

THE WORLD UNIVERSITY RANKINGS

**METHODOLOGY FOR OVERALL AND SUBJECT RANKINGS FOR THE
TIMES HIGHER EDUCATION WORLD UNIVERSITY RANKINGS 2020**
September 2019



Times Higher Education World University Rankings:

Times Higher Education is the data provider underpinning university excellence in every continent across the world. As the company behind the world's most influential university ranking, and with almost five decades of experience as a source of analysis and insight on higher education, we have unparalleled expertise on the trends underpinning university performance globally. Our data and benchmarking tools are used by many of the world's most prestigious universities to help them achieve their strategic goals.

The annual *Times Higher Education (THE)* World University Rankings (WUR), started in 2010, aims to provide the definitive list of the best universities, evaluated across five key areas of Teaching, Research, Citations, International Outlook and Industry Income. *Times Higher Education's* data is trusted by governments and universities and is a vital resource for students, helping them choose where to study.

To help demonstrate the integrity of the Rankings, we have asked PricewaterhouseCoopers LLP UK ("PwC") to undertake independent limited assurance over our application of the specific procedures (i) - (xii). Their independent assurance opinion on our application of specific procedures (i) – (xii) is set out on page 15 of this document.

The methodology is divided into four sections which are set out in the remainder of the document:

- 1) Data collection and sources**
- 2) Criteria for exclusion, inclusion, and data processing**
- 3) Calculation, scoring and ranking**
- 4) Publication and reporting**

Details of the methodology applied within each section are set out in the red boxes. The specific procedures within the methodology subject to assurance are marked with the symbol "Ω" and highlighted in bold.

Important links:

THE WUR 2020 Final Rankings: <https://www.timeshighereducation.com/world-university-rankings/2020/world-ranking>

THE WUR 2020 Methodology: <https://www.timeshighereducation.com/world-university-rankings/methodology-world-university-rankings-2020>

Directors' Statement:

This document (the "Methodology") sets out our end-to-end process for generating the THE World University Rankings 2020 (the "Rankings"). As directors and management of Times Higher Education, we state that we have followed our Methodology and correctly applied the specific procedures denoted by (i) - (xii) and marked with the symbol "Ω".

Signed:

Print:

Role:

Date:

For and on behalf of *THE* World Universities Insights Limited

Summary of the Rankings methodology:

The *Times Higher Education* World University Rankings are the only global performance tables that judge research-intensive universities across all their core missions: teaching, research, research influence, international outlook and knowledge transfer. We use 13 carefully calibrated performance indicators, listed below, to provide the most comprehensive and balanced comparisons, trusted by students, academics, university leaders, industry and governments. The basic methodology for this year's rankings is similar to that employed since the 2011 – 2012 tables, but we have made important changes to the underlying data sources, notably deriving bibliometrics from Elsevier's Scopus database from 2015 – 2016 onwards.

The 2020 World University Rankings are published in autumn 2019.

The performance indicators are grouped into five areas:

- **Teaching** (the learning environment)
 - Reputation Survey – Teaching
 - Academic Staff-to-Student Ratio
 - Doctorates Awarded / Undergraduate Degrees Awarded
 - Doctorates Awarded / Academic Staff
 - Institutional Income / Academic Staff
- **Research** (volume, income and reputation)
 - Reputation Survey – Research
 - Research Income / Academic Staff
 - Publications / Staff (Academic Staff + Research Staff)
- **Citations** (research influence)
 - Field Weighted Citation Impact
- **International outlook** (staff, students and research)
 - Proportion of International Students
 - Proportion of International Academic Staff
 - International co-authorship (International Publications / Publications Total)
- **Industry income** (knowledge transfer)
 - Research income from industry & commerce / Academic Staff

1) Data collection and sources

Institutional data – self-submitted on the *THE* Portal

A named representative from each institution submits and authorises their institutional data for use in the Rankings Ω^i , via THE's designated online portal, with confirmations that they have:

- Provided true and accurate information for their institution for 2017; and
- Understood and complied with the *THE* terms and conditions → <https://www.timeshighereducation.com/terms-and-conditions>;

Times Higher Education will not self-submit data for an institution without positive confirmation from the named representative of the institution. Ω^{ii}

Prior to submission of data within the portal, the draft data undergoes certain automatic validation checks to ensure that data is complete and accurate, for review by the named representative. Ω^{iii}

Elsevier

Bibliometric data

We examine research influence by capturing the number of times a university's published work is cited by scholars globally. This year, our bibliometric data supplier Elsevier examined 77.4 million citations to 12.8 million journal articles, article reviews, conference proceedings, book chapters and books published over five years. The data includes more than 23,400 academic journals indexed by Elsevier's Scopus database and all indexed publications between 2014 and 2018. Citations to these publications made in the six years from 2014 to 2019 are also collected.

Citations data is a score per institution calculated by Elsevier from 2015 (until 2014 it was supplied by Web of Science). Elsevier provide the Field-Weighted Citation Impact (FWCI) score, per subject and overall.

The FWCI score indicates how the number of citations received by an entity's publications compares with the average number of citations received by all other similar publications. 'Similar publications' are understood to be publications in the Scopus database that have the same publication year, type, and discipline, as defined by the Scopus journal classification system.

A FCWI of 1.00 indicates the global average.

In 2015-2016 papers with more than 1,000 authors were excluded due to their disproportionate impact on the citation scores of the small number of universities. Since 2017 these papers have been reincorporated using a fractional counting approach to ensure that all universities where academics are authors of these papers will receive at least 5 per cent of the value of the paper. The institutions with authors that provide the most contributors to the paper receive a proportionately larger contribution.

We also collect the total number of publications overall, plus the total number of publications with international co-authorship per institution, providing they meet our 'sufficient publications' criteria (detailed in section 2).

The citations help to show us how much each university is contributing to the sum of human knowledge: they tell us whose research has stood out, has been picked up and built on by other scholars and, most importantly, has been shared around the global scholarly community to expand the boundaries of human understanding, irrespective of discipline.

Academic reputation survey

An annual survey was sent to a sample of academics randomly selected by Elsevier, in which we ask them to nominate the universities that they perceive to be the best for Teaching and/or Research in their field. For the 2018 and 2019 surveys, academics were asked to nominate up to 15 institutions for Teaching and up to 15 institutions for Research globally. The 2019 results were combined with the 2018 results for use in the rankings.

The Teaching and Research scores for an institution at the global level were the count of mentions they received in each category, weighted both to reflect the distribution of scholars across the world (using data from UNESCO <http://data.uis.unesco.org>) and the distribution of respondents by subject in the survey.

The academic reputation score for a university is the number of mentions they received for the 2018 and 2019 surveys in the global teaching and research sections. Where a university received no votes, they were allocated a zero score.

Total reputation score for each university was calculated based on the aggregate of individual respondent data obtained from Elsevier. ^{Ωiv}

Reference data

THE incorporates reference datasets into its model to convert country-level data provided by institutions via the portal (e.g. research income in a local currency) to a single comparable dataset for all institutions.

The sources of this data are:

- The Her Majesty Revenue and Customs (HMRC) monthly datasets: [<https://www.gov.uk/government/publications/hmrc-exchange-rates-for-2017-monthly>], which provides accurate foreign exchange rates to convert datasets into GBP and then back into their local currency if an institution reports in a foreign currency;
- The World Bank Purchase Power Parity (PPP) dataset [<http://data.worldbank.org/indicator/PA.NUS.PPP>], which is used to convert the local currency to common-PPP-scaled USD. PPP is used to exemplify the differing currency strengths in each country while allowing for easy cross country comparisons; and
- Where data for a country doesn't exist in the World Bank database, a dataset from the IMF [<https://www.imf.org/external/pubs/ft/weo/2019/01/weodata/weoselgr.aspx>] or UN data is used [http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3APA.NUS.PPP].

2) Criteria for exclusion, inclusion, and data processing

Exclusion and inclusion criteria

There are seven key criteria for universities to be included in the Rankings:

1. They are required to publish more than 1,000 relevant publications over the previous 5 years, and more than 150 publications in any single year.

AND

2. They must teach at an undergraduate level, usually indicated by having more than zero undergraduate degrees awarded. Postgraduate-only institutions are therefore not in the ranking.

AND

3. They must not be focused on a single narrow subject area (more than 80% of their publication output is from one subject area).

AND

4. They must have supplied “overall” numbers for the ranking year.

AND

5. They must not have more than two of the critical values (academic staff, international academic staff, research staff, students, international students, undergraduate degrees awarded, doctorates awarded, institutional income, research income, research income from industry and commerce) as null (either marked by the institution as “unavailable” or “withheld”). Null values will cause any metric based on that value to also be null.

AND

6. They must supply numbers for at least one applicable subject. If no applicable subjects have been reported the institution is excluded.

AND

7. They must not be featured in the custom exclusions list. Institutions that have requested not to participate in the ranking or that are not eligible for other institution-specific reasons have been excluded.

Universities meeting the seven key inclusion criteria are included in the rankings. ∇

Subject ranking criteria: Publication eligibility

For the eleven subject tables, there is an additional threshold within the subject for publications:

For the subjects that generate a high volume of publications:

- At least 500 publications over 2014 – 2018 for clinical, preclinical & health, engineering & technology, computer science, life sciences, physical sciences;

For the subjects with lower volumes of publications:

- At least 250 publications over 2014 – 2018 for arts & humanities;
- At least 200 publications over 2014 – 2018 for social sciences and business and economics;
- At least 150 publications over 2014 – 2018 for psychology;
- At least 100 publications over 2014 – 2018 for law and education.

Subject	Publications for 5 years (2014-2018)
Overall	1000 (150 per year)
Arts & Humanities	250
Clinical, Preclinical & Health	500
Engineering & Technology	500
Computer Science	500
Life Sciences	500
Physical Sciences	500
Business & Economics	200
Social Sciences	200
Psychology	150
Law	100
Education	100

Subject ranking criteria: Staff eligibility

We also expect an institution to either have at least a proportion of its academic staff in a discipline (4% for engineering & technology and social sciences, 1% for computer science, psychology, law or education; 5% for other subjects), or an absolute number of staff threshold.

Subject	Proportion of academic staff	Absolute number of academic staff in a given subject
Arts & Humanities	5%	50
Clinical, Preclinical & Health	5%	50
Engineering & Technology	4%	40
Computer Science	1%	20
Life Sciences	5%	50
Physical Sciences	5%	50
Business & Economics	5%	50
Social Sciences	4%	40
Psychology	1%	20
Law	1%	20
Education	1%	20

Data adjustments

After the deadline of the submission of data via the Portal by institutions, ***management review and approve all institution submissions data for appropriateness and accuracy, based on prior year values and gaps within datasets*** Ω^{vi} as described below.

On the occasions where an institution does not provide a data point which would result in the inability to generate a metric, the missing metric may be calculated by imputing the value as the higher of:

- The average of the two lowest metric scores for an institution; or
- The minimum score awarded across the whole population for that metric.

Data processing pre-rankings

Data provided by institutions for financial information is converted into USD using international PPP exchange rates Ω^{vii} (provided by the World Bank) for use in the Rankings calculations. As necessary before the conversion to PPP, HMRC foreign exchange rates are also used to convert datasets into GBP and then back into local currency if an institution reports in a foreign currency.

The datasets used in the rankings have been accurately mapped by university name and ID. Institution-level bibliometric (Scopus and/or SciVal) and reputation survey data obtained from Elsevier is mapped to THE institution data via THE's institution ID. Ω^{viii}

3) Calculation, scoring and ranking

Calculation of metrics

There are 13 indicators, each combined into 5 categories, or “pillars”, which are weighted according to relative importance.

The pre-weighted indicators are calculated for each university Ω^i based on the definitions below:

1. Teaching (the learning environment)

Reputation survey

- The most recent Academic Reputation Survey (run annually) that underpins this metric was carried out from November 2018 to March 2019. It examined the perceived prestige of institutions in teaching. This metric is the total number of votes obtained from the Elsevier reputation survey from the last two years. Each year is calculated as the number of global teaching votes from respondents of the reputation survey, weighted by subject and country to be representative of the distribution of academics globally. Only non-zero values will be standardised using a logarithmic function, and universities that received no votes are scored a zero for this metric.

Academic Staff-to-student ratio

- The academic staff-to-student ratio is defined as total full time equivalent (FTE) number of staff employed in an academic post divided by FTE number of students in all years and of all programmes that lead to a degree, certificate, university credit or other qualification. This variable is normalised after calculation.

Doctorates-awarded-to-bachelor-degrees-awarded ratio

- This metric is generated by dividing the total number of doctorates awarded by the total number of undergraduate degrees awarded. This variable is normalised after calculation.

As well as giving a sense of how committed an institution is to nurturing the next generation of academics, a high proportion of postgraduate research students also suggests the provision of teaching at the highest level that is thus attractive to graduates and effective at developing them.

Doctorates-awarded-to-academic-staff ratio

- This metric is generated by dividing the total subject weighted doctorates, by the total subject weighted number of academic staff. This metric takes into account an institution’s unique subject mix, reflecting that the volume of doctoral awards varies by discipline. This variable is normalised after calculation.

Institutional income per staff

- This measure of income indicates an institution’s general status and gives a broad sense of the infrastructure and facilities available to students and staff. This metric is generated by dividing the institutional income adjusted to PPP, by the total number of academic staff. This variable is normalised after calculation.

2. Research (volume, income and reputation)

Reputation survey

- The most recent Academic Reputation Survey (run annually) that underpins this metric was carried out from November 2018 to March 2019. It examined the perceived prestige of institutions in research. This metric is the total number of votes obtained from the Elsevier reputation survey from the last two years. Each year is calculated as the number of global research votes from respondents of the reputation survey, weighted by subject and country to be representative of the distribution of academics globally. Only non-zero values will be standardised using a logarithmic function, and universities that received no votes are scored a zero for this metric.

Research income per staff is a somewhat controversial indicator because it can be influenced by national policy and economic circumstances. Income is crucial to the development of world-class research, and because much of it is subject to competition and judged by peer review, our experts suggested that it was a valid measure. This indicator takes account of each institution's distinct subject profile, reflecting the fact that research grants in science subjects are often bigger than those awarded for the highest-quality social science, arts and humanities research.

Research income per staff

- This metric is generated by dividing the total subject weighted research income adjusted for PPP, by the total subject weighted number of academic staff and is normalised after calculation.

Research productivity gives a sense of the institution's ability to get papers published in quality peer-reviewed journals. Introduced in the 2018 rankings, we devised a method to give credit for cross-subject research that results in papers being published in subjects where a university has no staff.

Research productivity

- This metric is generated by dividing the total subject weighted number of papers published in the academic journals indexed by Elsevier's Scopus database per scholar, divided by the sum of the total subject weighted number of FTE research staff and FTE academic staff. This metric is normalised after calculation. For subjects where there are papers, but not staff, we will reassign the papers to subjects where there are staff. We will do this proportionally according to the number of staff in populated subjects, and according to the median publications per staff for populated subjects. We will have a maximum threshold of the proportion of papers that we are willing to reassign (10% of the total of papers).

Our research influence indicator looks at universities' role in spreading new knowledge and ideas. The data includes more than 23,400 academic journals indexed by Elsevier's Scopus database and all indexed publications between 2014 and 2018. Citations to these publications made in the six years from 2014 to 2019 are also collected. The data is normalised by Elsevier to reflect variations in citation volume between different subject areas. This means that institutions with high levels of research activity in subjects with traditionally high citation counts do not gain an unfair advantage.

3. Citations (research influence)

We examine research influence by capturing the number of times a university's published work is cited by scholars globally. We have blended equal measures of a country-adjusted and non-country-adjusted raw measure of citations scores.

4. International outlook (staff, students, research)

Proportion of international students

- This metric captures the proportion of international students on campus. International students are those whose nationality differs from the country where the institution is based. The metric is calculated as the total FTE number of international students divided by the total FTE number of students. This variable is normalised after calculation.

Proportion of international staff

- This metric captures the proportion of international academic staff on campus. International staff are those whose nationality differs from the country where the institution is based. The metric is calculated as the total FTE number of international academic staff divided by the total FTE number of academic staff. This variable is normalised after calculation.

International collaboration

- In the third international indicator, we calculate the proportion of an institution's total research journal publications that have at least one international co-author. The metric is generated by dividing the total subject weighted number of publications with at least one international co-author by the total subjected weighted number of publications. This accounts for an institution's subject mix.

An institution's ability to help industry with innovations, inventions and consultancy has become a core mission of the contemporary global academy. The industry income (knowledge transfer) category suggests the extent to which businesses are willing to pay for research and an institution's ability to attract funding in the commercial marketplace – useful indicators of institutional quality.

5. Industry income (knowledge transfer)

The indicator seeks to capture such knowledge-transfer activity by looking at how much research income an institution earns from industry (adjusted for PPP), divided by the total number of FTE academic staff it employs. This variable is normalised after calculation.

Normalisation

Moving from a series of specific data points to indicators, and finally to a total score for an institution, 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 institution's indicator sits within that function.

For all indicators except the Academic Reputation Survey, we calculate the cumulative probability function using a version of Z-scoring. The distribution of the data in the Academic Reputation Survey requires us to use an exponential component.

Weightings of metrics to final scores and rankings

The 13 performance metrics representing the five pillars are weighted according to *THE*'s assessment of relative importance.

Pillar	Metric	% weighting
1. Teaching	Reputation survey	15.00
	Academic staff-to-student ratio	4.50
	Doctorates awarded-to-bachelor's degrees awarded ratio	2.25
	Doctorates awarded-to-academic staff ratio	6.00
	Institutional income	2.25
2. Research	Reputation survey	18.00
	Research income	6.00
	Research productivity	6.00
3. Citations	Citations	30.00
4. International outlook	Proportion of international students	2.50
	Proportion of international staff	2.50
	International collaboration	2.50
5. Industry income	Industry income	2.50
		100

Once the final population of universities and indicators has been determined, the scores for each university are generated by weighting the metrics and the Final Rankings are calculated according to the following percentage breakdowns: Ω^x

Subject ranking differentiation

N.B. The subject rankings are not subject to PwC assurance. The below information is provided for information purposes only.

The subject tables employ the same range of 13 performance indicators used in the overall World University Rankings, brought together with scores provided under the same five pillars:

- Teaching (the learning environment);
- Research (volume, income and reputation);
- Citations (research influence);
- International outlook (staff, students, research); and
- Industry Income.

However, within the subject rankings, the overall methodology is carefully recalibrated by subject, with the weightings changed to best suit the individual fields. In particular, those given to the research indicators have been altered to fit more closely the research culture in each subject, reflecting different publication habits: in the arts and humanities, for instance, where the range of outputs extends well beyond peer-reviewed journals, we give less weight to paper citations.

Accordingly, the weight given to “citations: research influence” is halved from 30% in the overall rankings to just 15% for the arts and humanities. More weight is given to other research indicators, including the Academic Reputation Survey. For social sciences and law, where there is also less faith in the strength of citations alone as an indicator of research excellence, the measure’s weighting is reduced to 25%. It is also reduced for education, engineering & technology and computer sciences to 27.5%.

By the same token, in those subjects where the vast majority of research outputs come through journal articles and where there are high levels of confidence in the strength of citations data, we have increased the weighting given to the research influence (up to 35% for the physical, life sciences, psychology and for the clinical, pre-clinical and health tables).

Indicator		Overall	A&H	Social	Bus & Eco	Clinical	Life	Phys	E&T	Comp Sci	Psycho	Law	Educ
C1	Citations	30.00%	15.00%	25.00%	25.00%	35.00%	35.00%	35.00%	27.50%	27.50%	35.00%	25.00%	27.50%
E1	Industry Income/Staff	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	5.00%	5.00%	2.50%	2.50%	2.50%
T1	Teaching Reputation	15.00%	25.30%	21.10%	21.10%	17.90%	17.90%	17.90%	19.50%	19.50%	17.90%	21.00%	20.00%
T2	Student to Staff Ratio	4.50%	3.80%	3.30%	3.30%	2.80%	2.80%	2.80%	3.00%	3.00%	2.80%	4.50%	4.50%
T3	PhD/Bachelors	2.25%	1.80%	1.60%	0.00%	1.40%	1.40%	1.40%	1.50%	1.50%	1.40%	0.00%	0.00%
T4	PhD/Staff	6.00%	4.60%	4.80%	4.90%	4.00%	4.00%	4.00%	4.50%	4.50%	4.00%	4.90%	6.00%
T5	Income/Staff	2.25%	1.90%	1.60%	1.60%	1.40%	1.40%	1.40%	1.50%	1.50%	1.40%	2.30%	2.20%
R1	Research Reputation	18.00%	30.00%	22.80%	22.80%	19.30%	19.30%	19.30%	21.00%	21.00%	19.30%	21.00%	20.00%
R2	Research Income/Staff	6.00%	3.80%	4.90%	4.90%	4.10%	4.10%	4.10%	4.50%	4.50%	4.10%	4.90%	4.90%
R3	Papers/Staff	6.00%	3.80%	4.90%	4.90%	4.10%	4.10%	4.10%	4.50%	4.50%	4.10%	4.90%	4.90%
I1	International Students	2.50%	2.50%	2.50%	3.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	3.00%	2.50%
I2	International Staff	2.50%	2.50%	2.50%	3.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	3.00%	2.50%
I3	International collaboration	2.50%	2.50%	2.50%	3.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	3.00%	2.50%
Total		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

4) Publication and reporting

Final rankings preparation

All institutions were ranked overall and are published in the Final Rankings table on the *THE* website. On the website, the overall score and pillar scores are displayed.

Precise overall scores are shown for the institutions ranked in the top 200 overall. Banded overall scores are presented for the institutions ranked in bands (e.g. from 201 to 205). Precise individual pillar scores are displayed for each ranked institution.

For the institutions ranked 1 – 200 overall, an individual rank position is listed. The next institutions are assigned to the following bands: 201-250, 251-300, 301-350, 351-400, 401-500, 501-600, 601-800, 801-1000, 1001+.

Review and sign off

The Rankings are formally signed off by *THE* World Universities Insights Limited management prior to being published in print and online.

The Rankings results are reviewed and signed off by THE's Chief Data Officer. Ω^{xi}

Reporting

The Rankings for the top 200 universities and banding allocation below top 200 are accurately reported on the THE website. Ω^{xii}

The specific procedures for the Overall Rankings are located on the *Times Higher Education* website at:

<https://www.timeshighereducation.com/world-university-rankings/methodology-world-university-rankings-2020>

Specific procedures subject to independent assurance by PwC

Rule number	Methodology section	Rule description
(i)	Data collection and sources	A named representative from each institution submits and authorises their institutional data for use in the Rankings
(ii)	Data collection and sources	<i>Times Higher Education</i> will not self-submit data for an institution without positive confirmation from the named representative of the institution.
(iii)	Data collection and sources	Prior to submission of data within the portal, the draft data undergoes automatic validation checks reviewed by the named representative.
(iv)	Criteria for exclusion, inclusion and data processing	Total reputation score for each university was calculated based on the aggregate of individual respondent data obtained from Elsevier
(v)	Criteria for exclusion, inclusion and data processing	Universities meeting the seven key inclusion criteria are included in the rankings
(vi)	Criteria for exclusion, inclusion and data processing	Management review and approve all institution submissions data for appropriateness and accuracy, based on prior year values and gaps within datasets.
(vii)	Criteria for exclusion, inclusion and data processing	Data provided by institutions for financial information is converted into USD using international PPP exchange rates.
(viii)	Criteria for exclusion, inclusion and data processing	Institution-level bibliometric (Scopus and/or SciVal) and reputation survey data obtained from Elsevier is mapped to <i>THE</i> institution data via <i>THE</i> 's institution ID.
(ix)	Calculation, scoring and ranking	The pre-weighted indicators are calculated for each university
(x)	Calculation, scoring and ranking	Once the final population of institutions and indicators has been prepared, the scores for each university are generated by weighting the metrics and the Final Rankings are calculated according to the following percentage breakdowns.
(xi)	Publication and reporting	The Rankings results are reviewed and signed off by <i>THE</i> 's Chief Data Officer
(xii)	Publication and reporting	The Rankings for the top 200 universities and banding allocation below top 200 are accurately reported on the <i>THE</i> website.

Appendix 1: Top 20 institutions in the Overall Rankings from the *Times Higher Education* 2020 World University Rankings.

Institution Name	Country	WUR 2020 Rank Label	WUR 2019 Rank Label	Overall Score	Teaching Score	Research Score	Citations Score	Industry Income Score	International Outlook Score
University of Oxford	United Kingdom	1	1	95.4	90.5	99.6	98.4	65.5	96.4
California Institute of Technology	United States	2	5	94.5	92.1	97.2	97.9	88	82.5
University of Cambridge	United Kingdom	3	2	94.4	91.4	98.7	95.8	59.3	95
Stanford University	United States	4	3	94.3	92.8	96.4	99.9	66.2	79.5
Massachusetts Institute of Technology	United States	5	4	93.6	90.5	92.4	99.5	86.9	89
Princeton University	United States	6	7	93.2	90.3	96.3	98.8	58.6	81.1
Harvard University	United States	7	6	93	89.2	98.6	99.1	47.3	76.3
Yale University	United States	8	8	91.7	92	94.8	97.3	52.4	68.7
University of Chicago	United States	9	10	90.2	89.1	91.4	96.7	52.7	76
Imperial College London	United Kingdom	10	9	89.8	84.5	87.6	97	69.9	97.1
University of Pennsylvania	United States	11	=12	89.6	87.5	90.4	98.2	74	65
Johns Hopkins University	United States	12	=12	89.2	81.7	91.4	98.3	91.3	73.2
Berkeley University of California	United States	13	15	88.3	83	90.6	99.2	46.1	70.4
ETH Zurich	Switzerland	13	11	88.3	81.8	92.8	90.3	56.8	98.2
UCL	United Kingdom	15	14	87.1	77.8	88.7	96.1	42.7	96.2
Columbia University	United States	16	16	87	85.6	82.6	98.2	44.8	79.3
University of California, Los Angeles	United States	17	17	86.8	83.1	88.6	97.3	51.3	64.1
University Of Toronto	Canada	18	21	85.5	76.6	89.5	93.6	50.5	84.7
Cornell University	United States	19	19	85.1	79.7	86	96.6	37.1	73.4
Duke University	United States	20	18	84	82.4	76.8	97	99.9	61.5



Independent assurance report to the directors of THE World Universities Insights Limited for the Times Higher Education World University Rankings 2020

The directors of THE World Universities Insights Limited engaged us to perform an assurance engagement over the application of specific procedures (i) – (xii) in production and reporting of the top 200 universities by rank, and banding allocation below the top 200 for the THE World University Rankings 2019 (the “Rankings”).

Our conclusion

Based on the results of our work, nothing has come to our attention that causes us to believe that THE World Universities Insights Limited management has not correctly applied, in all material respects, the specific procedures (i) – (xii) outlined in their report.

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 (i) – (xii) as marked with the symbol “Ω” (‘THE’s procedures’) within the THE World University 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 29 November 2018.

Professional standards applied and level of assurance

We performed a limited assurance engagement over application of 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 also 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

The subject matter incorporates at face value data sets obtained from third party sources. Such data are outside the control of THE World Universities Insights Limited and those have not been subject to validation for the purpose of their report nor subject to any assurance procedures during our engagement. These data sets include:

- Bibliometric data for universities provided by Elsevier (part of RELX Group);
- Academic reputational survey response data provided by Elsevier (part of RELX Group);
- PPP currency conversion figures for 2017 provided by the World Bank and International Monetary Fund; and
- Foreign exchange currency conversion rates for 2017 provided by HMRC.

Work performed

Our limited assurance procedures primarily comprised:

- Examining the Methodology and THE's procedures in order to obtain an understanding, and assessing any key assumptions and limitations.
- Obtaining an understanding of the third party surveys and data.
- Assessment of management's application of THE's procedures for:
 - Data collection and sources;
 - Criteria for exclusion, inclusion, and data processing;
 - Calculation, scoring and ranking; and
 - Publication and reporting.
- Testing accurate reporting of institutions in the THE World University Rankings 2019 report and on the Times Higher Education website.
- Enquiries of relevant management.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Directors' responsibilities

The directors of THE World Universities Insights 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 in this Methodology;
- 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 management's application of THE's procedures as described in the report; and
- reporting our conclusion to the directors of THE World Universities Insights 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 produced in accordance with the terms of our agreement dated 29 November 2018 and is intended solely for the use and benefit of the Board of Directors of THE World Universities Insights Limited, and solely for the purpose of reporting to them on the application of THE's procedures within the Methodology in preparation and publication of the Rankings and no other purpose. We do not, in giving our conclusion, accept or assume responsibility (legal or otherwise) or accept liability for, or in connection with, any other purpose for which our report including the conclusion 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 conclusion.

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) – (xii) 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 THE World Universities Insights 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
29 August 2019