

A background network diagram consisting of numerous small black dots (nodes) connected by thin, light gray lines (edges). The nodes are scattered across the frame, with a higher density in the lower-left and middle-right areas, creating a complex web-like structure. The overall color palette is grayscale, with the network elements appearing against a gradient background that transitions from dark gray on the left to light gray on the right.

iSkills: Research Metrics and Citation Analysis Tools. Part 2.

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January 2024

**By the end of
the session,
you will...**



Know how to find citation information for articles.



Be able to calculate a researcher h-index and understand its limitations.



Understand how altmetrics can be used to help provide a different view of research impact.



What are research metrics?

- **An attempt to quantify the impact of a piece of research.**
- **A means of ranking or comparing research in a quantitative way.**
- ***Not* an assessment of quality.**

What is Research Impact?

Narrowly –
measurement of how
widely research is read /
disseminated in
academia.

Broadly – impact of
research on society –
how it affects policy,
changes culture or the
environment, develops
technology or medicine...

Measuring Research Impact

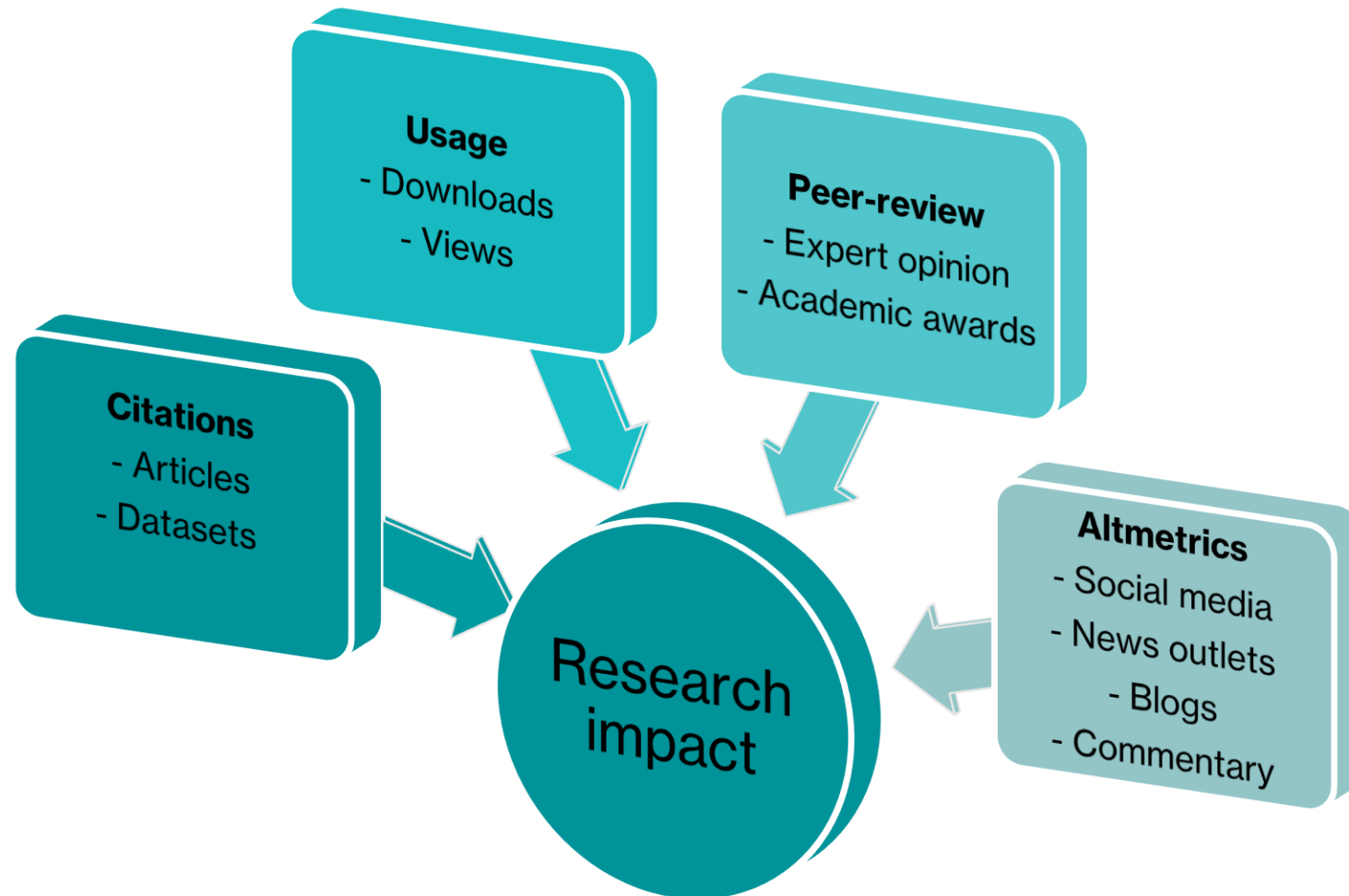


Diagram adapted from - <http://altmetrics.org/manifesto/> - CC-BY-SA



Why Measure Research Impact?



Demonstrate the wider social impact of your research.



Support grant applications and tenure.

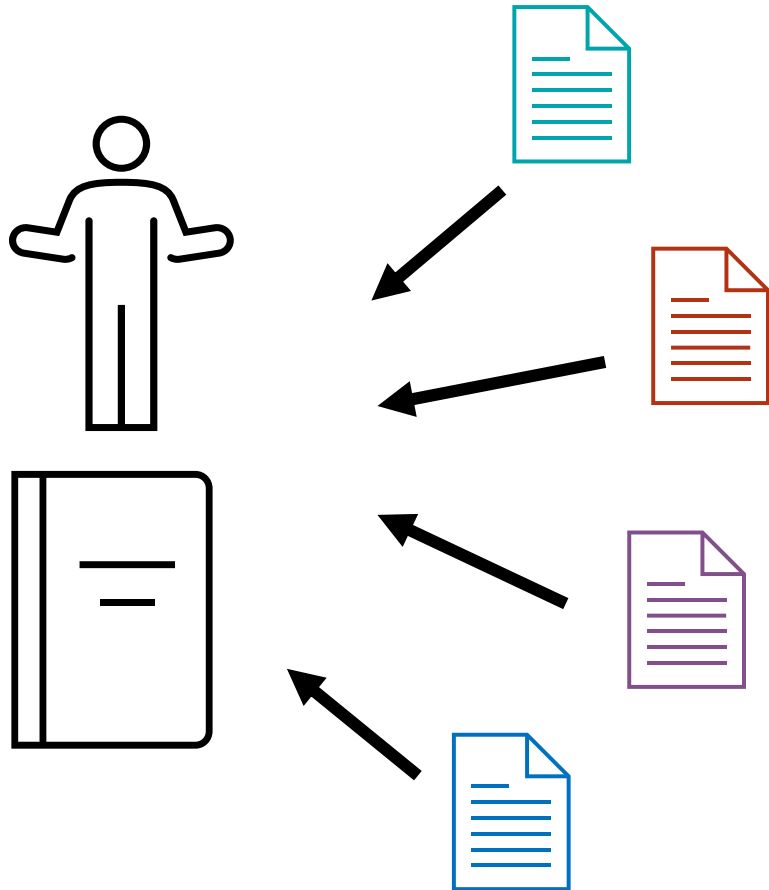


Find out who is making use of your research.



Consider outputs beyond academic papers.

What is citation counting?



- Count the citations to a particular paper, book *or* individual.
- In *theory* –
 - highly cited = widely read and influential.
- Tracks the sources of the citations.

How can article metrics help me?



Identify top or 'hot' papers.



Discover where citations are coming from.



Use altmetrics to give a different view on research impact.



Analyse citation patterns over time.



Many things
can influence
citation-based
metrics!

Using metrics responsibly

Publication culture

Different output types

Limited citation data

Manipulation or gaming

Reason for citations

Adding Context

- To understand if a paper is highly cited, it must be viewed in the context of similar papers.
- '*Similar*' may mean -
 - Papers within the same journal.
 - Papers within the same broad field/subject area.
 - Citations received over the same period.
- Some article level metrics try to add this context.



Your Turn! No. 1

- Download the workbook here
- In the workbook try: <http://tinyurl.com/MetricsHTPt2>
- Part A
- Group 1 – Use Scopus
- Group 2 – Use Web of Science





Answers 1

- How many citations in Scopus and how many in WoS?
 - What is that telling you?
- Were there any contextualising metrics that helped you figure out if this was an unusually highly cited paper?



Field-Weighted Citation Impact (FWCI) from Scopus

- Is a document cited more than we would expect?
- Considers -
 - When a document is published.
 - Type of document.
 - Subject area covered by the source journal.
- 1 = Expected average.
- > 1 = Cited more than expected.
- < 1 = Cited less than expected.

Highly Cited and Hot Papers (Web of Science)

- **Highly cited papers** – The top 1% of most highly cited papers in a particular field.
- **Hot papers** – Papers which receive a high number of citations over a short period of time (2 months).



Google Scholar

- Google Scholar also provides citation data.
- **Less clear** how Google Scholar generates its citation counts.

Google Scholar

miR miR on the wall



Articles

About 833,000 results (0.12 sec)

Any time

Since 2023

Since 2022

Since 2019

Custom range...

miR miR on the wall, who's the most malignant medulloblastoma miR of them all?

[X Wang, BL Holgado, V Ramaswamy, S Mack... - Neuro ...](#), 2018 - academic.oup.com

... **miR-9** and **miR-124**. During neuronal differentiation a negative feedback loop occurs whereby **miR-124** ... **miR-124** also appears to promote the transition of neuronal precursors to more ...

☆ Save Cite **Cited by 15** Related articles All 6 versions **Web of Science: 11** Find it @ Oxford

Sort by relevance

Data from Google Scholar

Data from Web of Science

Dimensions



Dimensions provides publication citation data and altmetrics.

Look at publications within specific fields.

Get contextualised metrics.

Limited free version available.

Your Turn! No. 2

- In the workbook try:
- Part B
- Group 1 – Google Scholar
- Group 2 - Dimensions



Answers 2

- **For Dimensions -**

- Any issues with the subject categories? Did all the papers seem relevant?
- Was this paper cited recently more than expected?

- **For Google Scholar -**

- Does Scholar pick up more citations to the paper than Web of Science?
- Are all the citations to the published journal version of the paper?



Who is citing this research?

What broad subject areas are citing a piece of research?

Which countries or institutions are heavily citing a piece of research?

Which authors are frequently citing a piece of research?



Demonstration – Citation Analysis

- How can we find out a bit out who is citing a piece of research.
- Why might this be useful?

Exporting Citation Analysis diagrams

- Click the '**Download**' button above the top right of the visualisation.
- Download the data table using the button at the bottom of the page.
- Data only downloads as a text file!



↓ DOWNLOAD





Citations for Books and Book chapters

- Historically, citation data has been counted from journal articles.
- More recently **book citation indexes** have been created.
- Web of Science has the Book Citation Index.
- The **Cited Reference Search** in WoS makes it easier to find all citations to a document.



Demo – Cited Reference Searching

- In this demo we show you how to use the Cited Reference search function in Web of Science.

DOCUMENTS **CITED REFERENCES** STRUCTURE

Cited Author ▼ Example: Peterson S* A-Z

⊖ And ▼ Cited Work ▼ Example: adv* food* res* A-Z

⊖ And ▼ Cited Year(s) ▼ Example: 2013-2014

+ Add row + Add date range

x Clear Search

What are Altmetrics for?

- Research reported in the media.
- Research that has created wider public discussion or debate.
- Research that has been used in policy documents.
- Useful when developing case studies or reporting on research impact.





Where can you find altmetrics?

- Scopus provides altmetrics information from Plum Analytics.
- **Dimensions** provides data from Altmetric.
- Freely available information is limited.
- University has access to Altmetric Explorer.
- **No one company covers or monitors all sources.**

Altmetric Explorer



A new tool for the University.



Allows in depth exploration of altmetric data.



Customised to find altmetrics for University of Oxford.



Too complex to cover here.

Your Turn! No. 3

- In the workbook try Part C

On your own, find altmetric data for a topic of your choice



Problems with Altmetrics

Hard to interpret.

More likely to exist for recent research.

Difficult to differentiate positive/negative discussion.

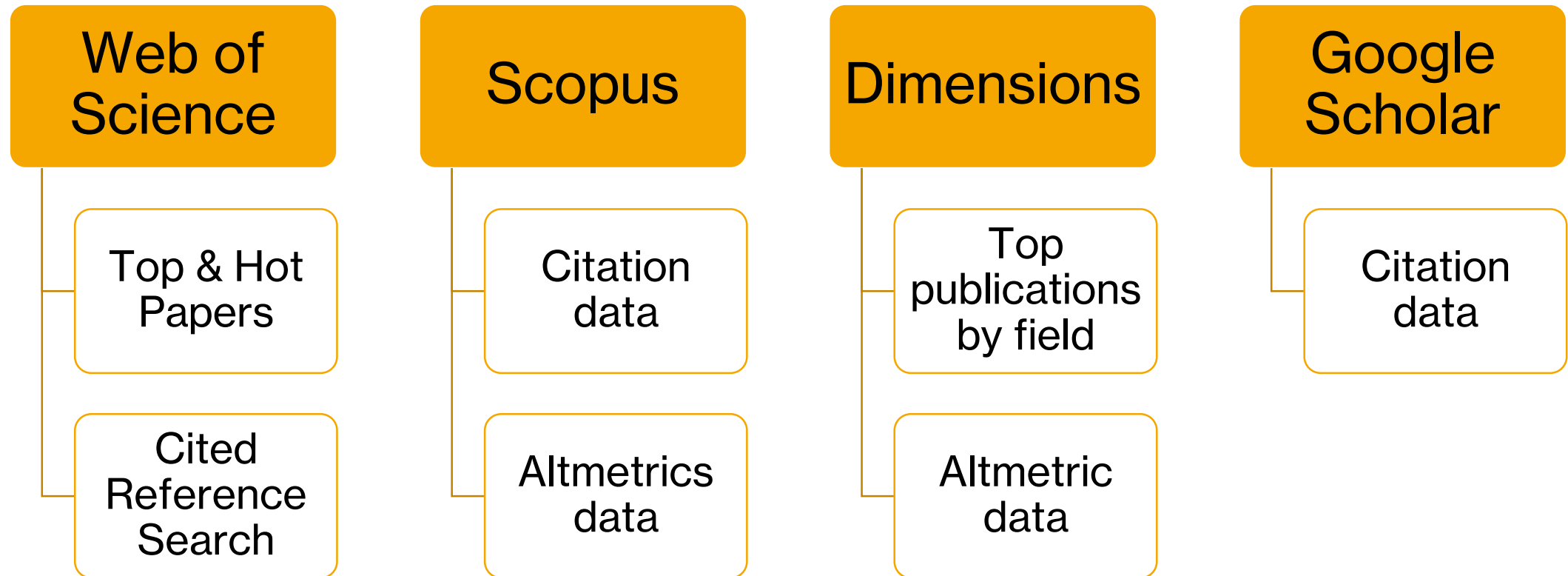
Limited access to source data for altmetrics.

May be influenced by factors that have little to do with the academic/scientific content of a piece of research.

May be influenced by open access publication.

Gaming e.g. use of bots to retweet references to articles.

Tools for Article Metrics





Author – h-Index

- Developed by Physicist **Jorge E. Hirsch** in 2005.
- Designed to account for both the *quantity* and *quality* of research produced.
- Sometimes funders or other bodies ask researchers for their h-index.
- **Use of the h-index is controversial!**

Calculating an H-index

- Considers –
 - Number of papers produced.
 - Number of citations received.
 - E.g., an h-index of 5 means I have produced at least 5 papers that have been cited at least 5 times each.

Papers	Citations
1	43
2	31
3	17
4	11
5	7
6	4
7	3
8	1
9	0

Your Turn! No. 4

- In the workbook try:
- H-index
 - Group 1 – Scopus
 - Group 2 – Web of Science
- If you have time, try Google Scholar too.



Answers 3

- What h-index values did you have for Sarah Gilbert -
 - Scopus?
 - Web of Science?
 - Google Scholar?
- Why might there be some difference?
- How easy was it to explore the underlying data for the h-index calculation?

A hand is shown balancing a dark, smooth rock on top of a stack of other smooth, rounded rocks of various colors (brown, grey, tan) on a beach. The background is a soft-focus view of the ocean and sky.

Problems with the h-index

- Different citation patterns.
- A narrow view of a researcher's total output.
- Different source data = different h-index.
- Placement of authors in publications.
- Favours those with a longer research career.
- Gaming by self-citations.
- Lacks correlation with importance of research.

Beyond the Research Paper

Other types of research output can be placed in repositories, cited and used for metrics.



Software

- GitHub



Datasets

- Dryad
- Figshare
- Zenodo
- ORA Data



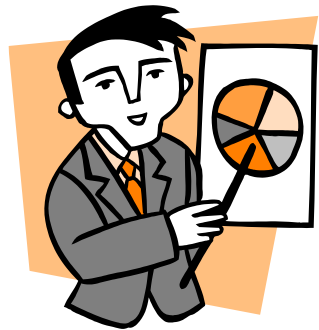
On-line Resources

- Research websites (Bod Web Archive)
- Blogs, videos, podcasts



Books and Book Chapters

- Increasingly indexed in WoS and SCOPUS



Posters & Presentations

- ORA
- SlideShare

ORCID

- Unambiguously identify yourself.
- The number can be attached to –
 - Publications
 - Datasets
 - Grants
- <http://orcid.org/>
- An Example:
 - <https://orcid.org/0000-0002-5240-7828>



Reasons to use ORCID



Clearly identify publications.



Easily display publications list and CV information using ORCID.



More reliable metrics calculations.



Identify more research outputs.

Setting up ORCID

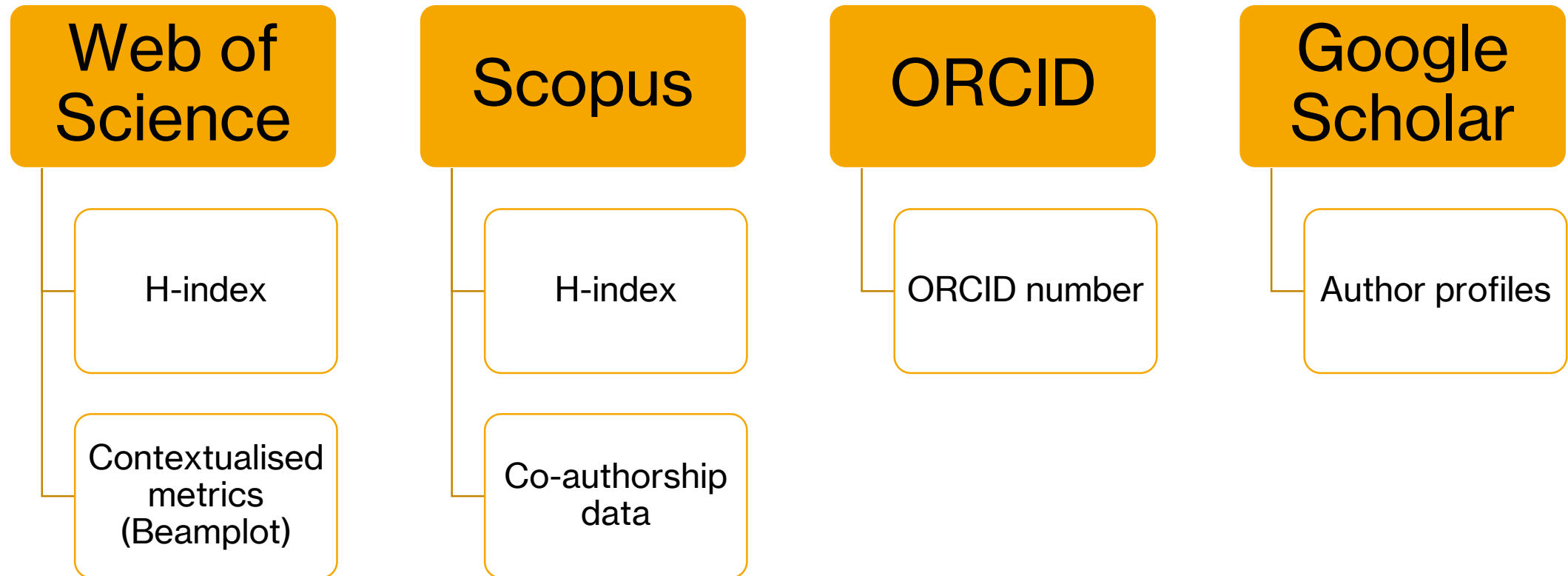
- You can set up ORCID through Oxford's own ORCID sign up system.
- Existing ORCID can be attached to an Oxford University affiliation.
- Takes about 5 minutes to set up.
- To get started and find out more visit -
 - <https://libguides.bodleian.ox.ac.uk/orcid>

In your own time

- Instructions for setting up your ORCID are in the workbook. Have a go!



Tools for Author Metrics





DORA



- San Francisco Declaration on Research Assessment (DORA).
- Oxford University is a signatory.
- Aims to improve the ways in which the outputs of scholarly research are evaluated.
- Critical of inappropriate use of metrics like h-index and looks at other ways of evaluating research output.
- More information: [Read the Declaration | DORA \(sfdora.org\)](https://www.sfdora.org)

Recap of aims...



Know how to find citation information for articles.



Be able to calculate a researcher h-index and understand its limitations.



Understand how altmetrics can be used to help provide a different view of research impact.

Further help

- Videos, slides and handout (QR code)
- <https://www.bodleian.ox.ac.uk/ask/workshops#/course/ISKILL0050>
- Contact email
- rachel.scanlon@bodleian.ox.ac.uk
- oliver.bridle@bodleian.ox.ac.uk
- [@radcliffescilib](https://twitter.com/radcliffescilib) on Twitter/X





**Any
Questions?**

