Data used to inform university rankings

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Kate Patyrak, RI Customer Consultant
University Rankings

What is their goal and which role does Elsevier play?
University Rankings aspire to measure and rank quality

Rankings use various indicators to measure the quality of institutions and rank these accordingly.

These indicators are retrieved from the institutions themselves and various other sources.

Elsevier provides “bibliometric indicators” based on Scopus data.
Elsevier’s position on University Rankings and metrics

All rankings have their strengths and potential disadvantages, we do not rank the rankings!

- We believe in working on fundamentals with a “basket of indicators”, always as a complement to peer opinion
- Informed decisions are better decisions
- Metrics should complement, not replace human judgement
- Well-selected metrics drive positive behaviors
- Metrics does not only mean bibliometrics
- Metrics can help monitor and eliminate biases
- Assessments are costly, but availability of new tools help bring cost down
Major rankings

And the role Elsevier / Scopus plays in them
Bibliometric data providers vs. ranking agencies

Elsevier - Scopus

Clarivate – Web of Science

THE UNIVERSITY RANKINGS

CWTS Meaningful metrics
Leiden Ranking

QS WORLD UNIVERSITY RANKINGS

SHANGHAI RANKING
Scopus

A source of bibliometric data
Scopus
Is a source-neutral abstract and citation database curated by independent subject matter experts. It is the underlying data source for SciVal and the bibliometric dataset used in rankings.

84+ million Items
1.7 billion cited references dating back to 1970

Identify and analyze which journals to read/submit to
Track and assess a researcher’s impact
Decide what, where and with whom to collaborate
Track the impact of research and monitor global research trends
Find the current research; what has been published in a research area
Determine how to differentiate research topics, generate ideas

7,000+ Publishers
26,000+ Serial titles
243,000+ Books
~80,000 Affiliation profiles
17+ million Author profiles
84+ million Items
1.7 billion cited references dating back to 1970
The Scopus data model

The Scopus data model is designed around the notion that publications are written by authors that are affiliated with institutions.
Scopus & THE WUR
The role of Scopus data in the THE World University Rankings
Which publications are eligible for ranking?

- Publication timespan
- Publication types
- Thresholds
- Hyper-authored publications
- Discontinued sources
Bibliometric indicators used in the WUR 2022

- Publication Volume
- International Collaboration
- Citation Impact
Metric weights in the WUR 2022

Teaching (the learning environment)
- Reputation survey: 15%
- Staff-to-student ratio: 4.5%
- Doctorate-to-bachelor's ratio: 2.25%
- Doctorates-awarded-to-academic-staff ratio: 6%
- Institutional income: 2.25%

Research (volume, income and reputation)
- Reputation survey: 18%
- Research income: 6%
- Research productivity: 6%

Citations (research influence)
- 30%

International outlook (staff, students, research)
- Proportion of international students: 2.5%
- Proportion of international staff: 9.8%

Industry income (knowledge transfer)
- International collaboration: 2.5%

Total: 38.5%
Field-Weighted Citation Impact explained.

FWCI is a normalized citation impact metric which is an indicator of the citation impact of a publication. It compares the actual number of citations received by an entity’s publications with the number of citations expected for each publication based on the subject field, publication type and publication year.

- FWCI counts citations in the calendar year of publication and the following X years
- It is calculated using the ratio of the citations received and the citations expected for a publication given the publication year, publication type and subject area.
- A FWCI of more than 1.00 indicates that the entity’s publications have been cited more than would be expected based on the global average for similar publications. For example, a FWCI of 2.11 means 111% more than the global average.
- A FWCI of less than 1.00 indicates that the entity’s publications have been cited less than would be expected based on the global average for similar publications; for example, 0.87 means 13% less than the global average.
Citation Score in the WUR

The FWCI is used to calculate the Citation Score (based on Z-score) of each institution participating in the WUR.

We also calculate a “country normalized” Citation Score by dividing the institution’s FWCI by the square root of the country’s FWCI.

The average of the Citation Score and country normalized Citation Score is used to calculate the final Citation Score.
SciVal – Rankings Analysis

Analyze and benchmark the indicators used in the THE World University Rankings

Research performance by Times Higher Education (THE)

25th
World University Rankings 2021

47,202
Scholarly Output

29,368
International Output

30% of ranking based on citation metrics

Citations indicators used by THE

Field-Weighted Citation Impact used by THE

Global

Country Normalized

Field-Weighted Citation Impact Breakdown per year

Benchmark Institution as seen by THE
THE Impact Rankings

A different methodology, more and different metrics.
Identifying SDG related publications through queries

- **Sept 2015**: Elsevier launches the Sustainability Science in a Global Landscape report (6 main themes).
- **Nov 2017**: Expert-vetted keywords from Elsevier Sustainability report 2015 mapped to 11 SDGs.
- **Dec 2018**: Included in the development of THE Impact Rankings, launched in April 2019.
- **Oct 2019**: Collect feedback on papers linked to each SDG.
- **Dec 2020**: New SDG mapping using SM queries, augmented with ML are used as part of THE Impact Rankings 2021.
- **Apr 2020**: Partnership with AURORA, Auckland University and Southern Denmark University to improve the document to SDG mapping using machine learning and query improvements.
- **May 2020**: Machine learning (ML) model (a logistic regression model) designed to help improve completeness.
- **Jul 2020**: Science-Metrix (SM) work on new SDG queries using Aurora and Scopus ones as a reference.
- **Oct 2020**: Improved queries to be more precise and expanded to 16 SDGs. Data used in THE Impact Rankings 2020 and SciVal.
The methodology used to classify SDG publications

1. New Science-Metrix queries, taking customer feedback into account, were developed and use significantly more search terms than Elsevier’s earlier queries

2. These updated queries were augmented through a machine learning model, which helped increase the completeness of the mapped documents by an additional ~10% per SDG

3. The new methodology, called the “Elsevier 2021 SDG mapping,” on average captures twice as many articles as the 2020 version, while keeping precision above 80%

4. The mappings also have a better overlap with SDG queries from other independent projects

2021 search query methodology, freely available at: https://elsevier.digitalcommonsdata.com/datasets/9sxdym8s4/4
THE Impact Rankings

The Times Higher Education Impact Rankings are the only global performance tables that assess universities against the United Nations' Sustainable Development Goals (SDGs). We use carefully calibrated indicators to provide comprehensive and balanced comparison across four broad areas: research, stewardship, outreach and teaching.

The 2021 Impact Rankings is the third edition and the overall ranking includes 1,118 universities from 94 countries/regions.

Read more...

EXPLORE IMPACT RANKINGS FOR INDIVIDUAL SDGS

Show me universities in any country / region offering any subject

Or, find specific universities by name
<table>
<thead>
<tr>
<th>SDG</th>
<th>Description</th>
<th>Total %</th>
<th>FWCI</th>
<th>Output</th>
<th>Output (low-income)</th>
<th>Output (top 10% CiteScore)</th>
<th>Scopus Usage</th>
<th>Clinical Citations</th>
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SDG 1: End poverty in all its forms everywhere

• Research on poverty (27%)
  − Field-weighted citation index of papers related to poverty (10%)
  − Number of publications related to poverty (10%)
  − Proportion of all research papers co-authored with low or lower-middle income countries (7%)

• Proportion of students receiving financial aid due to poverty (27%)

• University anti-poverty programmes (23%)

• Community anti-poverty programmes (23%)
The overall SDG scores for 2021 Impact Ranking

Each institutions top 3 SDGs are selected and a weight is applied to calculate the final score.

<table>
<thead>
<tr>
<th>SDG</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>SDG 17</td>
<td>22%</td>
</tr>
<tr>
<td>SDG X</td>
<td>26%</td>
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<tr>
<td>SDG Y</td>
<td>26%</td>
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<tr>
<td>SDG Z</td>
<td>26%</td>
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</tbody>
</table>
Improving your institution’s position in the rankings.

Spoiler alert: there are no quick wins!
Institutional perimeter

Desk Research

Customer Consultants
2nd Line Support

Customers

OrgDB

Scopus

SciVal
How to ensure your institutional hierarchy is correct?

As the publications on which all bibliometric data used in rankings are based on Scopus hierarchies it is important to make sure your organizational structure is correct.

At the institutional level

The **Institutional Profile Wizard** works like the Author Feedback Wizard. Institutions use the wizard to:

- Modify affiliation profiles
- Update organizational hierarchies
- Modify contact information

https://www.elsevier.com/solutions/scopus/support/institution-profile-wizard
Does international collaboration affect FWCI?

Source: Scopus.com, May 2019
How do I improve my Institution’s ranking?

1. Quality > Quantity
2. Collaboration
3. Time
4. Reputation
The sweet spot

Impact
How to spot journal quality issues?

- Spikes in year-on-year growth
- Sudden changes in content origin
- Drop in CiteScore
- Publications outside of subject area
- Weak or no peer-review process
Rankings evolve!

Usage Metrics
Output in top 10% CiteScore
Patent Citations
Clinical Citations
Gender Equality
Rankings aspire to measure and rank quality

Rankings use various indicators and weights to measure the quality of an institution and rank these accordingly.

The indicators we use to determine quality will keep on changing and evolving, think of PageRank-like algorithms that will go much further than looking at output and citations.

No one knows what the future might bring, but by taking a holistic approach to quality and not focusing on specific indicators will give your institution the best chances of doing well in future rankings.
Top 8 Universities in Hungary by Scholarly Output

THE Citations Score

Field-Weighted Citation Impact (5 year)

Semmelweis University
Eötvös Lorand University
University of Szeged
Óbuda University
University of Debrecen
Budapest University of Technology and Economics
Hungarian University of Agriculture and Life Sciences

Hide all chart labels

8.49K
4.77K
941

Scholarly Output
Top 8 Universities in Hungary by Scholarly Output

- Budapest University of Technology and Economics
- Eotvos Lorand University
- Hungarian University of Agriculture and Life Sciences
- Semmelweis University
- University of Debrecen
- University of Pecs
- Obuda University

THE Citation Score vs. %International Collaboration
Questions?
Thank you

Kate Patyrak,
k.patyrik@elsevier.com