METHODOLOGY FOR *WALL STREET JOURNAL TIMES HIGHER EDUCATION* COLLEGE RANKINGS 2019

September 2018
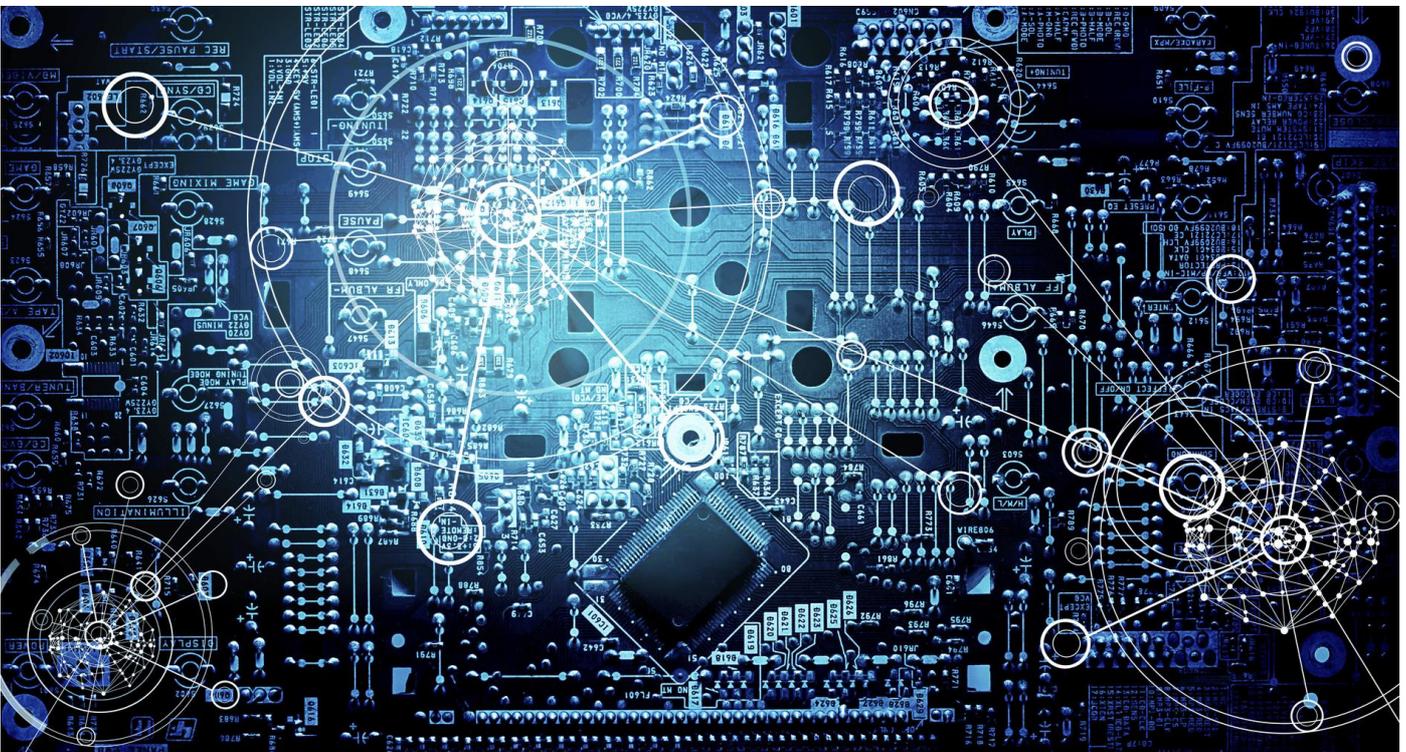
Directors' statement:

*This document (the "Methodology") sets out our end-to-end process for generating the WSJ THE College Rankings 2019 (the "Rankings"). As directors and management of TES Global Limited, we state that we have followed our Methodology and correctly applied the "specific procedures" denoted by (i) - (vii) (highlighted in **<u>bold underlined italics</u>** throughout this document).*

Signed: ....

Print: .....TREVOR BARRATT

Role: ...MANAGING...DIRECTOR THE

Date: 03/09/2018

For and on behalf of TES Global Limited

WSJ THE College Rankings:

The *WSJ THE College Rankings*, prepared for the first time in 2016, aims to provide the definitive list of the best Colleges in the US, evaluated across four key pillars of Resources, Engagement, Output and Environment. Times Higher Education's (THE) data is trusted by governments and universities and is a vital resource for students, helping them choose where to study. The Rankings have been prepared by THE, owned by TES Global Limited, with input from the Wall Street Journal (WSJ), where they will be published.

Independent assurance by PricewaterhouseCoopers LLP:

To help demonstrate the integrity of the Rankings, our application of the specific procedures (i) - (vii) has been subject to independent assurance by PricewaterhouseCoopers LLP UK ("PwC"). Their independent assurance opinion on our application of specific procedures (i) – (vii) is set out on the page 14-15 of this document. The specific procedures (i) – (vii) relate to:

1) **Data and sources**
2) **Criteria for inclusion, exclusion and merging of Colleges**
3) **Calculation, scoring and ranking**
4) **Publication and reporting**

The specific procedures (i) – (vii) that have been independently assured by PwC are set out in the table on page 12.

Important links:
- Times Higher Education 2019 general rules --> https://www.timeshighereducation.com/terms-and-conditions
- WSJ THE College Rankings 2019 Rankings (WSJ) --> https://www.wsj.com/news/collection/college-rankings-2019-714fd054
- WSJ THE College Rankings 2019 Rankings (THE) --> https://www.timeshighereducation.com/rankings/united-states/2019
- WSJ THE College Rankings 2019 Methodology overview --> https://www.timeshighereducation.com/wall-street-journaltimes-higher-education-college-rankings-2019-methodology
- WSJ THE College Rankings 2019 Methodology and PwC assurance opinion (this document) --> https://www.timeshighereducation.com/world-university-rankings/wall-street-journal-times-higher-education-college-rankings-methodology

The WSJ THE College Rankings score Colleges across four key pillars that students usually judge as important when applying to College. These are:

- Resources: Does the College have the right resources?
- Engagement: Does the College engage its students?
- Output: Does the College produce good results?
- Environment: Does the College have a supportive environment?

We at THE use 15 carefully calibrated performance metrics, listed below, to provide comprehensive and balanced comparisons. The methodology makes use of data provided by the Integrated Postsecondary Education Data System (IPEDS), the College Scorecard (CSC), the US Federal Student Aid office (FSA), the Bureau of Economic Analysis, Elsevier and two THE–commissioned surveys gathering data on College reputation and student engagement.

Each of the metrics will be normalized and weighted according to relative importance within the final Rankings.

The 2019 WSJ THE College Rankings are published in autumn 2018.

The 15 performance metrics are grouped into four pillars:

- **Resources**
  - Finance per student
  - Faculty per student
  - Bibliometric indicator
- **Engagement**
  - Student engagement
  - Student recommendation
  - Interaction with teachers and faculty
  - Number of accredited programs (by Classification of Instructional Programs (CIP) code)
- **Output**
  - Graduation rate
  - Graduate salary (this metric is calculated as a value-added assessment of salary)
  - Loan default rates (this metric is calculated as a value-added assessment of 'non-default' rates i.e. the number of students who have not defaulted calculated by 100% minus the default rate)
  - Reputation
- **Environment**
  - Percentage of international students
  - Student diversity
  - Student inclusion
  - Staff diversity

1) Data and sources

- IPEDS data

The National Centre for Education Statistics, part of the Institute of Education Sciences within the US Department of Education, commissions annual inter-related surveys. There are 12 survey components collected on an annual basis, and completion of the survey is a manual requirement for all institutions that participate in federal financial assistance programs authorised by Title IV of the Higher Education Act (1965).

The IPEDS data used in the Rankings are from the 2016 files, released in 2108 (the latest available data).

- College Scorecard

The College Scorecard is prepared on an annual basis by the US Department of Education and includes information on student-debt and attendance-cost data, as well as on-time graduation rates, school size, and salary after attending. The latest available data was published on 13 January 2017.

- Federal Student Aid

An office of the Department of Education, it provides data on student loan default rates by College. The latest available data was published in September 2017.

- Bureau of Economic Analysis (BEA)

The BEA is part of the United States Department of Commerce and it collects and prepares data on national economic performance. The key data used in the Rankings is regional and local inflation rates, which allows the measurement of Regional Price Parity (RPP). For Colleges located in metropolitan statistical areas (MSAs), we have used an MSA-specific RPP. For Colleges located outside of MSAs, we have used state specific nonmetropolitan area RPP, from data released in 2018.

- Bibliometrics

The bibliometric data is supplied by Elsevier, and the indicator is calculated as the total scholarly output between 2013 and 2017, divided by number of instructional, research and public service full-time staff with faculty status, as provided by the IPEDS data.

- Reputation survey

An annual survey was sent to a sample of academics randomly selected by Elsevier asking them to nominate the most important universities for teaching and/or research in their field. For the 2017 – 2018 survey, academics were asked to nominate the top 15 Colleges for teaching and the top 15 Colleges for research. Only votes received from academics associated with US Colleges were included. In addition, respondents were asked to rank the top six Colleges for their resident country if not already in their top 15; these votes for US Colleges were added to the total.

The score for a College at the national level was the count of mentions they received in the teaching category from worldwide and country level mentions.

Votes from both the 2016 – 2017 and 2017 – 2018 surveys are used in this ranking.

- Student perceptions survey

THE commissioned Streetbees, an independent research organisation, to gain insight into the perceptions of currently enrolled students about their College, across any subject and level of study. The survey has been run three times: between June and August 2016, May and June 2017 and May and June 2018. The survey is distributed to Colleges by Streetbees or self-administered by individual institutions under THE guidelines. Data collected through either stream individually or the sum thereof must reach 50 responses for the College to be included.

Colleges with fewer than 50 respondents to the 2018 survey were excluded from the Rankings [i]

- Data adjustments

Survey variables used in the rankings are correlated and normalised against the total population, therefore taking action against one would impact on the others. THE on a case-by-case basis evaluated mitigating options where necessary:

- Following analysis of the error rates on samples we decided to rebalance the survey responses according to the correct gender balance identified in the IPEDS data set.
- To perform this we have reweighted the average scores for each College according to the average score by gender and the actual gender balance. In doing this we have not included in the rebalancing any responses that have no identified gender or where gender was stated as other – these are reincorporated without weighting.
- Data from last year's student survey was averaged together with the current year.

All student survey responses were gender-weighted according to the IPEDS data. [ii]

2) Criteria for inclusion, exclusion and merging of Colleges

a) Inclusion criteria
b) Merging of Colleges

2a) Inclusion criteria

Colleges must meet eleven criteria to be considered for inclusion in the Rankings [iii]:

i.   They must be Title IV eligible Colleges
ii. They must award 4-year Bachelor's degrees
iii. They must have appropriate Carnegie Basics classification
iv. They must be located within the 50 States of the United States of America, or the District of Columbia
v.   They must be an active post-secondary College, as defined by IPEDS
vi. They must have more than 1,000 students enrolled in undergraduate programs (or 800 if institution was ranked in prior year)
vii. They must have 20% or fewer exclusively online students (or 30% if institution was ranked in prior year)
viii. They must not be financially insolvent
ix. They must be accepting new undergraduate students (as per date of IPEDS data collection)
x.   They must not be a private for-profit institution
xi. Must have complete set of data points for ranking (however some institutions may have their data points provided separately by the college at THE management's discretion or in special cases a conservative estimate will be used)

In addition, in cases of a new institution ID, some institutions might fail a categorical criterion such as Carnegie because the correct classification has not yet been recorded for them: we will in this case identify their correct classification by assuming continuity with the previous institution ID's characteristics.

Note that if an institution still drops out this year, the normal thresholds will apply to them next year (in relation to criteria vi and vii).

We will also accept the United States service academies provided they are able to supply the necessary data.

2b) Merging of Colleges

The following pairs of Colleges have merged either because they have specifically requested to be ranked together, or because they have merged into one entity.

- Southern Polytechnic State University consolidated with Kennesaw State University: their 2016 IPEDS data is published under their new ID and as one entity; previous data is published under those two components, which were merged into 1 single entity
- Purdue University-North Central Campus and Purdue University-Calumet Campus merged to form Purdue University Northwest: their data was merged into one single entity
- Fairleigh Dickinson University-Metropolitan Campus and Fairleigh Dickinson University-Florham Campus: their data was merged into one single entity

A total of 968 Colleges had sufficient data to be included in the rankings and met the criteria defined above.

3) Calculation, scoring and ranking

a) Distribution analysis and re-weighting
b) Value-added graduate salary metric
c) Value-added salary repayment/default rate

3a) Distribution analysis and re-weighting

The 15 performance metrics representing four pillars are weighted according to the THE assessment of relative importance.

Once the final population of Colleges and indicators has been prepared, the scores for each College are generated by weighting the metrics [iv] according to the following percentage breakdowns:

1. Resources (30%)

- Finance per student: 11%
  This metric is the instruction and student services expenses per student, and is calculated as (instruction expenses + student services)/(FTE undergraduate + FTE graduate students), adjusted by local price index. This metric uses a logarithmic scale to incorporate outliers prior to normalisation.
- Faculty per student: 11%
  The student-to-faculty ratio is defined as total FTE students not in graduate or professional programs divided by total FTE instructional staff not teaching in graduate or professional programs. This metric is extracted directly from IPEDS data (inverse of the filed reported in IPEDS which is student to faculty ratio). This variable is normalised after calculation. We use a mean of a university's score for 2015 and 2016 data, as this is given as an integer in IPEDS and shows more year-on-year variance than variables present as floats.
- Bibliometric indicator: 8%
  This metric captures the number of papers per member of staff and is a measure of research presence. It is calculated as the total scholarly output between 2013 and 2017 (from Elsevier) divided by number of instructional, research and public service full-time staff with faculty status. This metric uses a logarithmic scale to incorporate outliers prior to normalisation.

2. Engagement (20%)

- Student engagement: 7%
  This metric is generated from the average scores per College (gender-weighted) from four questions on the student survey:
    - To what extent does the teaching at your university or college support CRITICAL THINKING?
    - To what extent did the classes you took in your college or university so far CHALLENGE YOU?
    - To what extent does the teaching at your university or college support REFLECTION UPON, OR MAKING CONNECTIONS AMONG, things you have learned?
    - To what extent does the teaching at your university or college support APPLYING YOUR LEARNING to the real world?
- Student recommendation: 6%
  This metric is generated from the average score per College (gender-weighted) from the following question on the student survey:
    - If a friend or family member were considering going to university, based on your experience, how likely or unlikely are you to RECOMMEND your college or university to them?
- Interactions with teachers and faculty: 4%
  This metric is generated from the average scores per College (gender-weighted) from two questions on the student survey:
    - To what extent do you have the opportunity to INTERACT WITH THE FACULTY and teachers at your college or university as part of your learning experience?
    To what extent does your college or university provide opportunities for COLLABORATIVE LEARNING?

- <u>Number of accredited programs (by CIP code)</u>: 3%

    This metric is IPEDS standardized number of Bachelor's degree programs offered (by 6-digit CIP code), and is calculated as (number of programs - mean[number of programs])/StdDev[number of programs] based on IPEDS data. This variable is normalised after calculation. We use a mean of a university's score for 2015 and 2016 data to account for any variation due to re-classification of programs.

3. Output (40%)

- <u>Graduation rate</u>: 11%

    This metric is 150% of the graduation rate status as of 31 August 2016 for the cohort of full-time, first-time degree/certificate-seeking undergraduates, Bachelor's or equivalent sub-cohort (4-year College), and is calculated as (Completers of bachelor's or equivalent degrees total (150% of normal time)/Adjusted cohort (revised cohort minus exclusions))*100 based on IPEDS data. This variable is normalised after calculation.

- <u>Graduate salary</u>: 12%

    This metric estimates the outcome of median earnings of students working and not enrolled 10 years after entry. The value-added component is the difference between actual and predicted (based on underlying student and College characteristics) outcomes. Further information is included in section 3b below.

- <u>Loan default rates</u>: 7%

    This metric estimates the outcome of the 3-year 'non-default' (1-default) rate from Federal Student Aid data. The value-added component is the difference between actual and predicted (based on underlying student and College characteristics) outcomes. Further information is included in section 3c below.

- <u>Reputation</u>: 10%

    This metric is the number of votes obtained from reputation survey, and is calculated as the number of US teaching votes from the reputation survey and the number of US-only teaching votes from country section of the reputation survey. This variable is normalised and rescaled across a 0.0 to 1.0 range. We use a total number of votes from the 2017 and the 2018 surveys.

4. Environment (10%)

Diversity measures represent the diversity of enrolled students (or faculty) across various ethnic groups; and are equivalent to the probability of selecting two students (or faculty members) at random who would belong to separate groups.

The index itself is calculated using the Gini-Simpson score (1 – sum of the squares of each group's proportion), which is higher for more diverse populations. We used the IPEDS data for both faculty and student diversity.

This data in both cases is divided into 9 groups: (1) American Indian or Alaska Native, (2) Asian, (3) Black or African American, (4) Hispanic or Latino, (5) Native Hawaiian or Other Pacific Islander, (6) White, (7) Two or more races, (8) Race/ethnicity unknown and (9) Non-resident alien. Groups 1 to 7 were used in the metric – 8 and 9 were excluded and subtracted from the total (the proportion of foreign students is used as the 'international student percentage' metric).

For student diversity, only students enrolled for undergraduate degrees were counted. There is a known challenge with Historically Black Colleges and Universities (HBCU) that may be addressed with a special exclusion. 43 of the Colleges are classed as HBCUs: to avoid disadvantaging them (as their diversity score might be low due to the low proportion of non-black students) we have given those the median rank of all College's diversity score if the College's original score is lower than this median. Following the same logic this process was also applied to Predominantly Black Institutions (PBI) (11 institutions) and Hispanic-serving Institutions (HIS) (89 institutions).

For faculty diversity, we used the total amount of teaching faculty regardless of their instructional faculty category.

- <u>International student percentage</u>: 2%

    This metric is the percentage of resident alien students (based on 12-month enrolment data), and is calculated as the number of resident alien students/total*100, based on IPEDS data. This variable is normalised after calculation.

- <u>Student diversity</u>: 3%

    This metric is Gini-Simpson score of student diversity. This variable is normalised after calculation.

- <u>Student inclusion</u>: 2%

This metric is the percentage of students who are the first in their family to attend College, and/or who are the recipients of Pell Grants. Where the 1st generation number if privacy-suppressed but the Pell Grants number exists, we impute the former based on the median value in the university's Carnegie class. The elements are normalised prior to averaging.

- Staff diversity: 3%
  This metric is Gini-Simpson score of staff diversity. This variable is normalised after calculation.

3b) Value-added graduate salary metric

The value-added component of this metric is the estimate of the difference between actual and predicted outcomes for median graduate salaries, based on IPEDS, College Scorecard and BEA data. American College Test (ACT) and Scholastic Aptitude Test (SAT) scores were imputed to create a robust data set where they were not available from independent data sources. Data sets from 2012, 2013, and 2014 were used to generate this metric as they are the most recent years with outcomes (salary) data.

3c) Value-added loan default rate

The value-added component of this metric is the estimate of the difference between actual and predicted outcomes for the non-default rates (1-default i.e. the number of students who have not defaulted calculated by 100% minus the default rate) of student debt. ACT and SAT scores were imputed to create a robust data set where they were not available from independent data sources. The data from the September 2017 FSA release (which contains data for the latest 3 years available; 2012, 2013 and 2014) was used to generate this metric, as they are the most recent years with outcomes (loan default) data.

4) Publication and reporting

a) Review of ranking outputs
b) Sign off by management

4a) Review of ranking outputs

Getting to the final result

Moving from a series of specific data points to metrics, and finally to a total score for a College, requires us to match values that represent fundamentally different data. To do this we use a standardisation approach for each indicator, and then combine the indicators in the proportions indicated below.

The standardisation approach we use is based on the distribution of data within a particular indicator, where we calculate a cumulative probability function, and evaluate where a particular College's indicator sits within that function. A cumulative probability score of X in essence tells us that a College with random values for that indicator would fall below that score X per cent of the time.

For all indicators except the student survey, we calculate the cumulative probability function using a version of Z-scoring.

Once the individual metrics have been created for each College, the results are combined into the overall rankings according to their relative weightings – this is the Final Rankings.

Metrics and Pillars are combined to calculate the Final Rankings. [v]

4b) Sign off by management

The Final Rankings results are reviewed and signed off by the editorial team. [vi]

The Final Rankings are formally signed off by management prior to being uploaded to the website.

The methodology for the Final Rankings are located on the Times Higher Education website at:
https://www.timeshighereducation.com/world-university-rankings/wall-street-journal-times-higher-education-college-rankings-methodology

The Final Rankings are accurately reported on the THE website. [vii]

Specific procedures subject to independent assurance by PwC

Procedure number	Methodology section	Description
(i)	Data and sources	Colleges with fewer than 50 respondents to the survey were excluded from the Rankings.
(ii)	Data and sources	All student survey responses were gender-weighted according to the IPEDS data.
(iii)	Criteria for inclusion, exclusion and merging of Colleges	Colleges must meet eleven criteria to be considered for inclusion in the Rankings.
(iv)	Calculation, scoring and ranking	Once the final population of Colleges and indicators has been prepared, the scores for each College are generated by weighting the metrics.
(v)	Publication and reporting	Metrics and Pillars are combined to calculate the Final Rankings.
(vi)	Publication and reporting	The Final Rankings results are reviewed and signed off by the editorial team.
(vii)	Publication and reporting	The Final Rankings are accurately reported on the THE website.

Appendix 1: Top 20 institutions in the Final Rankings from the WSJ THE College Rankings 2019

USCR 2019 rank	Institution name	Overall score
1	Harvard University	93.2
2	Massachusetts Institute of Technology	92.0
3	Yale University	90.9
4	Columbia University	90.8
5	California Institute of Technology	90.5
6	Stanford University	90.4
=7	Brown University	90.0
=7	Duke University	90.0
9	Princeton University	89.9
10	University of Pennsylvania	89.8
11	Cornell University	89.5
12	Dartmouth College	89.4
13	Northwestern University	88.5
=14	University of Chicago	88.0
=14	Rice University	88.0
16	Carnegie Mellon University	87.4
17	University of Southern California	87.2
18	Washington University in St Louis	87.1
19	Vanderbilt University	86.9
20	Emory University	86.3

![pwc](pwc logo)

Independent assurance report to the directors of TES Global Limited for the WSJ THE College Rankings 2019

This report is produced in accordance with the terms of our contract dated 27 November 2017 for the purpose of reporting to the directors of TES Global Limited on our independent limited assurance engagement over the specific procedures (i) – (vii) in production and reporting of the universities ranked 1 – 500 for the WSJ THE College Rankings 2019 (the "Rankings"), outlined on page 12 of the methodology.

Our conclusion

Based on the results of our work, nothing has come to our attention that causes us to believe that the specific procedures (i) – (vii) outlined by TES Global Limited management are not fairly stated in all material respects.

This conclusion is to be read in the context of what is stated below.

Scope of our work

We have performed a limited assurance engagement over the procedures set out in the table on page 12 ('THE's procedures') within the WSJ THE College Rankings 2019 methodology (the 'Methodology'), which outlines THE's production and reporting of the Rankings.

Our work has been performed in accordance with the agreement between us dated 27 November 2017.

Professional standards applied and level of assurance

We performed our limited assurance engagement over THE's procedures in accordance with International Standard on Assurance Engagements 3000 (Revised) *Assurance Engagements other than Audits and Reviews of Historical Financial Information* issued by the International Auditing and Assurance Standards Board.

Our independence and quality control

We complied with the Institute of Chartered Accountants in England and Wales (ICAEW) Code of Ethics, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

We apply International Standard on Quality Control (UK) 1 and accordingly maintain a comprehensive system of quality control including documented policies and standards regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Inherent limitations

Our assurance procedures are limited to assessing the application of specific procedures (i) – (vii) and are subject to the following inherent limitations:

- Reliance has been placed on data obtained from third parties. These data sets include:
  - Bibliometric data for Colleges provided by Elsevier (part of RELX Group);
  - Reputational survey response data provided by Elsevier (part of RELX Group);
  - IPEDS data taken from the US Department of Education website;
  - College Scorecard data taken from the US Department of Education website;
  - Federal Student Aid data taken from the US Department of Education website;
  - Student engagement survey data provided by Streetbees Limited; and
  - Economic performance data taken from the website of the Bureau of Economic Analysis.
- Our responsibility is to assess the directors' statement that management has followed specific procedures (i) – (vii) of the Methodology, not to comment on the resulting rankings or results of the application of the Methodology.

Work performed

Our limited assurance procedures primarily comprised:

- Examining the Methodology and specific procedures (i) – (vii) and assessing any key assumptions and limitations
- Obtaining an understanding of the third party surveys and data
- Assessment of adherence to specific procedures (i) – (vii) for:
  - Data and sources;
  - Criteria for inclusion, exclusion and merging of Colleges;
  - Calculation, scoring and ranking; and
  - Publication and reporting.
- Confirming accurate reporting of Colleges in the Final Rankings on the Times Higher Education website. The top 20 Colleges have been reproduced in Appendix 1.
- Enquiries of relevant management.

A limited assurance engagement is substantially less in scope than a reasonable assurance engagement under ISAE 3000 and involves less detailed testing.

Directors' responsibilities

The directors of TES Global Limited are responsible for:

- establishing an appropriate Methodology and specific procedures for producing the Rankings and reporting the results on THE's website;
- designing, implementing and monitoring policies, activities, processes and controls to comply with the procedures;
- their Methodology, including the application of the procedures set out on page 12;
- supporting the Directors' Statement with sufficient evidence, including documentation; and
- the maintenance and integrity of THE's website.

Our responsibilities

We are responsible for:

- planning and performing the engagement to obtain evidence to support our assurance conclusion;
- forming an independent conclusion, based on the procedures we have performed and the evidence we have obtained, on the Directors' Statement over their application of the procedures on page 12; and
- reporting our conclusions to the directors of TES Global Limited.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Intended users and purpose

This report is prepared for, and only for, the directors of TES Global Limited, and solely for the purpose of reporting to them on their statement that they have fairly stated the specific procedures (i) – (vii) of the Methodology and no other purpose. We do not, in giving our opinion, accept or assume responsibility (legal or otherwise) or accept liability for, or in connection with, any other purpose for which our report including the opinion may be used, or to any other person to whom our report is shown or into whose hands it may come, and no other persons shall be entitled to rely on our opinion.

We permit the disclosure of our report, in full only and in the company of the Methodology, to enable the directors to demonstrate that they have discharged their governance responsibilities by commissioning an independent assurance report over procedures (i) – (vii) of the Methodology, without assuming or accepting any responsibility or liability to any third parties on our part. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the directors of TES Global Limited for our work or this report save where terms are expressly agreed and with our prior consent in writing.

PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP
Chartered Accountants
London, UK
03 September 2018