University rankings guide: A closer look for research leaders

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What are University Rankings?

“While university rankings are one of the essential ways of measuring the quality of higher education, quality measurement in higher education is a multi-dimensional problem that cannot be based solely on rankings.”


University rankings are diverse, imperfect — and influential.

Your university has a unique mission and works hard to attract the best students, talent, and funding to support that mission. On the flip side, potential students, researchers, faculty members (and, in some countries, even policymakers and funding agencies) look for help in deciding why your university best fits their interests. Enter the world of University Rankings.

Rankings are not perfect, but useful

Although not perfect, and certainly not the only input needed, university rankings and league tables provide a way to compare higher education institutions based on a set of similar criteria and are readily available.

Rankings are often met with criticism, especially when conflated with reputation. It is important to keep in mind that league tables do have their limitations and only provide one indication of university performance. Rankings, therefore, should be used as supportive tools, not as a stand-alone measurement.

Rankings are many, and not one size fits all

Just as each university is unique in its mission and purpose, each ranking and league table has its niche and focus. There are over 20 global university ranking reports or organizations alone, and each has its own methodology, data sources and set of indicators.

The table below provides a quick glance into the proliferation of ranking organizations over time, including various league tables added along the way to address the different types of universities and their missions.
According to the IREG Observatory on Academic Ranking and Excellence, rankings organizations need to “Recognize the diversity of institutions and take the different missions and goals of institutions into account. Quality measures for research-oriented institutions, for example, are quite different from those that are appropriate for institutions that provide broad access to underserved communities.”

**Rankings are influential**

Whether from the perspective of a student, parent, researcher, potential faculty, funder, or another entity, rankings help build one perspective on a university’s success or fit, objectively.

### Why do rankings matter?

In the past 18 years, international university rankings have grown in visibility and prominence and, in some countries, can influence:

- How governments measure research excellence for your institution
- The criteria used by undergraduate students, parents and graduate students when choosing a university
- Why a company selects you as a partner
- A funding body’s decision to invest in research at your university

Although rankings are not the sole indicator of an institution’s reputation and academic excellence, they do provide a quantitative and popular way to benchmark universities nationally, regionally and globally.

### Why rankings can play a role in attracting international students

One area where rankings make an impact is in attracting international students. In 2014, Ellen Hazelkorn shared in a Times Higher Education blog post, “An assessment tool to be used with care,”

“In the global marketplace, rankings bring visibility. This is essential because of the growing percentage of undergraduates and postgraduates who have a high interest in the rankings. High-achieving and wealthier students are most likely to make choices based on them. Likewise, international students continue to rate reputation and ranking positions as key determinants in their choice of institution, programme and country, more than, say, institutional websites.”

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The international student has economic significance, to both the university and its country or region. In the United States alone, the Association of International Educators (NAFSA) recently reported that

“international students studying at U.S. colleges and universities contributed $41 billion and supported 458,290 jobs to the U.S. economy during the 2018-2019 academic year.”

Source accessed on July 28, 2020: https://www.nafsa.org

Looking at the Universities UK’s website, they report that

“As of 2018 the U.K. remained the second most popular destination for international students to study higher education globally with only the USA ahead of it. This position is however increasingly coming under threat from Australia which has experienced strong growth in recent years. Between 2011/12 and 2017/18 the U.K. saw a 5% growth in international student numbers compared to 73% in Australia. Despite recent decreases since 2016 the USA also experienced 31% growth over the same time period.”

Source accessed August 6, 2020

How does the number of international students studying in the U.K. compare to other countries?

In November 2019, the Australian Minister of Education, The Hon Dan Tehan MP, shared that

“International education has experienced its fifth year of consecutive double digit growth, highlighting the strength of Australia’s higher education system” and that the “International education contributed $37.6 billion to the Australian economy last financial year, which was a $5 billion increase.”


Rankings increase your university’s visibility

For the international student, rankings and league tables often weigh into their decision-making process when considering return on investment; therefore, being ranked, even regardless of position, can help you to be considered.
Who publishes University Rankings?

Rankings are developed and published by a range of entities, including magazines, newspapers, websites, academics, and governments. Some ranking organizations specialize in global rankings, others in national or regional, and a few do both. This page primarily discusses ranking organizations producing world university rankings and who focus on research output.

A brief history of global rankings

The rise of global rankings (as shared in our earlier chart) is frequently marked by Shanghai Jiao Tong’s introduction of the “Academic Ranking of World Universities (ARWU)” in 2003, and attributed to an increasingly globalized economy and competitiveness. The growing attention toward higher education and university-based research, led to a need for a comparative framework. Source: Hazelkorn, E., Gibson, A. Global science, national research, and the question of university rankings. Palgrave Commun 3, 21 (2017). https://doi.org

From 2003 on, multiple ranking organizations and reports have entered the arena, expanding options into how Higher Education Institutions can be compared and with greater variety in niche reports.

Two examples of this are:

- QS World Rankings’ ‘University Rankings by Subject,’ created in 2011, which accounts for the varying research cultures and publication rates across academic disciplines
- Times Higher Education’s (THE) 2019 launch of the THE Impact Rankings, “a new global university ranking that aims to measure institutions’ success in delivering the United Nations’ Sustainable Development Goals”

From The Economist:

“The rankings race is thus marked by a happy irony. Driven in part by nationalism urges, it has fostered the growth of a community that knows no borders. Critics are right that governments and universities obsess too much about rankings. Yet the world benefits from the growth of this productive, international body of scholars.”


What are some of the key global ranking organizations, and how do they differ?

Quacquarelli Symonds (QS), Times Higher Education (THE) and Shanghai Ranking (the Academic Ranking of World Universities; ARWU) are considered among the most established and prominent global ranking bodies.

Seven key global ranking reports to know are (in alphabetical order):

- CWTS Leiden Rankings
- Shanghai Rankings (ARWU)
- Times Higher Education World University Rankings
- Times Higher Education Impact Rankings
- QS World University Rankings
- QS World University Rankings by Subject
- US News & World Report: Best University Rankings

Report: Shanghai Rankings
Focus: Global
Scope: 1800+ institutions are ranked annually, top 1000 are published
Timing: Annually (August)

Report: World University Rankings
Focus: Global
Scope: 1,500+ institutions
Timing: Annually (September)

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Before diving into how rankings are calculated, keep in mind there are vast differences and limitations to rankings and that they are not intended to be the sole indication of reputation or excellence.

Lydia Snover, director of institutional research at the Massachusetts Institute of Technology, in a Times Higher Education (THE) blog post

“Let me be clear: there is no such thing as a perfect university ranking. There is no ‘correct’ outcome as there is no single model of excellence in higher education, and every ranking is based on the available, comparable data, and is built on the subjective judgement (over indicators and weightings) of its compilers.”

Why is it important to understand methodologies

By understanding the inner workings of rankings, universities gain insights into how their practices and data can ultimately influence a ranking’s outcome.

The focus area(s), algorithms and methodologies vary across the growing number of ranking tables and reports produced by ranking organizations worldwide.

Where do ranking organizations get their data and information?

All ranking methodologies rely on data inputs from a range of external resources. These can often include the three examples below but varies based on the niche and focus of each league table:

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Your university’s institutional data and researcher data (based on research output) from bibliometric or citation indexing databases, such as Scopus

- Relevant data on human resources, student administration, finances
- Reputation surveys from faculty, students, alumni and employers

Similarly, the weighting and calculations of the above, and other factors, range greatly based on the ranking report’s specific focus.

**How can I find out what weighting and calculation ranking organizations apply?**

Most ranking organizations’ websites offer some level of information on their methodology. This helps you better understand a ranking’s focus and the data and information used to inform their results. For research-intensive universities, you can get a quick overview below.

**CWTS Leiden Rankings**

**Focus:** Research-intensive universities  
**Scope:** 1,000 institutions  
**Timing:** Annually (June)  
**Stated goal:** The Leiden Ranking stands for a multidimensional perspective on university performance.  
**Data sources:** Web of Science data from the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index, which is then enriched by CWTS. Excludes conference proceeding publications and book publications  
**Methodology:** The Leiden Ranking provides information exclusively about the research done at universities. They offer important insights into the scientific performance of nearly 1000 major universities worldwide. Research is represented in publications, and the collected data about these publications forms the basis for the Leiden Ranking. A set of bibliometric indicators are used to provide statistics on scientific impact, collaboration, open access publishing, and gender diversity.

**Identification of universities:** Typically, a university is characterized by a combination of education and research tasks in conjunction with a doctorate-granting authority. However, these characteristics do not mean that universities are particularly homogeneous entities that allow for international comparison on every aspect. As a result of its focus on scientific research, the Leiden Ranking presents a list of institutions that have a high degree of research intensity in common.

**These indicators include:**

- Publications
- Open access indicators
- Size-dependent vs. size-independent indicators

**World University Rankings**

**Focus:** Global  
**Scope:** 1,500+ institutions  
**Timing:** Annually (Spring)  
**Stated goal:** For students seeking to understand how their prospective university choices are perceived by the global academic community, and by potential employers across the world.  
**Data sources:** Elsevier’s Scopus database  
**Methodology:** QS uses a consistent methodological framework, compiled from six simple metrics to capture university performance. Faculty area normalization was introduced in 2015 to ensure that institutions specializing in Life Sciences and Natural Sciences were not unduly advantaged, QS has avoided fundamental changes, with the aim to provide a consistent year-on-year comparison.

QS World University Rankings evaluates universities according to six metrics:
WUR by Subject

Focus: Individual subject areas (48)
Scope: 1,000 institutions
Timing: Annually (Spring)

Stated goal: Help prospective students identify the world’s leading schools in their chosen field in response to high demand for subject-level comparisons.

Data sources:
- International Reputation
- QS global survey of academics
- QS global survey of employers
- Research impact: Elsevier’s Scopus database
- Research citations per paper
- h-index in relevant subject

Methodology: Four components are combined to produce the results for each of the subject rankings, with weightings adapted for each discipline:
- Academic reputation
- Employer reputation
- Research citations per paper
- h-index

As research cultures and publication rates vary significantly across academic disciplines, the QS World University Rankings by Subject applies a different weighting of the four indicators in each subject.

For example, in medicine, where publication rates are very high, research citations and the h-index account for 25% of each university’s total score. On the other hand, in areas with much lower publication rates such as art and design, where there are too few papers published to be statistically significant, the ranking is based solely on the employer and academic surveys.

Shanghai Rankings

Focus: Global
Scope: 1,800+ institutions are ranked annually, top 1,000 are published
Timing: Annually (August)

Stated goal: Provide a starting point for identifying national strengths and weaknesses as well as facilitating reform and setting new initiatives

Data sources:
- Nobel Prize
- Fields Medals (www.mathunion.org)
- HiCi: Clarivate
- N&S: Web of Science
- Bibliometrics: Web of Science
- Number of academic staff: National agencies such as National Ministry of Education, National Bureau of Statistics, National Association of Universities and Colleges, National Rector’s Conference.

Methodology: The highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. An institution’s rank reflects the number of institutions that sit above it.

- 10% Quality of Education: Alumni of an institution winning Nobel Prizes and Fields Medals
- 20% Quality of Faculty: Staff of an institution winning Nobel Prizes and Fields Medals
- 20% Quality of Faculty: Highly Cited Researchers
- 20% Research Output: Papers published in Nature and Science*
- 20% Research Output: Papers indexed in Science Citation Index-Expanded and Social Science Citation Index
- 10% Per Capita Performance: Per capita academic performance of an institution

* For institutions specialized in humanities and social sciences such as London School of Economics, N&S is not considered, and the weight of N&S is relocated to other indicators.
World University Rankings

Focus: Global
Scope: 1,400+ institutions
Timing: Annually (September)

Stated goal:
Evaluate research-intensive universities across all their core missions: teaching, research, knowledge transfer and international outlook.

Provide trusted performance data on universities for students and their families, university academics, university leaders, governments and industry

Data sources: Academic Reputation Survey | Elsevier’s Scopus database

Methodology: THE uses 13 performance indicators to position more than 1,400+ institutions worldwide. These performance indicators are grouped into five areas (as shown to the right).

• 30% Teaching (the learning environment):
  • 15.0% Reputation survey
  • 4.50% Staff-to-student ratio
  • 2.25% Doctorate-to-bachelor’s ratio
  • 6.00% Doctorates-awarded-to-academic-staff ratio
  • 2.25% Institutional income

• 30% Research (volume, income and reputation):
  • 18% Reputation survey
  • 6.0% Research income

• 6.0% Research productivity

• 30% Citations (research influence)
  • 7.5% International outlook (staff, students and research)
  • 2.5% Proportion of international students
  • 2.5% Proportion of international staff
  • 2.5% International collaboration

• 2.5% Industry income (knowledge transfer)

Impact Rankings

Focus: United Nations’ Sustainable Development Goals (SDGs)
Scope: 768 institutions (changes annually)
Timing: April

Stated goal: To provide a showcase for the work being delivered by universities in our communities, and an opportunity to shine a light on institutional activities and efforts not covered in other rankings and demonstrate the differences a university is making to the world we live in.

Data sources:
• Universities can submit data on as many of the 17 SDGs as they are able
• Elsevier’s Scopus database

How universities are ranked:
THE uses indicators to provide comparisons across three broad areas: research, outreach, and stewardship, across all of the SDGs. Any university that provides data on SDG 17 and at least three other SDGs is included in the overall ranking. The methodology was developed in conjunction with THE’s partners Vertigo Ventures and Elsevier, and after consultation and input from individual universities, academics, and sector groups. Universities can submit data on as many of the SDGs as they are able. Each SDG has a series of metrics that are used to evaluate the performance of the university in that SDG. As well as the overall ranking, THE also publishes the results of each individual SDG. This rewards any university that has participated with a ranking position, even if they are not eligible to be in the overall table.

Methodology:
A university’s final score in the overall table is calculated by combining its score in SDG 17 with its top three scores out of the remaining 16 SDGs. SDG 17 accounts for 22% of the overall score, while the other SDGs each carry a weight of 26%. This means that different universities are scored based on a different set of SDGs, depending on their focus.

The score from each SDG is scaled so that the highest score in each SDG in the overall calculation is 100. This is to adjust for minor differences in the scoring range in each SDG and to ensure that universities are treated equitably whichever SDGs they have provided data for. It is these scaled scores that we use to determine which SDGs a university has performed most strongly in; they may not be the SDGs in which the university is ranked highest or has scored highest based on unscaled scores.

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Best University Rankings

Focus: Global
Scope: 1,500 institutions across more than 80 countries
Timing: Annually (October)

Stated goal:
- For potential students: used to explore higher education options beyond their own countries’ borders and to compare key aspects of schools’ research missions.
- For universities: provide a way to benchmark themselves against other schools, become more visible globally, and find top schools in other countries to collaborate with.

Data sources:
- Bibliometric data and indicators: Web of Science and InCites
- Reputation Indicators: Clarivate Analytics’ Academic Reputation Survey

Methodology: The rankings focus specifically on schools’ academic research and reputation overall and not on their separate undergraduate or graduate programs. To arrive at a school’s rank, the overall global scores are calculated using a combination of the weights and z-scores for each of the 13 indicators used in the rankings.

Can I influence university rankings?

If you seek to establish, maintain or improve your institution’s reputation and standing, understanding the impact of your university’s data and information in the calculation of international university rankings is essential. These data points can include:
- Your research output
- Citation data
- Institutional data

Further, gaining insight into what that data includes and where it can be improved puts you in a better position to manage your university's rankings and reputation.

Rankings evolve, staying on top of changes is key

Even if your university has placed high in its valued rankings, algorithms and methodologies change, as do institutional priorities and research outputs. By understanding the inner workings of rankings, and monitoring them on an ongoing basis, both large and small universities can improve their practices in ways that ultimately will influence their ranking.

What are some steps I can take to influence ranking outcomes?

When you begin investigating your university’s rankings, consider the questions below to help put you on a good, pro-active path forward.

Which ranking should I focus on first?
- Ask: Which align best with my institution's mission and goals?

What is the methodology applied by the ranking organization?
- Research information on their website (or begin from our slides on this page)
- Look for webinars or virtual events hosted by the ranking organizations themselves; many include deep-dive courses on their methodology

What is the source of citation and publication information and data?
- Who supplies the data?
- What is included, e.g., article types, are self-citations included or excluded?
- Aside from research influence or citations, does the same data impact other parts of the methodology e.g., international collaboration?
- What weighting or adjustments are placed on certain areas?
Do I have a data-hygiene plan and schedule?

- Understand your research output data and how you can review, correct and validate information related to your institution
- Work with partners within your university to enable researchers to pro-actively maintain their research profiles, activities and information
- Know the ranking bodies’ timeline for pulling data, and establish a schedule to make sure changes are made in time

NOTE: THE and QS both use data from Scopus, which can be pro-actively optimized through the Institution Profile Wizard to better reflect your institution’s output.

Which tools can give me views into my university and researcher performance?

Invest in and leverage tools like SciVal that give you insightful views into your university and researcher performance, allowing you to:

- Benchmark and monitor progress as one example, you can monitor and benchmark the progress of the research entities available in SciVal using the metrics below, as well as the subject areas used by THE:
  - Field-Weighted Citation Impact (FWCI) and the proportion of a university’s total publications that have at least one international co-author are two metrics used in the THE World University Rankings. These metrics are available in SciVal (see page 10 of the above-mentioned rankings eBook for further details). NOTE: You can change the subject areas to the 11 subject areas used in the THE World University Rankings.

![Proportion of total publications with at least one international co-author](image)

Source: SciVal

- Identify, develop and analyze collaborations
- Understand your unique strengths

The bottom line: Will I rise in the rankings?

Although a proactive data hygiene practice cannot guarantee a rise in rankings, it can lead to a more accurate reflection of your university in ranking outcomes through the validation of research output and citation data attributed to your institution. Further, deep analyses of the same data can yield actionable insights that drive your institutional strategy forward and help you manage your reputation.