drama*	105	34.0	1	18.7	120	40.2	1	0	23.1
Courtauld Institute of Art*	50	16.3	0	-11.6	45	31.9	0	1	7.7
Coventry University	2,360	18.9	1	7.0	3,825	30.6	1	1	18.9
University for the Creative Arts	1,045	9.4	0	-2.8	1,025	34.1	1	1	23.2
The University of Cumbria	1,330	13.5	0	1.6	1,215	21.5	1	1	10.2
De Montfort University	2,825	11.5	0	0.3	3,980	31.5	1	1	21.1
University of Derby	2,265	10.1	0	-0.5	2,515	26.6	1	1	16.2
DN Colleges Group*	160	14.5	0	4.1	310	20.1	1	0	8.7
University of Durham	2,825	18.2	-1	-14.9	2,970	37.5	0	1	2.6
The University of East Anglia	2,260	13.5	0	-4.3	2,475	38.7	1	1	20.5
University of East London	1,940	11.7	0	-0.5	1,980	26.9	1	1	16.7
Edge Hill University	1,940	14.7	0	4.6	2,905	31.1	1	1	20.4
The University of Essex	1,665	14.4	0	2.2	2,045	27.6	1	1	16.3
University of Exeter	2,935	19.8	0	-4.2	4,005	32.9	0	1	5.4
Falmouth University	765	14.7	0	0.9	1,270	25.2	1	1	10.5
Farnborough College of Technology*	85	20.5	0	5.9	85	16.3	0	0	5.9
Gateshead College*	20	28.6	0	17.8	45	22.7	1	0	12.8
University of Gloucestershire	1,240	18.5	1	7.1	1,680	23.5	1	1	12.8
Goldsmiths' College	1,105	12.7	0	-2.3	1,215	25.2	1	1	10.8

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Greater Brighton Metropolitan College*	170	21.8	0	10.0	140	23.2	1	0	10.5
University of Greenwich	2,475	15.5	1	2.7	2,860	37.3	1	1	24.7
Grimsby Institute of Further and Higher Education*	195	8.3	0	-4.2	220	23.9	0	1	10.8
Guildhall School of Music & Drama*	100	24.5	0	5.4	125	32.8	1	1	12.9
Harper Adams University	255	11.7	0	-4.2	355	19.5	0	1	3.0
Havering College of Further and Higher Education*	125	25.2	1	13.7	70	15.9	1	0	4.5
Hereford College of Arts*	85	22.4	0	10.9	90	28.6	1	1	17.5
University of Hertfordshire	2,945	18.8	1	7.2	3,555	23.4	1	1	11.8
Heythrop College*	115	8.5	0	-3.9	15	35.3	1	1	24.1
The University of Huddersfield	2,460	15.1	0	3.2	2,715	40.3	1	1	28.8
The University of Hull	2,570	9.8	0	-2.5	2,565	24.1	1	1	12.3
Hull College*	215	14.4	0	2.5	145	11.2	0	0	1.0
Imperial College of Science, Technology and Medicine	1,295	30.5	-1	-15.1	1,155	46.4	0	1	-2.2
University of Keele	1,120	16.6	0	4.0	1,555	27.8	1	1	14.3
The University of Kent	2,930	16.1	0	2.9	3,325	27.3	1	1	13.3
King's College London	2,180	24.2	0	-3.8	2,595	35.7	1	1	7.3
Kingston University	3,150	14.6	1	2.6	2,915	31.4	1	1	19.6

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Kirklees College*	25	12.0	0	-1.7	15	38.5	1	1	28.3
The University of Lancaster	2,100	16.9	0	-3.5	1,875	33.8	1	1	9.9
The University of Leeds	5,165	17.7	-1	-6.0	4,955	33.6	1	1	7.8
Leeds Arts University*	290	19.1	0	6.4	430	24.3	1	0	9.4
Leeds Beckett University	4,245	10.1	0	-1.2	4,200	23.1	1	1	13.0
Leeds College of Music*	205	28.0	1	12.5	270	27.5	1	0	15.0
Leeds Trinity University	540	7.6	0	-1.8	820	24.8	1	1	16.1
The University of Leicester	2,015	15.2	0	-0.9	2,160	27.3	1	1	10.3
University of Lincoln	2,140	11.3	0	0.5	2,735	26.6	1	1	14.9
The University of Liverpool	2,730	14.8	0	-3.9	3,480	31.7	1	1	13.0
Liverpool Hope University	1,130	16.3	0	6.2	1,050	19.5	1	0	10.0
The Liverpool Institute for Performing Arts*	165	13.9	0	-2.9	185	38.3	1	1	23.1
Liverpool John Moores University	3,935	12.9	0	2.0	4,485	26.0	1	1	14.3
University College London	2,275	24.3	0	-7.8	2,635	40.3	1	1	4.7
London Metropolitan University	1,855	13.3	0	0.9	1,490	27.6	1	1	16.1
The London School of Economics and Political Science	670	18.5	-1	-15.5	700	27.3	0	1	-6.4
London South Bank University	1,545	12.1	0	-1.4	1,895	29.1	1	1	17.0
Loughborough College*	110	8.2	-1	-4.2	150	10.5	0	1	-0.6
Loughborough University	2,780	17.0	-1	-5.4	2,715	32.5	1	1	8.2

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
The University of Manchester	5,505	17.8	-1	-8.5	5,055	36.0	1	1	10.3
Manchester Metropolitan University	5,295	14.7	0	2.5	6,305	32.3	1	1	20.6
Middlesex University	2,240	14.6	1	3.5	2,255	25.9	1	1	15.7
Moulton College*	35	13.5	0	0.3	85	20.7	1	1	9.8
Nelson and Colne College*	10	18.2	0	9.0	35	31.4	1	1	19.8
New College Durham*	105	9.6	0	-4.0	130	26.7	0	1	15.1
University of Newcastle upon Tyne	3,095	18.5	-1	-5.2	3,620	26.6	0	1	3.2
Newman University	490	7.1	0	-2.2	475	19.8	1	1	10.8
North East Surrey College of Technology (NESCOT)*	25	29.6	0	11.8	35	16.7	0	0	0.4
University of Northampton, The	1,710	16.6	1	5.4	1,900	24.8	1	1	14.0
The Northern School of Art*	115	24.8	0	13.7	125	24.8	1	0	13.2
University of Northumbria at Newcastle	3,735	16.0	0	3.5	4,535	35.1	1	1	22.0
Norwich University of the Arts	405	18.7	0	5.3	550	34.8	1	1	21.0
Nottingham Trent University	4,205	9.7	0	-2.1	5,360	26.0	1	1	14.6
University of Nottingham, The	4,115	17.8	-1	-7.4	5,275	33.3	1	1	7.0
The School of Oriental and African Studies*	475	16.5	0	-2.0	510	21.5	1	1	4.9
University of Oxford	2,695	28.5	-1	-11.0	2,470	37.2	0	1	-0.9
Oxford Brookes University	2,030	16.4	0	2.0	2,475	26.0	1	1	12.7

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
University of Plymouth	3,735	13.3	0	0.9	3,765	24.8	1	1	12.2
Plymouth College of Art*	155	22.3	0	9.0	335	13.4	1	0	3.0
University of Portsmouth	3,555	10.6	0	-1.2	3,635	27.7	1	1	16.3
Queen Mary University of London	2,090	15.4	0	-3.3	2,490	34.9	1	1	13.1
Ravensbourne University London*	285	16.4	0	3.9	565	20.2	1	1	8.9
The University of Reading	2,100	17.5	0	-0.8	2,490	28.1	1	1	10.2
Roehampton University	1,485	7.9	0	-2.8	1,515	16.4	1	1	6.9
Rose Bruford College of Theatre and Performance*	180	16.7	0	4.2	165	31.7	1	1	17.7
The Royal Academy of Music*	50	53.8	1	36.0	55	54.5	1	0	33.2
The Royal Agricultural University	215	7.0	-1	-6.7	255	11.8	0	1	-1.7
The Royal Central School of Speech and Drama	155	17.3	0	-2.1	200	24.9	1	1	7.3
Royal College of Music	40	32.5	0	8.8	70	38.6	1	1	18.9
Royal Holloway and Bedford New College	1,490	17.2	0	-3.5	1,565	26.4	1	1	9.3
Royal Northern College of Music	65	25.4	0	8.0	115	42.7	1	1	20.1
The Royal Veterinary College	70	27.1	0	0.8	120	9.2	0	0	-10.3
University of Salford, The	2,600	16.7	1	4.9	3,345	35.2	1	1	23.4
The University of Sheffield	3,525	18.2	-1	-5.2	3,595	29.4	0	1	3.7
Sheffield Hallam University	4,500	15.4	0	4.1	5,530	30.2	1	1	18.8

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
Solent University	2,065	8.3	0	-2.0	2,015	26.2	1	1	16.7
University of Southampton	3,050	19.8	0	-4.6	3,790	31.0	1	1	8.5
Sparsholt College*	60	15.0	0	2.6	90	15.9	0	0	4.2
University of St Mark & St John	555	11.0	0	1.7	470	25.1	1	1	16.0
St Mary's University, Twickenham	725	10.2	0	0.5	995	22.3	1	1	12.9
St. George's Hospital Medical School	300	10.3	-1	-11.3	380	26.2	0	1	2.4
Staffordshire University	1,850	13.9	0	1.9	1,905	34.0	1	1	23.5
University of Suffolk*	560	8.0	0	-3.3	815	22.2	1	1	10.6
University of Sunderland	1,670	13.2	0	3.5	1,950	20.2	1	1	9.7
The University of Surrey	1,535	22.9	0	4.4	2,190	44.6	1	1	21.4
University of Sussex	1,890	17.9	0	-1.5	2,020	31.6	1	1	14.1
Teesside University	1,645	14.5	0	2.7	2,475	27.6	1	1	16.2
The Trafford College Group*	120	13.6	0	2.2	95	24.7	1	1	13.5
Trinity Laban Conservatoire of Music and Dance*	140	29.1	0	9.7	155	35.1	1	1	17.3
The University of Warwick	2,395	27.3	0	-5.9	2,700	33.8	0	1	0.4
Warwickshire College*	40	4.9	0	-7.6	100	16.3	0	1	4.1
The University of West London	1,035	12.5	0	0.2	1,640	33.9	1	1	22.2
University of the West of England, Bristol	4,035	17.7	0	5.4	3,970	27.2	1	1	14.4

Provider name	2010-11 number	2010-11 observed (%)	2010-11 sector 2010-11 flag	2010-11 unexplained (pp)	2017-18 number	2017-18 observed (%)	2017-18 sector 2010-11 flag	2017-18 provider 2010-11 flag	2017-18 unexplained (pp)
The University of Westminster	2,160	12.3	0	0.3	2,395	21.0	1	1	9.8
Wiltshire College and University Centre*	15	15.4	0	4.9	35	18.9	0	0	6.7
University of Winchester	1,100	8.3	0	-2.3	1,600	17.6	1	1	7.5
University of Wolverhampton	2,085	10.9	0	0.7	3,050	31.2	1	1	21.0
University of Worcester	1,110	13.1	0	2.0	1,810	21.9	1	1	10.9
Writtle University College*	130	14.8	0	3.0	140	12.7	0	0	-0.1
University of York	2,165	20.5	0	-4.9	3,020	26.3	0	1	2.3
York College*	30	25.0	0	12.8	65	26.9	1	0	15.2
York St John University	1,050	10.9	0	-0.3	1,175	21.6	1	1	11.1

Note: * indicates the provider did not have degree awarding powers in 2010.

Annex B: Definition and comparisons of graduate populations

1. This annex provides key comparisons between the following two graduate populations:
 - a. **Graduate population A:** The graduate population including all English higher education providers. UK-domiciled full-time first degree graduates attaining a classified honours degree from an English higher education provider. This population can be rebuilt using the following fields described in the OfS publication ‘Technical algorithms for institutional performance measures’¹⁰:
 - i. DFAPAPPEXCL = 0
 - ii. B3MONDOQUALPOP = 1
 - iii. B3MONCOUNTRY = ‘E’
 - iv. B3MONEMPLEVEL in (‘DEG’, ‘PUGD’)
 - v. B3MONEMPMODE = ‘FT’
 - vi. B3MONBASEYEAR in (2010,2011,2012,2013,2014,2015,2016,2017)
 - b. **Graduate population B:** The graduate population considered in the analysis presented in this report. As population A, but only including graduates that qualified from providers that have awarded at least 10 classified honours degrees per year from 2010-11 to 2017-18 inclusive (148 providers).
2. Table B1 presents a summary of the degree classification attainment from 2010-11 to 2017-18 for graduate population A. Table B2 presents a summary of the degree classification attainment from 2010-11 to 2017-18 for graduate population B.

Table B1: Degree classifications summary for academic years 2010-11 to 2017-18 for graduate population A

Academic year	First (N)	First (%)	Upper second (N)	Upper second (%)	Other honours (N)	Other honours (%)	Total (N)
2010-11	34,980	15.7%	114,350	51.3%	73,670	33.0%	223,000
2011-12	41,160	17.4%	122,685	51.9%	72,735	30.7%	236,580
2012-13	47,095	19.1%	128,450	52.2%	70,720	28.7%	246,265
2013-14	54,860	21.0%	138,090	52.8%	68,650	26.2%	261,600
2014-15	55,835	23.2%	124,785	51.8%	60,310	25.0%	240,930
2015-16	61,205	24.5%	128,375	51.3%	60,425	24.2%	250,005

¹⁰ See ‘Technical algorithms for institutional performance measures: Core algorithms’, available under ‘OfS core algorithms’ at www.officeforstudents.org.uk/data-and-analysis/access-and-participation-data-dashboard/guide-to-the-access-and-participation-data-resources/.

2016-17	70,530	26.9%	132,060	50.4%	59,535	22.7%	262,125
2017-18	77,650	28.9%	132,710	49.4%	58,440	21.7%	268,800

Table B2: Degree classifications summary for academic years 2010-11 to 2017-18 for graduate population B

Academic year	First (N)	First (%)	Upper second (N)	Upper second (%)	Other honours (N)	Other honours (%)	Total (N)
2010-11	34,910	15.7%	114,075	51.3%	73,445	33.0%	222,430
2011-12	41,085	17.4%	122,470	51.9%	72,525	30.7%	236,085
2012-13	46,930	19.1%	127,965	52.2%	70,260	28.7%	245,155
2013-14	54,540	21.0%	137,145	52.9%	67,775	26.1%	259,460
2014-15	55,045	23.3%	122,555	51.9%	58,310	24.7%	235,915
2015-16	60,055	24.7%	125,220	51.6%	57,380	23.6%	242,650
2016-17	68,990	27.2%	128,550	50.7%	56,030	22.1%	253,565
2017-18	75,840	29.3%	128,800	49.7%	54,545	21.0%	259,185

3. Table B3 presents a breakdown of graduate population A by characteristics included in the statistical modelling for academic years 2010-11 to 2017-18. Table B4 presents a breakdown of graduate population B by characteristics included in the statistical modelling for academic years 2010-11 to 2017-18.

Table B3: Changes in characteristics of graduate population A

		2010- 11 (N)	2010- 11 (%)	2011- 12 (N)	2011- 12 (%)	2012- 13 (N)	2012- 13 (%)	2013- 14 (N)	2013- 14 (%)	2014- 15 (N)	2014- 15 (%)	2015- 16 (N)	2015- 16 (%)	2016- 17 (N)	2016- 17 (%)	2017- 18 (N)	2017- 18 (%)
Subject of study	Agriculture and related subjects	1,855	0.8	2,030	0.9	2,160	0.9	2,375	0.9	2,095	0.9	2,200	0.9	2,345	0.9	2,405	0.9
	Architecture, building and planning	5,205	2.3	5,070	2.1	4,955	2.0	4,785	1.8	3,885	1.6	3,740	1.5	3,675	1.4	3,895	1.4
	Biological sciences	23,695	10.6	25,470	10.8	27,525	11.2	30,465	11.6	27,315	11.3	29,230	11.7	30,580	11.7	31,770	11.8
	Business and administrative studies	26,430	11.9	28,605	12.1	29,660	12.0	31,265	12.0	27,860	11.6	29,450	11.8	31,915	12.2	32,995	12.3
	Combined	720	0.3	1,040	0.4	885	0.4	775	0.3	530	0.2	460	0.2	485	0.2	540	0.2
	Computer science	8,135	3.6	8,685	3.7	9,310	3.8	9,685	3.7	9,190	3.8	9,215	3.7	10,285	3.9	10,880	4.0
	Creative arts and design	31,115	14.0	32,680	13.8	33,010	13.4	34,900	13.3	31,310	13.0	32,070	12.8	33,540	12.8	33,800	12.6
	Education	11,070	5.0	12,000	5.1	12,090	4.9	12,950	4.9	13,005	5.4	13,190	5.3	13,305	5.1	13,030	4.8
	Engineering and technology	10,315	4.6	10,610	4.5	11,100	4.5	11,730	4.5	11,350	4.7	11,325	4.5	12,045	4.6	12,610	4.7
	Historical and philosophical studies	11,985	5.4	12,535	5.3	12,740	5.2	13,355	5.1	11,630	4.8	12,515	5.0	12,635	4.8	12,760	4.7
	Languages	15,975	7.2	16,915	7.2	16,985	6.9	17,470	6.7	16,050	6.7	15,210	6.1	15,295	5.8	14,790	5.5
	Law	10,430	4.7	10,475	4.4	10,345	4.2	10,650	4.1	9,770	4.1	10,195	4.1	10,115	3.9	10,400	3.9
	Mass communications and documentation	8,120	3.6	8,715	3.7	8,645	3.5	8,985	3.4	7,450	3.1	7,705	3.1	7,820	3.0	8,110	3.0

		2010-11	2010-11	2011-12	2011-12	2012-13	2012-13	2013-14	2013-14	2014-15	2014-15	2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
	Mathematical sciences	4,515	2.0	4,765	2.0	5,455	2.2	5,570	2.1	5,250	2.2	5,305	2.1	5,505	2.1	5,540	2.1
	Medicine and dentistry	1,205	0.5	1,080	0.5	1,200	0.5	775	0.3	1,215	0.5	1,135	0.5	1,395	0.5	1,245	0.5
	Physical sciences	10,315	4.6	10,735	4.5	11,355	4.6	12,180	4.7	11,590	4.8	11,670	4.7	12,250	4.7	12,595	4.7
	Social studies	24,035	10.8	25,490	10.8	26,780	10.9	29,075	11.1	24,675	10.2	26,905	10.8	27,995	10.7	29,725	11.1
	Subjects allied to medicine	17,880	8.0	19,685	8.3	22,065	9.0	24,615	9.4	26,760	11.1	28,495	11.4	30,925	11.8	31,705	11.8
Entry qualifications	A-level: AAA and above	25,195	11.3	26,955	11.4	29,155	11.8	30,830	11.8	29,230	12.1	27,700	11.1	27,610	10.5	26,940	10.0
	A-level: AAB	15,450	6.9	16,485	7.0	18,045	7.3	19,935	7.6	18,005	7.5	17,960	7.2	18,095	6.9	17,925	6.7
	A-level: AAC	2,725	1.2	2,850	1.2	3,025	1.2	3,310	1.3	2,875	1.2	2,910	1.2	3,000	1.1	3,245	1.2
	A-level: ABB	13,575	6.1	14,355	6.1	15,700	6.4	17,260	6.6	15,550	6.5	16,115	6.4	16,295	6.2	16,320	6.1
	A-level: ABC	9,005	4.0	9,400	4.0	9,910	4.0	10,825	4.1	9,460	3.9	9,870	3.9	10,305	3.9	10,690	4.0
	A-level: ACC	4,385	2.0	4,600	1.9	4,780	1.9	5,145	2.0	4,415	1.8	4,575	1.8	4,690	1.8	4,905	1.8
	A-level: BBB	7,575	3.4	7,920	3.3	8,600	3.5	9,380	3.6	8,665	3.6	8,895	3.6	8,960	3.4	8,770	3.3
	A-level: BBC	11,555	5.2	11,745	5.0	12,330	5.0	13,475	5.2	11,950	5.0	12,650	5.1	12,850	4.9	13,190	4.9
	A-level: BCC	14,975	6.7	15,480	6.5	16,030	6.5	17,625	6.7	15,170	6.3	15,910	6.4	16,065	6.1	16,580	6.2
	A-level: CCC	13,240	5.9	13,795	5.8	14,315	5.8	15,585	6.0	13,345	5.5	13,790	5.5	14,215	5.4	14,200	5.3
	A-level: CCD	10,690	4.8	11,170	4.7	11,225	4.6	11,530	4.4	10,175	4.2	10,520	4.2	10,705	4.1	11,005	4.1
	A-level: CDD	8,210	3.7	8,565	3.6	8,070	3.3	8,140	3.1	7,020	2.9	7,085	2.8	7,545	2.9	7,610	2.8
	A-level: DDD	5,465	2.4	5,500	2.3	4,910	2.0	4,750	1.8	4,130	1.7	4,265	1.7	4,625	1.8	4,430	1.6
	A-level: Below DDD	4,505	2.0	4,495	1.9	3,940	1.6	3,425	1.3	2,990	1.2	3,130	1.3	3,290	1.3	3,150	1.2
	BTEC: DDD and above	5,225	2.3	7,695	3.3	10,460	4.2	13,565	5.2	14,485	6.0	16,780	6.7	19,535	7.5	22,135	8.2

		2010-11	2010-11	2011-12	2011-12	2012-13	2012-13	2013-14	2013-14	2014-15	2014-15	2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
	BTEC: DDM	3,285	1.5	3,275	1.4	3,645	1.5	4,045	1.5	4,085	1.7	4,435	1.8	4,855	1.9	4,965	1.8
	BTEC: DMM	1,400	0.6	2,410	1.0	3,135	1.3	3,625	1.4	3,595	1.5	3,865	1.5	4,145	1.6	4,010	1.5
	BTEC: MMM and below	6,600	3.0	7,160	3.0	7,030	2.9	6,710	2.6	6,625	2.7	7,065	2.8	7,520	2.9	7,470	2.8
	2 A-levels 1 BTEC	1,190	0.5	1,800	0.8	2,655	1.1	3,760	1.4	4,475	1.9	5,835	2.3	7,385	2.8	8,925	3.3
	1 A-level 2 BTECs	980	0.4	1,415	0.6	1,955	0.8	2,410	0.9	2,685	1.1	3,150	1.3	3,990	1.5	4,555	1.7
	International Baccalaureate	1,850	0.8	2,220	0.9	2,400	1.0	2,735	1.0	2,665	1.1	2,480	1.0	2,545	1.0	2,550	0.9
	Other Level 3	34,565	15.5	36,360	15.4	36,915	15.0	37,790	14.4	35,590	14.8	37,700	15.1	40,750	15.5	41,735	15.5
	No Level 3 equivalent	21,345	9.6	20,915	8.8	18,035	7.3	15,745	6.0	13,750	5.7	13,335	5.3	13,165	5.0	13,485	5.0
Age	Mature	42,980	19.3	46,330	19.6	46,985	19.1	48,220	18.4	46,135	19.1	48,615	19.4	51,485	19.6	52,015	19.4
	Young	180,020	80.7	190,245	80.4	199,280	80.9	213,380	81.6	194,795	80.9	201,390	80.6	210,645	80.4	216,790	80.6
Disability	Disability	23,140	10.4	25,460	10.8	28,640	11.6	32,885	12.6	32,350	13.4	35,195	14.1	38,845	14.8	42,110	15.7
	No disability	199,860	89.6	211,115	89.2	217,625	88.4	228,720	87.4	208,580	86.6	214,810	85.9	223,285	85.2	226,690	84.3
Sex	Female	127,215	57.0	134,820	57.0	139,285	56.6	148,895	56.9	138,530	57.5	144,930	58.0	151,785	57.9	157,275	58.5
	Male	95,785	43.0	101,755	43.0	106,955	43.4	112,685	43.1	102,375	42.5	105,005	42.0	110,260	42.1	111,395	41.4
	Other	-	-	-	-	25	0.0	20	0.0	30	0.0	75	0.0	80	0.0	130	0.0
Ethnicity	Asian	23,640	10.6	24,665	10.4	26,150	10.6	27,590	10.5	26,640	11.1	28,470	11.4	30,350	11.6	31,950	11.9
	Black	12,400	5.6	13,830	5.8	15,100	6.1	16,235	6.2	16,770	7.0	18,270	7.3	19,330	7.4	20,230	7.5
	Mixed	7,305	3.3	8,110	3.4	8,670	3.5	9,735	3.7	9,090	3.8	9,910	4.0	10,650	4.1	11,475	4.3
	Other	2,215	1.0	2,465	1.0	2,650	1.1	2,805	1.1	2,965	1.2	3,485	1.4	3,780	1.4	4,040	1.5
	Unknown	5,335	2.4	4,870	2.1	5,090	2.1	5,460	2.1	5,260	2.2	4,145	1.7	4,195	1.6	4,180	1.6
	White	172,100	77.2	182,630	77.2	188,605	76.6	199,785	76.4	180,205	74.8	185,725	74.3	193,815	73.9	196,920	73.3

		2010-11	2010-11	2011-12	2011-12	2012-13	2012-13	2013-14	2013-14	2014-15	2014-15	2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
POLAR	Quintile 1	22,395	10.0	24,190	10.2	25,490	10.4	27,685	10.6	26,585	11.0	28,340	11.3	30,430	11.6	31,915	11.9
	Quintile 2	33,045	14.8	35,470	15.0	36,950	15.0	39,095	14.9	36,855	15.3	38,720	15.5	40,970	15.6	42,380	15.8
	Quintile 3	41,195	18.5	44,165	18.7	45,865	18.6	48,665	18.6	45,195	18.8	47,425	19.0	49,520	18.9	50,700	18.9
	Quintile 4	51,900	23.3	55,345	23.4	57,385	23.3	60,675	23.2	55,790	23.2	57,760	23.1	60,465	23.1	61,335	22.8
	Quintile 5	73,195	32.8	76,420	32.3	79,420	32.2	83,940	32.1	75,965	31.5	77,255	30.9	80,155	30.6	81,890	30.5
	Unknown	1,265	0.6	990	0.4	1,155	0.5	1,540	0.6	545	0.2	510	0.2	585	0.2	580	0.2

Note: 'POLAR' = the Participation of Local Areas measure.

Table B4: Changes in characteristics of graduate population B

		2010-11	2010-11	2011-12	2011-12	2012-13	2012-13	2013-14	2013-14	2014-15	2014-15	2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
Subject of study	Agriculture and related subjects	1,855	0.8	2,025	0.9	2,150	0.9	2,330	0.9	2,065	0.9	2,145	0.9	2,160	0.9	2,160	0.8
	Architecture, building and planning	5,205	2.3	5,050	2.1	4,925	2.0	4,755	1.8	3,860	1.6	3,735	1.5	3,660	1.4	3,855	1.5
	Biological sciences	23,660	10.6	25,425	10.8	27,450	11.2	30,355	11.7	27,125	11.5	28,920	11.9	30,110	11.9	31,280	12.1
	Business and administrative studies	26,355	11.8	28,470	12.1	29,210	11.9	30,515	11.8	26,620	11.3	27,440	11.3	29,740	11.7	30,575	11.8
	Combined	720	0.3	1,035	0.4	885	0.4	775	0.3	520	0.2	455	0.2	485	0.2	500	0.2
	Computer science	8,125	3.7	8,675	3.7	9,230	3.8	9,580	3.7	9,005	3.8	8,940	3.7	9,990	3.9	10,505	4.1
	Creative arts and design	30,795	13.8	32,490	13.8	32,740	13.4	34,440	13.3	29,545	12.5	29,845	12.3	30,920	12.2	30,740	11.9

		2010- 11 (N)	2010- 11 (%)	2011- 12 (N)	2011- 12 (%)	2012- 13 (N)	2012- 13 (%)	2013- 14 (N)	2013- 14 (%)	2014- 15 (N)	2014- 15 (%)	2015- 16 (N)	2015- 16 (%)	2016- 17 (N)	2016- 17 (%)	2017- 18 (N)	2017- 18 (%)
Education		11,040	5.0	12,000	5.1	12,085	4.9	12,890	5.0	12,800	5.4	12,910	5.3	12,950	5.1	12,375	4.8
Engineering and technology		10,310	4.6	10,600	4.5	11,080	4.5	11,690	4.5	11,275	4.8	11,125	4.6	11,765	4.6	12,350	4.8
Historical and philosophical studies		11,985	5.4	12,535	5.3	12,730	5.2	13,305	5.1	11,355	4.8	12,100	5.0	12,200	4.8	12,280	4.7
Languages		15,975	7.2	16,915	7.2	16,985	6.9	17,465	6.7	16,010	6.8	15,130	6.2	15,210	6.0	14,710	5.7
Law		10,420	4.7	10,475	4.4	10,330	4.2	10,385	4.0	9,360	4.0	9,725	4.0	9,645	3.8	9,935	3.8
Mass communications and documentation		8,110	3.6	8,705	3.7	8,635	3.5	8,975	3.5	7,405	3.1	7,620	3.1	7,680	3.0	7,950	3.1
Mathematical sciences		4,515	2.0	4,765	2.0	5,455	2.2	5,570	2.1	5,250	2.2	5,305	2.2	5,505	2.2	5,535	2.1
Medicine and dentistry		1,205	0.5	1,080	0.5	1,200	0.5	775	0.3	1,215	0.5	1,135	0.5	1,390	0.5	1,240	0.5
Physical sciences		10,315	4.6	10,735	4.5	11,355	4.6	12,180	4.7	11,585	4.9	11,650	4.8	12,230	4.8	12,575	4.9
Social studies		23,990	10.8	25,435	10.8	26,675	10.9	28,965	11.2	24,395	10.3	26,415	10.9	27,410	10.8	29,290	11.3
Subjects allied to medicine		17,855	8.0	19,670	8.3	22,030	9.0	24,515	9.4	26,525	11.2	28,070	11.6	30,525	12.0	31,325	12.1
Entry qualifications	A-level: AAA and above	25,190	11.3	26,955	11.4	29,150	11.9	30,800	11.9	29,170	12.4	27,630	11.4	27,540	10.9	26,855	10.4
	A-level: AAB	15,440	6.9	16,480	7.0	18,045	7.4	19,905	7.7	17,910	7.6	17,870	7.4	18,015	7.1	17,835	6.9
	A-level: AAC	2,725	1.2	2,845	1.2	3,025	1.2	3,305	1.3	2,850	1.2	2,885	1.2	2,985	1.2	3,225	1.2
	A-level: ABB	13,570	6.1	14,350	6.1	15,690	6.4	17,215	6.6	15,465	6.6	16,010	6.6	16,175	6.4	16,205	6.3
	A-level: ABC	9,005	4.0	9,400	4.0	9,900	4.0	10,805	4.2	9,380	4.0	9,775	4.0	10,195	4.0	10,580	4.1
	A-level: ACC	4,385	2.0	4,595	1.9	4,775	1.9	5,125	2.0	4,375	1.9	4,520	1.9	4,640	1.8	4,830	1.9

		2010-11	2010-11	2011-12	2011-12	2012-13	2012-13	2013-14	2013-14	2014-15	2014-15	2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
A-level: BBB		7,570	3.4	7,920	3.4	8,595	3.5	9,345	3.6	8,605	3.6	8,820	3.6	8,860	3.5	8,695	3.4
A-level: BBC		11,550	5.2	11,740	5.0	12,325	5.0	13,430	5.2	11,860	5.0	12,510	5.2	12,720	5.0	13,030	5.0
A-level: BCC		14,965	6.7	15,475	6.6	16,010	6.5	17,580	6.8	15,025	6.4	15,715	6.5	15,840	6.2	16,345	6.3
A-level: CCC		13,235	5.9	13,785	5.8	14,295	5.8	15,530	6.0	13,190	5.6	13,590	5.6	13,970	5.5	13,935	5.4
A-level: CCD		10,675	4.8	11,155	4.7	11,205	4.6	11,480	4.4	10,035	4.3	10,330	4.3	10,470	4.1	10,765	4.2
A-level: CDD		8,205	3.7	8,555	3.6	8,050	3.3	8,090	3.1	6,900	2.9	6,945	2.9	7,370	2.9	7,425	2.9
A-level: DDD		5,455	2.5	5,490	2.3	4,885	2.0	4,700	1.8	4,035	1.7	4,125	1.7	4,515	1.8	4,295	1.7
A-level: Below DDD		4,500	2.0	4,480	1.9	3,910	1.6	3,390	1.3	2,890	1.2	3,000	1.2	3,190	1.3	3,025	1.2
BTEC: DDD and above		5,190	2.3	7,670	3.2	10,385	4.2	13,435	5.2	14,120	6.0	16,220	6.7	18,825	7.4	21,230	8.2
BTEC: DDM		3,260	1.5	3,260	1.4	3,615	1.5	3,995	1.5	3,975	1.7	4,250	1.8	4,665	1.8	4,735	1.8
BTEC: DMM		1,390	0.6	2,400	1.0	3,115	1.3	3,575	1.4	3,485	1.5	3,685	1.5	3,960	1.6	3,785	1.5
BTEC: MMM and below		6,565	3.0	7,130	3.0	6,960	2.8	6,560	2.5	6,290	2.7	6,530	2.7	6,870	2.7	6,780	2.6
2 A-levels 1 BTEC		1,190	0.5	1,795	0.8	2,640	1.1	3,735	1.4	4,385	1.9	5,730	2.4	7,210	2.8	8,695	3.4
1 A-level 2 BTECs		980	0.4	1,415	0.6	1,950	0.8	2,390	0.9	2,640	1.1	3,085	1.3	3,905	1.5	4,435	1.7
International Baccalaureate		1,850	0.8	2,220	0.9	2,400	1.0	2,730	1.1	2,635	1.1	2,445	1.0	2,495	1.0	2,505	1.0
Other Level 3		34,355	15.4	36,195	15.3	36,585	14.9	37,245	14.4	34,340	14.6	35,780	14.7	38,355	15.1	39,025	15.1
No Level 3 equivalent		21,185	9.5	20,770	8.8	17,645	7.2	15,085	5.8	12,350	5.2	11,190	4.6	10,800	4.3	10,945	4.2
Age	Mature	42,620	19.2	45,995	19.5	46,195	18.8	46,970	18.1	43,440	18.4	44,365	18.3	46,555	18.4	46,565	18.0
	Young	179,805	80.8	190,085	80.5	198,960	81.2	212,490	81.9	192,475	81.6	198,290	81.7	207,015	81.6	212,620	82.0
Disability	Disability	23,050	10.4	25,410	10.8	28,545	11.6	32,640	12.6	31,705	13.4	34,210	14.1	37,590	14.8	40,465	15.6

		2010-11	2010-11	2011-12	2011-12	2012-13	2012-13	2013-14	2013-14	2014-15	2014-15	2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
		(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
	No disability	199,380	89.6	210,670	89.2	216,610	88.4	226,820	87.4	204,210	86.6	208,440	85.9	215,980	85.2	218,720	84.4
Sex	Female	126,850	57.0	134,530	57.0	138,695	56.6	147,720	56.9	135,955	57.6	141,110	58.2	147,170	58.0	152,070	58.7
	Male	95,580	43.0	101,550	43.0	106,440	43.4	111,725	43.1	99,935	42.4	101,510	41.8	106,345	41.9	107,010	41.3
	Other	-	-	-	-	25	0.0	20	0.0	25	0.0	35	0.0	55	0.0	105	0.0
Ethnicity	Asian	23,620	10.6	24,655	10.4	26,120	10.7	27,505	10.6	26,280	11.1	27,875	11.5	29,685	11.7	31,345	12.1
	Black	12,330	5.5	13,820	5.9	15,055	6.1	16,095	6.2	16,125	6.8	17,050	7.0	17,865	7.0	18,590	7.2
	Mixed	7,285	3.3	8,105	3.4	8,655	3.5	9,690	3.7	8,915	3.8	9,615	4.0	10,290	4.1	11,060	4.3
	Other	2,205	1.0	2,460	1.0	2,645	1.1	2,790	1.1	2,875	1.2	3,325	1.4	3,605	1.4	3,835	1.5
	Unknown	5,330	2.4	4,865	2.1	4,800	2.0	4,545	1.8	4,530	1.9	3,635	1.5	3,870	1.5	4,010	1.5
	White	171,665	77.2	182,180	77.2	187,880	76.6	198,840	76.6	177,185	75.1	181,150	74.7	188,255	74.2	190,345	73.4
POLAR	Quintile 1	22,310	10.0	24,100	10.2	25,320	10.3	27,445	10.6	26,010	11.0	27,515	11.3	29,325	11.6	30,600	11.8
	Quintile 2	32,940	14.8	35,365	15.0	36,780	15.0	38,855	15.0	36,125	15.3	37,650	15.5	39,635	15.6	40,785	15.7
	Quintile 3	41,095	18.5	44,040	18.7	45,700	18.6	48,410	18.7	44,200	18.7	46,030	19.0	47,880	18.9	48,830	18.8
	Quintile 4	51,770	23.3	55,265	23.4	57,235	23.3	60,395	23.3	54,490	23.1	55,810	23.0	58,295	23.0	58,980	22.8
	Quintile 5	73,050	32.8	76,325	32.3	79,245	32.3	83,680	32.3	74,560	31.6	75,200	31.0	77,880	30.7	79,460	30.7
	Unknown	1,260	0.6	990	0.4	875	0.4	670	0.3	520	0.2	450	0.2	550	0.2	535	0.2

Note: 'POLAR' = the Participation of Local Areas measure.

Annex C: Statistical modelling – methodology overview

1. This annex outlines the methodology used for the statistical modelling of the attainment of first and upper second class degrees combined and of first class degree alone.

Method to determine ‘unexplained’ attainment

2. Mixed-effects logistic regression modelling was employed to investigate whether or not the observed changes in graduate attainment with time at the sector and provider levels can be explained by changes in the make-up of the graduate population in terms of the explanatory variables included in the modelling. Full model specifications are given in Annex D.
3. The modelling used to investigate degree attainment changes with time at the sector level includes explanatory variables relating to the provider at which the graduate was registered, graduation year and various key graduate characteristics. The effects of the following were included as explanatory variables in the full model:
 - the provider at which the graduate was registered
 - year of graduation
 - subject of study
 - qualifications on entry into higher education
 - age
 - additional contextual variables:
 - declared disability status
 - ethnicity
 - sex
 - Participation of Local Areas (POLAR4) quintile.
4. Sector-level results from modelling where the additional contextual variables have been included (the ‘full model’) and omitted (the ‘simplified model’) as explanatory variables are presented in the main body of this report.
5. The models allow us to predict the proportion of graduates awarded a first or an upper second class degree, or a first class degree, accounting for the effect of the explanatory variables.
6. To investigate and isolate the effect of graduation year on degree attainment the following methodology was applied:
 - f. The optimised models provide the probability of an individual with given characteristics attaining a first or upper second class degree, or a first class degree.

- g. The predicted probability for a given group of individuals (e.g. white women graduating in 2011-12) may then be determined by taking the mean of the predicted probabilities of the individuals in that group.
 - h. To investigate the effect of graduation year on degree classification attainment, the model is applied to the entire reported graduate population, but with the academic year of graduation for all graduates in the population changed to 2010-11.
 - i. The observed value for the proportion of graduates attaining a first or upper second class degree, or a first class degree, in each academic year is then compared with the model's predicted value for the same graduates had they graduated in 2010-11.
 - j. Any differences between the predicted and observed values is said to be 'unexplained', and a result of unobserved effects between academic years that have not been accounted for and have not been included as explanatory variables in the model. It is not possible to determine from this analysis what these additional unobserved factors are.
7. In summary, we estimate the '**unexplained**' difference in the proportion of graduates attaining a first or upper second class degree, or a first class degree, had they graduated in 2010-11, compared with the actual year of their graduation.

Hypothetically closed attainment gaps within additional contextual variable groups

8. Additionally, we have applied the same method presented in paragraphs 2 to 5 of this annex, but have further assigned all graduates the values for the additional contextual variables (sex, ethnicity, disability status and POLAR4 quintile) associated with the groups that have the highest attainment, as judged by the most positive regression coefficients (see Annex D) in the 'full model'.
9. The predicted attainment of this graduate population in 2017-18 may be considered a hypothetical upper estimate of the expected sector attainment, representing a hypothetical sector where attainment gaps between groups within the additional contextual variable groups do not exist.
10. For first and upper second class degrees combined, the highest achieving graduates in terms of these characteristics are white, non-disabled women from POLAR4 quintile 5 regions.
11. For first class degrees alone, the highest achieving graduates in terms of these characteristics are white, non-disabled women from POLAR4 quintile 4 regions.

Annex D: Statistical modelling – model details

1. This annex details the models used to describe the attainment of first or upper second class degrees and first class degrees.
2. Mixed-effects logistic regression has been used to model the probability of graduate i attaining a first or an upper second class degree, or a first class degree, from provider j , accounting for the effect of the explanatory variables outlined in Annex C.
3. The specifications of the ‘full’ and ‘simplified’ models are displayed in Equations D1 and D2 respectively.

Equation D1: ‘Full’ mixed-effects logistic regression model for graduate degree attainment

$$\begin{aligned}
 & \textit{first or upper second class OR first class} \sim \textit{Binomial}(n_{ij}, \pi_{ij}) \\
 \textit{logit}(\pi_{ij}) = & \beta_{0j} + u_{0j} + \sum_{Y=1}^8 (\beta_Y + u_{Yj}) X_{Yij} + \sum_{Sbj=9}^{25} \beta_{Sbj} X_{Sbjij} + \sum_{Q=26}^{47} \beta_Q X_{Qij} + \sum_{A=48}^{48} \beta_A X_{Aij} \\
 & + \sum_{(Q*A)=49}^{70} \beta_{(Q*A)} X_{(Q*A)ij} + \sum_{D=71}^{71} \beta_D X_{Dij} + \sum_{Sex=72}^{73} \beta_{Sex} X_{Sexij} + \sum_{E=74}^{78} \beta_E X_{Eij} \\
 & + \sum_{P=79}^{83} \beta_P X_{Pij}
 \end{aligned}$$

Equation D2: ‘Simplified’ mixed-effects logistic regression model for graduate degree attainment

$$\begin{aligned}
 & \textit{first or upper second class OR first class} \sim \textit{Binomial}(n_{ij}, \pi_{ij}) \\
 \textit{logit}(\pi_{ij}) = & \beta_{0j} + u_{0j} + \sum_{Y=1}^8 (\beta_Y + u_{Yj}) X_{Yij} + \sum_{Sbj=9}^{25} \beta_{Sbj} X_{Sbjij} + \sum_{Q=26}^{47} \beta_Q X_{Qij} + \sum_{A=48}^{48} \beta_A X_{Aij} \\
 & + \sum_{(Q*A)=49}^{70} \beta_{(Q*A)} X_{(Q*A)ij}
 \end{aligned}$$

4. Where the β s represent the fixed effect coefficients which are common to individuals across all providers (the sector) and years¹¹, X s (0 or 1) represent whether or not an individual has the characteristics (Y = academic year of graduation, Sbj = subject of study, Q = entry qualifications, A = age, $Q * A$ = interaction between entry qualifications and age, D = declared disability status, Sex = sex, E = ethnicity and P = POLAR4 quintile), u_{0j} is the random intercept for provider j and u_{Yj} represents the random coefficient for provider j in academic year Y with

$$u_{0j} \sim N(0, \sigma_{u_0}^2)$$

$$u_{Yj} \sim N(0, \sigma_{u_Y}^2).$$

¹¹ The summation term for academic year of graduation includes the reference year of 2010-11, as each provider has a random coefficient for all years but the fixed effect 2010-11 coefficient $\beta_1 = 0$ (reference categories for other explanatory variables are omitted from the model structure).

5. A full summary of the variables used in the model, and the categories within those variables, is given in Table D1.

Table D1: Variables used in the graduate degree attainment modelling (all categorical)

Model variable name	Description
Academic year (Y)	Academic year of graduation: 2010-11 (ref) 2011-12 2012-13 2013-14 2014-15 2015-16 2016-17 2017-18
Subject of study (Sbj)	Subject studied: Creative arts and design (ref) Medicine, dentistry and veterinary science Subjects allied to medicine Agriculture and related subjects Physical sciences Mathematical sciences Computer science Engineering and technology Architecture, building and planning Social studies Law Business and administrative studies Mass communication and documentation Languages Historical and philosophical studies Biological sciences Education Combined subjects
Entry qualifications (Q)	Entry qualifications of the graduate: A-level: AAA and above (ref) A-level: AAB A-level: ABB A-level: BBB A-level: BBC A-level: BCC A-level: CCC A-level: CCD A-level: CCD

Model variable name	Description
	A-level: CDD A-level: DDD A-level: Below DDD BTEC: DDD and above BTEC: DDM BTEC: DMM BTEC: MMM and below 2 A-levels and 1 BTEC 1 A-levels and 2 BTEC International Baccalaureate Other Level 3 No Level 3 Equivalent
Age (A)	Age on entry Under 21 (Young) (ref) Over 21 (Mature)
Disability (D)	Declared disability status of graduate No disability (ref) Disability
Sex (Sex)	Sex of graduate: Male Female (ref) Other
Ethnicity (E)	Ethnicity of graduate: White (ref) Black Mixed Asian Other Unknown
Participation of Local Areas (POLAR4) quintile (P)	Young participation quintile of graduate: Quintile 1 Quintile 2 Quintile 3 Quintile 4 Quintile 5 (ref) Unknown

Note: Those categories marked with '(ref)' are the reference categories for each categorical or dummy variable and are not formally included in the model structure (they are equal to 0).

- Estimates (Est) of the fixed effects coefficients, their standard errors (SE) and p-values for both the full and simplified models are shown for upper second class and first class degrees combined in Table D2, and for first class degrees alone in Table D3.

[Updated] Table D2: Fixed effect coefficient estimates for the models for first or upper second class degree attainment

Effect		Full model Est	Full model SE	Full model p-value	Simplified model Est	Simplified model SE	Simplified model p-value
Intercept	Intercept	2.959	0.034	<0.0001	2.787	0.031	<0.0001
Academic Year	2010-11 (ref)	–	–	–	–	–	–
	2011-12	0.107	0.021	<0.0001	0.105	0.02	<0.0001
	2012-13	0.206	0.021	<0.0001	0.194	0.02	<0.0001
	2013-14	0.327	0.021	<0.0001	0.307	0.02	<0.0001
	2014-15	0.432	0.021	<0.0001	0.396	0.02	<0.0001
	2015-16	0.518	0.021	<0.0001	0.479	0.02	<0.0001
	2016-17	0.644	0.021	<0.0001	0.600	0.02	<0.0001
	2017-18	0.716	0.021	<0.0001	0.669	0.02	<0.0001
Subject of study	Agriculture and related subjects	-0.254	0.022	<0.0001	-0.230	0.021	<0.0001
	Architecture, building and planning	-0.167	0.014	<0.0001	-0.348	0.014	<0.0001
	Biological sciences	-0.294	0.008	<0.0001	-0.374	0.007	<0.0001
	Business and administrative studies	0.013	0.008	0.079	-0.179	0.007	<0.0001
	Combined	-0.443	0.037	<0.0001	-0.553	0.036	<0.0001
	Computer science	0.140	0.010	<0.0001	-0.109	0.010	<0.0001
	Creative arts and design (ref)	–	–	–	0.000	0.000	<0.0001
	Education	-0.187	0.009	<0.0001	-0.153	0.009	<0.0001
	Engineering and technology	0.014	0.010	0.183	-0.224	0.010	<0.0001
	Historical and philosophical studies	0.042	0.011	<0.001	-0.009	0.011	0.439
	Languages	-0.068	0.010	<0.0001	-0.075	0.010	<0.0001
	Law	-0.508	0.010	<0.0001	-0.700	0.010	<0.0001
	Mass communications and documentation	0.036	0.011	<0.001	-0.035	0.011	0.001
	Mathematical sciences	-0.881	0.014	<0.0001	-1.054	0.014	<0.0001

	Medicine and dentistry	-0.231	0.039	<0.0001	-0.393	0.038	<0.0001
	Physical sciences	-0.533	0.010	<0.0001	-0.620	0.010	<0.0001
	Social studies	-0.261	0.008	<0.0001	-0.371	0.008	<0.0001
	Subjects allied to medicine	-0.256	0.008	<0.0001	-0.311	0.008	<0.0001
Entry qualifications	A-level: AAA and above (ref)	–	–	–	–	–	–
	A-level: AAB	-0.579	0.013	<0.0001	-0.588	0.013	<0.0001
	A-level: AAC	-0.975	0.022	<0.0001	-0.982	0.022	<0.0001
	A-level: ABB	-0.948	0.013	<0.0001	-0.969	0.013	<0.0001
	A-level: ABC	-1.218	0.015	<0.0001	-1.242	0.014	<0.0001
	A-level: ACC	-1.473	0.018	<0.0001	-1.507	0.017	<0.0001
	A-level: BBB	-1.238	0.015	<0.0001	-1.270	0.015	<0.0001
	A-level: BBC	-1.483	0.014	<0.0001	-1.518	0.014	<0.0001
	A-level: BCC	-1.694	0.013	<0.0001	-1.742	0.013	<0.0001
	A-level: CCC	-1.934	0.013	<0.0001	-1.994	0.013	<0.0001
	A-level: CCD	-2.148	0.014	<0.0001	-2.220	0.014	<0.0001
	A-level: CDD	-2.372	0.015	<0.0001	-2.456	0.015	<0.0001
	A-level: DDD	-2.550	0.016	<0.0001	-2.649	0.016	<0.0001
	A-level: Below DDD	-2.768	0.018	<0.0001	-2.886	0.018	<0.0001
	BTEC: DDD and above	-2.392	0.013	<0.0001	-2.464	0.013	<0.0001
	BTEC: DDM	-2.805	0.017	<0.0001	-2.916	0.017	<0.0001
	BTEC: DMM	-3.016	0.018	<0.0001	-3.133	0.018	<0.0001
	BTEC: MMM and below	-3.251	0.016	<0.0001	-3.387	0.016	<0.0001
	2 A-levels 1 BTEC	-2.138	0.017	<0.0001	-2.208	0.017	<0.0001
	1 A-level 2 BTECs	-2.515	0.019	<0.0001	-2.625	0.019	<0.0001
IB	-1.019	0.023	<0.0001	-1.064	0.023	<0.0001	
Other Level 3	-2.493	0.013	<0.0001	-2.611	0.013	<0.0001	
No level 3 equivalent	-2.244	0.021	<0.0001	-2.378	0.020	<0.0001	
Age	Mature	0.025	0.054	0.642	-0.108	0.052	0.040
	Young (ref)	–	–	–	–	–	–
Age (Mature) * Entry	A-level: AAA and above (ref)	–	–	–	–	–	–

qualifications	A-level: AAB	-0.139	0.073	0.056	-0.064	0.072	0.370
	A-level: AAC	-0.049	0.110	0.655	0.033	0.108	0.764
	A-level: ABB	-0.094	0.070	0.182	-0.003	0.069	0.964
	A-level: ABC	0.095	0.073	0.195	0.198	0.072	0.006
	A-level: ACC	0.136	0.081	0.093	0.258	0.080	0.001
	A-level: BBB	0.099	0.077	0.200	0.189	0.076	0.012
	A-level: BBC	0.169	0.067	0.011	0.265	0.065	<0.0001
	A-level: BCC	0.301	0.062	<0.0001	0.416	0.061	<0.0001
	A-level: CCC	0.363	0.061	<0.0001	0.472	0.060	<0.0001
	A-level: CCD	0.406	0.061	<0.0001	0.530	0.059	<0.0001
	A-level: CDD	0.531	0.062	<0.0001	0.662	0.060	<0.0001
	A-level: DDD	0.481	0.063	<0.0001	0.617	0.062	<0.0001
	A-level: Below DDD	0.580	0.062	<0.0001	0.714	0.061	<0.0001
	BTEC: DDD and above	0.174	0.057	0.002	0.250	0.056	<0.0001
	BTEC: DDM	0.247	0.062	<0.0001	0.350	0.061	<0.0001
	BTEC: DMM	0.275	0.064	<0.0001	0.374	0.062	<0.0001
	BTEC: MMM and below	0.404	0.057	<0.0001	0.532	0.055	<0.0001
	2 A-levels 1 BTEC	0.036	0.078	0.642	0.133	0.077	0.083
	1 A-level 2 BTECs	0.046	0.082	0.570	0.180	0.080	0.025
	IB	-0.527	0.093	<0.0001	-0.448	0.090	<0.0001
Other Level 3	0.254	0.054	<0.0001	0.369	0.053	<0.0001	
No level 3 equivalent	0.211	0.057	<0.001	0.311	0.055	<0.0001	
Disability	Disability	-0.155	0.005	<0.0001	–	–	–
	No disability (ref)	–	–	–	–	–	–
Sex	Female (ref)	–	–	–	–	–	–
	Male	-0.259	0.004	<0.0001	–	–	–
	Other	0.055	0.172	0.748	–	–	–
Ethnicity	Asian	-0.687	0.006	<0.0001	–	–	–
	Black	-0.983	0.007	<0.0001	–	–	–
	Mixed	-0.366	0.009	<0.0001	–	–	–
	Other	-0.670	0.015	<0.0001	–	–	–
	Unknown	-1.163	0.012	<0.0001	–	–	–
	White (ref)	–	–	–	–	–	–
POLAR4	Quintile 1	-0.136	0.006	<0.0001	–	–	–

Quintile 2	-0.064	0.006	<0.0001	–	–	–
Quintile 3	-0.027	0.005	<0.0001	–	–	–
Quintile 4	-0.013	0.005	0.009	–	–	–
Quintile 5 (ref)	–	–	–	–	–	–
Unknown	-0.245	0.030	<0.0001	–	–	–

Table D3: Fixed effect coefficient estimates for the models for first class degree attainment

Effect		Full model Est	Full model SE	Full model p-value	Simplified model Est	Simplified model SE	Simplified model p-value
Intercept	Intercept	-0.030	0.039	0.437	-0.068	0.037	0.069
Academic Year	2010-11 (ref)	–	–	–	–	–	–
	2011-12	0.093	0.024	<0.0001	0.093	0.023	<0.0001
	2012-13	0.202	0.024	<0.0001	0.193	0.023	<0.0001
	2013-14	0.321	0.024	<0.0001	0.307	0.023	<0.0001
	2014-15	0.448	0.024	<0.0001	0.422	0.023	<0.0001
	2015-16	0.583	0.024	<0.0001	0.555	0.023	<0.0001
	2016-17	0.753	0.024	<0.0001	0.720	0.023	<0.0001
	2017-18	0.869	0.024	<0.0001	0.832	0.023	<0.0001
Subject of study	Agriculture and related subjects	0.111	0.024	<0.0001	0.113	0.024	<0.0001
	Architecture, building and planning	-0.039	0.015	0.010	-0.153	0.015	<0.0001
	Biological sciences	-0.189	0.008	<0.0001	-0.255	0.008	<0.0001
	Business and administrative studies	0.209	0.008	<0.0001	0.062	0.008	<0.0001
	Combined	-0.343	0.037	<0.0001	-0.427	0.037	<0.0001
	Computer science	0.810	0.011	<0.0001	0.649	0.010	<0.0001
	Creative arts and design (ref)	–	–	–	–	–	–
	Education	-0.154	0.011	<0.0001	-0.163	0.011	<0.0001
	Engineering and technology	0.540	0.010	<0.0001	0.387	0.010	<0.0001
	Historical and philosophical studies	-0.481	0.011	<0.0001	-0.514	0.011	<0.0001
	Languages	-0.480	0.010	<0.0001	-0.500	0.010	<0.0001

	Law	-0.857	0.013	<0.0001	-1.001	0.012	<0.0001
	Mass communications and documentation	-0.236	0.012	<0.0001	-0.277	0.012	<0.0001
	Mathematical sciences	0.382	0.013	<0.0001	0.254	0.012	<0.0001
	Medicine and dentistry	-0.021	0.024	0.398	-0.165	0.024	<0.0001
	Physical sciences	0.075	0.010	<0.0001	0.015	0.010	0.14
	Social studies	-0.385	0.009	<0.0001	-0.487	0.008	<0.0001
	Subjects allied to medicine	0.127	0.008	<0.0001	0.038	0.008	<0.0001
Entry qualifications	A-level: AAA and above (ref)	–	–	–	–	–	–
	A-level: AAB	-0.699	0.008	<0.0001	-0.709	0.008	<0.0001
	A-level: AAC	-1.003	0.017	<0.0001	-1.016	0.016	<0.0001
	A-level: ABB	-1.068	0.009	<0.0001	-1.086	0.009	<0.0001
	A-level: ABC	-1.271	0.011	<0.0001	-1.295	0.011	<0.0001
	A-level: ACC	-1.476	0.015	<0.0001	-1.511	0.015	<0.0001
	A-level: BBB	-1.351	0.012	<0.0001	-1.376	0.012	<0.0001
	A-level: BBC	-1.547	0.011	<0.0001	-1.578	0.011	<0.0001
	A-level: BCC	-1.742	0.011	<0.0001	-1.784	0.011	<0.0001
	A-level: CCC	-1.951	0.011	<0.0001	-2.002	0.011	<0.0001
	A-level: CCD	-2.175	0.013	<0.0001	-2.235	0.013	<0.0001
	A-level: CDD	-2.362	0.015	<0.0001	-2.431	0.015	<0.0001
	A-level: DDD	-2.511	0.020	<0.0001	-2.595	0.020	<0.0001
	A-level: Below DDD	-2.694	0.025	<0.0001	-2.796	0.024	<0.0001
	BTEC: DDD and above	-2.178	0.012	<0.0001	-2.240	0.012	<0.0001
	BTEC: DDM	-2.803	0.023	<0.0001	-2.895	0.023	<0.0001
	BTEC: DMM	-3.081	0.027	<0.0001	-3.175	0.027	<0.0001
	BTEC: MMM and below	-3.214	0.023	<0.0001	-3.327	0.023	<0.0001
	2 A-levels 1 BTEC	-2.051	0.016	<0.0001	-2.108	0.016	<0.0001
	1 A-level 2 BTECs	-2.457	0.023	<0.0001	-2.549	0.023	<0.0001
	IB	-0.861	0.018	<0.0001	-0.895	0.018	<0.0001
	Other Level 3	-2.257	0.011	<0.0001	-2.361	0.011	<0.0001

	No level 3 equivalent	-1.729	0.023	<0.0001	-1.839	0.023	<0.0001
Age	Mature	0.277	0.027	<0.0001	0.234	0.027	<0.0001
	Young (ref)	–	–	–	–	–	–
Age (Mature) * entry qualifications	A-level: AAA and above (ref)	–	–	–	–	–	–
	A-level: AAB	0.152	0.043	<0.001	0.170	0.042	<0.0001
	A-level: AAC	0.293	0.075	<0.0001	0.315	0.074	<0.0001
	A-level: ABB	0.349	0.043	<0.0001	0.370	0.043	<0.0001
	A-level: ABC	0.343	0.047	<0.0001	0.372	0.046	<0.0001
	A-level: ACC	0.460	0.056	<0.0001	0.504	0.056	<0.0001
	A-level: BBB	0.343	0.050	<0.0001	0.371	0.050	<0.0001
	A-level: BBC	0.400	0.043	<0.0001	0.427	0.042	<0.0001
	A-level: BCC	0.442	0.038	<0.0001	0.488	0.038	<0.0001
	A-level: CCC	0.522	0.039	<0.0001	0.562	0.038	<0.0001
	A-level: CCD	0.560	0.040	<0.0001	0.611	0.039	<0.0001
	A-level: CDD	0.612	0.043	<0.0001	0.672	0.042	<0.0001
	A-level: DDD	0.535	0.048	<0.0001	0.602	0.048	<0.0001
	A-level: Below DDD	0.587	0.050	<0.0001	0.653	0.049	<0.0001
	BTEC: DDD and above	0.061	0.036	0.087	0.064	0.035	0.069
	BTEC: DDM	0.355	0.051	<0.0001	0.379	0.051	<0.0001
	BTEC: DMM	0.380	0.059	<0.0001	0.400	0.058	<0.0001
	BTEC: MMM and below	0.496	0.042	<0.0001	0.546	0.042	<0.0001
	2 A-levels 1 BTEC	0.087	0.067	0.192	0.111	0.066	0.093
	1 A-level 2 BTECs	0.164	0.082	0.046	0.218	0.081	0.007
IB	-0.409	0.075	<0.0001	-0.396	0.074	<0.0001	
Other Level 3	0.267	0.029	<0.0001	0.294	0.029	<0.0001	
No level 3 equivalent	0.050	0.036	0.167	0.061	0.036	0.087	
Disability	Disability	-0.141	0.006	<0.0001	–	–	–
	No disability (ref)	–	–	–	–	–	–
Sex	Female (ref)	–	–	–	–	–	–
	Male	-0.081	0.004	<0.0001	–	–	–
	Other	0.234	0.141	0.099	–	–	–

Ethnicity	Asian	-0.625	0.007	<0.0001	–	–	–
	Black	-1.125	0.010	<0.0001	–	–	–
	Mixed	-0.309	0.010	<0.0001	–	–	–
	Other	-0.604	0.018	<0.0001	–	–	–
	Unknown	-0.722	0.016	<0.0001	–	–	–
	White (ref)	–	–	–	–	–	–
POLAR4	Quintile 1	-0.053	0.007	<0.0001	–	–	–
	Quintile 2	0.010	0.006	0.087	–	–	–
	Quintile 3	0.022	0.005	<0.0001	–	–	–
	Quintile 4	0.027	0.005	<0.0001	–	–	–
	Quintile 5 (ref)	–	–	–	–	–	–
	Unknown	-0.187	0.036	<0.0001	–	–	–

7. Estimates (Est) of the variance components and their standard errors (SE) for the random intercepts and random year coefficients in both the full and simplified models are shown for upper second class and first class degrees combined in Table D4, and for first class degrees alone in Table D5.

Table D4: Variance component estimates for the models for first or upper second class degree attainment

Random effect		Full model Est	Full model SE	Simplified model Est	Simplified model SE
Intercept	$\sigma_{u_0}^2$	0.111	0.014	0.086	0.011
Year	$\sigma_{u_Y}^2$	0.023	0.001	0.021	0.001

Table D5: Variance component estimates for the models for first class degree attainment

Random effect		Full model Est	Full model SE	Simplified model Est	Simplified model SE
Intercept	$\sigma_{u_0}^2$	0.165	0.020	0.153	0.019
Year	$\sigma_{u_Y}^2$	0.029	0.002	0.026	0.002

8. Model fit statistics for both the full and simplified models are shown for upper second class and first class degrees combined in Table D6, and for first class degrees alone in Table D7.

Table D6: Model fit statistics for the models for first or upper second class degree attainment

Statistic	Full model	Simplified model
-2logLikelihood	1,972,279	2,012,401
AIC	1,972,451	2,012,547

Table D7: Model fit statistics for the models for first class degree attainment

Statistic	Full model	Simplified model
-2logLikelihood	1,880,242	1,903,954
AIC	1,880,414	1,904,100

Annex E: Provider unexplained attainment flagging – methodology

1. This annex details the methodology used to flag providers where unexplained graduate attainment was statistically significantly different from the sector or from themselves in the academic year 2010-11.
2. Two statistical significance flags for each provider included in the modelling have been presented to address the following questions:
 - a. **Sector 2010-11 flag** – Is graduate attainment of first or upper second class degrees or of first class degrees at the provider statistically significantly higher than (1, above), lower than (-1, below) or no different from (0, same as) the mean graduate attainment of the sector in 2010-11, with the effect of all explanatory variables accounted for?
 - b. **Provider 2010-11 flag** – Is graduate attainment of first or upper second class degrees or of first class degrees at the provider statistically significantly higher than (1, above), lower than (-1, below) or no different from (0, same as) the mean graduate attainment of the same provider in 2010-11, with the effect of all explanatory variables accounted for?
3. These flags are created for a provider where the following Z-scores are deemed significant at the $\alpha < 0.05$ level, or lie outside the limits -3.5844 (flag = -1) $\leq Z \leq 3.5844$ (flag = 1). These values of Z were deduced by applying the Bonferroni correction method for multiple comparisons. As we are comparing the results of 148 providers, we set the Z-score threshold to be at $0.05/148 = 0.0003$, which corresponds to ± 3.5844 standard deviations from the mean (zero). The Z-scores for the sector 2010-11 and provider 2010-11 flags are calculated using equations E2 and E3, respectively¹².

Equation E1: Sector in 2010-11 flag

$$Z_{Sector,2010} = \begin{cases} \frac{u_{0,j} + u_{year,j}}{\sqrt{s.e.(u_{0,j})^2 + s.e.(u_{year,j})^2}}, & , year = 2010 \\ \frac{u_{0,j} + \beta_{year} + u_{year,j}}{\sqrt{s.e.(u_{0,j})^2 + s.e.(\beta_{year})^2 + s.e.(u_{year,j})^2}}, & , year \neq 2010 \end{cases}$$

Equation E2: Provider in 2010-11 flag

$$Z_{provider,2010} = \begin{cases} 0 & , year = 2010 \\ \frac{\beta_{year} + u_{year,j} - u_{2010,j}}{\sqrt{s.e.(\beta_{year})^2 + s.e.(u_{year,j})^2 + s.e.(u_{2010,j})^2}}, & , year \neq 2010 \end{cases}$$

¹² For the calculation of Z-scores all covariance terms that appear in the denominator are = 0 and therefore not shown; i.e. coefficients that appear in the equations are assumed to be independent and uncorrelated.

Where, for provider j : $u_{0,j}$ is the random intercept (one per provider); $u_{year,j}$ is the provider random year effect (eight per provider); β_{year} is the sector fixed year effect (seven in total, as 2010-11 is the reference academic year); and the *s. e.* (x) is the standard error of coefficient x .

The Z-scores for both flags for all 148 providers across all years are given alongside the flags in the full tables available at www.officeforstudents.org.uk/publications/analysis-of-degree-classifications-over-time/.



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