Getting Started with Research Impact Metrics (Especially when you feel 'Clueless')

Welzenbach, Rebecca
https://dx.doi.org/10.7302/4487
https://hdl.handle.net/2027.42/172457
http://creativecommons.org/licenses/by-nc/4.0/

Downloaded from Deep Blue, University of Michigan's institutional repository
Getting started with Research Impact Metrics
(Especially when you feel *Clueless*)

April 19, 2022
Rebecca Welzenbach
Research Impact & Information Science Librarian
University of Michigan Library
Link to these slides: https://bit.ly/IntroResearchImpact
What’s a research impact librarian?

I empower scholars to create the conditions under which they can establish:

- A strong public identity
- An account of their contributions to the scholarly enterprise
- A persuasive body of evidence for the impact of their work

Email me at rwelzenb@umich.edu
How did I get here?

Michigan Publishing

- Digital Publishing Coordinator (2009-2012)
- Text Creation Partnership (2010-2014)
- Director, Strategic Integration and Partnerships (2015-2017)

Themes: open access, digital scholarship, usage/metrics, innovative business models/partnerships for producing & preserving scholarship, telling the story of why our scholarship matters
What does “research impact” mean to you?
What terms, words, associations, or emotions does “research impact” bring up?
When do you think about research impact, metrics, etc.?
If you take one thing from today’s workshop, let it be:
GIF from the 1995 movie Clueless: Cher says to Tai, “She’s a full-on Monet. It’s like the painting, see? From far away, it’s OK, but up close, it’s a big old mess.”

The more I learn, the messier the picture gets!
Ex. 1: Metrics for Journals

Example: Journal Impact Factor

New England Journal of Medicine
2019 JIF (InCites Journal Citation Reports)

Journal Impact Factor Calculation

\[ \text{Journal Impact Factor} = \frac{48,405}{648} = 74.699 \]

How is Journal Impact Factor Calculated?

\[ \text{JIF} = \frac{\text{Citations in 2019 to items published in 2017 (25,326) + 2018 (23,079)}}{\text{Number of citable items in 2017 (327) + 2018 (321)}} = 48,405 \]

\[ \frac{1}{648} \]
Ex. 1: Metrics for Journals

Other things to know about the JIF:

- Created in 1960s to aid in library collection development
- Owned by Clarivate Analytics, based on the Web of Science journal index. Only journals indexed in Web of Science are eligible for a JIF.
- For 2019, the “Top” journal in Internal Medicine has a JIF of 74.699, in Organic Chemistry: 12.000, in Mathematics: 8.455
Ex. 1: Metrics for Journals

What issues do you see with the JIF?
Ex. 1: Metrics for Journals

What issues do you see with the JIF?

- Validity (different numerator and denominator)
- Effect of “Rockstar”/outlier articles
- Never intended as a proxy for quality--certainly not for articles
- Cannot be compared across disciplines
- Only available to journals in the WOS index
- Artificial precision?
Ex. 1: Metrics for Journals

Other citation-based ways of measuring journal impact (with flaws of their own):

- SCImago Journal Rank
- Source-Normalized Impact per Paper (SNIP)

Other qualities to consider:

- Acceptance rate
- Quality of peer review
- Scope/Fit for your research
- Frequency of publication
- Openness
- Author-friendliness
- Costs to publish
Ex. 2: Metrics for Researchers

Example: h-index

h-index is represented by the number of papers (h) with a citation number ≥ h

(https://guides.lib.umich.edu/researchimpact/hindex)
Ex. 2: Metrics for Researchers

Other things to know about the h-index:
- Developed in 2005 by physicist Jorge Hirsch
- Intended to provide a composite measure of productivity and impact
- Depends on the source for publications (e.g., Scopus vs. Google Scholar).
Ex. 2: Metrics for Researchers

What issues do you see with the h-index?
Ex. 2: Metrics for Researchers

What issues do you see with the h-index?

- Prioritizes number of publications (productivity) over citations (impact): h-index can never be greater than your number of publications
- Different across sources – no single score!
- Privileges a longer career (many publications + time to accrue citations)
- Cannot be compared across disciplines
Ex. 2: Metrics for Researchers

Other potential metrics for researchers:

● Number of publications
● Author position (differs across fields)
● Grants (number or $$ awarded)

What other factors matter?

https://humetricshss.org/
In case you’re now thinking...

GIF from Clueless: Cher looks worried, and thinks, “Everything I think and everything I do is wrong.”
You’re not alone. There is no “right” answer.
No single definition!

“The measurement of research impact is a contested research and political agenda that poses a complex academic question.”

No single definition!

- Only 23% of articles explicitly defined ‘research impact’
- 76% of those definitions came from external agencies (e.g., funding bodies)
No single definition!

Four types of research impact definitions:

- as “the demonstrable contribution that excellent research makes to society and the economy” (the Research Councils United Kingdom)
- as “an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia” (the Higher Education Funding Council for England and the Research Excellence Framework)
- as measurable influences in the form of quantifiable data such as citation frequency (bibliometric definitions)
- as the influences of research results on the knowledge and actions of researchers and policymakers (use-based definitions).

Where does this leave us?

- All research impact metric indicators have limitations – some really serious.
- Many have been used and applied inappropriately (Goodhart’s law: “When a measure becomes a target, it ceases to be a good measure.”)
- The issues are long known!
- Many ongoing discussions and debates are pushing to change the ways we think about research impact, and recognize and reward important scholarship.
- And yet, we’re still asked for (and asking for) new metrics to solve this
So what are we to do?

GIF from Clueless: Mr. Hall addresses a student in a high school classroom, saying “I’m all ears.”
I want to help!

GIF from Clueless: Cher, sitting in class and looking concerned, raises her hand and says, “I want to help.”
In the second half of this workshop:

- A few key footholds
- Responsible metrics
- Where do we go from here?
Research Impact: Not something that happens to you, but a story you create.
# Research Impact Challenge

This guide contains 10 activities to help researchers better understand and manage their online scholarly presence, as well as the impact and reach of their research.

## Introduction: Research Impact Challenge

Day 1: Register your ORCID and associate it with your U-M identity

Day 2: Claim your Google Scholar Profile

Day 3: Preserve and Share your work with a Digital Repository

Day 4: Social Media Audit

Day 5: Your personal web page—putting the pieces together

Day 6: What I do, what’s important to me, & what "counts"

Day 7: Finding appropriate metrics

Day 8: The h-index (and other citation-based measures of impact)

Day 9: Alternative Metrics

Day 10: Responsible Metrics

---

## Related Guides

- Altmetric and Altmetric Explorer for Institutions
  by Rebecca Weltenbach  Last Updated Jan 3, 2022  131 views this year

- Open Researcher and Contributor ID (ORCID)
  by Merle Rosenzweig  Last Updated May 11, 2021  192 views this year

- Research Impact Assessment (Health Sciences)
  by Tyler Nix  Last Updated Apr 14, 2022  695 views this year
1. Register your ORCID

- Open, non-profit, community-based effort
- Provides a standard unique author identifier that distinguishes you from every other researcher
- Aims to prevent authorship confusion
- Integrated with many systems
- Increasingly requested/required by funders & publishers
2. Claim your Google Scholar Profile

- Visibility & connection on widely used platform
- If someone finds one of your works on Google Scholar, they’ll be able to find all others
- One source for h-index
- Alerts for new publications and citations – for yourself and others
- Bad news: very little control, no integration with other systems
3. **Consider your social media use**

- Only you can decide what serves you and your work best.
- Social media takes time and work – does it advance or inhibit your path?
- The experience of “being” in public on social media is not the same for everyone.
4. Start with what you value…and go from there

- **Start** with what you value
- **Context** consideration
- **Options** for measuring
- **Probe** deeply
- **Evaluate** your evaluation

*(SCOPE Framework for Responsible Evaluation)*

GIF from *Clueless*: an 1990s computer application for making outfits shows a top and skirt as a mis-match
This is hard and complex work – as it should be.
Responsible Metrics

Examples:

- Leiden Manifesto
- San Francisco Declaration on Research Assessment (DORA)
- Examples of university responsible metrics statements
- SCOPE Framework for Responsible Research Evaluation

Common themes:

- Combine expert, qualitative assessment w/ quantitative
- Use more than one metric
- Do not misuse metrics (e.g., JIF as a proxy for quality of an article)
- What would you include?
That seems like a lot to think about on a Tuesday afternoon.
Thank you! What questions do you have?