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REMS 2021 Lunch and Learn: Intro to Research Impact

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UMSI REMS Orientation--Research Impact Metrics Overview

[Slide 1]
Good morning, everyone! My name is Rebecca Welzenbach. I am the research impact librarian as well as the librarians for the school of information here at the University of Michigan Library, and I'm really pleased to have the opportunity to be here with you today to talk a bit about Research Impact and what we mean when we use that term in scholarly communications. Today I'd like to introduce you to some of the metrics or indicators of imapct you may encounter, raise some the current questions and emerging issues in this space, and then leave you with some resources and tools to turn to as you go forward.

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So, before we go any further, you might be wondering, what is a research impact librarian? During more normal times, I am based in the Hatcher Graduate Library, and I'm part of the Library's research division.

 I work with faculty across disciplines, with these aims in mind:
- to help create conditions under which scholars can develop for themselves a strong public scholarly identity,
- a complete and coherent account of their contributions to the scholarly enterprise,
  and a persuasive body of evidence for the impact of their work.

I'm the only person in the library whose whole job is dedicated to research impact issues, but I am far from the only person with expertise in this area. Most notably for the audience today, I want to make sure to point out the Research Impact Core at the Taubman Health Sciences Library. These days I am doing my work from home, but that has no bearing on my ability to work with you--I am available to take your questions by email, as well as

for one-on-one consultations or group instruction or workshops via video conference.

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So as I mentioned, these are our objectives for today: I want to familiarize you with some terms and concepts that you're likely to encounter as a researcher, and particularly as you move into the role of a professional scholar looking to publish your work, and advance along a career path. Then, having laid some of this groundwork, I want to raise some issues that are worth wrestling with. And finally, I'll point you to some tools and resources you can use going forward.

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Here's what we won't do today: memorize the formulas to calculate every research impact metric that exists.

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So, let's get started with some audience participation. First up: What does "research impact" mean to you? No wrong answers here--including "I have no idea." Please take a minute or two to think to yourself, and then throw some ideas into the chat box. This is a brainstorm, so just random words, phrases, concepts are fine.

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OK, great (pull out themes). Next, a little more brainstorming: what terms, words, ideas, emotions, etc. come up when you think about research impact? Take a minute or to think to yourself, and then I'd like to ask you to throw some ideas into the chat.

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You might be surprised--or maybe you won't be--to learn that there's no single, concrete definition for what is meant by research impact. In fact, the

term is so vague and contested in that a couple of years ago, Kristel Alla and others conducted a systematic review of public health literature to identify how the term is used, whether or not it's defined when used, and how those definitions differ.

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They found that only 23% of articles that met their study criteria explicitly defined the term research impact, and that, of these, 76% were drawn from external agencies such as funding bodies. They identified common areas and patterns for where research impact tends to be observed--in the scholarly literature, in policy, in clinical practice, etc.

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This study grouped definitions of research impact into four categories (although three of these are quite similar, and one--our focus today--stands apart):

- The first category of research impact identified in this study looks for positive contributions, broadly speaking, to *society* and *the economy*
- The next covers some of the same ground, but focuses on the definition of impact as occurring in some domain *outside of academia*
- Third is impact within the scholarly conversation, usually measured according to some bibliometric indicator.
- And fourth is a bucket that has to do with the influence of research on the future actions of other researchers and policy makers.

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In general in my work I'm interested in all of these areas--and I end up spending a good deal of time with scholars looking for ways to understand and communicate the impact of work that goes beyond academic channels, and isn't easily quantified with bibliometric indicators.

For the purposes of today's conversation, though, we're going to focus specifically on these measures of impact within the scholarly literature, because as you embark on your own research paths, I'm hoping to help equip you with the language and tools you need to navigate this space. I'm always happy at another time to talk about different forms of research impact. For now, though, we'll transition into the next bit of this session, which will focus on these bibliometric indicators.

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Ok, here are some examples of the types of things you might hear in conversation among academics:
- "What's the impact factor of that journal?"
- "My Google Scholar h-index is better than my Scopus h-index, so I'll use that one."
- "A high-impact article with 25 citations…"
- What's my Altmetric score?

For better or for worse (let's be real, it's for worse!) folks--whether researchers or evaluators-- will often take up these numbers of measures of *something* important, assuming that they are neutral, objective, reliable, and meaningful. But we won't make this mistake.

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In order to even begin to make sense of these metrics, you first need to know what the metric or score is purporting to measure. Most commonly in this space, we're talking about a score or measure that applies to either a whole journal, an individual researcher's body of work, or perhaps a single article, or some other measurable unit.

Today we have time to look at just two very high profile examples that you're likely to run into. Let's start with the big one: the Journal Impact Factor.

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The Journal Impact Factor measures the average citation frequency of a journal's articles within a particular year. The calculation is based on a two-year period, where a journal's citations are divided by the number of total published citable articles.The JIF can also be measured over a five year, rather than a two year period, so it's important to indicate which one is meant. Usually the assumption is the 2 year

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A few more things to be aware of regarding the journal impact factor:
Example: Journal Impact Factor
- 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

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With all this in mind, let's pause for a moment and think about some of the issues you see with the JIF. I'll give you maybe 20 seconds to think about it, and then shout out some ideas in the chat box.

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Right, so lots of good ideas in the chat box. Here are some of the key issues folks have found with the JIF--and been writing about for years:
- 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

Nonetheless, we still see the JIF come up as an indicator that *bcomes* really important to researchers--in some cases, impacting their ability to win funding or advance in their careers. Even when the scales fall from our eyes--it is *really* hard to break the habits of using these scores, and to develop new and better ones.

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That's not to say that folks haven't tried! There *are* other ways of calculating scores of journal impact that seek to measure in a more valid way, or that aim to normalize across fields. There are also many ways of thinking about the importance of a journal -- or its fit for your work--that have nothing to do with JIF. Nonetheless, the JIF persists.

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Let's look at one more example of a widely talked about research impact metric. This one, rather than measuring the impact of a journal, attempts to say something about both the impact and the productivity of an individual researcher. This is the h-index. An author's h-index is represented by the number of papers (h) with a citation number ≥ h.

In our example here, we are looking at the screenshot from the Scopus database for the h-index of James Hilton, the dean of the Libraries. According to Scopus, James' h-index is 18--that is, he has 18 papers that have been cited 18 or more times each.

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