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

Welzenbach, Rebecca

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Getting started with Research Impact Metrics (Especially when you feel *Clueless*)

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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)
- Journals Coordinator (2013-2015)
- Lever Press (2014-2017)
- 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:

The more I learn, the messier the picture gets!

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!"

Ex. 1: Metrics for Journals

Example: Journal Impact Factor

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

Journal Impact Factor Calculation

$$\text{2019 Journal Impact Factor} = \frac{48{,}405}{648} = 74.699$$

How is Journal Impact Factor Calculated?

$$\text{JIF} = \frac{\text{Citations in 2019 to items published in } \textbf{2017 (25,326)} + \textbf{2018 (23,079)}}{\text{Number of citable items in } \textbf{2017 (327)} + \textbf{2018 (321)}} = \frac{48{,}405}{648}$$

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

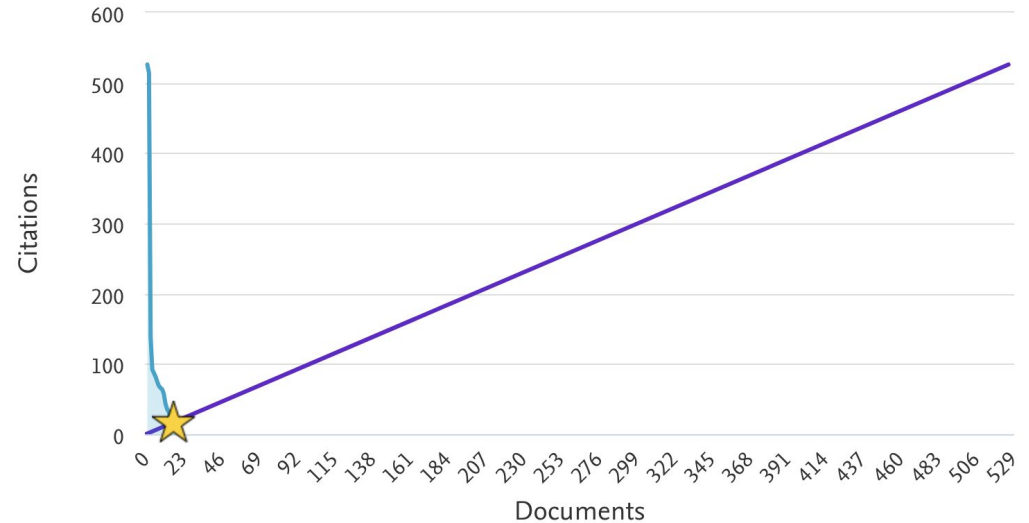# Ex. 2: Metrics for Researchers

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)

This author's *h*-index

18

The *h*-index is based upon the number of documents and number of citations.

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...
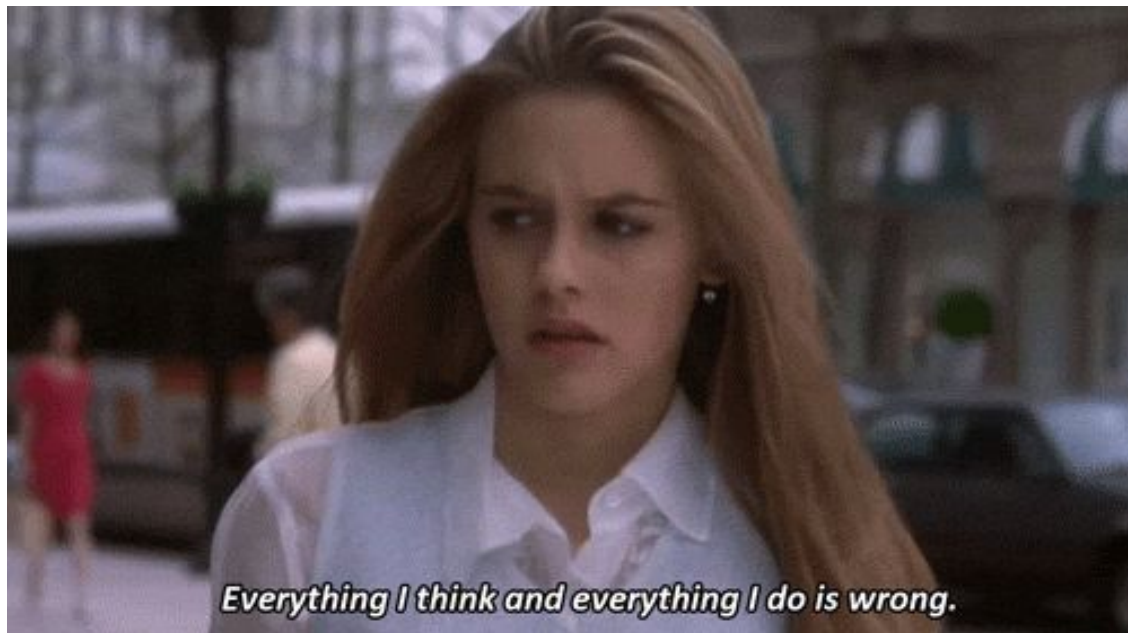
GIF from *Clueless*: Cher looks worried, and thinks, "Everything I think and everything I do is wrong."

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."

(Alla et al. "How do we define the policy impact of public health research? A systematic review" *Health Science Policy and Systems,* 2017)

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](#)

University of Michigan Library / Research Guides / Research Impact Challenge / Introduction: Research Impact Challenge

Research Impact Challenge

This guide contains 10 activities for researchers to 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-- pulling 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

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. The activities are presented as daily "challenges" that researchers might accomplish over the course of two weeks. However, each activity stands alone and can be completed separately from the others. You should feel free to select the activities that are most relevant to you and complete them in any order you wish.

Week 1 of the challenge (days 1-5) focuses on online scholarly presence: how can you ensure that you and your work are represented accurately and appropriately on the web?

Week 2 of the challenge (days 6-10) focuses on the various ways to measure the success and impact of scholarly work, and strategies for situating yourself and your research in order to make a compelling case for your work.

Please note that these activities were designed and written specifically for researchers at the University of Michigan. While most of them can be easily adapted for use elsewhere (and you are welcome and encouraged to do this!), some instructions are specific to a U-M environment or may refer to resources at the U-M Library that are not universally available.
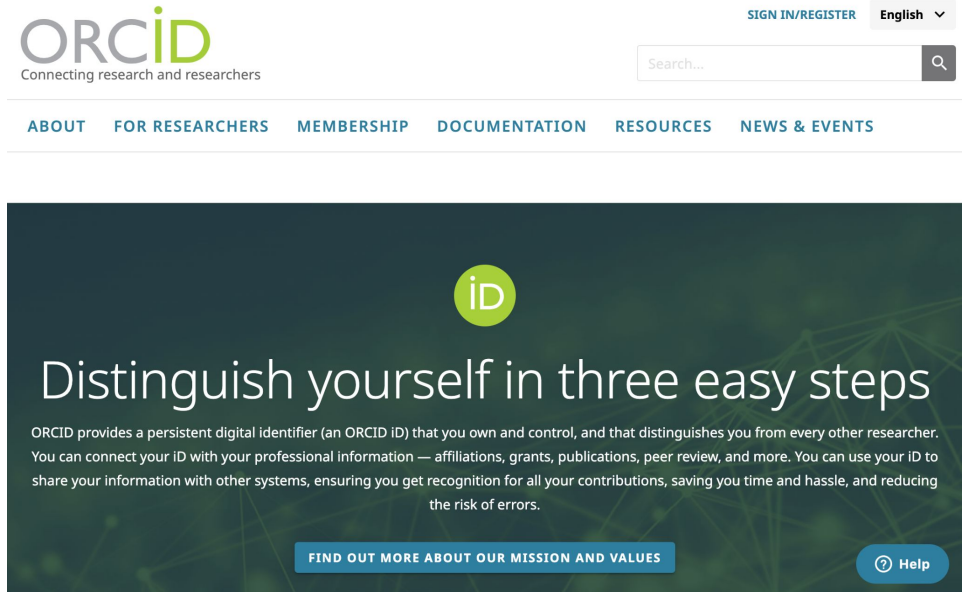
Let's get started!

Related Guides

- Altmetric and Altmetric Explorer for Institutions
  by Rebecca Welzenbach 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 researche
- 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. <u>Consider your social media use</u>

- 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

GIF from *Clueless*: with effort, Cher carries many plastic bags and pushes a large suitcase though the foyer to the front door of her house

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?