Redefining Value: Alternative Metrics and Research Outputs

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REDEFINING VALUE: ALTERNATIVE METRICS AND RESEARCH OUTPUTS


http://unl.libguides.com/CINFAIt
Practical Applications for Altmetric Data: Funding Requests

Redefining value: Alternative metrics and research outputs
ACS National Meeting, Denver
22 March 2015

Sara Rouhi
Product Specialist
sara@altmetric.com
How do we measure engagement?

(Thanks, Donna)
An online world **stuck** in a print paradigm..

- 44K online mentions of scholarly articles every day.
- 1 mention every 2 seconds!
- 50K unique articles are shared each week.
- >2M articles with tracked attention data.

Source: Altmetric internal data, March 2015
The big questions

• Why altmetrics? Why now?
• What does Altmetric.com do?
• Why should YOU care?
  – Spoiler alert: Because your researchers do!
  – Funding case study
Traditional metrics lag behind...

The evolution of cichlid fish egg-spots is linked with a cis-regulatory change

M. Emilia Santos, Ingo Braasch, Nicolas Boileau, Britta S. Meyer, Loïc Sauteur, Astrid Böhne, Heinz-Georg Belting, Markus Affolter & Walter Salzburger

Nature Communications 5, Article number: 5149 (2014) | doi:10.1038/ncomms6149

Last updated: 14 October 2014 13:45:47 EDT

Total citations

Data not available
Data not available
Data not available

Web of Science
CrossRef
Scopus

Online attention

Altmetric score (what's this?)

Tweeted by 48
On 6 Facebook pages
Picked up by 12 news outlets
Blogged by 1

It is Altmetric score means that the article is:

- in the 99 percentile (ranked 201st) of the 38,911 tracked articles of a similar age in all journals
- in the 94 percentile (ranked 14th) of the 274 tracked articles of a similar age in Nature Communications

USA NEWS

The cichlids egg-spots: How evolution creates new characteristics

Daily News

The evolution of new traits with novel functions has normally posed a challenge to evolutionary biology. Studying the colour mar ..

2014-10-09T10:17:50+01:00
Funders are noticing...

Grant funders looking for proof of “broader impacts” often defined as “an effect, change, or benefit to the economy, society, culture, public policies, health, the environment, etc.”

Research Excellence Framework,
http://www.ref.ac.uk/panels/assessmentcriteriaandleveldefinitions/

Broaden dissemination to enhance scientific and technological understanding, for example, by presenting results of research and education projects in formats useful to students, scientists and engineers, members of Congress, teachers, and the general public.

A definition...

An alternative, more immediate measure of attention

Not a replacement but a complement

Policy documents, blogs, mainstream news, social media

From non-traditional sources

To provide a larger context

#altmetrics can help provide a broader view
Altmetric is a **data science company** that **tracks attention** to research outputs, delivering **article output-level metrics** via visually engaging, intuitive interfaces.

In other words, we help give **credit where credit is due**.
Where you might have seen us...
Publishers

- Wiley
- Elsevier
- Nature Publishing Group
- Sage
- Wolters Kluwer Health
- Frontiers
- The Cochrane Collaboration
- Springer
- JAMA
- The Journal of the American Medical Association
- Altmetric
- The Royal Society Publishing
Where you might have seen us...Discovery systems
Where you might have seen us...

Institutional repositories
It’s not about numbers, it’s about context!
Wild chimpanzees plan their breakfast time, type, and location

Karline R. L. Janmaat, Leo Polansky, Simone Dagui Ban and Christophe Boesch

So far Altmetric has seen 22 stories from 21 outlets.

Chimpanzees Plan Their Breakfast Time
The New Indian Express

Chimpanzees plan their breakfast time
Northern Voices Online

Chimpanzees plan their breakfast time
Vancouver Verdesi
Wild chimpanzees plan their breakfast time, type, and location
Karline R. L. Janmaat, Leo Polanco, Onne Dagui Ban and Christophe Boesch

Twitter attention
The data shown below were collected from the profiles of tweeters who shared this article. Click here to find out more about how the information was compiled.

Geographical breakdown

<table>
<thead>
<tr>
<th>#</th>
<th>Country</th>
<th>As %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>US</td>
<td>31%</td>
</tr>
<tr>
<td>2</td>
<td>GB</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>ES</td>
<td>3%</td>
</tr>
<tr>
<td>3</td>
<td>DE</td>
<td>3%</td>
</tr>
<tr>
<td>3</td>
<td>NO</td>
<td>3%</td>
</tr>
<tr>
<td>6</td>
<td>PK</td>
<td>1%</td>
</tr>
<tr>
<td>6</td>
<td>SE</td>
<td>1%</td>
</tr>
<tr>
<td>6</td>
<td>ZA</td>
<td>1%</td>
</tr>
<tr>
<td>6</td>
<td>UG</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>42%</td>
</tr>
</tbody>
</table>

Tweeter demographics

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
<th>As %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members of the public</td>
<td>47</td>
<td>71%</td>
</tr>
<tr>
<td>Scientists</td>
<td>15</td>
<td>24%</td>
</tr>
<tr>
<td>Practitioners (doctors, other healthcare professionals)</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td>Science communicators (journalists, bloggers, editors)</td>
<td>1</td>
<td>1%</td>
</tr>
</tbody>
</table>
**Demographics Tab**

Demographic data is about providing **context**.

*Who* is reading your work?

*Where* are they?

What *stage of their career* are they in?

---

**Mendeley readership**

The data shown below were compiled from readership statistics for 124 Mendeley readers of this article. Click [here](#) to see the article's page on the Mendeley website.

**Geographical breakdown**

<table>
<thead>
<tr>
<th>#</th>
<th>Country</th>
<th>As %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GB</td>
<td>4%</td>
</tr>
<tr>
<td>1</td>
<td>US</td>
<td>4%</td>
</tr>
<tr>
<td>3</td>
<td>CA</td>
<td>2%</td>
</tr>
<tr>
<td>4</td>
<td>AU</td>
<td>1%</td>
</tr>
<tr>
<td>5</td>
<td>CH</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>5</td>
<td>DK</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>5</td>
<td>MX</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>–</td>
<td>Unknown</td>
<td>85%</td>
</tr>
</tbody>
</table>

**Reader demographics**

**Readers by discipline**

- Medicine: 36, 29%
- Social Sciences: 35, 28%
- Psychology: 12, 9%
- Biological Sciences: 12, 9%
- Business Administration: 7, 5%
- Other: 22, 17%

**Readers by professional status**

- Ph.D. Student: 26, 20%
- Student (Master): 21, 16%
- Student (Bachelor): 11, 8%
- Researcher (at an Academic Institution): 10, 8%
- Student (Postgraduate): 9, 7%
- Other: 47, 37%
Why should you care?

Because your researchers do.
Meet Terrie Moffitt, PhD

Terrie Moffitt, PhD
Knut Schmidt Nielsen Professor
Professor, Duke Psychology and Neuroscience Psychiatry & Behavioral Sciences

Terrie E. Moffitt researches the interplay between nature and nurture in the origins of problem behaviors. Her particular interest is in antisocial and criminal behaviors. She is Associate Director of the Dunedin Multidisciplinary Health and Development Study in New Zealand, which conducts a 32-year longitudinal study of a 1972 birth cohort of 1000 individuals and their families. She also directs the Environmental-Risk Longitudinal Twin Study (“E-risk”), which follows a 1994 birth cohort of 1116 British families with twins.

For her research, she has received the American Psychological Association's Early Career Contribution Award (1993) and Distinguished Career Award in Clinical Child Psychology (2006), and the Stockholm Prize for her work in criminology (2007). She is a fellow of the Academy of Medical Sciences (1999), the American Society of Criminology (2003), the British Academy (2004), and Academia Europaea (2005).

She has served on investigative panels for institutions such as the Nuffield Council on Bioethics (ethics of behavioral genetic research) and the US National Academy of Sciences (research into firearms and violence).
Meet the NSF Broader Impacts Statement

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding?

What may be the benefits of the proposed activity to society?

Article by article wasn’t enough
Who **benefits** from Altmetric for Institution’s data?

**Librarians**
- I want to help researchers track the attention paid to their articles.
- I want to add value to my institutional repository or discovery service.
- I want to consider journal attention data in my library's acquisition decisions.

**Researchers**
- I want to find indicators of impact for my CV and funding applications.
- I want to make informed decisions on future publishing choices.

**Communications / PR team**
- I want to share our institution’s success stories.
- I want to maximize the reach of our institution’s research.

**Research administrators**
- I want to monitor and report on uptake, usage, and impact of publications by department.
- I want to comply with funder and governmental mandates.
Your Institution’s Impact at a glance...

Lilliput University

All mentioned articles from Lilliput University

Pick new articles:
- You've chosen to see articles from Lilliput University.
- Look at all articles instead

Mentioned in the past
- With keyword
- In these journals
- With identifiers
- From publisher
- With handle prefix
- With Medline subjects
- With subjects
- Matching PubMed query
- Funded by
- Mentioned at any time on
- Order by
  - reset filters and search terms

Summary report
- All mentions: 76,049
- News: 4,774
- Blogs: 12,302
- Policy documents: 80
- Peer reviews: 112
- Twitter: 47,063
- Facebook: 5,116
- Weibo: 164
- Research highlights: 3,862
- Google+: 1,683
- Reddit: 447
- Video: 328
- Q&A: 83
- Pinterest: 30
- LinkedIn: 5

Chart of mentions of 11,479 matched articles from 26th October 2012 to 1st October 2014

Location of Twitter users

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>US</td>
<td>43%</td>
</tr>
<tr>
<td>2</td>
<td>UK</td>
<td>14%</td>
</tr>
<tr>
<td>3</td>
<td>JP</td>
<td>9%</td>
</tr>
<tr>
<td>4</td>
<td>CA</td>
<td>5%</td>
</tr>
</tbody>
</table>
Terrie’s data in aggregate

**Key words here are:** “disseminated broadly” and “benefits to society”
Prior Juvenile Diagnoses in Adults With Mental Disorder: Developmental Follow-Back of a Prospective-Longitudinal Cohort

So far Altmetric has seen 3 policy documents that reference this article.

Lifetime Impacts
Publisher: Mental Health Foundation
About this publisher: The Mental Health Foundation is the UK’s leading mental health research, policy and service improvement charity.
Countries: UK

Making The Link Between Mental Health And Youth Homelessness
Publisher: Mental Health Foundation
About this publisher: The Mental Health Foundation is the UK’s leading mental health research, policy and service improvement charity.
Countries: UK

Key words here are: “benefits to society”

Our health and wellbeing today
Publisher: UK Government (GOV.UK)
About this publisher: GOV.UK is a central website that covers all UK government departments, as well as many other agencies and public bodies. All policy papers and research publications by the UK government are listed on GOV.UK.
Countries: UK
Disseminated broadly: *International News coverage = 60%*

Data from Article Details Pages
Disseminated broadly: 
*International Blog coverage* = 40%

Data from Article Details Pages
“Benefits to society”: New communities, new conversations

Julie K. Johnson
@JulieKJohnson

Health, Dog & Rational Thinking Enthusiast. PhD Candidate, Health Policy. Humanist & Positivist. Fluent in sarcasm. linkedin.com/in/juliekjohns...

Boston

Geraldine McGinty
@DrGMcGinty

Physician leader, radiologist, advocate for quality imaging. Content is meant for informational purposes only and not as medical advice.

Dr. Bill Paul
@billpaulmd

Director, Metro Public Health Dept

Nashville TN
Many many more eyeballs – Terrie’s T10

Twitter reach by article - Total upward bound: 5,630,639

Even if 1% click on the article, that’s 56,000 eyes that never would have seen it before Twitter = Disseminated broadly...

Data from Article Details Pages
Altmetric data saved time; met funder requirements

I save a tremendous amount of time for my lab and me having to demonstrate “evidence of impact” to various funders.
Altmetric data made **funder reporting easier**

NIH Program Manager: “[This Altmetric data is] fantastic information for [our] budget report.”
Before Altmetric data, Terrie didn’t know...

- How broadly her work was disseminated
  - News vs policy vs blogosphere
- The difference in interest by media source
  - Methodology papers via Twitter
- That all this data could be aggregated in one place to save her time
In short...

• Online paradigm is changing how researchers communicate
  – Who they communicate with
• Outputs are trackable, traceable, and reportable
• Facilitating new kinds of story telling
• *Give credit where credit is due*
Wait, what’s that donut?

- Policy documents
- News
- Blogs
- Twitter
- Post-publication peer-reviews
- Facebook
- Sina Weibo
- Google+
- LinkedIn
- Reddit
- Faculty1000
- Q&A (stack overflow)
- Youtube
- Pinterest

<table>
<thead>
<tr>
<th>Volume</th>
<th>Sources</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>The score for an article rises as more people mention it.</td>
<td>Each category of mention contributes a different base amount to the final score.</td>
<td>How often the author of each mention talks about scholarly articles influences the contribution of the mention.</td>
</tr>
</tbody>
</table>

Altmetric
Measuring Science

William Gunn

Head of Academic Outreach, Mendeley

http://orcid.org/0000-0002-3555-2054
1. A (very) brief history of metrics
2. Metrics at Mendeley & Elsevier
3. NISO ALMI Initiative: metrics standards
We have always used non-citation metrics
so far this year, 86,056 books, 52,817 children’s books, 69,370 movies, 28,347 albums, 3,937 magazines, 10,508 audiobooks and 575 puppets circulated.

14,607 public computing sessions by 3,668 users, totaling 1,018 hours.

33,355 wireless sessions by 8,398 unique devices.

1,018 new user accounts created. 15,635 questions answered.
High-Activity Article!
This article has a high relative ranking in at least one of the 4 key dimensions we track.

View Full Details

---

High-Activity Article!
This article has a high relative ranking in at least one of the 4 key dimensions we track.

View Full Details
New metrics matter

• https://www.mendeley.com/groups/586171/altmetrics/


Issues and challenges

• Trust
  – Is the data reliable?

• Quality
  – Is the data complete, accurate, available?

• Standards
  – Consistency in collecting and reporting the data
NISO ALMI Initiative

2013 – 2014 Phase I
3 meetings, 30 one-on-one interviews
1 White Paper

2014-2015 Phase II
Working Groups:
Definitions
Sources
Identifiers
Quality
Creepy or cool – how far is too far?

• We’ve saved your shopping cart for you!
• Your flight to Philadelphia is reduced until midnight!
• William, would you like to date mature Dutch singles?

• Your friend wrote this paper, maybe you should read it?
• Most people read a couple of pages and don’t come back to this article
• Why don’t you download this dataset instead of making some new figures?
There aren’t metrics and altmetrics; there are only metrics
THANK YOU!

william.gunn@mendeley.com
@mrgunn
OUTREACH & ENGAGEMENT (O&E)

...is defined as meaningful and mutually beneficial collaborations with partners in education, business, and public and social service. It is:

• That aspect of research that makes what we discover useful beyond the academic community.

• That aspect of teaching that enables learning beyond the campus walls.

• That aspect of service that directly benefits the public.

Ohio State University
Office of Outreach and Engagement
http://outreach.osu.edu/about-us/faq.html

Dr. Raychelle Burks
raychelle.burks@doane.edu
In the late 1990s, Michigan State University (MSU) found “a major barrier to faculty involvement in outreach and engagement activities” was...

MSU revised made changes to P&T “...to better align faculty roles and rewards with institutional value of outreach and engagement and to facilitate faculty reporting outreach and engagement.”

Outreach and Engagement in Promotion and Tenure: An Empirical Study Based on Six Years of Faculty Dossiers - Diane M. Doberneck, Ph.D. & Hiram E. Fitzgerald, Ph.D.
http://ncsue.msu.edu/files/OutreachEngagementPromotionTenure.pdf
O & E + P & T

Institution type

- Research-Intensive Universities (RIU)
- Primarily Undergraduate Institutions (PUI)
- Hybrid

Institutional values

Career level
O & E IMPACT

- Current institutional measures
- Your data
- Altmetrics
  - Media mentions
  - Media interviews
  - Social media mentions (#impact)
  - Downloads, likes, shares
WHAT’S MY IMPACT?
Kiyomi D. Deards, University of Nebraska-Lincoln
kdeards2@unl.edu, @KiyomiD
WHAT IS A SIGNIFICANT NUMBER OF DOWNLOADS FROM AN IR?

Chart Title

<table>
<thead>
<tr>
<th>Category</th>
<th>Median Downloads</th>
<th>Average Downloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry (233,980 Total)</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>Chemical Engineering (343,950 Total)</td>
<td>600</td>
<td>900</td>
</tr>
<tr>
<td>Physics (1,077,286 Total)</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>
The previous chart and those to follow use numbers from the University of Nebraska-Lincoln Digital Commons from papers uploaded, and their download statistics, between 2005 and February 2015. While each institution is unique, as the third largest institutional repository in the world download statistics from this repository can show general disciplinary trends.
TOP DOWNLOADED PAPER

Chemistry: 71,840
Chemical Eng: 47,145
Physics: 30,283
• Primase structure and function
http://digitalcommons.unl.edu/chemfacpub/2

• Haemophilic Factors Produced by Transgenic Livestock: Abundance that can enable alternative therapies worldwide
http://digitalcommons.unl.edu/chemeng_biotechnology/13

• Diffractive Dijet Production at $\sqrt{s}= 630$ and 1800 GeV at the Fermilab Tevatron
http://digitalcommons.unl.edu/physicsbloom/69
<table>
<thead>
<tr>
<th>Field</th>
<th>Total # of Papers</th>
<th># of Downloads / Paper in the Top 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>543</td>
<td>936+</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>341</td>
<td>2,100+</td>
</tr>
<tr>
<td>Physics</td>
<td>2,872</td>
<td>2,872+</td>
</tr>
</tbody>
</table>
DOWNLOADS OR CITATIONS?

Scholarly Paper (1,1) v. How to Handout (981,1)

Downloads

Citations

Note how small the graphs for the number of citations and downloads for the scholarly article are when compared to the downloads for the “how to” handout.

This graph compares the 2013 scholarly paper:
Why, How, and Where We’re Going Next: A Multi-Institution Look at Data Management Service by Kiyomi D. Deards
http://www.clir.org/pubs/reports/pub160

with the ACRL 2011 handout:
Staying Genuine And Creating Connections: Networking And Involvement For Introverts
http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1064&context=library_talks
This paper is the 6th most popular in its category
<table>
<thead>
<tr>
<th>Conference Publications &amp; Speeches</th>
<th>Total Publications</th>
<th>Average # of Downloads</th>
<th># of Downloads / Paper in the Top 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>104</td>
<td>328</td>
<td>687+</td>
</tr>
<tr>
<td>Full Text Downloads of Faculty Publications</td>
<td>307</td>
<td>1,160</td>
<td>2678+</td>
</tr>
</tbody>
</table>
OTHER CITATIONS & IMPACTS

A Brand

An Expert  A Speaker

An Instructor