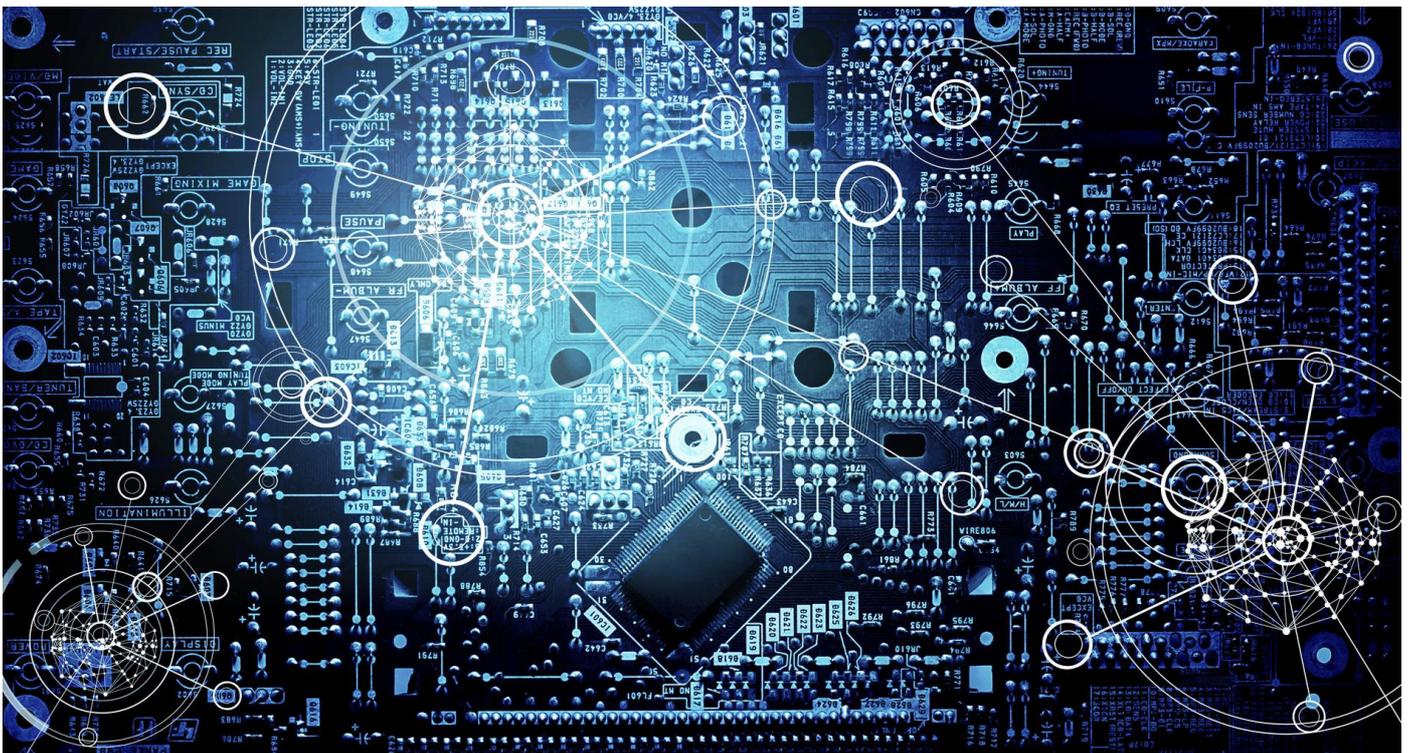


## METHODOLOGY FOR OVERALL AND SUBJECT RANKINGS FOR WSJ THE College Rankings 2016 – 2017

September 2016



## 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.

### Directors' statement:

*This document (the "Methodology") sets out our end-to-end process for generating the WSJ THE College Rankings 2016 – 2017 (the "Rankings"). As directors and management of Times Higher Education, we state that we have followed our Methodology and correctly applied the "specific rules" denoted by (i) - (viii) (highlighted in **bold underlined italics** throughout this document).*

Signed: .....

Print: .....

Role: .....

Date: .....

For and on behalf of TES Global Ltd

### Independent assurance by PricewaterhouseCoopers LLP:

To help demonstrate the integrity of the Rankings, our application of the specific rules (i) - (viii) has been subject to independent assurance by PricewaterhouseCoopers LLP UK ("PwC"). Their independent assurance opinion on our application of specific rules (i) – (viii) is set out on the final page of this document. The specific rules (i) – (viii) 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 rules (i) – (viii) that have been independently assured by PwC are set out in the table on page 10.

### Important links:

- Times Higher Education 2016 – 2017 general rules --> <https://www.timeshighereducation.com/terms-and-conditions>
- WSJ THE College Rankings 2016 – 2017 Rankings --> <http://www.wsj.com/collegerankings>
- WSJ THE College Rankings 2016 – 2017 Methodology overview --> <https://www.timeshighereducation.com/world-university-rankings/wall-street-journal-times-higher-education-college-rankings-methodology>
- WSJ THE College Rankings 2016 – 2017 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, 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 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/repayment rates (this metric is calculated as a value-added assessment of loan repayment or default rates)
  - 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 2014 (the latest available data) with the exception of data relating to staff which are from 2013, as HR reporting is optional in even-numbered years.

### *- 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 September 2016.

### *- 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 July 2016.

### *- Bibliometrics*

The bibliometric data is supplied by Elsevier, and the indicator is calculated as the total scholarly output between 2011 and 2015, divided by number of instructional, research and public service full-time staff with faculty status, as

provided by the IPEDS data. The score achieved by each College is based on the number of citations received in publications in the Scopus database.

#### *- 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 2016 – 2017 survey, academics were asked to nominate the top 15 Colleges for teaching and the top 15 Colleges for research. Only US Colleges included in the responses are taken into account, and 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.

#### *- 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 was run between June and August 2016.

When we at THE examine the survey response we undertake a quality control that is designed to evaluate whether the sample for a particular College is fit for purpose, or if a remedial action is required.

There are four key data elements that help us make the decisions:

- Gender of respondents
- Proportion of out of state respondents
- Proportion of Science, Technology, Engineering and Math (STEM) subjects (measured by subject of focus of respondents)
- Number of subjects represented across all respondents

In the first three instances we have good comparison data sets, from IPEDS that allow us to compare the population of the survey to the overall population, on a College by College basis. For the fourth element we use our judgment to determine a suitable threshold for analysis.

#### Test 1: Minority group representation

We evaluate the number of respondents in the minority group, as a proportion of the total (% male, % Out of State, % STEM, or % female, % in-state, and % non-STEM as the case may be), in the sample set, and compare it to the proportion as calculated from IPEDS.

In all other cases we flag entities where the minority group is represented by < 10% of the sample, on a given dimension. For example, if there are 23% out of state students at a College, we flag Colleges where there are less than 10% out-of-state respondents.

#### Test 2: Differential between expected minority group and response

The thresholds we are using are, against the proportions according to IPEDS:

- 20 ppt difference in out-of-state students
- 30 ppt difference in the uptake of STEM subjects
- 30 ppt difference in gender

Where the sample set proportion less the IPEDS proportion differs, in absolute value, by an amount greater than the above thresholds, we again flag these entities for further review.

#### Test 3: Non-present groups

This test only applies to entities where there are no members in the minority group according to IPEDS – for example a College is an all-female College. We check whether we have any respondents who have identified themselves as such.

#### Test 4: Subject representation

Our final check is to establish whether, if respondents are only reporting a small number of focus subjects, this is consistent with the number of subjects taught in that College, again according to IPEDS.

The four tests above are conducted by Streetbees and results then provided with the original data set to THE.

- *Corrective actions*

As identified earlier, because the variables are correlated, taking action against one may have impacts on the others. We as THE therefore, on a case-by-case basis, evaluate mitigating options, or may indeed make no change. Mitigating options include recruiting additional respondents for the minority group, or in the case of gender, rebalancing the responses for a particular College using weighting.

- 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 – these are reincorporated without weighting.

**Colleges with fewer than 50 respondents to the survey were excluded from the Rankings**<sup>(i)</sup>

**Colleges with responses that do not represent the overall student population gender balance were re-weighted according to the IPEDS data set**<sup>(ii)</sup>

## 2) Criteria for inclusion, exclusion and merging of Colleges

- a) Inclusion criteria
- b) Exclusion criteria
- c) Merging of Colleges

### 2a) Inclusion criteria

**Colleges must meet nine criteria to be considered for inclusion in the Rankings**<sup>(iii)</sup>:

- i. They must be Title IV eligible Colleges
- ii. They must award 4-year Bachelors 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 strictly more than 1,000 students enrolled in undergraduate programs
- vii. They must have 20% or fewer exclusively online students
- viii. They must not be insolvent
- ix. They must be accepting new undergraduate students

### 2b) Exclusion criteria

Colleges will be excluded if any data sets are not complete for the nine criteria listed above.

The following Colleges were excluded from the rankings either because they have closed, because they have stopped admitting students, or because they have no online presence:

- Dowling College
- Sojourner-Douglass College
- Uta Mesivta of Kiryas Joe
- United Talmudical Seminary

In addition, **private for-profit institutions have been excluded from the rankings**.<sup>(iv)</sup>

### 2c) 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 between the time the 2014 IPEDS data was submitted and now:

- Southern Polytechnic State University consolidated with Kennesaw State University
- Purdue University-North Central Campus and Purdue University-Calumet Campus merged to form Purdue University Northwest
- Fairleigh Dickinson University-Metropolitan Campus and Fairleigh Dickinson University-Florham Campus ranked as one entity

A total of 1,061 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** <sup>(v)</sup> 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 not calculated but extracted directly from IPEDS data.
- **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 2011 and 2015 (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 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 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 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?

- Number of accredited programs (by CIP code): 3%

This metric is IPEDS standardized number of Bachelor's degree programs offered (by 6-digit CIP code), and is calculated as  $(\text{number of programs} - \text{mean}[\text{number of programs}]) / \text{StdDev}[\text{number of programs}]$  based on IPEDS data. This variable is normalised after calculation.

### 3. Output (40%)

- Graduation rate: 11%

This metric is 150% of the graduation rate status as of 31 August 2014 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  $(\text{Completers of bachelor's or equivalent degrees total (150\% of normal time)} / \text{Adjusted cohort (revised cohort minus exclusions)}) * 100$  based on IPEDS data. This variable is normalised after calculation.

- Graduate salary: 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.

- Loan default/repayment rates: 7%

This metric estimates the outcome of the 3-year repayment rate from College Scorecard 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.

- Reputation: 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.

### 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 ( $1 - \text{sum of the squares of each group's proportion}$ ), which is higher for more diverse populations. We used the IPEDS data for both faculty (2013 data – as reporting HR data is optional in even-numbered years) and student diversity (2014 data).

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. 66 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.

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

- International student percentage: 2%

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

- Student diversity: 3%

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

- Student inclusion: 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. The elements are normalised prior to averaging, and where one of the two values is missing, the average is calculated from existing variables.

- **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 set from 2011 and 2012 were used to generate this metric.

### **3c) Value-added loan repayment/default rate**

The value-added component of this metric is the estimate of the difference between actual and predicted outcomes for the repayment or default rates of student debt. ACT and SAT scores were imputed to create a robust data set where they were not available from independent data sources. Data set from 2011, 2012, 2013 and 2014 were used to generate this metric.

## **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** <sup>(vi)</sup>:

### **4b) Sign off by management**

**The Rankings results are reviewed and signed off by the editorial team.** <sup>(vii)</sup>

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

The specific rules for each Main Ranking 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.** <sup>(viii)</sup>

**Specific rules subject to independent assurance by PwC**

<b>Rule number</b>	<b>Methodology section</b>	<b>Rule description</b>
(i)	Data and sources	Colleges with fewer than 50 respondents to the survey were excluded from the Rankings.
(ii)	Data and sources	Colleges with responses that do not represent the overall student population gender balance were re-weighted according to the IPEDS data set.
(iii)	Criteria for inclusion, exclusion and merging of Colleges	Colleges must meet nine criteria to be considered for inclusion in the Rankings.
(iv)	Criteria for inclusion, exclusion and merging of Colleges	Private for-profit institutions have been excluded from the rankings.
(v)	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.
(vi)	Publication and reporting	Metrics and pillars are combined to calculate the Final Rankings.
(vii)	Publication and reporting	The Rankings results are reviewed and signed off by the editorial team.
(viii)	Publication and reporting	The Main Rankings are accurately reported on the THE website.



## **Independent assurance report to the directors of TES Global Limited for the WSJ THE College Rankings 2016 – 2017**

This report is produced in accordance with the terms of our contract dated 22 April 2016 for the purpose of reporting to the directors of TES Global Ltd on our independent limited assurance engagement over the directors' statement that Times Higher Education (THE) management has correctly applied specific rules (i) – (viii) within its methodology (the "Methodology") in production of the WSJ THE College Rankings 2016 – 2017 (the "Rankings").

Specific rules (i) – (viii) relate to the following steps in the production of the Rankings:

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

The directors' statement that THE management has correctly applied specific rules (i) – (viii) is set out on page 2 of the accompanying Methodology.

### **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 correctly applied the specific rules (i) – (viii) 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 the application of the specific rules (i) – (viii) 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.

### **Respective responsibilities of the directors and PricewaterhouseCoopers LLP**

The directors of TES Global Limited are responsible for establishing an appropriate Methodology and specific rules (available on the Times Higher Education website at <https://www.timeshighereducation.com/world-university-rankings/wall-street-journal-times-higher-education-college-rankings-methodology#>) for conducting the Rankings and reporting the results on the Times Higher Education website.

It is our responsibility to examine the application of the specific rules (i) – (viii), to form an independent conclusion based on our work and to report that conclusion to the directors.

### **Our approach**

Our examination was conducted in accordance with ISAE 3000 (revised) *Assurance Engagements other than Audits and Reviews of Historical Financial Information* issued by the International Auditing and Assurance Standards Board.

We performed a limited assurance engagement, as defined in ISAE 3000 (revised). The objective of a limited assurance engagement is to enable us to state whether, on the basis of our procedures, anything has come to our attention that causes us to believe that the directors' statement that the WSJ THE College Rankings 2016 – 2017 process has correctly applied specific rules (i) – (viii) is not fairly stated in all material respects.

## **We performed the following procedures:**

- Examining the Methodology and specific rules (i) – (viii) and assessing any key assumptions and limitations
- Obtaining an understanding of the third party surveys and data
- Assessment of adherence to specific rules (i) – (viii) 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.

## **Inherent limitations**

Our assurance procedures are limited to assessing the application of specific rules (i) – (viii) 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;
  - 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 rules (i) – (viii) of the Methodology, not to comment on the resulting rankings or results of the application of the Methodology.

## **Conclusion**

Based on the results of our work, nothing has come to our attention that causes us to believe that the directors' statement that TES Global Limited management has correctly applied specific rules (i) – (viii) in producing the WSJ THE College Rankings 2016 – 2017 is not fairly stated in all material respects.



PricewaterhouseCoopers LLP  
Chartered Accountants  
London, UK

11 October 2016

**Appendix 1: Top 20 institutions in the Final Rankings from the WSJ THE College Rankings 2016 – 2017**

USCR 2016-17 Rank	Institution Name	Overall Score
1	Stanford University	92.0
2	Massachusetts Institute of Technology	91.3
3	Columbia University in the City of New York	90.9
4	University of Pennsylvania	90.8
5	Yale University	90.4
6	Harvard University	90.3
7	Duke University	90.0
8	Princeton University	89.6
9	Cornell University	89.1
10	California Institute of Technology	89.0
=11	John Hopkins University	88.7
=11	Washington University in St Louis	88.7
=13	Northwestern University	88.4
=13	University of Chicago	88.4
15	University of Southern California	88.3
16	Dartmouth College	88.1
17	Emory University	87.9
18	Rice University	87.2
19	Carnegie Mellon University	87.1
20	Brown University	87.0