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The journal impact factor does more harm than good. Wow. When I was approached for this debate, I thought, “Am I being punished for something?” Maybe it’s a good thing that we changed our name since you might have thought I work someplace else. But honestly I’m very glad for this opportunity to share my thoughts with you and to hear yours.

I’d like to start with a quote- “Like nuclear energy, the impact factor has become a mixed blessing”- words from Dr. Eugene Garfield, the co-creator of the journal impact factor and the founder of the Institute for Scientific Information, today part of Clarivate Analytics. Like most scientific advances, he couldn’t predict where it would lead, nor can we quantify how much harm or good it has done.

As a scientific community, most of us would agree that quantitative analysis is a valuable tool. And quantitative analysis of science, the science of science, is also valuable. There is value in measuring scientific activity through publications and other means in order to improve our understanding of science, scientists, their organizations, their funders, etc. Only with understanding can we make better decisions, whether you are a funder deciding who should receive your precious dollars, or a department head deciding whom to hire, or a researcher deciding where to submit a manuscript. I believe that our community can benefit by informing those decisions with the best data.

When Dr. Garfield created the Science Citation Index and the Journal Citation Reports many moons ago, he never could have imagined where it all would lead. His and Irving Sher’s original goals with the journal impact factor in the early 1960s were around information retrieval and discovery, to help select the best journals for the Science Citation Index. They hoped it could help librarians to inform collection development decisions by adding a quantitative dimension. Fast forward 50 plus years, and we see the journal impact factor and other bibliometrics being used, and sometimes abused, in diverse ways that have become ingrained in the scientific ecosystem and never intended by Garfield and colleagues.

How did we get here? Let’s first clarify what it is and isn’t. The journal impact factor has taken on an almost mythical aura and become more than it is, bigger than it is. There are countless articles written about it, dissecting it every which way. Sometimes I think we can stop marketing JCR because our critics do such a good job themselves. It’s become a symbol, some would say scapegoat, for all the pitfalls of bibliometrics. Yet it’s really a simple calculation when you get to the heart of it. It’s a ratio of citations received by a journal in one year to articles and reviews in that journal from the previous two years. It’s an indicator of a journal’s citation activity in that three year window, taking citations received by all documents in that journal and scaling them by the size of the journal. Nothing more and nothing less. We are not a publisher and we would gain nothing by being opaque with this. In fact, we continue to
add transparency. We are adding a direct link to the documents in the denominator to make the underlying data clearer. And we hope to expose even more data going forward.

Now that we’ve cleared up what it is, let me take a step back. We can all probably agree that we have a metrics problem, maybe an addiction. I’ve seen publishers one day denounce the journal impact factor, and the next promote their new impact factor in a press release. Like many “rankings,” if you do well, you like it. If your rank goes down, then the ranking must be flawed. I think most of us see the value in research metrics, but we want them to be better. We want them to be used in the best way, with the best understanding, in conjunction with the best human judgment. That’s the ideal.

So you ask whether the journal impact factor, one metric out of many, has done more harm than good. Perhaps what we’re really talking about is whether bibliometrics have done more harm than good. When I reflect on the legacy of the journal impact factor, one can argue that it has ushered in the modern age of bibliometrics. Without it, where would bibliometrics be today? We have to remember that it came out in the era of paper and punch cards. We are spoiled by today’s computing power. Back then, very few people could do bibliometrics. Journal impact factor was ready-made, and it filled a need. It provided an unbiased, quantitative perspective on journals that never existed before. A journal could now be evaluated and ranked against its peers based on numbers, the language of science, not based on someone’s opinion. That turning point is one of the key benefits of journal impact factor and its legacy, which we tend to take for granted.

When the journal impact factor came out, scientific publishing was an old boys club, difficult to penetrate if you were a woman, a minority, from a non-Western country, or a non-English speaker. Is it better to have metrics that add a non-biased, internationally-representative, quantitative counterpoint to this culture? Yes, I think so. Should we rely solely on such metrics? Of course not.

Journal impact factor does more harm than good?

Ironically, it’s not something we can easily quantify. Have bibliometrics, journal impact factor and otherwise, been used in strange and incorrect ways? I see it all the time. What is the solution? If we were able to magically erase journal impact factor from history, what would happen? I think some other journal metric would fill its vacuum. It would be naïve to think that suddenly, the misuse and misunderstanding would stop. People are people. They do things for a reason. They use journal impact factor in weird ways because of ignorance. Because of convenience. Because of habit. In fact, journal impact factor has taught us valuable lessons in scientometrics, including altmetrics. We need to normalize the data, to think about the consequences of our metrics, to adjust and augment our metrics when they are insufficient. It has taught us lessons that are still very useful, and have furthered the dialog around quantitative measurement of science, and that is a benefit, not a harm. So let’s not throw the baby out with the bathwater. Let’s not discount all citation metrics because of the journal impact factor’s limitations and misuse.

So, what should we do to improve this situation?
We and others constantly educate the community about the best way to use bibliometrics. I’m very encouraged that more librarians are seeking bibliometrics training. There is no need to over rely on the journal impact factor, to make it do things it can’t do. If you want to evaluate an article’s citation performance, there are article-level metrics to do that. We have category and journal normalized citation ratios and percentiles in category for every article in our database. These article-level metrics can be aggregated for a person, an institution, a journal etc., to evaluate that body of work against its cohort.

So what can the journal impact factor tell you? It represents a journal as a whole. That’s what it’s always done and continues to do. It is one journal metric among many found in the JCR, like 5 year impact factor, immediacy index, Eigenfactor, citing and cited half-life...each telling you something different about a journal’s citation activity. Collectively, these metrics tell a rich story about a journal and its relationship within the network of journals. The journal impact factor, when used in conjunction with other JCR metrics and other data, provides valuable information about a journal’s overall impact. I believe it has done good in helping publishers add a quantitative dimension to otherwise subjective decisions. I believe it has done good in helping librarians add a quantitative dimension to their collections decisions. I believe it has done good in helping funders to assess the journals an applicant has published in, especially an early career researcher without citations. I believe it has done good in helping researchers to understand the relative impact of the journals in their field in a way that is impossible from their individual perspective. Citations are a measure of usefulness through which we crowdsource the opinions of the entire scientific community. No one researcher, nor librarian, can read everything in her field, especially as scientific publication continues to expand. So leveraging the wisdom of the crowd is valuable to extend beyond your own circle and tap into the expertise of the global scientific community. That is a good, not a harm, when we are all plagued by information overload.

Statistics pervade our lives. Fantasy football, the stock market, Facebook likes, credit scores, SATs. When I take my baby to the doctor, I’m anxious to know her weight percentile because she’s had weight issues. And yes, every child is unique and yes, there are many factors at play, but nonetheless I find it helpful to know how she compares with other babies since I can’t possibly gauge that myself. I can’t help but compare. Can this be harmful? Sure, if I stress out too much about that number. All metrics need context and common sense.

Similarly, the journal impact factor is helpful for its intended purpose, as a broad measure of the citation activity of a journal to be used in conjunction with other data and human judgement. It is not the end all and be all any more than SATs are the only judge of a student’s intelligence. The journal impact factor has become a symbol for the frustrations and anxieties people feel about research metrics. It made the mistake of being one of the earliest bibliometrics when there were few alternatives, and it has been forced to do things it was never meant to do. But the past is the past. My hope is that our community can come together to establish and encourage the best possible use of research metrics across the ecosystem: publishers, researchers, department heads, funders, and anyone else who cares about science. It’s not a Clarivate problem. Or a journal impact factor problem. It’s a community problem. Changing a mindset and changing ingrained practices is daunting. Things are slowly changing, so there is
hope, but it will happen only if we work together. For ushering in the age of modern bibliometrics, for teaching us important lessons about scientometrics, for bringing quantitative evaluation to journal-based decisions and helping to democratize the publishing process, I believe the journal impact factor has done more good than harm and it’s up to all of us to do it justice going forward.