

DEGREE CLASSIFICATION

TRANSPARENT,
CONSISTENT AND
FAIR ACADEMIC
STANDARDS



CONTENTS

EXECUTIVE SUMMARY	3
INTRODUCTION	5
THE CHALLENGE	6
INPUT FACTORS	12
SYSTEMIC RISKS	22
A STATEMENT OF INTENT	42
CONCLUSIONS	49
BIBLIOGRAPHY	50
ANNEXES	
A Organisations consulted in the development of this report	54
B Input modelling methodology	55
C Statistical methods for investigating the effect of grade inflation on student success	57
D Borderline practices exercise for pilot using the full marking range	59
FIGURES AND TABLES	
Figure 1: Upper degrees awarded (% of all degrees, and % of classified degrees) by UK nation, 2007/08 to 2016/17	6
Figure 2: Percentage change in upper degrees awarded (% of classified degrees) by UK higher education institutions, 2010/11 to 2016/17	7
Figure 3: Distribution of upper degrees awarded (% of classified degrees) across UK higher education institutions, 2010/11 and 2016/17	8
Figure 4: Increases and upper degrees (%), 2009–2017	15
Figure 5: Increases and first-class degrees (%), 2009–2017	17
Figure 6: First-class degree awarded (% of classified degrees) in UK higher education institutions and A-level results (three-year lagged), 1997–1990 to 2016/17	19
Figure 7: Percentage of SCQF Highers grades awarded A–D, 2009/10 to 2016/17	20
Figure 8: Institutional efficiency scores 2007/08 to 2016/17	21
Figure 9: The assessment-to-classification process	23
Figure 10: Range of decisions potentially influencing degree outcomes	24
Figure 11: Distribution of degree classifications (% of classified degrees) awarded by subject area, 2016/17	25
Figure 12: First class degree awards (% of classified degrees) by subject area, 2007/08 to 2016/17	27
Figure 13: UK-wide NSS satisfaction scores and upper degree awards (% of classified degrees), 2007/08 to 2016/17	28

CONTENTS

Figure 14: Number of AFHEA fellows by type (2007/08 to 2017/18), and number of upper degrees as a percentage of all classified degrees awarded (2007/08 to 2016/17)	29
Figure 15: Simulation of percentage of upper degree awards by degree algorithm (n=211 students)	31
Figure 16: Institutional level simulation of influence of degree algorithms on grade profile	33
Figure 17: Institutional results of research exercise on the impact of changes in degree algorithms, by ethnicity	34
Figure 18: Distribution of degree awards 2016/17 and standard UK degree classification scale	35
Figure 19: Survey respondent views on degree classification distribution and actual classification distribution, 2016/17	35
Figure 20: Upper degree awards (% of classified degrees) in 2016/17 by average entry tariff points for undergraduate study in 2013/14	36
Figure 21: Distribution of upper degrees awarded (% of classified degrees) by institution across subject area	37
Figure 22: Percentage of 2013/14 and 2016/17 qualifiers gaining a first or upper second class degree	38
Figure 23: Upper degree awards (% of classified degrees), by student characteristics, 2016/17	40
Table 1: Simulation of marking using the full marking range	26
Table 2: Models used to simulate influence of degree algorithms at institutional level	32
Table 3: League table components by compiler/publisher	41

EXECUTIVE SUMMARY

This report presents findings and recommendations from a programme of work undertaken on behalf of the UK Standing Committee for Quality Assessment by Universities UK, GuildHE and the Quality Assurance Agency for Higher Education (QAA).

It examines the increase in the proportion of upper awards being made by UK higher education institutions. It responds to concerns that the trend is evidence of grade inflation rather than a genuine improvement in student ability. It proposes that the upward trend in grades presents two interrelated challenges:

- An **increased** proportion of upper degrees may erode the practical usefulness of the honours degree classification system for grading and differentiating student attainment.
- More generally, the **upward trend** risks undermining confidence in the integrity of academic standards and the value of higher education among students, employers and society.

The upward trend in awards is significant, sector wide, and, in some cases, has accelerated. Over the past decade, the number of graduates receiving at least an upper second-class degree (ie, a 2.1) has risen by 55%, at an average rate of 5% annually.¹ During the same period, the proportion of upper degrees awarded increased from 61% to 75% of all classified first degrees, and the proportion of first class honours degrees doubled, from 13% to 26%. Nor is this general trend exclusive to the last decade; it can be traced over the last 20 years and beyond.

This report proposes that while the factors driving the increase are complex, it is essential that the sector address the challenge to protect public confidence in the value of the honours degree classification system. The report starts from the principle that the success of the UK higher education sector is founded on the autonomy and diversity of its higher education institutions, including universities and colleges, which embody the freedom of academic communities to teach and challenge their students. However, the continued uplift across the sector in grades presents a collective risk that requires a collective response.

The report examines the factors that have been driving the increase in upper degree awards so as to guide effective action. It argues that the increase in grades is the result of a system-wide dynamic where no single action is the cause of the increase; nor is there a 'silver-bullet' solution. Some of these factors can be described as genuine improvements, but other factors can also be described as inflation. The response requires a review by universities of a range of practices and a re-calibration of quality assurance arrangements to ensure that these are protecting the value of qualifications over time.

1. Between 2007/08 and 2016/17 (HESA student record, 2007/08 to 2016/17, accessed via Heidi Plus)

To do this, the report calls on the sector to reiterate its commitment to protecting the value of its qualifications, as set out in the UK quality code, and recommends steps to be taken as part of national quality assessment and regulatory frameworks.

It calls on higher education institutions to make a statement of intent by:

- **Reviewing and publishing** evidence on their degree outcomes, with external assurance of the data, in a ‘degree outcomes statement’ or equivalent
- **Enhancing** the consistency of classification practice, including narrowing the range of rules that are used to classify degrees and using stretching criteria to guide the assessment of students
- **Supporting** the professional development of academic staff and external examiners to aid consistency and calibration of marking
- **Reviewing** the structure of the degree classification system to ensure that it remains useful for students and employers in the future

The UK Standing Committee for Quality Assessment should undertake a UK-wide consultation on these recommendations. The consultation should support a sector-wide dialogue on protecting the value of qualifications alongside the enhancement of teaching and learning. The consultation should examine how these recommendations can be meaningfully taken forward by degree awarding bodies, higher education institutions and, as appropriate, through national quality assurance and regulatory frameworks.

The report is based on desk research, quantitative modelling and analysis, a pilot survey of 105 students and graduates, over 40 one-to-one discussions with institutional leaders of teaching and academic quality, and a series of workshops and events with a variety of representative groups and organisations (see [annexe A](#)). These organisations do not necessarily endorse the findings and proposals set out in this report.

RECOMMENDATION

Higher education institutions should make a statement of intent to protect the value of qualifications over time by:

- **Publishing** analysis of institutional degree outcomes, supported by appropriate external assurance, in a ‘*degree outcomes statement*’ or equivalent.
- **Publishing** and explaining the design of the degree classification algorithm, including where it deviates from accepted norms of practice.
- **Ensuring** that assessment criteria meet and exceed sector reference points and reviewing the use of data in quality assurance processes.
- **Supporting** the professional development of academics working as external examiners to help maintain standards and the value of qualifications.
- **Reviewing** the structure of the degree classification system to ensure that it remains useful for students and employers.

INTRODUCTION

This report examines the upward trend in the number of upper degree classifications – 1st and 2.1 – being awarded by UK universities over the past decade.

It examines this trend to make recommendations to the sector that will protect the value of the honours degree classification system within universities themselves and in the eyes of students, employers and the wider public. It seeks to examine the factors behind the trend, including whether it should be understood as improvement in student attainment or inflationary. However, the report recognises that the upward trend itself will undermine the usefulness of classification for differentiating student attainment and, potentially, wider confidence in academic standards.

The report aims to inform action by universities and the collective higher education sector in order to address two interrelated challenges:

- There is a need to maintain – and where necessary strengthen – the integrity of the classification system, standards and quality assurance, so that the uplift represents genuine improvement in attainment, to the benefit of students and society, and so that students, employers and the public can have confidence in the qualifications being awarded.
- The approach to classifying student attainment needs to be able to respond to ongoing and legitimate improvement in student attainment where this occurs, to ensure it remains a useful measure of student attainment where differentiation between student performance remains possible.

The report sets out a series of recommendations and proposes that these are taken forward through consultation with the sector. The report examines the issue at a UK-wide level while also examining differences between the devolved nations of the UK. This is especially relevant where school systems, degree structures and higher education policy agendas vary, most notably in Scotland. As a result, while the report identifies issues that should be considered by universities across UK, it recommends that effective action will necessarily need to be taken forward at national levels within a UK-wide framework.

For England specifically, the report makes recommendations in the context of a new regulatory framework following the passage of the Higher Education and Research Act 2017 and the establishment of the Office for Students (OfS). The new statutory framework brings standards into the regulatory framework of the OfS under a co-regulatory approach that is founded on autonomous academic institutions and collective sector definition of standards for the purposes of regulation. The report also notes the inclusion of a grade inflation measure as part of the teaching excellence framework (TEF) in England and which other nations can participate in if they wish, subject to government approval, and the role that this may play in protecting the value of qualifications over time.

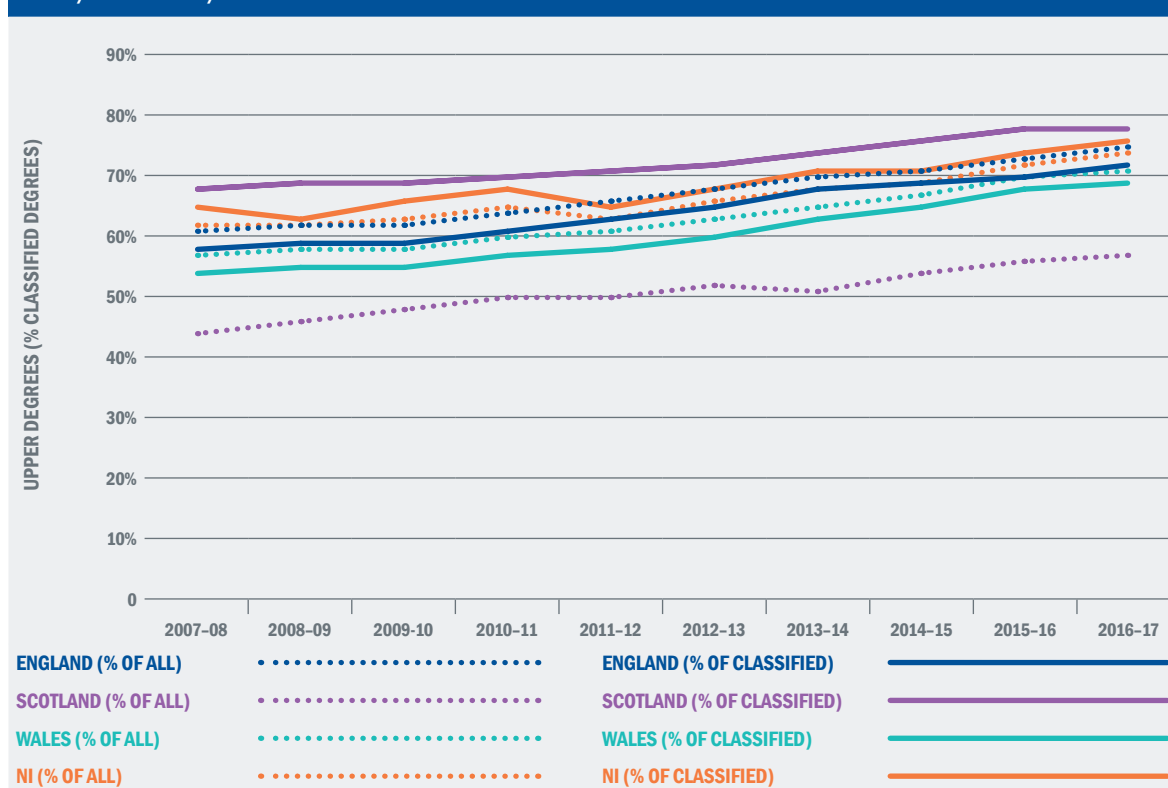
The UK Standing Committee for Quality Assessment (UKSCQA) has taken this work forward on behalf of the sector representative groups and national funders and regulators. UKSCQA is the co-regulatory body that oversees the maintenance of the common academic infrastructure in use across the UK, including the UK quality code. It also plays a role in England, for the purposes of the Higher Education and Research Act, in defining academic standards for the purposes of regulation. The research has been taken forward by Universities UK, GuildHE and QAA.

The first section of the report examines the role of the degree classification system and the upward trend over time. Following this, it explores the possible drivers of the upward trend by examining the impact of inputs into the system, such as the prior attainment of students and investment. The report also examines the potential impact of academic practice and where this may present risks to confidence in degree classification and academic standards. It then concludes with recommendations that will enable universities to protect the value of qualifications over time.

The recommendations set out in this report are presented to the sector for further consultation by UKSCQA on behalf of all the UK nations. This consultation should aim to ensure that the recommendations form a clear and consistent set of measures that universities can take forward to address the challenge.

THE CHALLENGE

FIGURE 1: UPPER DEGREES AWARDED (% OF ALL DEGREES, AND % OF CLASSIFIED DEGREES) BY UK NATION, 2007/08 TO 2016/17



Source: HESA (multiple years) Student Record

The upward trend in the proportion of upper degrees awarded presents a risk to the confidence of students, employers and the wider public in the value of honours degrees.

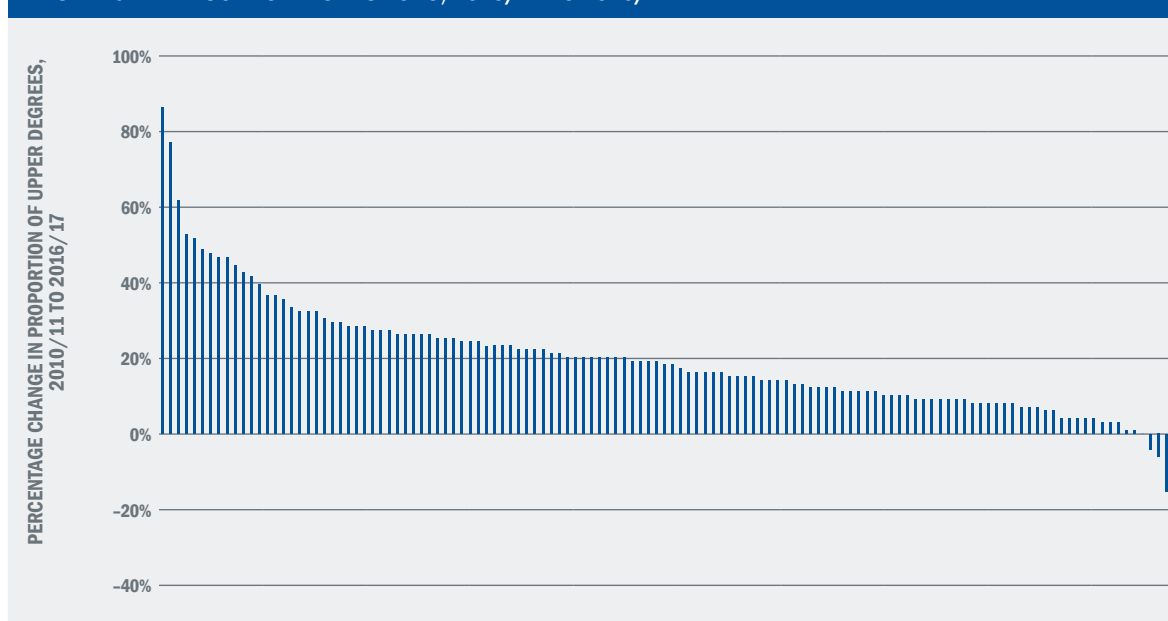
Over the past decade, the number of graduates receiving at least a 2.1 (upper second class) degree award has risen by 55%, at an average rate of 5% annually.² During the same period, the proportion of upper degrees awarded increased from 61% to as much as 75% of all classified first degrees, and the proportion of first class honours doubled, from 13% to 26% (Figure 1). Nor is this general trend exclusive to the last decade; it can be traced over the last 20 years and beyond.

2. Between 2007/08 and 2016/17 (HESA student record, 2007/08 to 2016/17, accessed via Heidi Plus)

There is no uniform distribution of degree classifications being awarded across the UK's higher education institutions. Nor is there a single distribution for subject areas within or across institutions. When we talk of a grade profile in the sector, and issues of distribution, improvement and inflation, there is no single grade profile upon which analysis or recommendations can be solely based. However, analysis suggests that almost all institutions have been affected to varying extents (Figure 2).³

- The average percentage of upper degrees awarded by an institution in 2016/17 was **74%**, ranging from **52%** to **94%**.
- The average percentage point change in the proportion of upper degrees between 2010/11 and 2016/17 was 11 points, ranging from a fall of **11 points** to an increase of **34 points**. There was an increase in the proportion of firsts, from **15%** to **25%**.
- Over half (**54%**) of institutions had an increase in the proportion of upper degrees of **10 points** or more between 2010/11 and 2016/17.

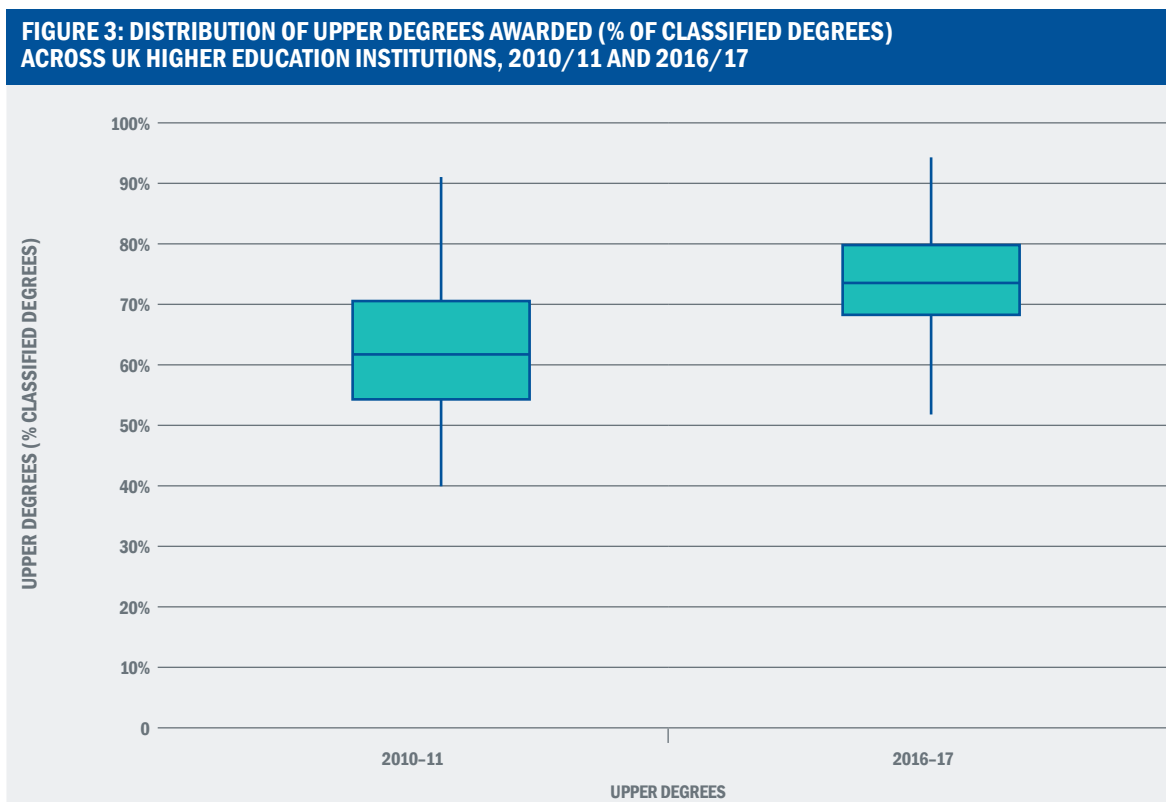
FIGURE 2: PERCENTAGE CHANGE IN UPPER DEGREES AWARDED (% OF CLASSIFIED DEGREES) BY UK HIGHER EDUCATION INSTITUTIONS, 2010/11 TO 2016/17



Source: HESA (multiple years) Student Record

Note: Sample = 125 institutions, awarded at least 500 classified degrees in 2016/17 and providing higher education in 2010/11 and 2016/17

Moreover, there has been a certain amount of convergence; within an overall upward trend, the range in the proportion of upper degrees being awarded by the central 50% of institutions has narrowed (Figure 3).



Source: HESA (multiple years) Student Record

Note: Sample = 125 institutions, awarded at least 500 classified degrees in 2016/17 and providing higher education in 2010/11 and 2016/17

The increase in upper degree awards over the past 10 years has been a continuation of patterns observed within the original Burgess Review (2007) and in Mantz Yorke's 2008 analysis of the trend (Yorke 2008). The UK is not alone in this trend. Data from the United States demonstrates a consistent rise in the percentage of students achieving A grades and in the average grade point average (GPA) being achieved, since the late 1980s (Rojstaczer 1980). An increase in Sehr gut (very good) and Gut (good) degree awards in Germany has also been witnessed, from approximately 70% in 2000 to almost 80% in 2011 (German Council of Science and Humanities – referenced in Baker 2018).

It is to be expected that higher education institutions support and challenge their students to succeed, including narrowing gaps in participation and attainment. However, there is a legitimate and concurrent public interest, and by extension regulatory interest, in the integrity of academic standards and qualifications. It is right that higher education institutions should be responsible for setting curricula and standards, and assessing student performance, while also teaching students to achieve those goals. This dual role makes it particularly important that higher education institutions protect wider confidence in the value of qualifications.

The UK higher education sector has a well-deserved international reputation for academic excellence that attracts students and researchers from around the world. Universities in the UK are autonomous but use the common honours degree classification system to grade student attainment. This award and classification structure is recognised and valued by students and employers around the world. However, students, employers and the wider public increasingly view upper degrees as the threshold for what is considered a 'good' degree, which in turn can devalue 3rd and 2.2 classifications.

The upward trend in upper degrees is set in the context of concerns about the value of a university education. For example, online polling of 2,063 UK adults by BritainThinks for UUK in May 2018 provides further indication of public attitudes towards the value of a university education within this context:

- **75%** agreed that ‘being a graduate is less impressive now because more people have degrees than in the past’.
- **61%** agreed that ‘a university degree is only worth doing if it will help you get a better job’.
- **55%** agree that ‘people going to universities can get better jobs than those who don’t’.

In September 2017, in a speech to the UUK annual conference, the then Minister for Higher Education in England, Jo Johnson MP, connected the increasing proportion of upper degrees with wider debates about the value of higher education and academic standards. He argued that, ‘Unchecked, grade inflation will undermine the reputation of the entire UK [higher education] sector, creating a dangerous impression of slipping standards, undermining the efforts of those who work hard for their qualifications and poorly serving the needs of employers.’ (Johnson 2017). However, there are similar trajectories across the whole of the UK (**Figure 1**) so the challenge should be of UK-wide concern.

GRADE INFLATION

The rising proportion of upper degrees is cited as evidence of grade inflation.

Grade inflation has been defined as ‘an upward shift in [student grades] over an extended period of time without a corresponding increase in student achievement’ (Rosovsky and Hartley 2002: 4). Applied to the UK, this would mean an increase in upper degree awards without improvement in student attainment. Quality assurance systems aim to maintain the integrity and consistency of standards, for example through internal moderation and external examining. However, the charge of grade inflation implies that these processes do not counter (or are imbued by) educational cultures and/or financial and market incentives that have softened rigour.

Proving whether the upward trend in grades is inflation or as a result of improvement in student performance is highly complex and imbued by debates between different educational philosophies. To test whether grade inflation is real requires accurate knowledge of a student’s divergence from an expected outcome, while accounting for the impact of teaching and learning and student motivation on attainment. For potential statistical and analytical models **see Annexe C**. Retrospective reviews of student marks can help to compare attainment between different points in time, but also need to account for legitimate changes in academic knowledge and assessment priorities. At the same time, to disprove grade inflation requires evidence that benchmarks have not changed inadvertently, through the cumulative effect of adjustments to curricula, assessment or support given to students.

In the school system, grade inflation has been treated as a phenomenon that was the result of a distributed, system-wide dynamic where ‘[...] different agents, taking decisions which are quite rational within their own contexts, collectively give rise to a result which no-one explicitly intended’ (Sherwood 2014). In this model, examination boards competed to attract students from schools that were in turn rated by government and parents on the basis of their students’ attainment in exams. There were countervailing pressures, including from higher education institutions and employers, to maintain standards. However, on balance, these dynamics led to a progressive uplift in awards that was self-reinforcing.

What the system-wide approach does not necessarily do is isolate the relative balance between inflation and improvement in the system; rather, it provides a framework for thinking about how system-wide incentives can be translated through a wide range of decisions, with the result that the proportion of upper awards increases. In this model, what was observed was a cumulative ratchet effect that came about as the result of incentives in the system to increase the proportion of upper grades. Genuine improvements in attainment would not only contribute to the increase in grades, but would also contribute to the incentive to increase grades further.

In the case of higher education, the system encompasses over 130 degree-awarding bodies. Most degree programmes, with the exception of certain regulated courses such as medicine, have their own curricula, albeit with core similarities. At the same time, enhancement agendas, both within the university and through external government policy, have introduced incentives to increase student attainment, as measured by the proportion of upper degrees. On the counteracting side is the integrity of academic quality assurance and the professional integrity and judgement of academics who seek to challenge students and assess their attainment.

ASSESSMENT CRITERIA

Degree-awarding bodies in the UK are self-critical academic communities that set and maintain their own academic standards.

Students are assessed against criteria that are specific to their own degree programme or module and that reflect the curricula and learning priorities of a course. Academic teams who are expert in their field develop curricula and exercise their judgement to assess the attainment of their students in respect of the expected learning outcomes. The diversity of mission, pedagogy and academic expertise allows space for legitimate debate and innovation in teaching and learning at a higher level.

A student who passes their degree can expect to receive one of the following degrees upon their graduation: a first (the highest classification), an upper second (or 2.1), a lower second (2.2), a third or a pass.⁴ Classifications provide a broad indication of how well a student has performed against their programme's curricula and learning outcomes. As such, they act as a signal to the individual and employers about the skills and knowledge a graduate has developed through their studies. This criteria-based approach differs from 'norm-referenced' grading, which measures a student's performance relative to that of other students on the course.

Thus, assessment of grade inflation should necessarily be referenced against the expectations of higher level learning. However, higher education assessment frameworks can hinder a simple judgement of inflation since they expect students to demonstrate independent problem-solving at the forefront of disciplines. This is captured in sector qualifications frameworks that set out the higher level knowledge, skills and competencies that students should develop in their chosen subject (QAA 2014; see Box 1). In addition to high-level criteria, there are also subject benchmark statements that provide a common framework in different disciplines but do not represent common curricula.

4. While there are differences in practice, classified undergraduate honours degrees are typically awarded at the final stage within the overarching convention of: 1st (≥ 70), 2.1 (60–69), 2.2 (50–59), 3rd (40–49), pass (35–40). On some courses, typically in medicine and veterinary medicine, degrees are awarded on a pass/fail basis. The same is true of ordinary degrees in Scotland, where students do not undertake the standard fourth year of study.

BOX 1: CHARACTERISTICS OF LEVEL 6 IN ENGLAND, WALES AND NORTHERN IRELAND AND LEVEL 10 QUALIFICATIONS IN SCOTLAND

KNOWLEDGE AND UNDERSTANDING – a systematic, extensive and comparative understanding of key aspects of their field of study, including coherent and detailed knowledge of the subject and critical understanding of theories and concepts, at least some of which is at, or informed by, the forefront of defined aspects of a discipline.

COGNITIVE SKILLS – a conceptual understanding of a level that is necessary to devise and sustain arguments, and/or to solve problems and comment on research and scholarship in the discipline, with an appreciation of the uncertainty, ambiguity and limits of knowledge.

PRACTICAL SKILLS – an ability to manage their own learning and to deploy accurately established techniques of analysis and enquiry within a discipline, or as necessary for their discipline, including in creative arts.

TRANSFERABLE SKILLS – including the ability to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences, the exercise of initiative and personal responsibility and decision-making in complex and unpredictable contexts.

PROFESSIONAL COMPETENCES – including specific professional requirements and the learning ability needed to undertake appropriate further training of a professional or equivalent nature.

Source: Adapted from Frameworks for Higher Education Qualifications (FHEQ) (QAA 2014)

However, the discussion about grade inflation typically includes a norm-referenced element that has a notional idea of the ‘correct’ distribution of awards. This model sits in tension with criterion-based approaches that allow for the theoretical possibility that all students can be awarded the top (or bottom) grade if they meet (or do not meet) the criteria. The middle strand to this debate is that learning and assessment should be set and maintained in a way that preserves a distribution of awards that enables differentiation. However, this still necessitates a normative idea about the quota of successful students in any given cohort, which may undermine the transparency and consistency of the assessment of outcomes.

This raises a difficult question about the calibration of the criterion-based system and the extent to which it should allow space for differentiation and stretch at the upper end, in the context of improving student attainment. A norm-referenced approach is not appropriate because it effectively sets a quota for success, which can affect student motivation for students around the average – or who at least perceive themselves to be average and unlikely to be able to compete against others (Wolfe and Powell 2014; see also Barrow et al 2009; Dubey and Geanakopolos 2010; Woodfield and Earl-Novell 2006). Nor are students – or employers – able to clearly understand the criteria against which a student’s performance is assessed (see Box 2).

Criterion-based assessment allows for more effective assessment of student attainment. No student is prevented from achieving a mark or classification if they are able to demonstrate that they have met the required learning outcomes. However, for criterion-based assessment to be effective, there needs to be confidence that students are being assessed transparently, and that reasonably comparable criteria are applied reasonably consistently. This includes ensuring that students are being assessed fairly against criteria that they find challenging and that there are no inadvertent biases that may lead to differential outcomes. Similarly, the criteria that students are being assessed against need to be sufficiently stretching for students’ capabilities.

BOX 2: DISADVANTAGES OF NORM REFERENCING

- It is unable to account for variation of attainment between cohorts because students are marked solely in relation to their peers on their course.
- It is unable to measure absolute attainment of skills and knowledge, where there is no specified criterion to be met.
- It cannot be applied uniformly across all subjects, which vary in their assessments, student characteristics and size.
- It can be demotivating where higher marks appear either unobtainable, relative to peers, or too easily achieved.
- It can discourage collaboration by encouraging competition between students for the limited share of the best grades when applied at programme level.

INPUT FACTORS

This section examines the impact that inputs into the higher education system have on degree classification.

It finds that the prior attainment of students before they enter higher education, plus increased investment in teaching and staff numbers, have all had an impact on the overall outcome in grades. In addition, university efficiency has also contributed to the improvement in degree outcomes. Over and above the increases in the proportion of good degrees measured using the four input measures that are available, however, there was a substantial additional increase that needs further inquiry to explain. This means that academic practice and student study behaviours are likely to be the major determinants in the increasing proportion of upper degrees.

The higher education sector has undergone significant expansion and change over the past 10 years, with increased investment in services and facilities, change in student composition, and agendas designed to enhance teaching and attainment. Educational improvements have also taken place at school-level, enabling more qualified students to enter higher education. The attainment gap between disadvantaged secondary school pupils and their peers in 2017 has narrowed by 3.2% since 2016 and 10% since 2011 (DfE 2018a), and nine out of 10 schools are now judged outstanding or good, following Ofsted inspections (ibid).

To examine the impact of these inputs on degree awards, this section uses stochastic frontier regression analysis to model their influence on upper and first-class degrees. The modelling controls for institutional efficiency – that is, the role of the institution in turning the respective inputs into degree outputs. Dummy variables are then used to capture where there is significant change observed for a given academic year, relative to 2007/08, which cannot be explained by the inputs into the system. For more details on the statistical method, see [Annexe B](#) and the technical report, *The drivers of degree classifications over time* (Bachan 2018).

The input variables used are as follows:

- Average UCAS score of the graduating cohort. While not accounting perfectly for academic potential, for example in the case of contextualised admissions, this score acts as an indicator of students' pre-existing base-level ability and preparedness.
- Real expenditure on academic services (2015=100),⁵ such as library and learning resource services, central computers and computer networks, and centrally run museums, galleries and observatories. Not all services will be directly related to academic performance, but are important for student experience and potential for engagement with their institution.
- Real expenditure on student and staff facilities (2015=100), such as careers and advisory services, student societies, accommodation office, sporting facilities, transport, chaplaincy, student counselling, creches and the providers' healthcare services. Again, not all facilities are specifically academic in nature, but are all part of providing an environment in which a student can thrive.
- Staff–student ratio, measured by the number of full-time equivalent students per full-time equivalent academic staff (teaching or teaching/research), offers a way of capturing human resources, although teaching requirements for different subjects are likely to see this vary.

The model uses data obtained from the Higher Education Statistics Agency (HESA) covering the period 2007/08 to 2016/17. This data is reported to HESA by institutions and there may therefore be variation in the quality and coverage of the information contained within each variable. For example, student–staff ratio and expenditure on student and staff facilities can advantage research-intensive institutions over those that are primarily focused on teaching due to possible miscounting of staff time spent on teaching in staff that are listed as research and teaching. Data is, however, reported for 128 institutions in the sample, for every year, providing 1,280 observations. This is the best publicly available data to model the impact of inputs into the system.

Based as they are on a statistical model dealing with a complex issue, these results should be treated as indicative of the potential impact of variables on outcomes and as a guide to understanding the parameters of the drivers behind the uplift in grades. Nevertheless, the results suggest that UCAS score, expenditure on academic services, and expenditure on staff and student facilities are all statistically significant and positively associated with the proportion of upper degrees awarded. In statistical terms, within the model:⁶

- a **10% increase** in spending on staff and student facilities increases the proportion of upper degrees by approximately **2%**
- a **10% increase** in spending on academic services increases the proportion of upper degrees by approximately **1%**
- a **10% increase** in the staff–student ratio (ie, where the number of students relative to staff increases) decreases the proportion of upper degrees by approximately **4%**
- a move from three grade Bs at A level to three grade As at A level in the prior attainment of students increases the proportion of upper degrees by approximately **3%**

5. Consumer price index (2015=100)

6. For full results, see The drivers of degree classifications (Bachan 2018).

When assessing the impact of these inputs on the proportion of first-class degrees:

- a **10% increase** in spending on staff and student facilities increases the proportion of firsts by approximately **3%**
- a **10% increase** in spending on academic services increases the proportion of firsts by approximately **4%**
- a move from three grade Bs to three grade As in the prior attainment of students increases the proportion of firsts by approximately **1%**

However, while the input variables modelled here have a significant impact on grade distributions, there are a number of other factors that could impact on the proportion of upper degrees and so there is still a significant proportion of the increase that is left ‘unexplained’. This is indicated by significant associations with the time dummy variables. For upper degrees, this unexplained component in the increasing proportion is detected from 2010/11, and for first-class degrees from 2009/10. While some of these changes have, therefore, occurred over a period that has included big changes to fees and funding, particularly in England, the trend has pre-dated the graduating cohorts most affected.

By 2017, the unexplained component of the total percentage-point change in upper degrees from 2008 was approximately 11 percentage points.⁷ For first-class degrees, it was approximately 10 percentage points. Using the same modelling technique, this is demonstrated in **Figures 4 and 5** across the period (the pale bars represent actual degrees awarded and dark bars the estimates of ‘unexplained change’ since 2008). The model therefore finds that over time, the input variables of UCAS tariff points, expenditure and staff–student ratio are able to explain less of the uplift in awards. In turn, this suggests that other factors must be driving the uplift in awards.

In general, Scottish universities have exhibited the lowest level in first-class degrees, at 6 points, and post-1992 institutions the greatest at 13 points.⁸ Pre-1992 institutions have exhibited the lowest level of increase that is unexplained by the model (at 10 points) and the combined group of post-2003 and post-2012 institutions the highest, at 14 points. It must be noted, however, that the analysis starts in 2007/08, so for some institutions there will have been more headroom to increase the number of upper and first-class degrees over the period than for others. This reflects one of the key challenges in assessing the risks associated with changing classification distributions: namely, at what point observations should start and over what period or intervals.

7. Calculated by multiplying the model coefficient for respective years, as presented in Annexe D of Bachan (2018), by the sample mean percentage for upper degrees awarded, as presented in Annexe B of Bachan (2018).

8. Owing to differences between the institutions included within the sample, and their number, the analysis has been conducted on grouped samples covering pre-1992, post-1992, and a combined group of post-2003 and post-2012 institutions. These include institutions from England, Wales and Northern Ireland. Scottish institutions, with four-year honours degrees as standard and three-year degrees being awarded without classification, present a more distinct case and have therefore been analysed separately, although there is additional variation within the Scottish sector. Due to mergers over the period in question and smaller sample size, separate analysis for Wales has not been possible. Similarly for Northern Ireland.

FIGURE 4: INCREASES AND UPPER DEGREES (%), 2009-2017



UPPER DEGREES **UNEXPLAINED**

Source: Bachan (2018)

FIGURE 4: INCREASES AND UPPER DEGREES (%), 2009-2017



UPPER DEGREES

UNEXPLAINED

Source: Bachan (2018)

FIGURE 5: INCREASES AND FIRST-CLASS DEGREES (%), 2009–2017



FIRSTS

UNEXPLAINED

Source: Bachan (2018)

FIGURE 5: INCREASES AND FIRST-CLASS DEGREES (%), 2009–2017



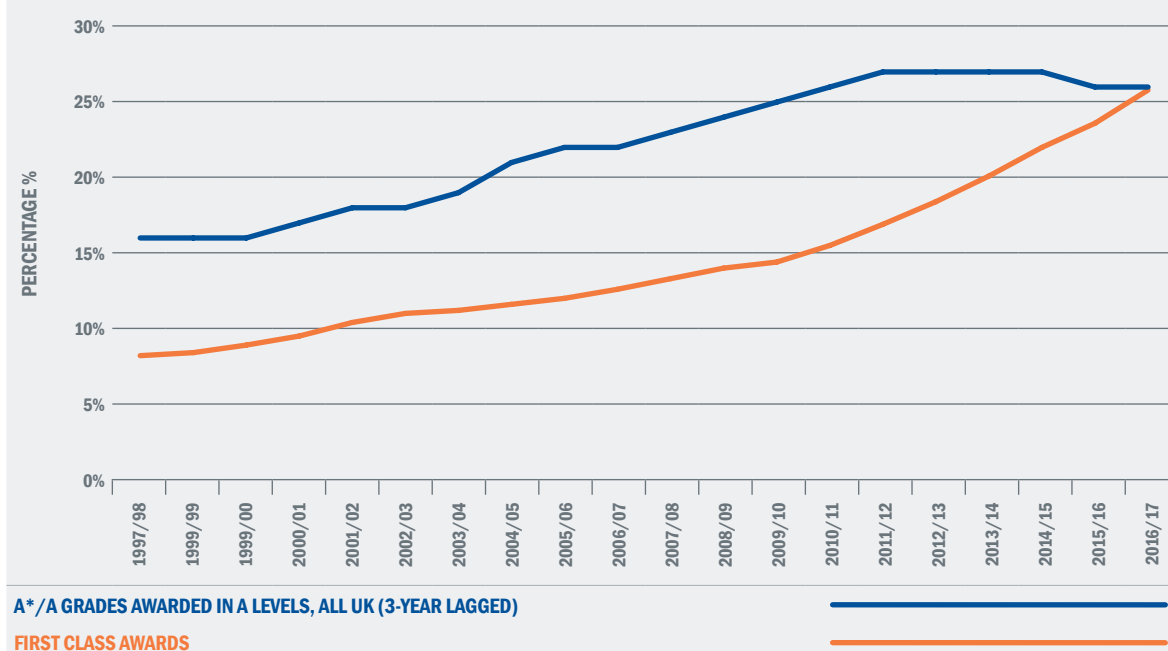
FIRSTS

UNEXPLAINED

Source: Bachan (2018)

The analysis has been extended, as reported in *The drivers of degree classifications* (Bachan 2018), to include a range of student characteristics, to control as far as possible for the impact of changing student demographics and performance as widening participation and attainment gap enhancement activities have become embedded. This includes consideration of the gender, school type and subject area characteristics of the graduating cohort, and in further extensions of the model, domicile, ethnicity, socio-economic status and participation by neighbourhood.

What the results reveal is that while these can be significant, their explanatory power with regard to the increasing proportion of upper degrees and first-class degrees is not sizeable enough to alter the overarching conclusion that these kinds of ‘inputs’ – be they student characteristics and prior qualifications, or institutions’ financial and staffing investments – only explain a certain proportion of the uplift.

FIGURE 6: FIRST-CLASS DEGREE AWARDED (% OF CLASSIFIED DEGREES) IN UK HIGHER EDUCATION INSTITUTIONS AND A-LEVEL RESULTS (THREE-YEAR LAGGED), 1997–1990 TO 2016/17

Source: Joint Council for Qualifications 'A-Levels' via Stubbs (2018); DfE (2018b); HESA (multiple years) Student Record.

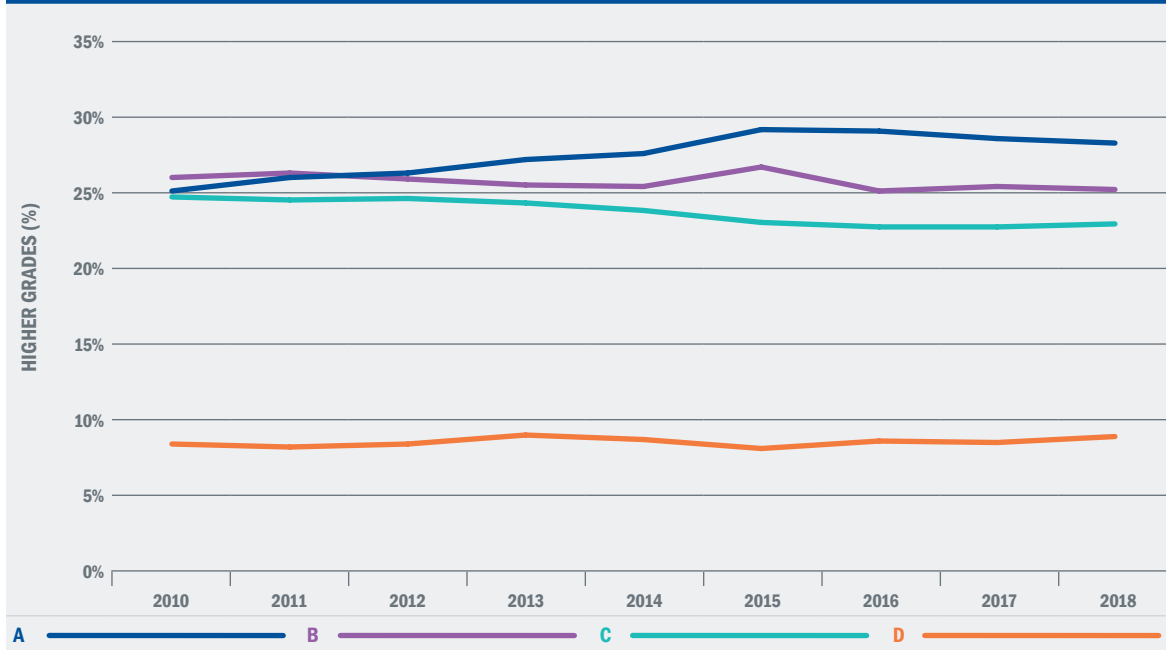
Note: Three-year lag applied to school-level qualifications to correspond with the graduating cohort in a given year, assuming three-year degrees are the norm.

In the case of student ability, the rate of increase in first-class awards has not been matched by a similar rate of change in top-grade A-level results, in the UK (Figure 6).⁹ During this time, school-level qualifications have, however, been subject to reforms that aim to restrict the number of higher grades. Reforms have included changes to grading scales, benchmarking, assessment timing, mode of assessment and grade distributions. Elements of norm-referencing have also been introduced to manage changing distributions. Moreover, tariff points are not necessarily a perfect reflection of academic potential, as evidenced in the literature on contextualised admissions (HEFCE 2003; Ogg et al 2009; Hoare and Johnston 2011; Lasselle et al 2014).

The picture in Scotland (Figure 7) shows that while there has been an increase in A-grades in Scottish Credit and Qualifications Framework (SCQF) Highers, it too has not been as rapid as the increase in first-class awards (although less time series data is available to be able to lag the effects onto graduating cohorts). The proportion of A-grade Highers has increased by 14% in the period between 2009/10 and 2016/17, whereas the rise in first-class degrees for graduates of Scottish universities over the same period was 47%.

9. A-levels have historically been the most prevalent university entry qualifications for students in England, Wales and Northern Ireland.

FIGURE 7: PERCENTAGE OF SCQF HIGHERS GRADES AWARDED A–D, 2009/10 TO 2016/17



Source: Scottish Qualifications Authority (2018a, 2018b)

This means that other changes in practice and policy at the institutional level are also having a significant impact on degree outcomes. Many of these variables are not easy to measure or standardise across universities and require additional institutional-level analysis. These include:

- **Assessment practices**, including the volume, style and breadth of assessment and the calibration of marking
- **Classification practices**, including consideration of borderline cases and the extent to which credit bearing modules are counted in the final classification
- **Curriculum development**, including the quality of curriculum design and support for students and the breadth, depth and stretch of curricula
- **Enhancement activity**, such as sharing of practice, for example through enhancement-led institutional review or improved support for disadvantaged groups.
- **Student study behaviours**, including the level of self-motivated engagement with their learning and their personal targets

These can partly be explained by the model in terms of a predictor of institutional efficiency, that is, the extent to which the institution itself, through its activities, is able to use the respective ‘inputs’ and turn them into upper and first-class degree outcomes. The stochastic frontier model allows this by estimating institution-specific variation in efficiency, ranging between zero (not efficient at all) and one (100% efficient). It finds that across university types, efficiency has, over time, been relatively high: pre-1992 institutions have a median efficiency of 94% on average, post-1992 93% on average, and Scottish universities 92% on average, as represented by the horizontal line in each box in [Figure 8](#).¹⁰ The model also suggests that efficiency has become more compressed over time, in line with a compression in the distribution of student classification.

10. The model for post-2003/12 universities was less well specified with the noise to signal ratio λ insignificant and therefore the efficiency term may be biased.



Source: Bachan (2018)

Nevertheless, the processes embedded within this idea of efficiency – and those activities that cannot be expressed as efficiencies, but rather changes in regulations, conventions and behaviours – remain the area for further examination. In the debate about grade inflation, it is the activities that contribute to this proportion that require further interrogation to assess their likely direct contribution to the uplift, and their indirect contribution through system-wide dynamics. In addition, this assessment also needs to examine the interrelationship with student and staff behaviour and ultimately the impact on student outcomes.

SYSTEMIC RISKS

This section examines the potential impact of decisions related to curriculum and assessment design, assessment and grading practices, and student behaviours, on the increase in upper awards.

It highlights risks associated with the rules used to compile student awards and the use and effectiveness of the full marking scale. It also highlights how the structure of the classification system is limiting the headroom for demonstrating improvement in attainment and differentiation. Finally, it examines how inconsistency in awards between students with different characteristics suggests a need to examine assessment and classification practices.

This section demonstrates that a range of decisions may influence degree outcomes (**Figures 9 and 10**). These decisions reflect legitimate differences in approaches to curriculum design and are embedded in quality assurance arrangements that maintain standards. Decisions include the volume, breadth, weighting and format of assessment, including submitted assignments, work-based elements or examination, depending on the style or aim of the programme. For example, marks can be accumulated over time through flexible modular credit structures or through more linear assessment of a student's accumulated knowledge at the end of a final year.

This debate is relevant because an institution's pedagogy and subject mix influence its teaching and assessment practices. Furthermore, practice legitimately evolves: for example, criterion-based assessment replaced norm-referenced grading over 20 years ago. Interviews as part of this research suggest criterion-based assessment remains the preferred method for assessing students across the sector, typically because it enhances the transparency and quality of curriculum design and standardises marking and grading practices. At the same time, if used poorly, criteria can induce tactical teaching and study practices that potentially narrow the breadth and depth of student learning.

FIGURE 9: THE ASSESSMENT-TO-CLASSIFICATION PROCESS

THE MARKING AND CLASSIFICATION PROCESS

SECTOR REFERENCE POINTS:

- Frameworks for Higher Education Qualifications (FHEQ)/Frameworks for Qualifications of Higher Education Institutions in Scotland (FQHEIS)
- UK Quality Code for Higher Education
- Subject benchmark statements
- Qualifications and Credit Framework (QCF)/Scottish Credit and Qualifications Framework (SCQF) Credit and Qualifications Framework for Wales (CQFW)

Programme design and approval with assessments and marking criteria set and approved by exam board and external examiners.



Individual piece of work submitted and marked according to criteria.



Marks moderated and/or double marked, and are confirmed or adjusted. Provisional mark released to student.



Overall module mark/grade calculated using individual assessment marks, weighted accordingly.



Marks/grades approved by exam board, on a yearly basis. External examiners sit on the exam board for each course.



Module marks/grades feed into an annual summary mark/grade.

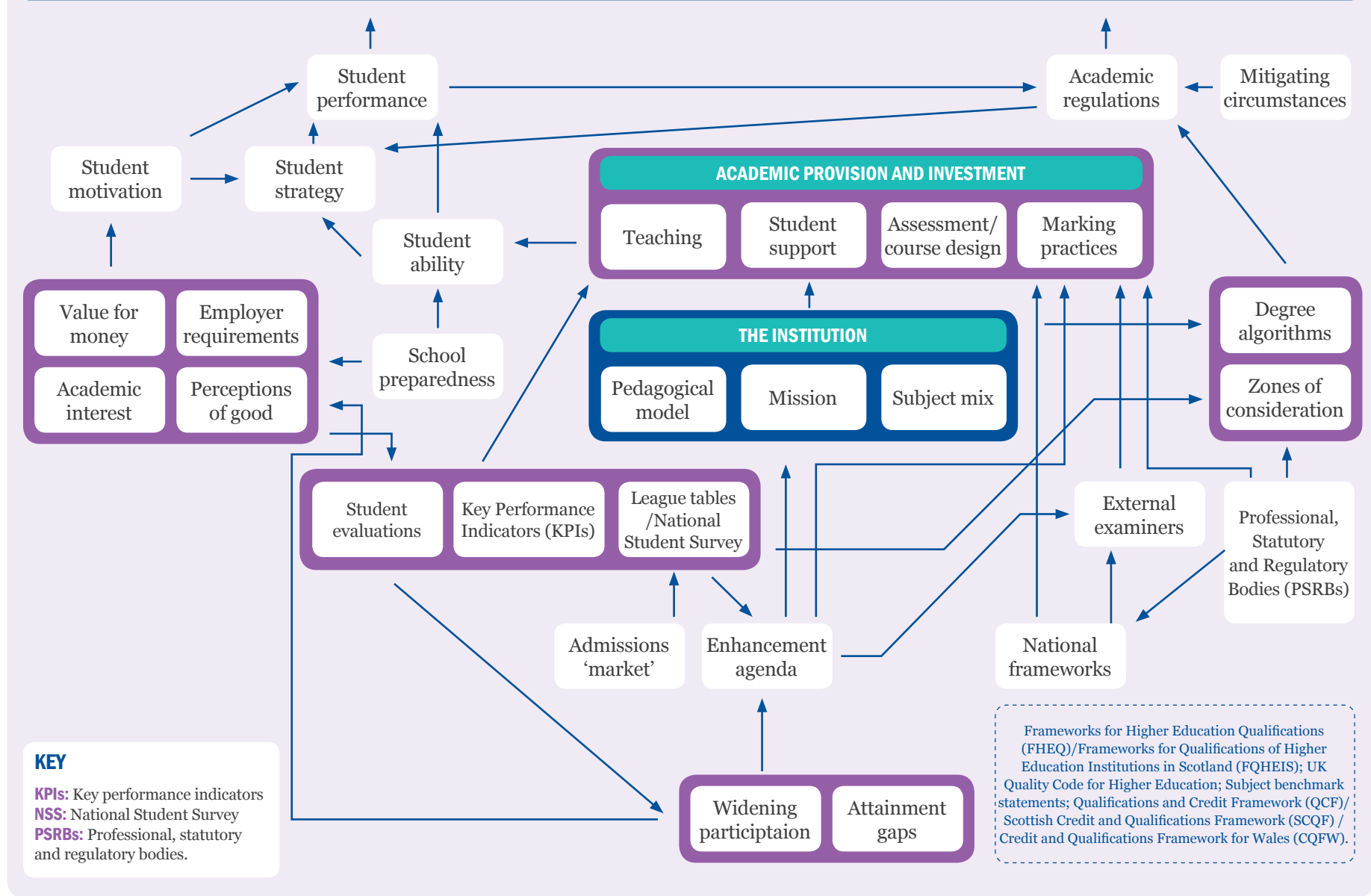


Degree algorithm converts annual summaries into overall percentage, allocated a final degree classification.

Source: Adapted from Ylonen et al (2018)

What this section does not do is determine whether specific practices are inflationary in their own right. Instead, the report suggests that the uplift in awards is likely the result of the aggregate impact and interaction of a range of decisions made by institutions, academic staff and students. Therefore, this section examines the potential impact of trends to identify where practices – possibly justifiable on their own terms and in isolation – may be part of a collective inflationary dynamic. At the same time, none of these elements alone is likely to be the sole cause, or solution, to any inflationary uplift in grades.

FIGURE 10: RANGE OF DECISIONS POTENTIALLY INFLUENCING DEGREE OUTCOMES



MARKING PRACTICES

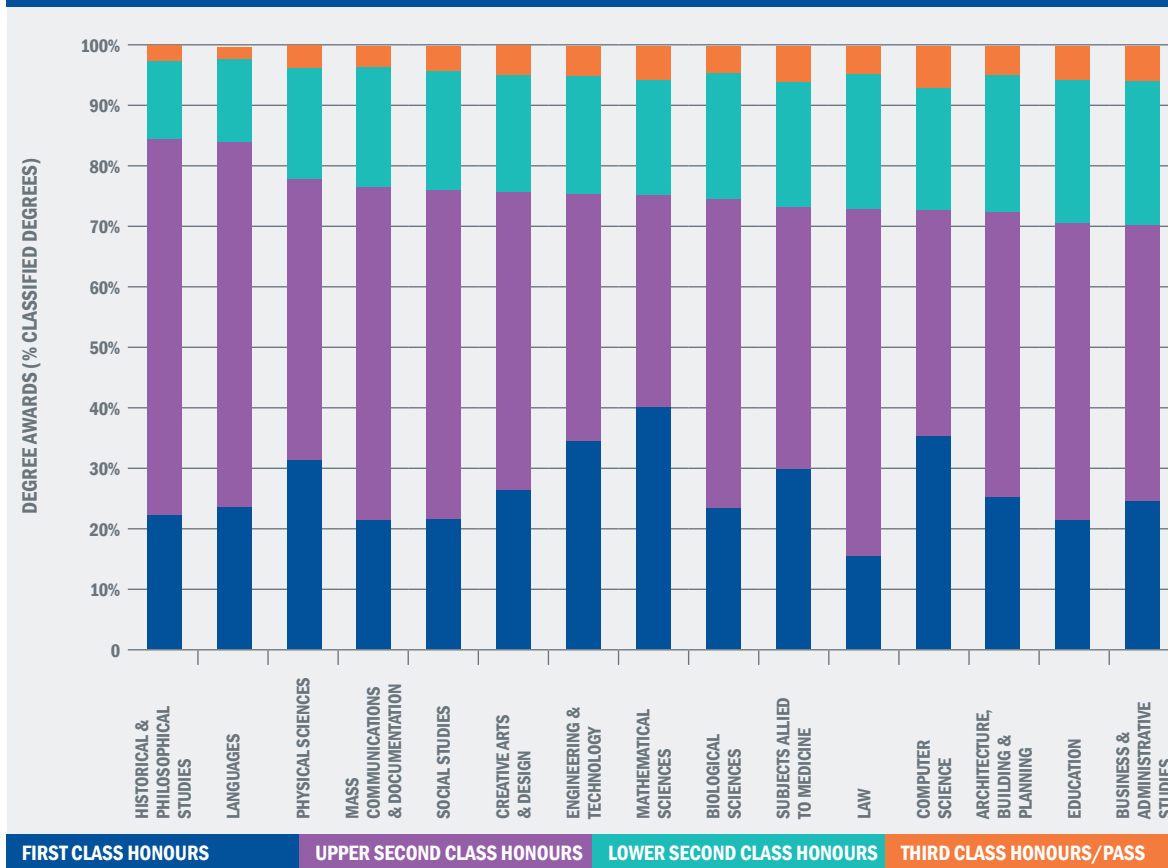
Marking scales and practices vary between subjects and institutions.

In most cases work is assessed on a scale from 0 to 100 and the marks may be formally or informally associated with the standard classification structure bands.

Alternative scales are used, but, in most cases, will be converted into a final honours classification. Different subject disciplines may view and use marks differently as ways of describing student attainment, including the use of different scales. These differences typically relate to epistemic disciplinary differences, from more impressionistic models in the arts, qualitative approaches in the humanities and social sciences, and more Bayesian models adopted in science, engineering and technology (SET) disciplines.¹¹

Disciplinary differences can be observed in differential distributions across subject areas that will also affect institutional classification distributions (**Figure 11**). Marking in arts and humanities subjects is more subjective, making it rare to receive a very high or very low score, while in SET subjects, a more quantitative right–wrong dichotomy and greater reliance on exams can mean that more of the marking scale is likely to be used (Woodfield and Earl-Novell 2006). Languages and history record a greater proportion of upper degrees, but mathematics, engineering and physical sciences record the highest proportions of first-class honours degrees.

FIGURE 11: DISTRIBUTION OF DEGREE CLASSIFICATIONS (% OF CLASSIFIED DEGREES) AWARDED BY SUBJECT AREA, 2016/17



Source: HESA (2018b) Table 17: HE qualifiers by subject of study and level of qualification obtained (subjects >4,000 classified degrees awarded 2016/17)

11. Under the joint academic coding system (JACS), SET subjects are defined as medicine and dentistry, subjects allied to medicine, biological sciences, veterinary sciences, agriculture and related subjects, physical sciences, mathematical sciences, computer science, engineering and technology, and architecture, building and planning.

FULL MARKING SCALE

This research has found there has been increased emphasis on using the full marking scale.

Interviews and workshops as part of this research have highlighted the influence of external examiners in pushing for the removal of the artificial cap on attainment that still persists in many disciplines. It is also, in theory, a natural response if and where students are improving in their performances. This is frequently being supported by more granular marking criteria that go beyond defining outcomes attached to the classification system. This enables students to see what they need to do to achieve marks of 80–90%, for example.

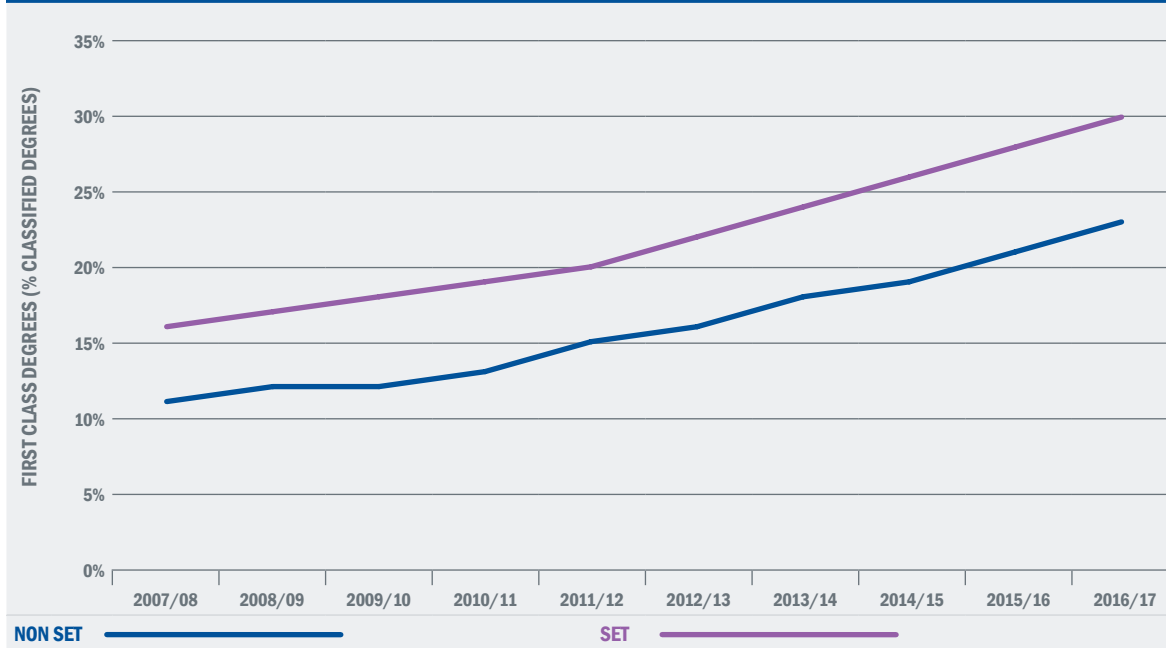
		USING THE FULL RANGE (70–100)				BEFORE USING FULL RANGE (70–80)			
UNDERLYING DISTRIBUTION	STUDENT STANDARD VARIATION	THIRD	LOWER SECOND	UPPER SECOND	FIRST	THIRD	LOWER SECOND	UPPER SECOND	FIRST
65,10	3	5%	26%	40%	29%	5%	26%	45%	24%
	5	5%	26%	40%	30%	5%	26%	47%	22%
	7	6%	26%	40%	28%	6%	27%	48%	20%
65,7	3	1%	23%	54%	23%	1%	23%	60%	16%
	5	2%	22%	54%	22%	2%	22%	61%	15%
	7	2%	23%	52%	24%	2%	23%	62%	12%
65,5	3	0%	15%	69%	17%	0%	15%	76%	9%
	5	0%	17%	67%	17%	0%	17%	74%	9%
	7	0%	16%	65%	19%	0%	17%	75%	8%

The increased use of the full marking scale is likely to have led to an increase in first-class degrees. Even without accounting for student behaviours in response to an extended and expanded marking criteria, modelling suggests that awarding marks up to 100% – versus an artificial ‘cap’ of 80% – can increase the percentage of firsts awarded by 7 percentage points (Table 1). If the full marking scale is used, the typical mark distribution currently gives 22% firsts and 54% upper seconds. Adjusting for a condensed high range – the practice of only giving first-class work marks between 70 and 80 – gives 15% firsts and 61% upper seconds.¹³

However, while there has been a similar rate of change in the proportion of first-class degrees between science, engineering and technology (SET) subjects and non-SET subjects over time, this does not appear to reflect convergence in marking practices (Figure 12). Degrees awarded in non-SET subjects continue to be less likely than those in SET subjects to receive first-class awards. This suggests that despite some commitment to using the full marking scale, it is not necessarily reflected in the marking practices of all subjects.

12. With thanks to Professor Amanda Chetwynd, Lancaster University, for providing this modelling.

13. The modelling here assumes that: i. a student’s overall average comes from a normal distribution with mean 65 and standard deviation 7 ii. the criteria for the borderline between first and upper second class honours is unchanged at 70, but the marks achieved between 70 and 100 would have been condensed to between 70 and 80 in the past iii. a student’s overall average comes from 10 marks normally distributed about the student’s overall average with a standard deviation of 5 iv. A range of models with different distributions have been modelled and provisional results demonstrate similar increases in first class awards when using the full range of marks.

FIGURE 12: FIRST CLASS DEGREE AWARDS (% OF CLASSIFIED DEGREES) BY SUBJECT AREA, 2007/08 TO 2016/17

Source: HESA (multiple years) Student Record

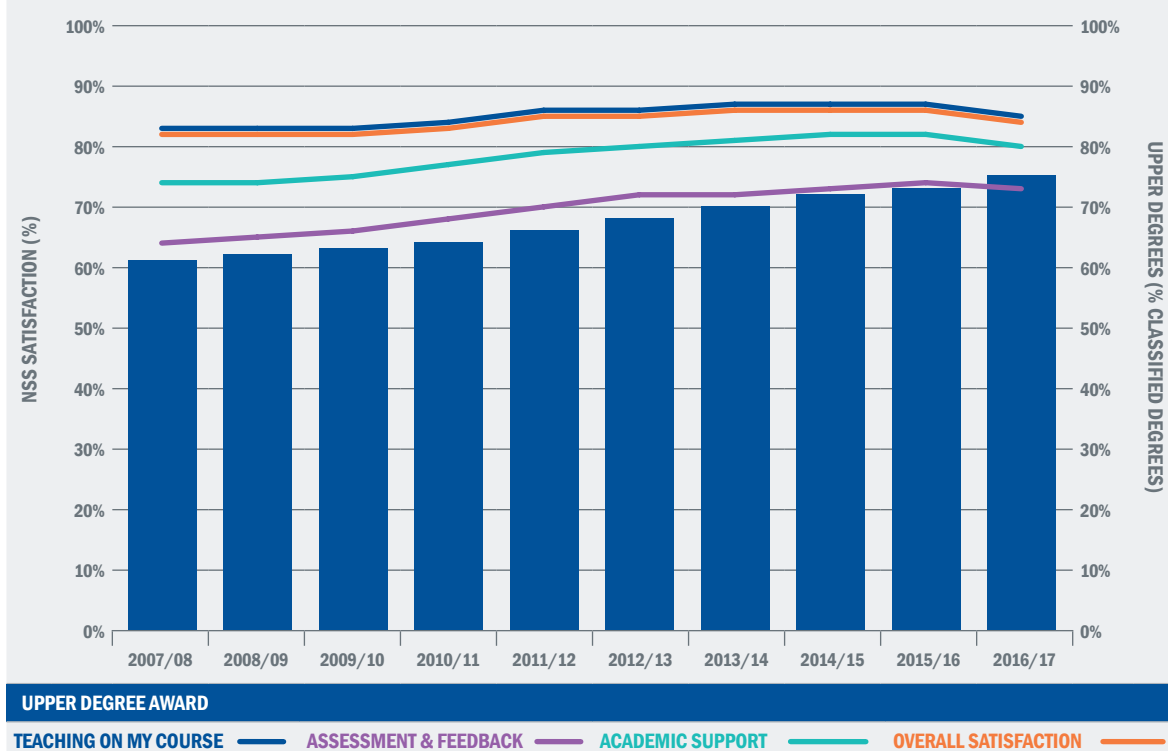
STUDENT FEEDBACK

Research evidence from the United States suggests that the pressure of student evaluations on teaching staff can often lead to more generous marking (Krautmann and Sander 1999; Sonner 2000).

Feedback in the UK has also highlighted the risk that performance targets linked to student satisfaction, allied to insufficient professional development of marking practices and assessment design, may create an incentive to inadvertently produce more generous marking over time. This includes a feedback loop between students and academic staff through the National Student Survey (NSS), institutional course evaluation and performance metrics in league tables, and the TEF.

In the NSS, students have consistently rated their satisfaction with assessment and feedback lower than the teaching on their courses, although both have risen over time (Figure 13). There is a question about the causal direction in this improvement, and what it is that students are judging to be 'good', such as being challenged by their assessments or feeling supported and able to achieve a desired mark with relative ease. Responses to low student satisfaction with assessment can include an increased emphasis on more assessment alongside more detailed and personalised feedback, which may feed into improvements in grades.

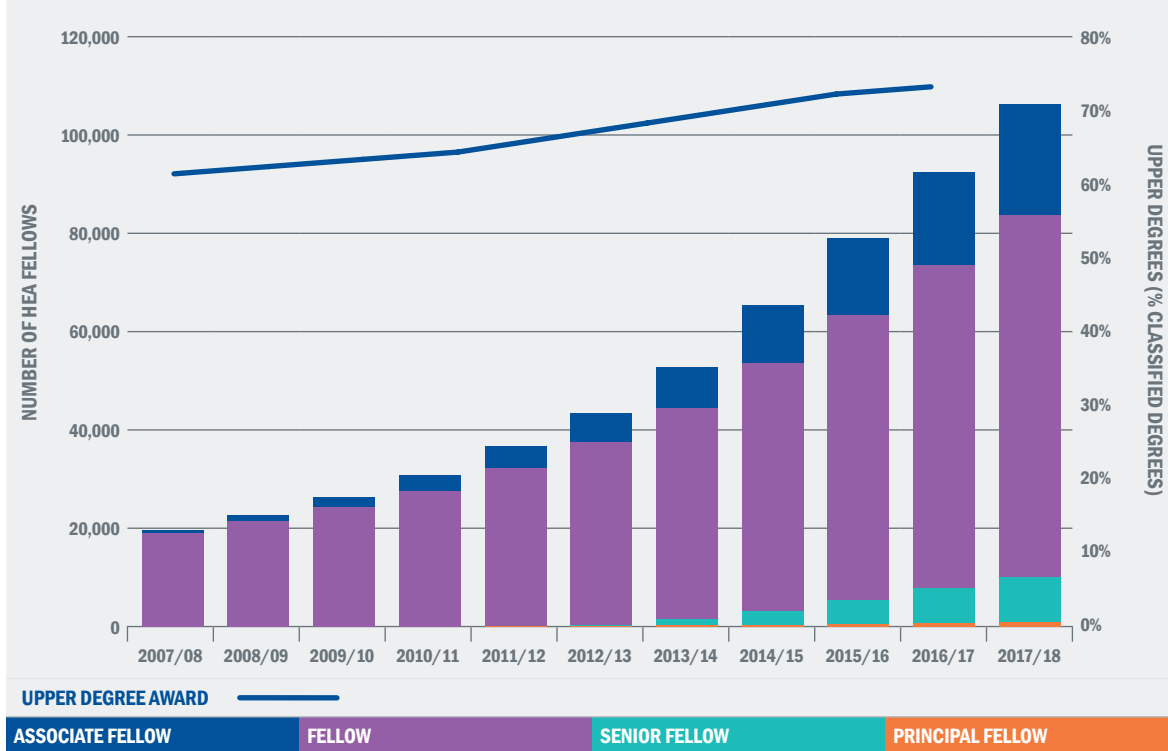
FIGURE 13: UK-WIDE NSS SATISFACTION SCORES AND UPPER DEGREE AWARDS (% OF CLASSIFIED DEGREES), 2007/08 TO 2016/17



Source: HESA (multiple years) Student Record; National Student Survey 2008 to 2017 (available via OfS, 2018)

At the same time, there is evidence of the sector placing more emphasis on ‘teaching excellence’, which is improving students’ engagement with their education.

Universities have professionalised teaching, with more training available on lecturing, instruction, and marking and feedback. Advance HE Associate Fellowship (AFHEA) accreditation is becoming increasingly common and as of July 2018, there are almost 106,000 fellows (**Figure 14**). Research has subsequently found there to be a significant positive relationship between high levels of AFHEA and the level of student engagement with their education, as measured in the UK Engagement Survey (HE Academy 2016).

FIGURE 14: NUMBER OF AFHEA FELLOWS BY TYPE (2007/08 TO 2017/18), AND NUMBER OF UPPER DEGREES AS A PERCENTAGE OF ALL CLASSIFIED DEGREES AWARDED (2007/08 TO 2016/17)

Source: Data provided by Advance HE; HESA (multiple years) Student Record

BOX 3: EXTERNAL EXAMINERS

The role of external examiners in confirming standards and quality is well understood and supported across the sector, and is intended to support assessment design, marking and moderation.

External examiners play a pivotal role in providing assurance of academic standards. To support this role, Advance HE, supported by national funders and regulators, is developing a common training package for external examiners to aid consistency of practice. Specifically, the project will:

- **design and pilot** different approaches to the training of external examiners
- **propose** evidence-based and cost-effective longer term approaches to ensuring that external examiners operating across the UK higher education system are appropriately trained
- **deliver** ongoing training for external examiners
- **explore** approaches to the calibration of standards, and present recommendations for any future work in this area.

Source: Advance HE

CLASSIFICATION PRACTICES

The 2017 joint UUK and GuildHE report Understanding degree algorithms (UUK 2017a) responded to concerns relating to changes that were being made to algorithms to ensure students are not disadvantaged vis-à-vis their peers at similar institutions. This trend risked a systemic upward effect on degree outcomes. The report found that there was legitimate variation in the design of degree algorithms, but that algorithms have been undergoing review across the sector to harmonise practice across institutions. Trends include increased use of rule-based approaches and away from deliberation by academic boards, designed to be more transparent and ensure fairness and equitable treatment of students.

- which levels or year marks should be included
- what the weighting should be between levels, from an even weighting up to a 100% final-year mark
- how many marks should be included, and whether any should be discounted through compensation or condonement ([see Box 4](#))
- whether there should be a zone of consideration used to account for borderline performances, including the use of preponderance

Key decisions in the design of algorithms that were highlighted in the report included:

The report did identify risks that certain practices could inadvertently undermine degree classification conventions and contribute to the uplift in awards. In practice, any changes to algorithms at institutional level following review tend to be relatively minor, incremental and subject to academic governance process. The impact of algorithms is also dependent on the behaviour of staff and students. For example, if a student is aware that their lowest mark will not count within their overall mark, they may not put in the same level of work as they would do so ordinarily, which in turn might free up their time to work harder on their other modules. If all module marks are to be included, a student might be more strategic in their choices presenting in their being less likely to take risks.

BOX 4: DISCOUNTING

Discounting is the practice of not counting module marks towards a final degree classification and includes:

- **Compensation** – poor performance in one or more modules is offset by considering the score against satisfactory performance in other modules
- **Condonement** – institutional acceptance that the failure of a module does not disqualify the student from eligibility for the target award.

Nevertheless, degree classification algorithms can have a sizable impact on degree classification outcomes, both for an individual student and for institutional distribution. For example, in work by David Allen, the application of 20 algorithms (of which only four are hypothetical) across a sample of 211 students from one programme, found that the number of firsts awarded could be as low as 35 (17%) and as high as 72 (34%) (Allen 2018a; see Figure 15). Further analysis, which looked at individual students, found that a single student could, over nine algorithms, result in averages ranging from 62.25 to 70.42. If rounding to the nearest whole number is applied, this would result in four instances of firsts, and if no rounding was applied, just one (Allen 2018b).

FIGURE 15: SIMULATION OF PERCENTAGE OF UPPER DEGREE AWARDS BY DEGREE ALGORITHM (N=211 STUDENTS)



Source: Adapted from Allen (2018a)

The 2017 joint UUK and GuildHE report on degree algorithms highlighted the risk that ‘zones of consideration’ could undermine degree classification conventions. The report found that 42% of institutions surveyed used an automatic borderline option, while 15% used rules to identify cases to be considered by exam boards (UUK 2017a). Automatic rules typically include consideration if a student is within one or two percentage points from the grade boundary (the ‘zone’) and preponderance (ie, whether or not their modal mark, or a defined proportion of marks, fall within the upper classification band).

As part of this research, a similar exercise has been run using an institutional-level data set (sample size approximately 5,300, of graduating students in the 2016/17 academic year)¹⁴. As presented in Table 2, the exercise tested a range of potential algorithm options by applying different combinations of levels, credits, weighting, rounding and preponderance rules. These were developed based on examples of existing practice. In reality, algorithms often involve multiple components, but to isolate certain effects the degree of complexity was deliberately constrained.

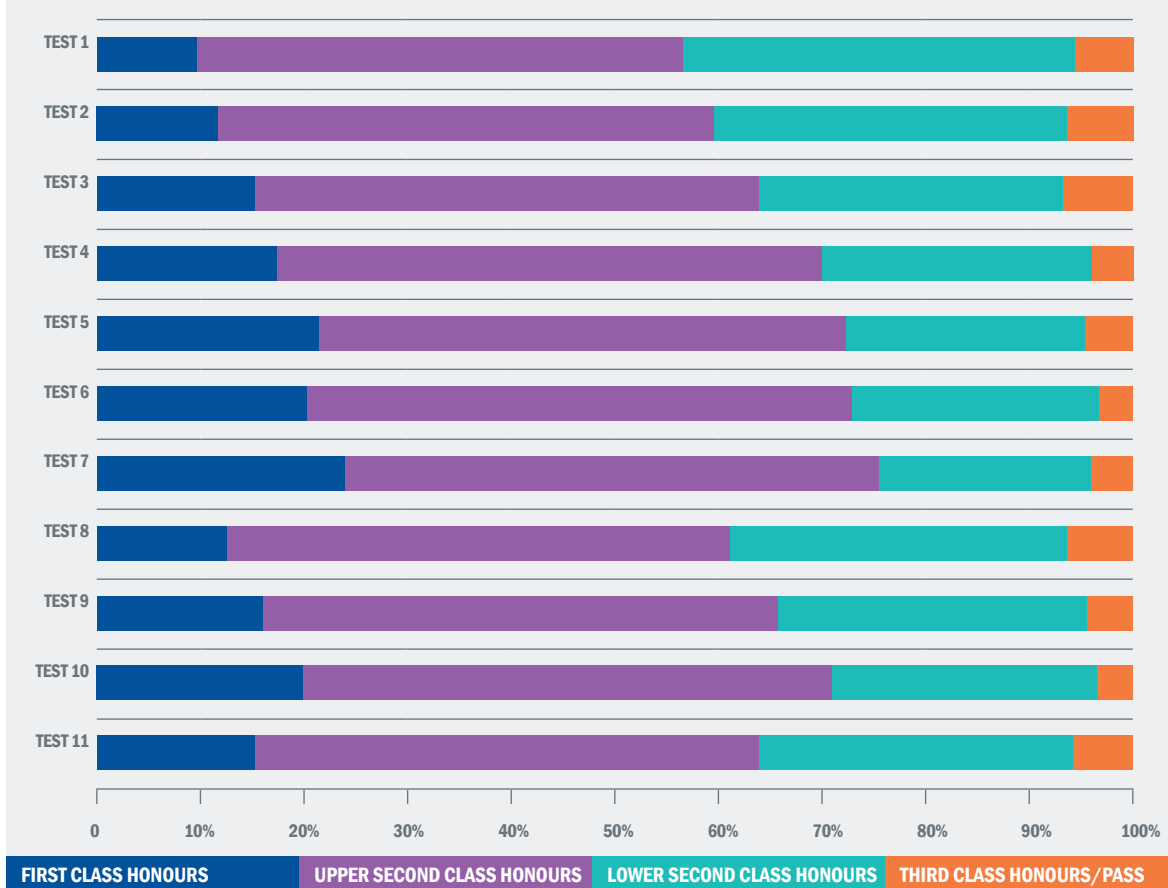
14. All students included in the sample had completed 120 credits at each level of undergraduate study, with all credits receiving a mark. Numbers reported rounded to nearest ten students.

TABLE 2: MODELS USED TO SIMULATE INFLUENCE OF DEGREE ALGORITHMS AT INSTITUTIONAL LEVEL					
	LEVELS USED	CREDITS	WEIGHTING	ROUNDING	PREPONDERANCE
Test 1	4/5/6	All (360)	Even	None	None
Test 2	5/6	All (240)	50/50	None	None
Test 3	5/6	All (240)	20/80	None	None
Test 4	5/6	Best 100 per level (200)	50/50	None	None
Test 5	5/6	Best 100 per level (200)	20/80	None	None
Test 6	5/6	Best 90 per level (180)	50/50	None	None
Test 7	5/6	Best 90 per level (180)	20/80	None	None
Test 8	5/6	All (240)	40/60	Rounding 0.5 and above	None
Test 9	5/6	All (240)	40/60	1% borderline (no rounding)	None
Test 10	5/6	All (240)	40/60	2% borderline (no rounding)	None
Test 11	5/6	All (240)	40/60	2% borderline (no rounding)	180 credits at higher classification (across L5/L6)

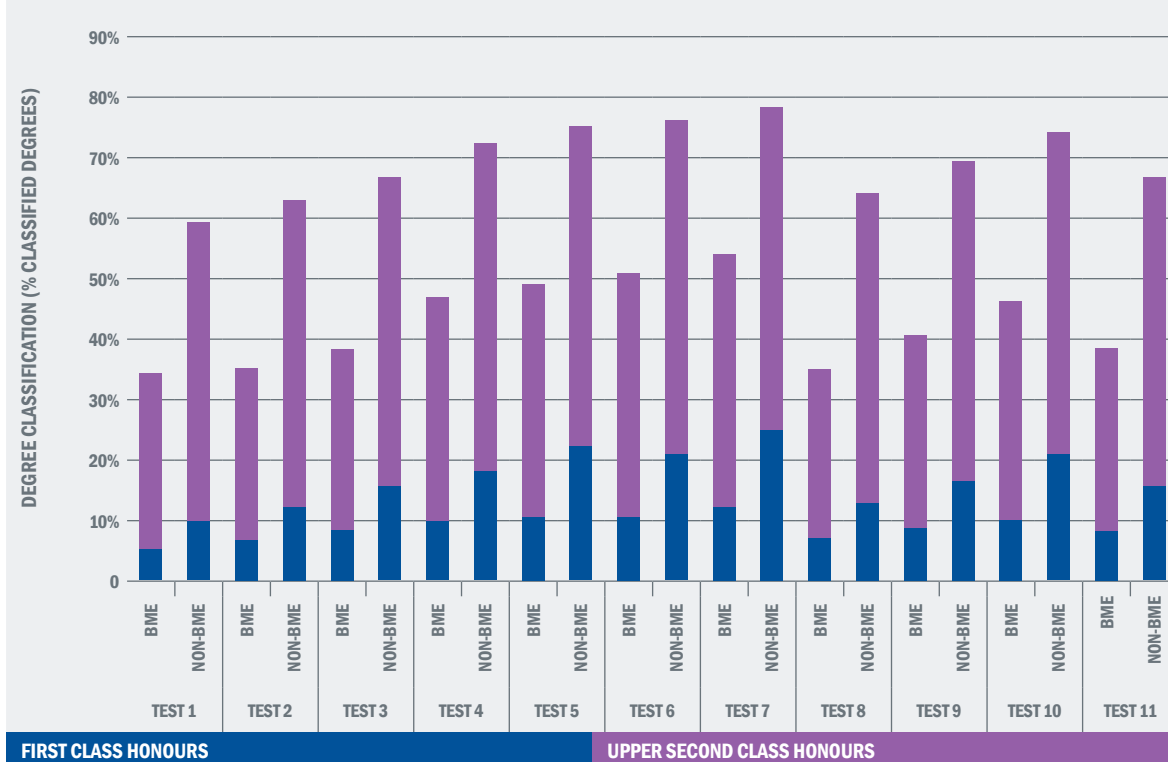
The results (**Figure 16**) indicate that in test 7, where there is more discounting (best 90 credits per level) and emphasis on level 6 results, almost a quarter (24%) of students receiving classified degrees would receive first-class honours. In contrast, if all levels are included and equally weighted (test 1) or levels 5 and 6 are equally weighted (test 2), the proportion of first-class honours drops to just 10% and 12% respectively. These tests cannot control for student behaviours – for example, they might strive for higher marks in their first year if they know it counts – but give an indication that the impact of ‘discounting’ module marks can be important.

Looking solely at borderline and rounding practices (tests 8 to 11, all conducted using the same basic initial degree algorithm), an automatic uplift for students falling within 2 percentage points of the classification boundaries without rounding (test 10) versus a standard rounding from just 0.5 and above (test 8) increases the percentage of first-class honours by 7 percentage points. Restricting the uplift to only those students receiving at least 180 credits overall at the higher classification level restricts the difference to just 2 percentage points.

FIGURE 16: INSTITUTIONAL LEVEL SIMULATION OF INFLUENCE OF DEGREE ALGORITHMS ON GRADE PROFILE



The exercise also included an ethnicity equalities assessment, by comparing the impact on black and ethnic minority (BME) and non-BME students. The results first reinforce the presence of an attainment gap (Figure 17). However, on first-class awards, they also suggest that in this context, the impact of a different algorithm is bigger for non-BME students. Across the tests, there is an 8-point difference for BME students – the lowest proportion in test 1 and highest in test 7. For non-BME students, tests 1 and 7 are still where the proportions are lowest and highest, but the gap is increased to 15 points. However, for receiving a 2.1 award – and a ‘good’ upper degree – the difference across algorithms is greater for BME students – 12 points as opposed to 5 points. Any change to degree algorithm practice must ensure that specific groups, especially those from a widening participation background, are not disadvantaged. There will also be a need to consider separately specific cases where there are mitigating and special circumstances, to ensure students for whom these apply are not disadvantaged.

FIGURE 17: INSTITUTIONAL RESULTS OF RESEARCH EXERCISE ON THE IMPACT OF CHANGES IN DEGREE ALGORITHMS, BY ETHNICITY

Note: BME sample size = 570, Non-BME sample size = 4,730

Further modelling of the impact of borderline practices ([Annexe D](#)) offers further suggestion that the extent of rounding, zones of consideration and modal-based algorithms (where the most frequently achieved mark is referred to) can alter distribution. A pilot study with four institutions revealed that across five separate ‘model’ borderline rules, the average distance for an institution between the highest and lowest proportion of firsts generated by the model rules was 7.9 percentage points, and for upper seconds 3.1 percentage points. The model rules can be found in [Annexe D](#) and are illustrative of some of the practices identified during the research.¹⁵

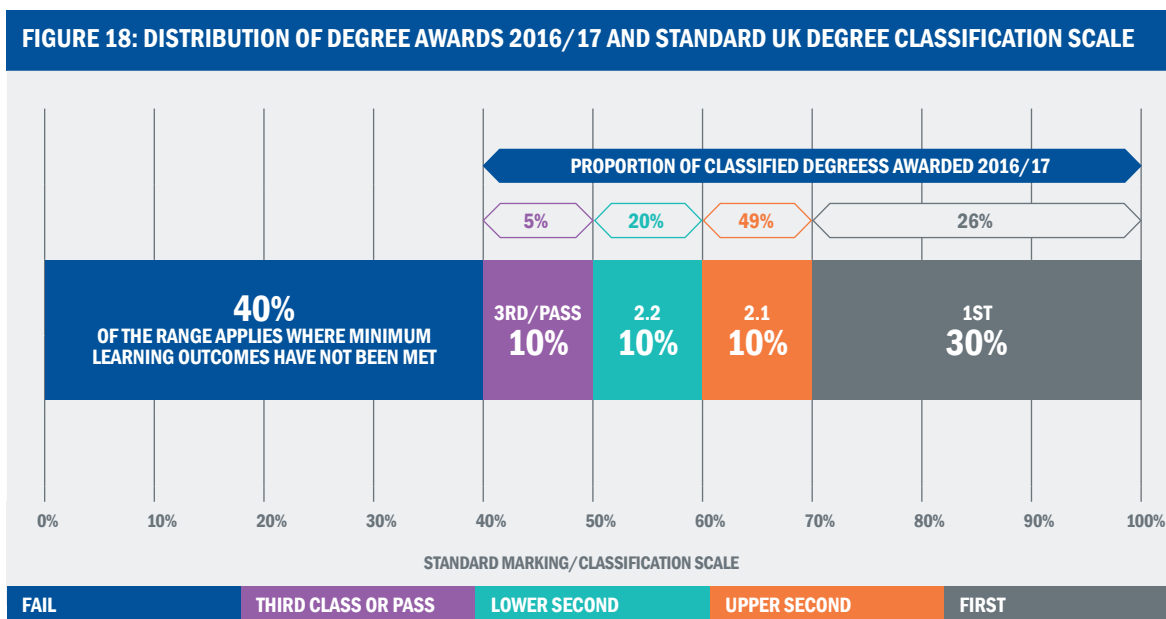
Reasons for adopting zones of consideration or discounting practices include the subjectivity of marking practices and a safeguard for students who may experience a ‘rogue’ poor performance (ie, one that cannot be addressed through separate special and/or mitigating circumstances). However, there is a perception risk, where it involves students who do not meet the conditions of the stated degree algorithm being perceived as receiving a second chance. Within the more common case of an automatic uplift, it is an arguably fairer system, but there is also evident potential for a change in overall distribution to include more upper degrees.

ACADEMIC STRETCH AND CALIBRATION

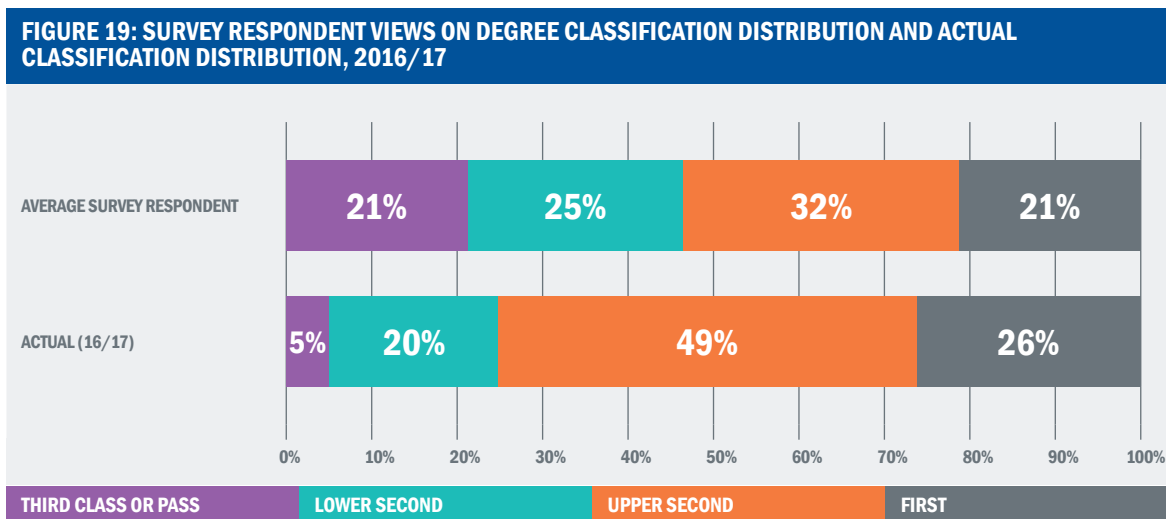
The upward trend in degree classification now means that most students are bunched into the upper second classifications.

This limits the scope for differentiating student attainment and demonstrating improvement at the top end, and is out of step with student expectations. At the same time, degree outcomes differ between institutions by subject and prior attainment and between students across variation in their social and demographic characteristics. This has contributed to the tension between the comparability of a single award structure in a diverse system and the need to ensure consistent practice that keeps pace with improving attainment and degree outcomes across the system ([Figure 18](#)).

15. In this exercise, the model rules also assume that all students who are considered within the zone of consideration are automatically uplifted if they meet the criteria.



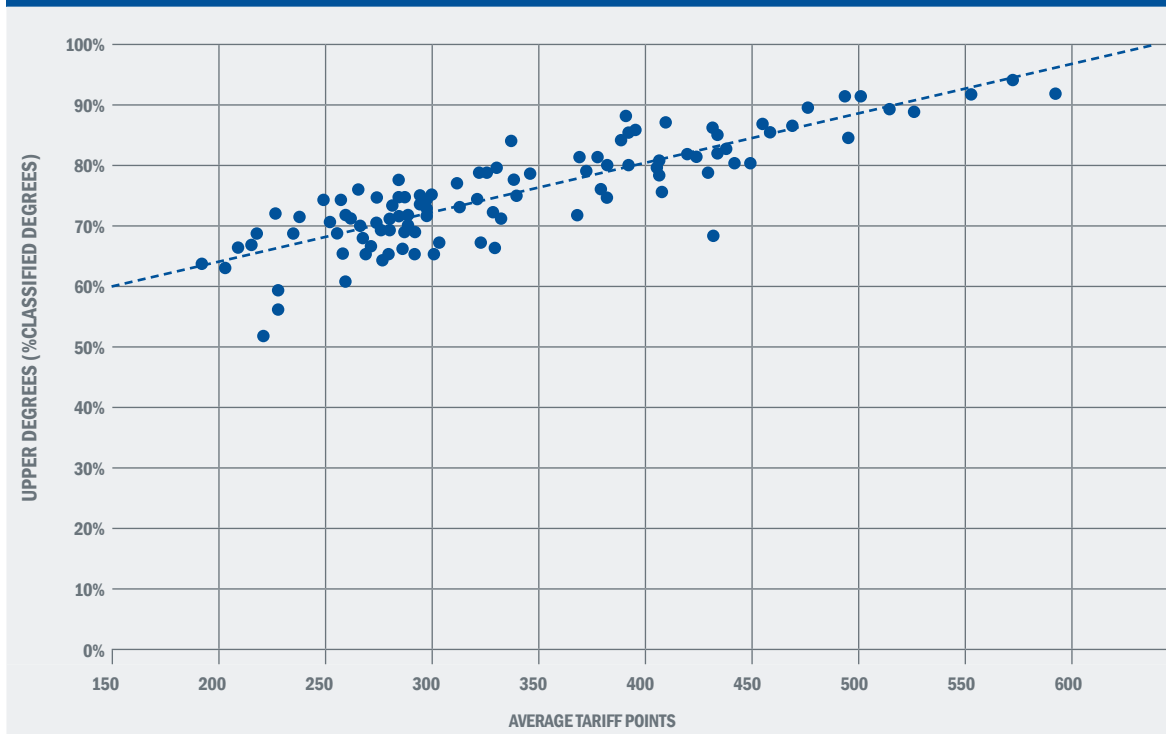
Students themselves value high-quality and academically challenging courses and continue to associate a first-class award with outstanding attainment. Furthermore, students are increasingly focused on the need for a ‘good degree’ to secure employment after graduation (see Tomlinson 2014; Kuh and Hu 1999; Boretz 2004). However, while three-quarters of graduates receive an upper degree, the respondents to a pilot study of students and graduates, run May to June 2018 with a sample size of 105, found that most respondents thought that only a third of awards should be 2.1s (32%) and that as many as 22% should be found in the third or ‘pass’ category (Figure 19).¹⁶



16. Average scores for each classification as provided by respondents adjusted through weighting to sum to 100%, and third and ‘pass’ marks combined to match HESA reporting. Original averages: 1st (21%), 2.1 (33%), 2.2 (26%), 3rd (12%) and pass (9%).

Despite this divergence, there was support for maintaining a four-class structure to UK degrees; 77% considered the number ‘just right’ and not in need of change – an endorsement which has been evident in conversations with students as part of this research – while 16% felt there should be more classifications, and only 7% that there should be fewer. This contrasts with the previous findings that students were dissatisfied with degree classification as a method for measuring or comparing attainment (House of Commons Innovation, Universities, Science and Skills Committee 2009).

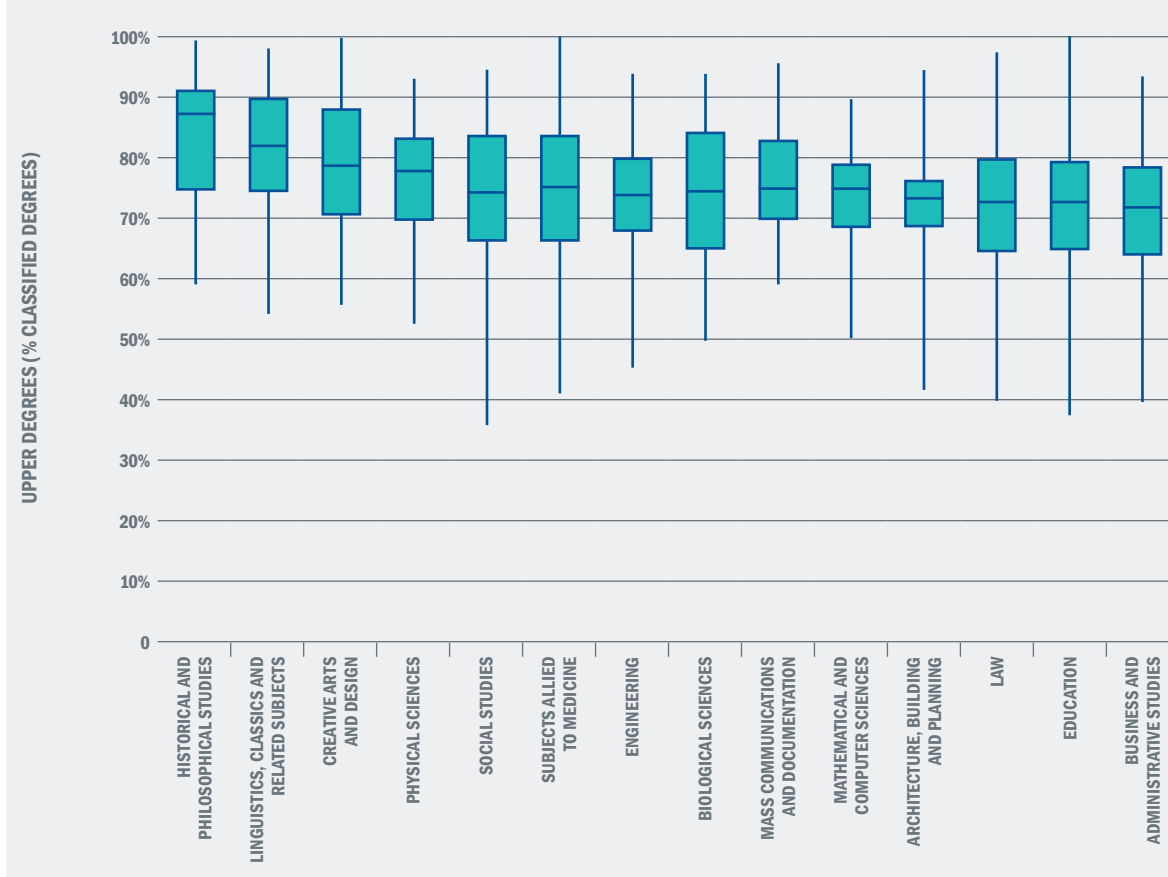
FIGURE 20: UPPER DEGREE AWARDS (% OF CLASSIFIED DEGREES) IN 2016/17 BY AVERAGE ENTRY TARIFF POINTS FOR UNDERGRADUATE STUDY IN 2013/14



Source: HESA (2018c) Student record 2016-17; Complete University Guide (2013)

There is a positive relationship between the average tariff points of students entering an institution within a year group and the proportion of upper degrees awarded to that cohort (**Figure 20**). Average tariff points provide both an indicator of students’ base-level ability but, as alluded to, may not reflect academic potential and the subsequent impact of teaching. Similarly, SET subjects are more likely to award first-class honours than non-SET subjects, although non-SET subjects tend to award a higher proportion of upper degrees (first and upper second class). The stochastic modeling (Bachan 2018) suggests that across all institutions, a 10% increase in the proportion of students studying SET subjects reduces the proportion of upper degrees awarded by around 0.2 percentage points.¹⁷

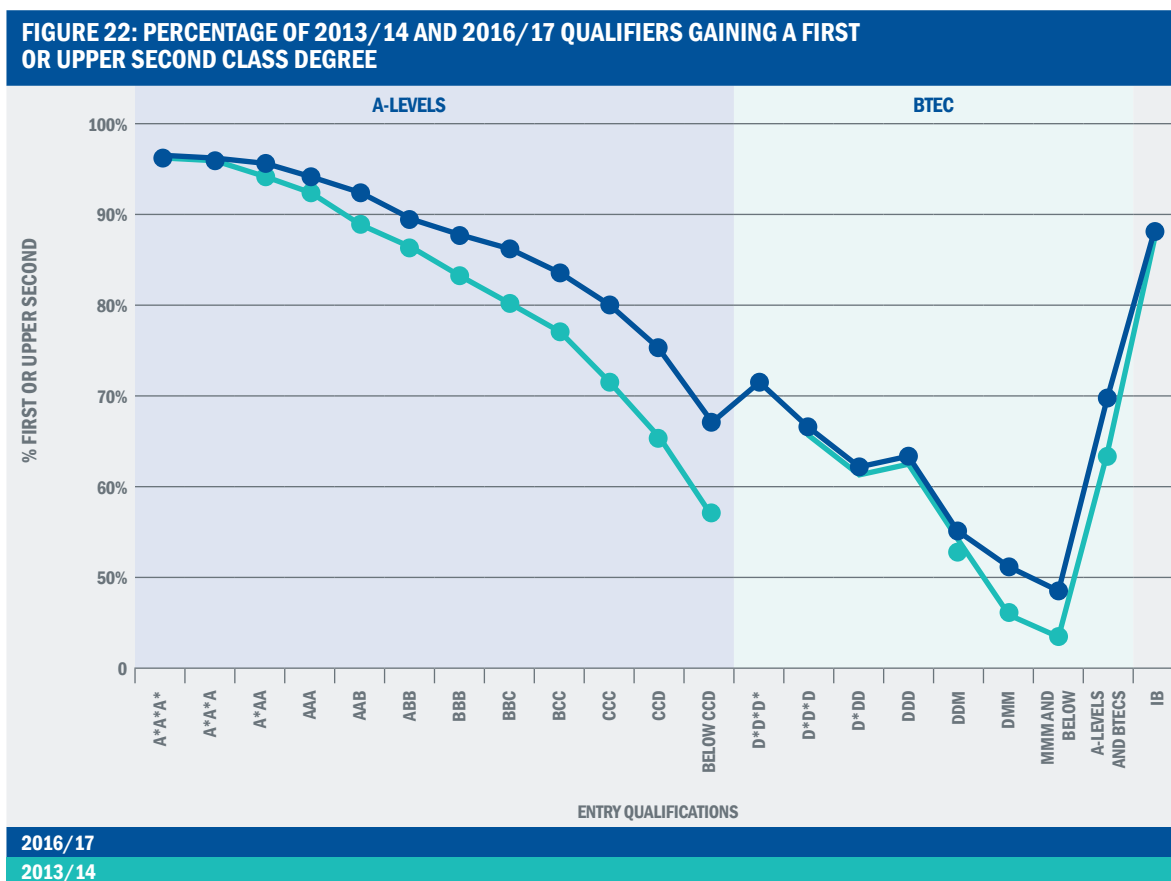
17. This applies when modelled alongside UCAS tariff points, expenditure on academic services, expenditure on facilities, staff-student ratio, gender and school type; see Bachan (2018).

FIGURE 21: DISTRIBUTION OF UPPER DEGREES AWARDED (% OF CLASSIFIED DEGREES) BY INSTITUTION ACROSS SUBJECT AREA

Source: HESA (2018c) Student record 2016-17

Note: Institutions where ≥ 50 degrees awarded in subject area, 2016/17, sample size in parentheses

The compression in the classification system corroborates the modelling on university efficiency and suggests a level of compression over time whereby institutions are becoming more similar. This can also be illustrated in the patterns of improvement over time. For example, in England, there is evidence that the main area of uplift has been from students entering with lower entry qualifications (Figure 22). This is intuitively reasonable, since students that previously received lower classifications have the most room for improvement. For example, analysis by the Higher Education Funding Council for England (HEFCE) in 2014 found that state school students tend to do better in their degree studies than students from independent schools with the same prior educational attainment (HEFCE 2014).



Source: HEFCE (2018)

Some improvement has also been seen in the case of ethnicity, which has also contributed to compression at the upper end of the chart. However, a significant attainment gap for BME students persists. For example, in 2016/17, white students (80%) had a higher likelihood of receiving an upper degree than Asian and Asian British students (68%), black and black British (55%) students, and students from other ethnic groups (73%) (HESA 2018c). This suggests that some students are being disadvantaged by inadvertent biases in curriculum, academic support and assessment and classification practices.

Measures to close this gap, including a joint NUS and UUK initiative, should improve student attainment and by extension the proportion of upper awards across the sector. For example, over the period 2010/11 to 2016/17, across the sector, black and black British students have experienced a rise in upper degrees – an 89% increase, moving from a likelihood of 41% to 56%. Asian and Asian British students have increased their likelihood from 52% to 68% and other ethnic groups from 60% to 73%. Simultaneously, these groups have all increased in prevalence, with the proportion of white students falling by 4 percentage points (HESA 2018c).

BOX 5: CALIBRATION IN THE SCHOOL SYSTEM

The school system in England has recently re-formed examination and assessment practices to address accusations of inflation and protect the sustainability of its qualifications.

Changes have been made to the ways in which students are assessed, including moves away from modular courses and towards more linear courses, and there has been a renewed focus on exams, which are favoured above coursework. However, this type of reform would not be suited to an autonomous higher education sector where subject and pedagogical variation require a more diverse approach to programme and assessment design.

Significantly, there have been changes to the ways school-level qualifications are graded. GCSEs have introduced new and additional grade boundaries, with a shift towards increased differentiation at the higher end of the scale combined with less differentiation at the lower end. This was designed to reflect the growing number of students achieving grades C or above (Ofqual 2017).

To aid this process, and in order not to disadvantage new cohorts, it has been accompanied by changes to grade 'definers', moving from letters to numbers. It is intended that within this schema, fewer grade 9s will be awarded than was previously the case for A* grades (Ofqual 2017); a formula will be used to set this at about 20% of those students who achieve at least a grade 7. Statistical predictions, which compare cohorts on their previous attainment at key stage 2 (KS2) will be used to anchor the new standards for each grade boundary; a strategy of 'comparable outcomes', as opposed to aiming for 'comparable performance' (see Benton and Sutch 2014).

However, this type of reform in higher education would rely on the development of sector-wide consensus and may also risk undermining established domestic and international recognition of UK higher education qualifications.

Further impacts of student characteristics are likely (**Figure 23**), according to gender, school background, domicile and ethnicity. For example, in the stochastic modelling (Bachan 2018) a 10% rise in the percentage of female graduates was associated with a 1 percentage-point increase in upper degrees, and a 10% increase in state school educated graduates, a decrease of approximately 3 percentage points, when controlling for the other input variables (including UCAS tariff points). Among similar types of institution, the impacts tended to be less significant and consistent. In the extended models (Bachan 2018), these kinds of differences between institutions even appear to negate some of the effects of the original 'input' variables, such as expenditure on facilities and academic services.

FIGURE 23: UPPER DEGREE AWARDS (% OF CLASSIFIED DEGREES), BY STUDENT CHARACTERISTICS, 2016/17

Source: HESA (2018c) Student record 2016-17

PUBLIC INCENTIVES

Degree classifications are signals that are used to assess an individual's academic calibre and an institution's quality and standards.

At the same time, the association of upper degrees with good degrees has introduced incentives to increase the proportion of upper degrees. Both students and employers increasingly view upper degrees as the de facto threshold for a good degree, and in this context league tables include the proportion of upper degrees as a measure of a 'good' institution. Similarly, many institutions track degree outcomes, or equivalent measures, to monitor the effectiveness of programmes and the institution over time.

In the pilot survey conducted for this project to examine perceptions of the degree classification system for this project 80% included upper seconds in their definition of a 'good' degree, and 74% included firsts.¹⁸ Only 16% of respondents felt that a lower second should be considered within the definition of a good degree. In England in particular, there is growing competition for student recruitment in the context of a declining population of 18-year-olds and no controls on student places. This contrasts with other parts of the UK where places for 'home' students are still capped.

Research published by the Confederation of British Industry (CBI 2018) shows that an overwhelming majority of businesses (79%) regard a 2:1 undergraduate degree (or above) as a good measure of academic ability. It remains common practice to use the upper classifications as a filtering tool for shortlisting. This is particularly relevant in a highly competitive graduate labour market. For example, analysis conducted by HEFCE found that among 2015/16 UK-domiciled first-degree graduates, those with first-class honours were more likely to be in graduate employment or further study six months after graduation than those awarded third-class honours by 24 percentage points (HEFCE 2018).

18. The marginally lower percentage of respondents considering a first to be a 'good' degree could be reflective of the ambiguity around the terminology of a 'good' degree, and whether this definition represents a threshold (eg 2.1 or higher) or a single classification (eg a 2.1 as 'good' and a first as 'excellent').

Where competition to attract students is high, institutions have an incentive to perform well in league tables. The three main UK league tables are The Times and Sunday Times Good University Guide, the Guardian University Guide and the Complete University Guide. They each have their own methodologies, with differences in definitions, coverage and weighting, but will draw on similar sources, predominantly accessed through HESA and the NSS. A review by the Higher Education Policy Institute (HEPI) (Turnbull 2018; see Table 3) shows that degree classifications feature explicitly in The Times and Sunday Times and the Complete University Guide:

- *The Times and Sunday Times* - percentage of graduates achieving a first or upper second, with the award of four-year first degrees treated as equivalent to a first or upper second.
- *Complete University Guide* – number of graduates with a first or upper second, divided by the total number of graduates with classified first degrees, with the award of enhanced first degrees, awarded after a four-year course, treated as equivalent to a first or upper second.

TABLE 3: LEAGUE TABLE COMPONENTS BY COMPILER/PUBLISHER

GUARDIAN	THE TIMES AND SUNDAY TIMES	COMPLETE UNIVERSITY GUIDE
<ul style="list-style-type: none"> • Entry qualifications • Student satisfaction: <ul style="list-style-type: none"> – Satisfied overall – Satisfied with teaching – Satisfied with feedback • Student: staff ratio • Value-added score • Graduate careers • Spend per student 	<ul style="list-style-type: none"> • Entry qualifications • Student satisfaction: <ul style="list-style-type: none"> – Student experience – Teaching quality • Student: staff ratio • Completion • Degree classifications • Graduate careers • Research quality • Services and facilities spend per student 	<ul style="list-style-type: none"> • Entry qualifications • Student satisfaction • Student: staff ratio • Completion • Degree classifications • Graduate careers • Research quality • Research intensity • Academic services spend per student • Facilities spend per student

Source: Turnbull (2018)

In the context of increased competition for students and enhancement agendas, governing bodies may monitor key performance indicators (KPIs) that in some cases include specific targets related to the proportion of upper degrees awarded. These targets are typically linked to teaching and learning improvement agendas and can be a useful marker of success in widening participation in respect of narrowing attainment gaps. They can also be mapped onto performance in league table rankings. Outliers are likely to be the focus of further analysis, leading to action plans where it is felt there is a need to enhance the quality of programmes or subject areas.

A STATEMENT OF INTENT

On balance, the findings from this research suggest that much of the upward trend in grades seen across the sector will have been legitimately influenced by enhancement in teaching and learning.

There has been a welcome focus on student outcomes, teaching and assessment design and feedback, and academic teaching skills. However, this improvement is also likely to have contributed to a system-wide inflationary effect on classifications. While there is no ‘smoking-gun’ proof, this report has outlined risks that the higher education sector should acknowledge and address to ensure the value of its qualifications are protected over time.

The findings suggest that the interaction of different factors, illustrated in [Figure 9](#) and [10](#), has contributed to the uplift in degree outcomes. This includes a range of incentives to enhance attainment, the motivation of students, an institution’s educational mission and enhancement agendas and public incentives. At the same time, there are measures in place that protect the value of qualifications, including formal quality assurance processes and professional and sector norms. Students, employers and the wider public, and universities themselves, need to be assured that the balance between these two sides is calibrated appropriately.

To address this challenge, higher education institutions should make a clear statement of intent to examine the transparency, reasonable consistency and comparability of degree classification. There is no single answer to a complex phenomenon that is the direct and indirect result of the aggregation of a wide range of decisions, behaviours and practices. Nevertheless, higher education institutions have a collective interest and responsibility to maintain wider confidence in the integrity and usefulness of the common honours degree classification system.

It is also essential that any measures to address the uplift in grades protect the features of higher education learning and the success of the UK higher education system, and do not place quotas on success or impede improvement. Four central principles will need to drive the response:

- The diversity and autonomy of the sector are strengths that should be supported, and measures must be founded on autonomous, self-critical academic institutions that are responsible for setting and maintaining standards.
- Existing quality assurance arrangements provide a framework for monitoring and maintaining academic standards: proposals should enhance and strengthen these in order to meet the challenge.
- Current and future students should not be unfairly disadvantaged by changes, and any measures should be developed and implemented with input from students and communicated clearly.
- Criteria-based assessment and classification should provide an effective framework for measuring attainment that allows students and institutions to demonstrate genuine improvement.

The following sections examine the areas that should be addressed as part of the statement of intent. Any way forward will also need to be mindful of the differing national contexts across the UK, including the rate and nature of any uplift and the operating environment in which institutions are located. In England, the assessment of academic standards has been included as a co-regulatory element of the Higher Education and Research Act and is reflected in conditions of registration with the Office for Students. Wales uses the Quality Assessment Framework for Wales, which includes annual institutional assurance and external quality review, Scotland uses the Enhancement-Led Institutional Review method and Northern Ireland uses the revised operating model for quality assessment. Any approach adopted must build on these arrangements and certainly not undermine or duplicate them.

SECTOR REFERENCE POINTS

The statement of intent should build on existing expectations on higher education providers, including the UK quality code and qualifications frameworks. These sector reference points should inform national quality assessment processes, including enhancement-led institutional Review in Scotland, the Quality Assessment Framework for Wales, the revised operating model in Northern Ireland the OfS registration conditions that relate to quality and standards.¹⁹ In this respect, the UK quality code already places an expectation on all higher education providers to maintain standards. This includes the following two core practices, that:

- the academic standards of courses meet the requirements of the relevant national qualifications framework
- the value of qualifications awarded to students at the point of qualification and over time is in line with sector-recognised standards

Institutions with degree-awarding powers are expected to ensure awards meet common threshold standards as outlined in national qualifications frameworks. Providers are also expected to ensure that students are able to achieve standards beyond the threshold that are reasonably comparable with those achieved in other UK providers. The existing national qualifications frameworks represent a baseline that sets out the requirements expected of all students to receive a degree. However, there is currently no common agreed description for classification, including qualitative descriptions and associated quantitative thresholds.

The quality code expects providers to use external expertise, assessment and classification processes that are reliable, fair and transparent as a core practice for maintaining academic standards. There is an expectation that it would be common practice for providers to review core practices for standards regularly and use the outcomes to drive improvement and enhancement. The advice and guidance sections of the quality code cover practices relevant to the setting of academic standards, including:

- programme design and development
- external expertise
- concerns, complaints and appeals
- assessment

Both the previous and revised quality code emphasise the need to engage in a transparent dialogue with students and staff about assessment criteria. Many institutions have introduced institution-wide marking and assessment criteria that are used as a framework for guiding programme design and academic practice (and alignment, where necessary, with PSRB requirements). Even where criteria are set at school or departmental level, it remains good practice for these to be clear and transparent.

TRANSPARENCY AND EXTERNALITY OF INSTITUTIONAL EVIDENCE

There is a case to be made that the transparency of institutional evidence relating to grade outcomes should be enhanced. The work undertaken by this project illustrates the complexity of the phenomenon and the likely impact of different institutional practices and characteristics on degree outcomes. Most debate about grade inflation is based on high-level interpretation of the trend in the increasing proportion of first and upper second classifications. Further evidence at sector and institutional level only accounts for externally observable input variables that do not account for improvement activity 'inside' the institution.

19. These conditions relate to quality, reliable standards and positive outcomes for all students.

Universities have well-developed quality assurance systems and strong systems of academic governance that maintain the quality of academic programmes and the teaching on offer to students. Institutions have external examining and their own internal processes and data to calibrate marking practices alongside evidence from internal assurance process that can help to demonstrate improvements. However, there is legitimate debate about whether or not these systems are effectively calibrating academic standards and classification.

The concern about the uplift in grades is an issue of public confidence. Universities have to be mindful of the potential perception of a conflict of interest associated with both teaching students and awarding their qualification. In the quality and regulatory frameworks of each of the UK nations, there are growing expectations on governing bodies to monitor outcomes data and provide public assurances to funders and regulators. Building on these arrangements, institutions should review how existing quality assurance processes, including external examining arrangements, can address this.

As part of this process, it will be important for institutions to consider what measures they have in place for interrogating institutional data in relation to degree outputs. In particular, there would be merit in ensuring that this data is transparent for the purposes of public accountability, including across the sector itself. This would also have the benefit of increasing the evidence available to make the case for improvement, while also potentially identifying risky trends. Areas that could be considered by an institutional review of evidence include the following:

- institutional grade profile and the relationship between degree outcomes and entry qualifications and other student characteristics, including comparison against sector norms
- activities undertaken to ensure marking consistency and transparency and the impact of degree algorithms, including interrogation and explanation of the relationship to sector norms
- equalities assessment of the differences in outcomes by student backgrounds and the potential impact of academic regulations, assessment practices and university decisions
- summary of the overall process of academic boards, including academic appeals and special circumstances and external examiner appointments

This data should be considered and published as a degree outcomes statement (or equivalent, depending on national quality arrangements), to enable reasonable comparison. The review of evidence should aim to demonstrate that external accountability requirements were appropriate and form part of existing academic and institutional governance arrangements. The review and outcomes statement or equivalent should include appropriate external assurance at governance level to evaluate trends and identify risks. External assurance may be taken forward through existing national external review arrangements or by integrating appropriate external advice at governance level.

The external examiner system will continue to be the foundation for ensuring an effective and fair examination system. However, the current external examining system will not be an answer on its own. It will be necessary to ensure that examiners are properly supported in their roles to enable them to assess and challenge practice where necessary to protect the value of qualifications. This should be supported by a clear commitment by higher education providers to actively support the professional development of external examiners, including the following:

- **Providing** external examiner training to staff, referenced against common sector expectations, broadly commensurate with the number of external examiners used by the institution
- **Supporting** opportunities for external examiners and academic staff to participate in subject-specific calibration activities
- **Reiterating** steps to protect the independence of external examiners, including the process for appointment, dismissal and conflicts of interest of appointed examiners, and how transparent these processes are

CLARIFYING DEGREE CLASSIFICATION ALGORITHMS

Autonomous universities should retain full control over how students are assessed and classified.

There are legitimate pedagogical debates about the design of classification processes, and algorithms should not be interpreted in isolation from a university's curriculum. Simple comparisons of the results that are produced by algorithms do not account for dependent student and staff behaviour or differences between subjects. Furthermore, cases should be considered in relation to potential differential effects on different groups of students.

The design of degree algorithms does, however, highlight a debate about what is considered legitimate academic practice. There is a trend toward increasing the consistency of algorithms within institutions, based on concerns that students studying at the same institution may perceive differences in classification algorithms as unfair. While this principle does not apply between institutions, there is a risk that an overly diverse range of designs could undermine wider confidence in the consistency and integrity of practice across the sector.

In this context, the sector should review what is considered acceptable practice and avoid that which could, if allowed to develop and proliferate, start to undermine shared classification threshold conventions. Without a settled view of what is appropriate, there is no way of identifying practice that undermines the integrity of the classification system. This represents a potential systemic risk in a competitive system that is driven by student choice and information.

The two areas of concern that have been highlighted as potentially problematic are discounting on modules and zones of consideration (UUK 2017a). The statement of intent should include a commitment by universities to publishing and explaining the design of degree algorithms, including reference to the following decisions:

- weighting and inclusion of marks at different levels
- where an arithmetic mean is being supplemented by a modal share of marks
- where PSRB requirements have influenced the design for programmes

In addition, there would be merit in a sector dialogue about certain elements of algorithm design to protect the value of the common classification system. This should not be confused with or undermine provision for students with mitigating or special circumstances. As part of the publication and justification of algorithm design, universities individually and the sector collectively should consider whether (and if so, when) it is appropriate to:

- use '**zones of consideration**' to upgrade a student's final classification algorithm, and how and when raw or rounded marks can be used
- '**discount**' modules through compensation or condonement, especially for compulsory modules or modules that are core to the learning outcomes of a degree

CALIBRATING ASSESSMENT CRITERIA

Fair and transparent academic assessment of student attainment should be at the heart of any steps to address the long-term challenge of managing grade inflation.

However, this presents a complex and sensitive issue in a diverse and autonomous sector that rightly places a high value on academic freedom. Assessment of students is fundamentally linked to curricula and high-level learning outcomes, at the heart of which is expert academic judgement. Furthermore, it is essential that students are assessed against clear, upfront and stretching criteria and not against the performance of their peers.

Universities already have quality assessment processes in place to maintain academic standards, including the external examiner system. However, there may be a need to further develop practice to address concerns about inflation and to aid calibration in the context of improving student attainment, ensuring that challenge and stretch within marking criteria continue to reflect levels of student ability as this improves. Any measures must be embedded within an institution's own quality assurance and curriculum development processes. Furthermore, any calibration of assessment practice across the sector must be focused on disciplines.

Ultimately, decisions about how to set and align academic standards are the responsibility of individual institutions, but should include consideration of:

- shared use of sector qualifications frameworks in curricula design and academic judgement, including by external examiners, that includes a shared description of the degree classification system that helps to ensure academic stretch for students
- the use of data in institutional quality assurance and calibration practices, including using of common sector data and benchmarks to inform and calibrate quality assurance processes
- support to develop assessment and grading practice for all academic staff, including teaching assistants and doctoral students, and ensuring judgements are free from bias and not linked to performance criteria
- the role of external examiners in protecting the value of qualifications in the development of academic regulations or course development to help inform the design of assessment

To support this work, it will be necessary to:

- work with HESA to enable comparable analysis of common data, including the development of a shared sector metric on degree outcomes, that can help inform an institution's judgement about its own grade profiles and internal quality assurance practices. Any metric would necessarily operate at subject level and account for relevant input variables and student characteristics such as:
 - prior student attainment
 - student characteristics
 - subject mix
 - spend on academic services
- agree a shared description of the degree classification system and criteria that can act as a reference point for practice and be appended to national qualifications frameworks. A draft description has been developed on behalf of the UKSCQA by QAA for consultation with the sector. In England, this description should be adopted by the OfS as part of the 'sector recognised standards' set out in section 13 of the Higher Education and Research Act 2017.
- work with Advance HE to review how external examiner training packages can continue to be developed in the future and how their contents can be mapped against the UK Professional Standards Framework (UKPSF) to enable recognition of professional development of assessment and marking practices ()

BOX 6: CALIBRATION OF JUDGEMENT

The Advance HE project on external examining is exploring ways of supporting calibration of external examiner judgement. In addition, to a more consistent understanding of the role through training and development the work is exploring calibration of judgement through subject level communities of practice. Emerging findings from this work suggest the following.

- The conclusion of previous studies that the inability of external examiners to apply standards consistently is a key weakness of the current system is a commonly held view. Further impetus and resources are needed if the weaknesses are to continue to be addressed.
- While there has been some progress at regional levels and in certain subjects, it is not clear how sustainable or scalable these initiatives are to date as they tend to rely on enthusiastic individuals.
- The social moderation processes may have had some benefit in uniting those involved in a standard which was more widely shared, although the impact on practice is not yet proven and more sustained activities with an evaluation strategy will be needed to test the efficacy of this method for strengthening comparability.
- There is potential for relatively small-scale workshop events to have a big impact in highlighting the issues among subject communities and generating enthusiasm for calibration activities to continue and be driven within the existing networks.

PUBLIC ACCOUNTABILITY AND INCENTIVES

The operating environment for universities is also likely to shape institutional practice.

In England, there is an active policy agenda of encouraging market competition to drive institutional performance and activity, which, allied with the role of league tables, creates incentives to increase the proportion of upper degrees. Commensurate policy agendas focused on good teaching, student satisfaction and the closing of attainment gaps are all likely to increase the proportion of upper degrees. Institutions must balance competing, sometimes contradictory, steers.

It is appropriate to consider the wider environment for universities and the consequences of inadvertent incentives and indirect impact on behaviours that may drive the proportion of upper degrees upwards. The UK system rightly has a commitment to providing appropriate information to students to help inform their study choices; any proposals should not seek to undermine this principle. Nevertheless, the following steps should be considered:

- **Removing** degree outcomes from league-table ranking algorithms, but continuing to present the data on degree outcomes to ensure that students are fully informed about the teaching and learning on offer at an institution and the outcomes of prior students
- **Reviewing** at the national levels how higher education providers work with regulators, funders and/or QAA and the TEF to maintain confidence in the sustainability of the UK's degree classification system. This would include the sharing, review and interpretation of degree outcomes statements or equivalent to assess and address potential risks

These recommendations do not include tolerance bands for rates of increase or the overall distribution of classifications being awarded by an institution. Tolerance bands would establish a notional idea of the right or expected distribution. While some institutions do use this type of approach to smooth award profiles prior to their release, this would be a substantial change in practice for the vast majority of higher education institutions. The crude setting or interpretation of tolerance bands would risk undermining subject diversity and deterring enhancement activity focused on the genuine improvement of student attainment.

There is a risk that steps that serve to fix grade distributions at a point in time may disadvantage institutions or students studying different types of subjects based on past practices. However, a debate about normalised distributions is unlikely to produce a productive answer to the challenge of ensuring that degree classifications are reasonably consistent, transparent or fair. Rather, the challenge for individual institutions and the sector as a whole is to be confident in the academic judgements and supporting processes that produce classification outcomes.

STRUCTURE OF THE DEGREE CLASSIFICATION SYSTEM

This report is primarily focused on the issue of grade inflation, which comprises a complex array of issues, and includes the possibility of inflation in both marking and degree classification.

The measures identified above are intended to provide a foundation for managing the risks associated with the uplift in upper and first-class degrees, and inflationary dynamics. The recommendations also start to examine how calibration of academic judgement can be developed in the context of improving student attainment.

However, these recommendations may not provide a long-term resolution to the sustainability of the degree classification system in the context of improving student attainment. In a criteria-based approach, it is possible that all students can get a first. However, this would undermine the usefulness of the degree classification system and would signal that the criteria being employed by an institution are no longer sufficiently stretching for students.

This highlights the risks associated with the sustainability and usefulness of the degree classification system for differentiating student attainment and accurately measuring graduate ability. In this context, there is merit in setting up a sector ‘task and finish group’ to review the following:

- whether or not there is merit in providing graduates with more information about the results of their study, including a full transcript and, for example, a cohort ranking alongside the standard degree classification where possible, and the ongoing role of the higher education achievement report (HEAR) in providing this information and its use by employers and institutions
- engaging with employers about the expectations associated with students receiving a lower second or third classification or a pass/ordinary degree and cohort ranking. This could include how to support students to articulate their own learning from a course through sector qualification frameworks and shared description of degree classification
- reviewing the merits of a new classification structure, such as a new top classification, potentially referred to as a starred first, or alternative grading structures. This could be advanced either as a defined mark band (for example, a mark of 80 or more) or through a ‘norm-referenced’ measure, such as for the top third of the current band of firsts. Any measure would have to account for the risks associated with undermining the qualification of previous cohorts and shifting marking up the scale.

CONCLUSIONS

This report has examined the factors that have contributed to the uplift in upper awards over time.

However, the evidence presented in this study is not conclusive evidence of either inflation or improvement. It is nearly impossible to demonstrate concretely one way or another. Any reliable methodology would be beyond the capacity and resource of a single project. Furthermore, it would still rely on contentious interpretation of student attainment against the breadth and depth of curricula, teaching and assessment methods and the judgement of student work.

Nevertheless, the report concludes that the upward trend in itself creates a risk that degree classifications will become less useful to students and employers and may undermine wider confidence in the value of higher education. Furthermore, it finds that there is likely to have been a system-wide inflationary dynamic that has contributed to the increase in upper classifications over time. The report has identified practices that are likely to have contributed to this uplift and that may undermine the sustainability and confidence in degree classifications.

The report calls for a clear statement of intent by higher education institutions to address the challenge of grade inflation. Universities should actively, openly and self-critically consider risks in relation to the value of their qualifications through the interrogation and publication of evidence and practice. This should be supported by clear action in the areas outlined by the report within a year of this publication. This process should aim to protect public confidence in the integrity of the honours degree classification system.

The statement of intent should represent a concerted, sector-wide commitment to protect the value of qualifications over time. This commitment should be founded on a review of existing arrangements and practices that are in place to protect academic standards and the integrity of degree classification. However, the statement of intent should support a collective tightening of practice to ensure that the welcome enhancement of teaching and learning does not come at the expense of the integrity, sustainability and value of the honours degree classification system.

At the heart of any work taken forward by higher education institutions should be an active engagement with students and employers to examine what is needed from the degree classification system. This should include how students and employers understand and use degree classifications and how the honours degree classification system can remain relevant and useful into the future. However, while it is essential to address these questions, institutions should build on clear action to ensure the consistency, fairness and sustainability of the current classification system.

In summary, this report recommends that higher education institutions make a statement of intent to protect the value of qualifications over time by:

- **Publishing** analysis of institutional degree outcomes, supported by appropriate external assurance, in a 'degree outcomes statement' or equivalent.
- **Publishing and explaining** the design of the degree classification algorithm, including where it deviates from accepted norms of practice.
- **Ensuring** that assessment criteria meet and exceed sector reference points and reviewing the use of data in quality assurance processes.
- **Supporting** the professional development of academics working as external examiners to help maintain standards and the value of qualifications.
- **Reviewing** the structure of the degree classification system to ensure that it remains useful for students and employers.

The statement should be taken forward through a UK-wide consultation by UKSCA, including appropriate national approaches and variations. The consultation should aim to establish a common framework for taking forward the statement including:

- a framework for institutional review of practice and data
- common principles for algorithm practice
- a shared sector metric on degree outcomes
- recognition of a common description of degree classification criteria
- terms of reference for a review of the classification system
- a timeline for action

BIBLIOGRAPHY

Advance HE (2018) Degree Standards Project Briefing available at: www.heacademy.ac.uk/project-section/degree-standards-project-briefing-january-2018

Allen D (2018a) The use of differential weighting and discounting in degree algorithms and their impact on classification inflation and equity: A further analysis. *University of the West of England – Economics Working Paper Series No. 1803* available at: www1.uwe.ac.uk/bl/research/bcef/publications.aspx

Allen D (2018b) Degree algorithms, grade inflation and equity: the UK higher education sector. *University of the West of England – Economics Working Paper Series No. 1801* available at: www1.uwe.ac.uk/bl/research/bcef/publications.aspx

Aronin S and Smith M (2016) ‘One in four students suffer from mental health problems’. YouGov Press release 9 August available at: <https://yougov.co.uk/topics/education/articles-reports/2016/08/09/quarter-britains-students-are-afflicted-mental-hea>

Bachan R (2018) The drivers of degree classifications. UKSCQA-commissioned analysis. Available at: <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2018/drivers-of-degree-classifications.pdf>

Baker S (2018) Is grade inflation a worldwide trend? available at: <https://www.timeshighereducation.com/features/grade-inflation-worldwide-trend>

Barrow M, Reilly B and Woodfield R (2009) The determinants of undergraduate degree performance: how important is gender? *British Educational Research Journal* 35(4): 575–597

Belotti F, Daidone S, Bardi G and Atella V (2012) Stochastic frontier analysis using Stata. *CEIS Research Papers* 251: Tor Vergata University

Benton T and Sutch T (2014) *Analysis of use of key stage 2 data in GCSE predictions*. np: ARD Research Division/Ofqual available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/429074/2014-06-16-analysis-of-use-of-key-stage-2-data-in-gcse-predictions.pdf

Boretz E (2004) Grade inflation and the myth of student consumerism. *College Teaching* 52(2): 42–6

Burgess Group (2007) *Beyond the honours degree classification: The Burgess Group final report* London: Universities UK

CBI (2018) *Educating for the modern world*. London: Confederation of British Industry available at www.cbi.org.uk/insight-and-analysis/educating-for-the-modern-world/

Complete University Guide (2013) University League Tables 2013 available at: www.thecompleteuniversityguide.co.uk/league-tables/rankings?y=2013

CUC (2018) *The Higher Education Code of Governance: Revised 2018*. Bristol: Committee of University Chairs available at: www.universitychairs.ac.uk/wp-content/uploads/2018/06/HE-Code-of-Governance-Updated-2018.pdf

DfE (2017) *Teaching excellence and student outcomes framework specification*. London: Department for Education available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/658490/Teaching_Excellence_and_Student_Outcomes_Framework_Specification.pdf

DfE (2018a) Education standards continue to rise at GCSE and A level. Press release 25 January available at: www.gov.uk/government/news/education-standards-continue-to-rise-at-gcse-and-a-level

DfE (2018b) Statistics: 16 to 19 attainment. Data collection series available at: www.gov.uk/government/collections/statistics-attainment-at-19-years

Dubey P and Geanakopolos J (2010) Grading exams: 100, 99, 98,... or A, B, C? *Games and Economic Behavior* 69(1): 72–94

Greene W (2005) Fixed and random effects in stochastic frontier models. *Journal of Productivity Analysis* 23(1): 7–32

HE Academy (2016) *The relationship between HEA fellowship and student engagement*. York: HE Academy available at: www.heacademy.ac.uk/system/files/downloads/ukes_and_he_a_fellowship_correlation_march_2016.pdf

HEFCE (2003) Schooling effects on higher education achievement. *Issues paper 2003/32*. Bristol: Higher Education Funding Council for England available at: http://webarchive.nationalarchives.gov.uk/20120118175653/http://www.hefce.ac.uk/pubs/hefce/2003/03_32.htm

HEFCE (2014) *Differences in degree outcomes: key findings 2014/03*. Bristol: Higher Education Funding Council for England available at: <http://webarchive.nationalarchives.gov.uk/2018032211443/http://www.hefce.ac.uk/pubs/year/2014/201403/>

HEFCE (2018) *Differences in student outcomes: The effect of student characteristics*. Bristol: Higher Education Funding Council for England available at: www.hefce.ac.uk/media/Hefce%202014/Content/Pubs/2018/201805/Hefce2017_05.pdf

HESA (2018a) Figure 17 – Percentage of first degree qualifiers obtaining each classification 2012/13 to 2016/17 available at: www.hesa.ac.uk/data-and-analysis/sfr247/figure-17

HESA (2018b) Table 17 – HE qualifiers by subject of study and level of qualification obtained 2016/17. Higher Education Student Statistics UK 2016/17 available at: www.hesa.ac.uk/data-and-analysis/students/table-17

HESA (2018c) *Student Record 2016/17*

HESA (multiple years) *Student Record*

Hindmarsh A (2018) Are degree standards the same at all universities? HEPI blog available at: www.hepi.ac.uk/2018/07/02/degree-standards-universities

Hoare A and Johnston R (2011) Widening participation through admissions policy – a British case study of school and university performance. *Studies in Higher Education* 36(1): 21–41

House of Commons Innovation, Universities, Science and Skills Committee (2009) Chapter 5: Standards. Eleventh Report available at: <https://publications.parliament.uk/pa/cm200809/cmselect/cmdius/170/17008.htm>

Johnson J (2017) Speech to UUK annual conference. London: Department for Education available at: www.gov.uk/government/speeches/jo-johnson-speech-to-uuk-annual-conference

- Jondrow J, Lovell K, Materou I and Schmidt P (1982) On the estimation of technical efficiency in the stochastic frontier model. *Journal of Economics* 19(2–3): 233–238
- Krautmann A and Sander W (1999) Grades and student evaluations of teachers. *Economics of Education Review* 18: 59–63
- Kuh G and Hu S (1999) Unraveling the complexity of the increase in college grades from the mid-1980s to the mid-1990s. *Educational Evaluation and Policy Analysis* 21(3): 297–320
- Lasselle L, McDougall-Bagnall J and Smith I (2014) School grades, school context and university degree performance: Evidence from an elite Scottish institution. *Oxford Review of Education* 40(3): 293–314
- Morley L, Eraut M, Aynsley S, MacDonald D and Shepherd J (2006) *Needs of employers and related organisations for information about quality and standards of higher education* – Report to Hefce by the University of Sussex School of Education. Falmer: University of Sussex available at: http://webarchive.nationalarchives.gov.uk/20100303155224/http://www.hefce.ac.uk/pubs/rereports/2006/rd20_06/
- NUS (2014) *Mental distress in HE*. London: National Union of Students available at: www.nusconnect.org.uk/resources/mental-distress-in-he-social-policy-briefing--2
- Ofqual (2017) Setting grade 9 in new GCSEs. Ofqual blog 5 April available at: <https://ofqual.blog.gov.uk/2017/04/05/setting-grade-9-in-new-gcse/>
- OfS (2018) National Student Survey NSS Get the NSS data available at: www.officeforstudents.org.uk/advice-and-guidance/student-information-and-data/national-student-survey-nss/get-the-nss-data/
- Ogg T, Zimdars A and Heath A (2009) Schooling effects on degree performance: A comparison of the predictive validity of aptitude testing and secondary school grades at Oxford University. *British Educational Research Journal* 35(5): 781–807
- QAA (2014) *The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies*. Gloucester: Quality Assurance Agency available at: www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf
- Rojstaczer S (2018) Gradeinflation.com available at: www.gradeinflation.com
- Rosovsky H and Hartley M (2002) *Evaluation and the academy: are we doing the right thing?* Cambridge, MA: American Academy of Arts and Sciences
- Sherwood D (2014) Yes, the ‘race to the bottom’ is real. Presentation to UK Chapter of the System Dynamics Society Annual Conference 2014, London School of Economics 3–4 April available at: <http://systemdynamics.org.uk/wp-content/uploads/2014-Day1-Sherwood-Script.pdf>
- Sonner B (2000) A is for ‘Adjunct’: examining grade inflation in higher education. *Journal of Education for Business* 76(1): 5–8
- SQA (2018a) Statistics 2018 Statistical qualification reports. Glasgow: Scottish Qualifications Authority available at: www.sqa.org.uk/sqa/63001.8312.html
- SQA (2018b) Statistics archive. Glasgow: Scottish Qualifications Authority available at: www.sqa.org.uk/sqa/57518.8313.html
- Stubbs B (2018) Student performance analysis: National percentage figures for A level grades available at: www.bstubbs.co.uk/a-lev.htm
- Thorley C (2017) *Not by degrees: Improving student mental health in the UK’s universities*. London: IPPR available at: www.ippr.org/publications/not-by-degrees
- Tomlinson M (2014) *Exploring the impact of policy changes on students’ attitudes and approaches to learning in higher education*. York: HE Academy available at: www.heacademy.ac.uk/system/files/resources/exploring_the_impact_of_policy_changes_student_experience.pdf

Turnbull S (2018) *A guide to UK league tables in higher education*. Oxford: HEPI available at: www.hepi.ac.uk/wp-content/uploads/2018/01/HEPI-A-Guide-to-UK-League-Tables-in-Higher-Education-Report-101-EMBARGOED-4-JAN-2018.pdf

UUK (2017a) *Understanding degree algorithms*. London: Universities UK available at: www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2017/understanding-degree-algorithms.pdf

UUK (2017b) *Education, consumer rights and maintaining trust: what students want from their university*. London: Universities UK available at: www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/what-students-want-from-their-university.aspx

Wolfe J and Powell E (2014) 'Engineering beats you up': problems with relying on the bell curve. Presentation to the 122nd ASEE Annual Conference and Exposition 15–18 June, Indianapolis available at: <https://peer.asee.org/engineering-beats-you-up-problems-with-relying-on-the-bell-curve>

Woodfield R and Earl-Novell S (2006) An assessment of the extent to which subject variation between the arts and sciences in relation to the award of a first class degree can explain the 'gender gap' in UK universities. *British Journal of Sociology of Education* 27(3): 355–372

Ylonen A, Gillespie H and Green A (2018) Disciplinary differences and other variations in assessment cultures in higher education: exploring variability and inconsistencies in one university in England. *Assessment and Evaluation in Higher Education* 43(6): 1009–1017

Yorke M (2008) *Grading student achievement in higher education: signals and shortcomings*. London: Routledge.

ANNEXE A: ORGANISATIONS CONSULTED IN THE DEVELOPMENT OF THIS REPORT

This report has been developed with the input of a range of individuals from across the sector, for which the report's authors are grateful.

In addition, the following organisations have provided input into this work but do not necessarily endorse the findings and proposals set out in this report:

- Academic Registrars Council
- Association of Heads of University Administration
- CBI
- Centre for Recording Achievement
- Civitas Learning
- GuildHE quality managers and students' unions network
- HEFCW quality assessment conference
- Higher Education Strategic Planners Association
- Institute for Student Employers
- QAA annual conference
- QAA student advisory forum
- Quality and Standards Network
- UK Standing Committee for Quality Assessment.
- Universities Scotland Learning and Teaching Committee
- UUK Board and Student Policy Network

ANNEXE B: INPUT MODELLING METHODOLOGY

The data used in the primary analysis is compiled at the institution level from the HEIDI Plus database and covers the academic years from 2007/8 to 2016/17 inclusive, giving a 10-year timeframe.

The sample includes all UK universities, but excludes postgraduate institutions, the Open University and specialist universities and colleges of the arts, medical schools and institutes, and small institutes of the University of London and University of Wales. These institutions are omitted due to the nature of the degrees undertaken and their atypical student intake. Moreover, relevant data is not available for many of these institutions over the sample period, partly due to mergers and the reporting requirements of UK higher education agencies. In total, 128 UK universities are included in the sample, providing 1,280 observations.

Regression techniques are used while the estimating equations are specified in terms of an educational production function, ie, universities use 'inputs' to transform 'raw materials' into 'outputs'. The 'output' is the proportion of upper or first-class honour degrees awarded as a proportion of all classifications (dependent variable).

The modelling technique adopted (true random effects stochastic frontier) allows an estimate of 'unexplained' changes in degree outcomes, controlling for student 'quality' measured by UCAS score (raw material) and university inputs (staff–student ratio, and expenditure on student services and facilities). It also allows for changes in university efficiency to enter the analysis (ie, an institution's ability to 'transform' students into graduates using available resources).

Universities are assumed to be operating within a production 'frontier', but they cannot operate above it. The error term in the regression model contains two elements. The first, is a 'classical' disturbance that captures measurement error and other classical 'noise'. The second component is a one-sided disturbance (half normal) which is used to capture efficiency using the transformation suggested by Jondrow et al (1982).

The 'unexplained' change in degree outcomes over time is accounted for by time- or year dummy variables. If statistically significant, they provide evidence suggestive of other factors being involved in affecting the distribution of classification awards, beyond the 'input' variables and 'raw materials' used, in the year in question. Given the logarithmic form of the models, the coefficients on the year dummies are presented for interpretation in terms of percentage-point changes using the sample mean for first-class and upper degrees.

The models estimated in the primary analysis are parsimonious in nature and include a small set of variables including average UCAS entry score and the expenditure variables noted above. In subsequent analysis, the models are augmented to include other performance determining variables such as the subject studied and student characteristics including: gender, previous school, ethnicity, domicile, socio-economic group and the nature of their higher education participation areas.

A 'true' (university) random effects estimator (TRE) is used in that it allows for time varying university inefficiency to be separated from cross-section university heterogeneity (see Greene, 2005; Belotti et al 2012 for detail). The basic model can be expressed as:

$$g_{it} = (\alpha + \omega_i) + \beta' X_{it} + \sum_{t=2}^T \gamma_t D_t + V_{it} - U_{it} \quad i = 1, 2, \dots, N \quad t = 1, 2, \dots, T$$

$$V_{it} \sim \text{NID}(0, \sigma_v^2) \quad \text{and} \quad U_{it} \geq 0 \quad \text{where} \quad U_{it} \sim N^+(0, \sigma_u^2)$$

where: g_{it} is the natural logarithm of the percentage of upper degrees awarded by the i^{th} institution at time t ; X_{it} is a $k \times 1$ vector of performance determining variables. Specifically, the vector X_{it} includes variables that describe graduate/institution specific characteristics in the i^{th} university at time t . Time-specific dummies (D_t) are used to capture exogenous factors that affect all universities in their award of upper degrees that are independent from changes in university efficiency. The unknown parameters α , ω_i , β , and γ_t are estimated using simulated maximum likelihood techniques. In this specification ω_i is a random effect and captures variation due to unobserved university-specific heterogeneity not associated with university-specific variation in efficiency.

ANNEXE C: STATISTICAL METHODS FOR INVESTIGATING THE EFFECT OF GRADE INFLATION ON STUDENT SUCCESS

This section outlines alternative potential analytical models for examining the influence of grade inflation on student success and to ascertain the relationship between grade inflation and learning outcomes metrics if available. This overview of potential models has kindly been provided by Civitas Learning.

TERMS

We define a few terms first:

- **Features:** Features are generally derived over raw data elements over time through data processing. For example, GPA trend is the slope of term GPA over terms.
- **Non-stationarity:** Data or feature characteristics change over time. Non-stationarity metrics include availability, overall distribution, student success-dependent distribution, and feature importance.
- **Risk-adjusted outcomes:** In healthcare, we can predict patient health outcomes before treatment, given all the available information. When treatment alters the patient health outcomes after some time period, and if this difference is consistent over multiple patients who go through the same treatment, we can calculate patient risk-adjusted health outcomes of the treatment. In this context, treatment = grade inflation.

METHODOLOGY OPTIONS

Potential detection algorithms in the order of complexity include the following:

DETECTION ALGORITHM	ALGORITHM DESCRIPTION
Non-stationarity test of grade-related derived features	If there is grade inflation, grade-related feature distributions and their importances (predictive power) will change over time. Using historical time-series data on grades, we can compute overall and student success-conditional probability density function (PDF) metrics over time using Fisher's discriminant ratio (Sharpe ratio), multi-modal overlap measure, divergence measure, or Bhattacharyya distance, as well as correlation.
Incoming student quality adjusted grade outcomes	Residual statistics between model predictions and actual outcomes can be used for detection. For example, we can build a well-calibrated model to predict term GPA on day 0 and then see how actual term GPAs are different from the predicted mean for overall and various groups of students, such as by college, department, modality or experience. Such drill-downs into risk-adjusted outcomes metrics can help us see whether grade inflation is spread out or concentrated. Prior academic performance features can be included or excluded from the models, depending on the level of nonstationarity in grade-related features over time.

Faculty influence measures

Grade inflation can be faculty dependent. While we stay away from faculty analytics in general, it will be interesting to quantify faculty influence on the grades of current courses and related future courses that lie in the requirements requisite graph. Conceptually, we are investigating student performance in requisite-connected courses grouped by faculty. In the simplest term, how do students who received grade A in Calculus 101 taught by Professor JD compare in Calculus 2 to those who also received grade A in the same course taught by Professor KI?

Once grade inflation is detected reliably, we can then perform impact analysis on grade inflation using observational studies, such as prediction-based propensity score matching (PPSM) or Mahalanobis distance matching (MDM) with prediction adjustment. Both matching algorithms identify comparable control students who do not experience grade inflation to pilot students who do at baseline. By controlling for the many factors of student success, we can attribute any difference in future student success outcomes to grade inflation. This phase-2 investigation will help us determine the impacts of grade inflation on grades in subsequent courses, student satisfaction, persistence and completion.

For further information, please contact the authors of this annexe **David Kil**, Chief Data Scientist and **Chris Greenough**, Director of Data Engineering.

ANNEXE D: BORDERLINE PRACTICES EXERCISE FOR PILOT USING THE FULL MARKING RANGE

	BORDERLINE RULE	CALCULATION
1	No rounding	1st ≥ 70 2.1 ≥ 60 2.2 ≥ 50 3rd ≥ 40
2	Rounding	1st ≥ 69.5 2.1 ≥ 59.5 2.2 ≥ 49.5 3rd ≥ 39.5
3	Rounding + modal	1st $\geq 69.5 + 50\%$ of modules ≥ 70 2.1 $\geq 59.5 + 50\%$ of modules ≥ 60 2.2 $\geq 49.5 + 50\%$ of modules ≥ 50 3rd $\geq 39.5 + 50\%$ of modules ≥ 40
4	1pt + rounding + modal	1st $\geq 68.5 + 50\%$ of modules ≥ 70 2.1 $\geq 58.5 + 50\%$ of modules ≥ 60 2.2 $\geq 48.5 + 50\%$ of modules ≥ 50 3rd $\geq 38.5 + 50\%$ of modules ≥ 40
5	2pts + rounding + modal	1st $\geq 67.5 + 50\%$ of modules ≥ 70 2.1 $\geq 57.5 + 50\%$ of modules ≥ 60 2.2 $\geq 47.5 + 50\%$ of modules ≥ 50 3rd $\geq 37.5 + 50\%$ of modules ≥ 40

Universities UK is the collective voice of 137 universities in England, Scotland, Wales and Northern Ireland. Our mission is to create the conditions for UK universities to be the best in the world; maximising their positive impact locally, nationally and globally. Universities UK acts on behalf of universities, represented by their heads of institution.

This publication and accompanying research was conducted by Universities UK, GuildHE and the Quality Assurance Agency on behalf of the UK Standing Committee for Quality Assessment. The UK Standing Committee for Quality Assessment provides sector-led oversight of higher education quality assessment arrangements that continue to be shared across the UK. The committee has members drawn from regulated providers in England and Wales, publicly-funded universities and colleges in Scotland and Northern Ireland, and providers currently designated for student support by the Secretary of State in England. Student interests are represented by both the National Union of Students and individual student members. Membership is also drawn from the four UK higher education funding/regulatory bodies, sector bodies and regulatory partners.

Woburn House, 20 Tavistock Square,
London WC1H 9HQ

TEL +44 (0)20 7419 4111

EMAIL info@universitiesuk.ac.uk

WEBSITE www.universitiesuk.ac.uk

TWITTER @UniversitiesUK

November 2018

ISBN 978-1-84036-415-6

