SCIENTOMETRICS & TOOLS

BACKGROUND & USE CASES

As a quick search of the internet will show, there is an on-going discussion in the sector about how to "assess" or "evaluate" research in a responsible and fair manner (sometimes linking in to considerations around "research culture"), at both institutional and personal levels[1].

Scientometrics (the measurement and analysis of scholarly literature) form part of the suite of measures that research assessment exercises (such as the REF), ranking exercises (such as THE WUR and QS WUR), institutions and individuals compile to demonstrate their research "strength".

At the University of Sussex, we subscribe to two tools to help us obtain scientometric information—to aid us in preparations for such exercises, and to help individuals, departments, schools and the institution derive useful intelligence and benchmarking information on an on-going basis for use cases such as:

- Demonstrating breadth/depth of expertise in a particular subject, topic or research area (e.g. in preparation for a funding application)
- Evidencing (and generating geomaps to easily show) the extent of a collaboration and/or citation network.
- Highlighting the complementarity of a (new) collaborative team
- Benchmarking against others, or self over time
- Determining where, and to what extent, research has been mentioned in policy documents and patent applications
- Finding when research has been embedded into mainstream life (e.g. being reported in the media, used in Wikipedia…)

TOOL #1: SCIVAL (ELSEVIER)

This tool is provided by Elsevier, and draws the majority of it's data from the abstract and citation database: Scopus.

The Scopus data-verse:

- Scopus is a highly curated database, containing over 84million records (research outputs) covering the Social-, Physical-, Life- and Health-Sciences.
- There is a content selection and advisory board that make recommendations regarding which content should be included within the database.
- Not all research outputs will be held in the Scopus database, but those that are: are well annotated with unique identifiers; have authors well disambiguated with unique identifiers assigned (an authors Scopus ID).
- The team at Elsevier are very responsive to correcting any errors uncovered, and merging author profiles if the disambiguation algorithm separates entries that should be combined.

SciVal functionality:

SciVal lets us "mine" sets of research outputs from various "entities" (individuals, groups, institutions,

TOOL #2: ALTMETRIC EXPLORER

This tool was developed by a small company called Altmetric (now part of the Digital Science suite of offerings). It monitors a range of online sources[3] for "mentions" of research outputs.

The Altmetric Explorer data-verse:

- The Altmetric database currently contains over 235million mentions of more than 41million research outputs (including journal articles, datasets, images, white papers, reports…) as discovered by searching a large range and variety of online sources for unique publication identifiers including:

PubMedID	SSRN ID	URN
arXiv ID	RePEC ID	ISBNs
ADS ID	Handle.net identifiers	DOIs

- The identifiers help recognise different versions of the same research output; the system cross checks and match them together, returning a collated record of attention for the disambiguated item
- As well as generating a "general" Altmetric database, Explorer links with the University of Sussex instance of Elements, creating a "profile" of the institution derived from what is there: the School

countries) around the world.

We can look at, and compare, things such as:

- Co-authorship: who do people collaborate with; where are they located; what sector do they come from…
- Citations: absolute numbers; how the citation profile compares to others in the field; where authors that cite papers are located…
- Topics: what people work on; who else works in that area; who covers complementary areas that we might approach to form collaborations…
- [a range of "alternative metric" information such as: mentions in patent or media; levels of grants awarded (at institutional level)]

Importance of the tool/derived data...

...in the sector:

- The data and research intelligence that Elsevier produce from Scopus and SciVal is used by various organisations in ranking exercises deemed important to the sector (e.g. THE and QS)[2]
- Whilst the metrics available from SciVal are not directly used in the REF process, Elsevier provide a complementary tool to institutions to enable them to compare their submissions with others at the institutional and UoA (Unit of Assessment) level.
- Also within SciVal, Elsevier have created Research Areas containing all REF 2021 submissions (by UoA and institution), allowing subscribers to explore and analyse these publication sets for insights

… to the academic:

- This tool may be useful to individuals when preparing cases for funding in the academic realm: demonstrating strength in a particular area, finding collaborators and/or demonstrating the synergies to be had by linking with others

and Departmental structure is auto-generated; authors (and any associated outputs they have claimed in Elements) are then assigned as per the Elements hierarchy

- Not all research outputs will be present in the Full- or University of Sussex- Altmetrics database: they will only contain information where the research output has a recognisable identifier and has been mentioned by at least one of its mention sources

Altmetric Explorer functionality:

Explorer lets us look at how people talk about, and mention, our research in a range of online fora so we can get an insight into the reach and adoption of our research outputs into:

- policy documents: which bodies have referenced our outputs, how many times, where are they located…
- patent applications: who has cited our research in patent applications…
- news: which news outlets have talked about our research, where are they around the world…
- wikipedia: where, and when, has our research been referenced in Wikipedia entries…
- social media and blogs: who is talking about our research, where are they located…
- [a range of academic sources]

Importance of the tool/derived data...

...to the academic:

- This tool is useful for social scientists as a way uncover / evidence incorporation of research outputs in policy documents
- The tool is also useful for individuals (and groups) to build a narrative around how their research is being talked about and used in the "real world"

Further Reading & Links

- The library have produced an excellent guide entitled "Publication Metrics"
- Reach out to Dr Hayley Cordingley, Research Intelligence Adviser in RES for training, 1:1 support and collaborations
- Altmetric Explorer: https://www.altmetric.com/explorer/login
- SciVal: https://www.scival.com/home

[1] For example:

- 16May2023 "Research assessment exercises are necessary — but we need to learn to do them better" https://www.nature.com/articles/d41586-023-01611-y
- 08May2023 "The REF is ruining UK research" https://www.timeshighereducation.com/opinion/ref-ruining-uk-research
- 12Dec2022 "Evaluation reports steer away from 'automated' UK research assessment" https://www.ukri.org/news/evaluation-reports-steer-away-from-automated-uk-research-assessment/
- 06May2022 "Don't let the REF tail wag the academic dog" https://www.timeshighereducation.com/campus/dont-let-ref-tail-wag-academic-dog?utm_source=academic-website&utm_medium=link-embed&utm_campaign=news
- [1]Jul2021 "R&D People and Culture Strategy" https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004685/r_d-people-culture-strategy.pdf
- 25Mar2021 "Row erupts over university's use of research metrics in job-cut decisions" https://www.nature.com/articles/d41586-021-00793-7
- "Declaration on Research Assessment" https://sfdora.org/
- "Research culture: let's reimagine how we work together" https://wellcome.org/what-we-do/our-work/research-culture
- 26Jul2021 "Our sector must come together to improve research culture" https://wellcome.org/news/our-sector-must-come-together-improve-research-culture

[2] NB: Data for other ranking exercises such as ARWU and NTU source their information from a different data-verse: sets of information held by Clarivate (Web of Science; collections)

[3] https://www.altmetric.com/about-us/our-data/our-sources/