



Altmetrics: Tools for measuring the impact of polar publications on public discourse

SHELLY SOMMER

*Information & Outreach Director,
Institute of Arctic and Alpine Research (INSTAAR),
University of Colorado Boulder*

Abstract

Alternative metrics (altmetrics) track the attention that scientific publications receive in the public sphere. Traditional metrics, such as citation counts and h-index, measure a publication's impact on scientific discourse. Altmetrics, in contrast, evaluate the publication's impact on public discourse.

This paper will explore altmetrics collated by the company Altmetric and show how and why they might be helpful for librarians and researchers. It will:

- ▶ Quickly but clearly outline the purpose of altmetrics.
- ▶ Tour Altmetric information and its quirks.
- ▶ Break down what kinds of evidence and support altmetrics can provide to researchers and institutions.
- ▶ List best practices that help authors get credit for their influence on public discourse.

I would like to share a little about Altmetric, which is rapidly becoming one of my favorite analytical tools for measuring the impact of my institute's scholarly publications. Altmetric has become a hot topic with some of my library colleagues who specialize in scholarly communications. If you've looked at an online article and seen a small multicolored bar or wheel, you may have come across Altmetric scores as well. But what do they mean, practically, for our work as librarians? Do they have anything to offer us or our researchers that we couldn't get before? I hope to convince you that Altmetric can be a handy item in our toolkits and a useful conversation starter with our library patrons.

What is it?

Many of us are familiar with the metrics that measure the scholarly impact of scientific papers, such as number of citations, h-index, or an author's impact factor. These measure a paper's impact on scientific discourse. Altmetric, on the other hand, measures a paper's impact on public discourse.

Alternative metrics in general track information about the public attention that research outputs, like scientific papers, books, or datasets, receive online. Altmetric (with a capital A) is an online product, developed by the company of the same name, that measures and delivers article-level metrics across many platforms.

Altmetric information can tell the story of how people are engaging with the article outside citations. And they can help people get credit for influencing public conversations and knowledge. They do this by monitoring the attention given to the article in sources like:

- social media channels
- mainstream media from around the world (news stories)
- research blogs
- policy documents
- Wikipedia
- patents
- sites running Stack Exchange
- downloads to online reference managers like Mendeley and CiteULike

Altmetric scores are a counterpart to more traditional citation-based metrics, filling in the picture of public attention to research. It is not a substitute for citation-based metrics, but an extension, showing a more inclusive and pluralistic picture of impact.

Altmetric scores are popping up in lots of places: on publishers' websites alongside each article; in discovery platforms like Primo and Summon; and in institutional research monitoring systems like Symplectic Elements. You can also install a bookmarklet on your web browser that will show Altmetric information for any paper or other output with a doi.

Altmetric information has a number of aspects that are useful to understand:

Attention can be positive or negative. Mentions of a research paper might extol the results or excoriate the author; the Altmetric score does not differentiate between the two.

There can be changes in social media channel coverage. For instance, Pinterest and LinkedIn recently changed their APIs in a way that means Altmetric can no longer track mentions of research there.

Altmetric information is not comprehensive. Altmetric tracks mentions of links and DOIs in a sophisticated way, but they cannot correctly interpret every online mention. For instance, a tweet that doesn't include a link to the paper, DOI, or a news story about the paper may not be counted toward the paper's Altmetric score.

In addition, Altmetric continues to add sources such as new channels and policy documents. But curation takes time, so there are always sources that aren't included even though they may fit Altmetric's profile of a legitimate source.

A quirk of Altmetric scores is that two research outputs can receive the same numerical score, even if the quality of the attention they receive is quite different. Altmetric assigns different sources of attention different weights. For example, a news story counts more than a tweet. That means one research output can receive a lot of attention on social media, and another can make it into newspapers across a continent, and they'll both wind up with the same numerical Altmetric score. Altmetric gives a visual indicator of where attention is coming from using the colors on its wheel: all aqua means you're looking at a lot of social media, while a mix of colors may mean some pickup in news, social media, and perhaps a policy document or Wikipedia article. I see this as a positive attribute of Altmetric scores, since it gives both a reasonably balanced way to compare public attention and encourages you to delve into the story behind the metrics and why they look like they do.

Research outputs tend to rack up most of their Altmetric scores fairly quickly, as most news and social media coverage happens shortly after publication. There can be a long tail, however, if papers become relevant to new conversations, or as they are added to different sources like policy documents or online discussions.

Why use it?

There are several reasons why researchers and librarians might want to use Altmetric scores to discover and report their influence on public discourse.

Researchers can demonstrate the early impact of a paper, before it has time to garner citations. Some research has been conducted that links more public attention to higher citation counts later, though that link is as yet somewhat tenuous. However, one can use Altmetric to find success stories about a researcher's recent work that they can share with their departments and prospective students, report to their grant funders, or add to their CVs. The actual number of the Altmetric score may not be that telling, but being able to say where the research is having an impact, or that it is top ranked in some way, can be.

Researchers can share their impact on public discourse during performance and tenure reviews. Public engagement is still an undervalued part of an academic career, at least in the United States. Including information from Altmetric can help fill in the performance picture for a publicly engaged scholar.

Researchers can use Altmetric information in their grant applications and reports to funders. Being able to report to a funder that work that came out of a grant is top ranked in some way can be more powerful than simply recording the fact of publication, especially before citations have time to accrue.

Librarians may have a somewhat different perspective. In a scholarly communications context, they might include information about Altmetrics alongside other bibliometric indicators in their conversations, workshops, and other communications. If you already provide bibliometrics reports or advice to your researchers, it may be useful to add Altmetric to the mix to show a broader view of attention. Altmetric can also be something you include when you teach researchers good information skills.

I have shared information about Altmetrics in a variety of contexts, from a workshop for early-career scientists to casual conversations in the hallway. Several times I have dug into a researcher's Altmetric information when they publish a paper that gets some news coverage. If I see an interesting pattern, I pass it along to the researcher with some supporting evidence. This is usually interesting to the researcher, but it also creates teachable moments in which I can encourage positive behavior: perhaps letting me know about their papers coming out in advance, or taking photos in the field that I can use in social media, or

publishing in open access sources. My job involves being a communicator as well as a librarian, so you may have different kinds of conversations; just know that Altmetric information can work as a lever to get your researchers to pay attention to what you're telling them and perhaps encourage desired behavior.

These conversations with researchers have also had some knock-on effects. Because they open up topics that may be a bit outside what researchers are used to thinking of as my skill set, they encourage researchers to come back to me with wider, more strategic questions. They tend to talk with me more often afterwards, about more meaningful subjects. So Altmetric is a tool I use to build a better network at my institution.

More broadly, Altmetric information can be used to encourage researchers to adopt open practices, make their research data available, and consider publishing in open-access journals. If you already talk with your researchers about these topics, you might explain the opportunities for tracking attention using Altmetrics, and the links between open-access data and publications with increased attention and higher Altmetric scores.

Altmetric can also be a tool you use to help your researchers "get" social media. When they see how public attention to their most recent paper is driven by tweets and other social media mentions, they see exactly how social media can be important to how their work reaches the public. They may never tweet or blog, but they may give me content for my institute's channels. More importantly, they may be more understanding and supportive of their students who do choose to use social media.

Last but perhaps not least, Altmetric may be a tool that helps us contribute to performance and tenure review reform. Because publicly engaged scholarship is rarely rewarded in the review process at American universities in general, and at my University in particular, there is a disconnect between our reward system for faculty and our moral imperative as a public university. Making some kinds of public engagement and attention a little more measurable can be a way to wedge open the definitions of what counts as a scholarly product and who counts as a peer.

Altmetric has recently developed a product Explorer for Institutions. This paid service lets institutions look at aggregate data for their publications and for the entire universe of publications measured using Altmetric. I won't go into detail about Altmetric Explorer, since it is not a free tool. But I did find it quite useful for helping my director and dean argue for more resources for our research area, which is getting a very large share of the public attention given to our university. If your entity has a subscription, and if you are called on to analyze the performance of your institute, university, or individual researchers, Altmetric Explorer is well worth looking into.

Best practices

There are a few simple practices that may help your researchers improve their Altmetric scores. They will not magically turn an uninteresting paper into a social media superstar. But practiced consistently, they can help researchers connect their work with people outside the academy. Conveniently, these are all just good communications practices that many of us try to instill in our researchers and students anyway. I usually include these suggestions:

Talk to your communicator before a paper comes out to decide if your work can best be shared through a news release, social media posts, or other channels. If you can write a brief lay summary of your work that highlights why it's important or interesting, bring it along. A sentence or two can really help.

Get the word out. If you have social media channels, use them. If you don't, consider writing a post for an existing blog when you release interesting results. Either way, remember that the details of the study won't pull people in as much as knowing why the study is meaningful.

Make your work available via open access when you can. People don't talk about what they can't see.

Upload and make available data, figures, posters, and other files using a repository or an open-access platform that assigns DOIs, like figshare. This gives those research outputs that otherwise might languish on your hard drive a chance to connect with people who need them.

Share links to your work. Altmetric tracks research outputs using a persistent identifier like a DOI, arXiv ID, or PubMed ID. Whenever possible, link mentions of your work to a page that includes that unique ID. The publisher or institutional repository abstract page works well. I usually try to include a DOI link to the research output even if I lead with a link to a news story about it.

For librarians, best practices include our usual: digging into the data, knowing where it comes from, and understanding strengths and limitations of the information we're seeing. More information on Altmetric and how to use it can be found on the Altmetric website (<https://www.altmetric.com/>), which is surprisingly helpful. I hope that you will check it out, perhaps download the bookmarklet to your web browser, and see if Altmetric might be another tool that you can offer your researchers.

References

- ADIE, EUAN, 2014: Attention! A study of open access vs non-open access articles. figshare: <http://dx.doi.org/10.6084/m9.figshare.1213690>. Last accessed 31 May 2018 at <https://www.altmetric.com/blog/attentionoa/>
- ALTMETRIC SUPPORT, 2018: What outputs and sources does Altmetric track? (online help system document, updated 5 April 2018). Last accessed 31 May 2018 at <https://help.altmetric.com/support/solutions/articles/6000060968-what-data-sources-does-altmetric-track->
- COSTAS, RODRIGO, ZOHREH ZAHEDI, AND PAUL WOUTERS, 2014: Do "altmetrics" correlate with citations? Extensive comparison of altmetric indicators with citations from a multidisciplinary perspective. *Journal of the Association for Information Science and Technology*, 66(10): 2003–2019. doi 10.1002/asi.23309
- DIDEGAH, FERESHTEH, TIMOTHY D. BOWMAN, AND KIM HOLMBERG, 2016: Increasing our understanding of altmetrics: identifying factors that are driving both citation and altmetric counts. iConference 2016 papers: <http://hdl.handle.net/2142/89331>. Last accessed 31 May 2018.
- HUANG, WENYA, PEILING WANG, AND QIANG WU, 2018: A correlation comparison between Altmetric Attention Scores and citations for six PLOS journals. *PLoS ONE*, 13(4): e0194962. doi 10.1371/journal.pone.0194962
- KWOK, ROBERTA, 2013: Research impact: Altmetrics make their mark. *Nature*, 500: 491–493. doi 10.1038/nj7463-491a
- LI, XUEMEI AND MIKE THELWALL, 2012: F1000, Mendeley and traditional bibliometric indicators (conference paper). 17th International Conference on Science and Technology Indicators.
- PIWOWAR, HEATHER A. AND TODD J. VISION, 2013: Data reuse and the open data citation advantage. *PeerJ*, article 1:e175. doi 10.7717/peerj.175