Tamara Nevill – coauthor of this paper

Could scientists use Altmetric.com scores to predict longer term citation counts?

An empirical analysis

Mike Thelwall

University of Wolverhampton

Journal peer review: a bar or bridge? An analysis of a paper's revision history and turnaround time, and the effect on citation

Overview of attention for article published in Scientometrics, January 2018
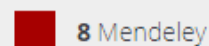
27

? About this Attention Score

In the top 5% of all research outputs scored by Altmetric

MORE...

Mentioned by

- 🟧 **1** blog
- 🟦 **27** tweeters
- 🟦 **1** Facebook page

Readers on

- 🟥 **8** Mendeley

| SUMMARY | Blogs | Twitter | Facebook |

Title	Journal peer review: a bar or bridge? An analysis of a paper's revision history and turnaround time, and the effect on citation
Published in	Scientometrics, January 2018
DOI	10.1007/s11192-017-2630-5 ☑
Authors	J. Rigby, D. Cox, K. Julian

☑ View on publisher site

✉ Alert me about new mentions

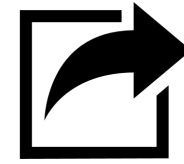**TWITTER DEMOGRAPHICS**   **MENDELEY READERS**

ATTENTION SCORE IN CONTEXT

The data shown below were collected from the profiles of **27** tweeters who shared this research output. Click here to find out more about how the information was compiled.

Will this January 2018 article with a high Altmetric Score

→

be highly cited in the future?

Citations and impact

- Counts of citations to journal articles are widely used in informal and formal research evaluations

- In many fields, higher citation counts associate with higher quality (as judged by peers)

- But citation counts take many years to accumulate

Altmetrics

- Altmetrics include counts of mentions of articles from anything except traditional citation databases
  - Especially the web and social web
  - E.g., Tweets, Mendeley readers, grey literature citations
- Most altmetrics accumulate more quickly than citation counts, **giving earlier evidence**
- Most altmetrics at least partly reflect non-scholarly impact, giving wider impact evidence
- Most altmetrics are potentially susceptible to spam and manipulation
  - But OK for **self-evaluations,** for **informal impact statements (e.g., on CVs)** and perhaps **surprise evaluations**

Measuring research quality?

- Empirical evidence is needed to assess the value of altmetrics

- Altmetrics are sometimes called:
  - **alternative indicators** – avoiding the implication that they directly *measure* the quality of research
  - **social media metrics** – avoiding the implication that they measure the quality of *research*

- Altmetrics are useful if they **associate with** higher quality or greater impact research
  - even if there are exceptions
  - if they are used responsibly

Limitations of prior research

- Few studies have attempted to **predict** future citations from early altmetric scores.

- Exception: Eysenbach, G. (2011). Can tweets predict citations? Metrics of social impact based on Twitter and correlation with traditional metrics of scientific impact. *Journal of Medical Internet Research*.
  - For this journal (perhaps uniquely) tweet counts during the publication year predict later citation counts

New study: Research design
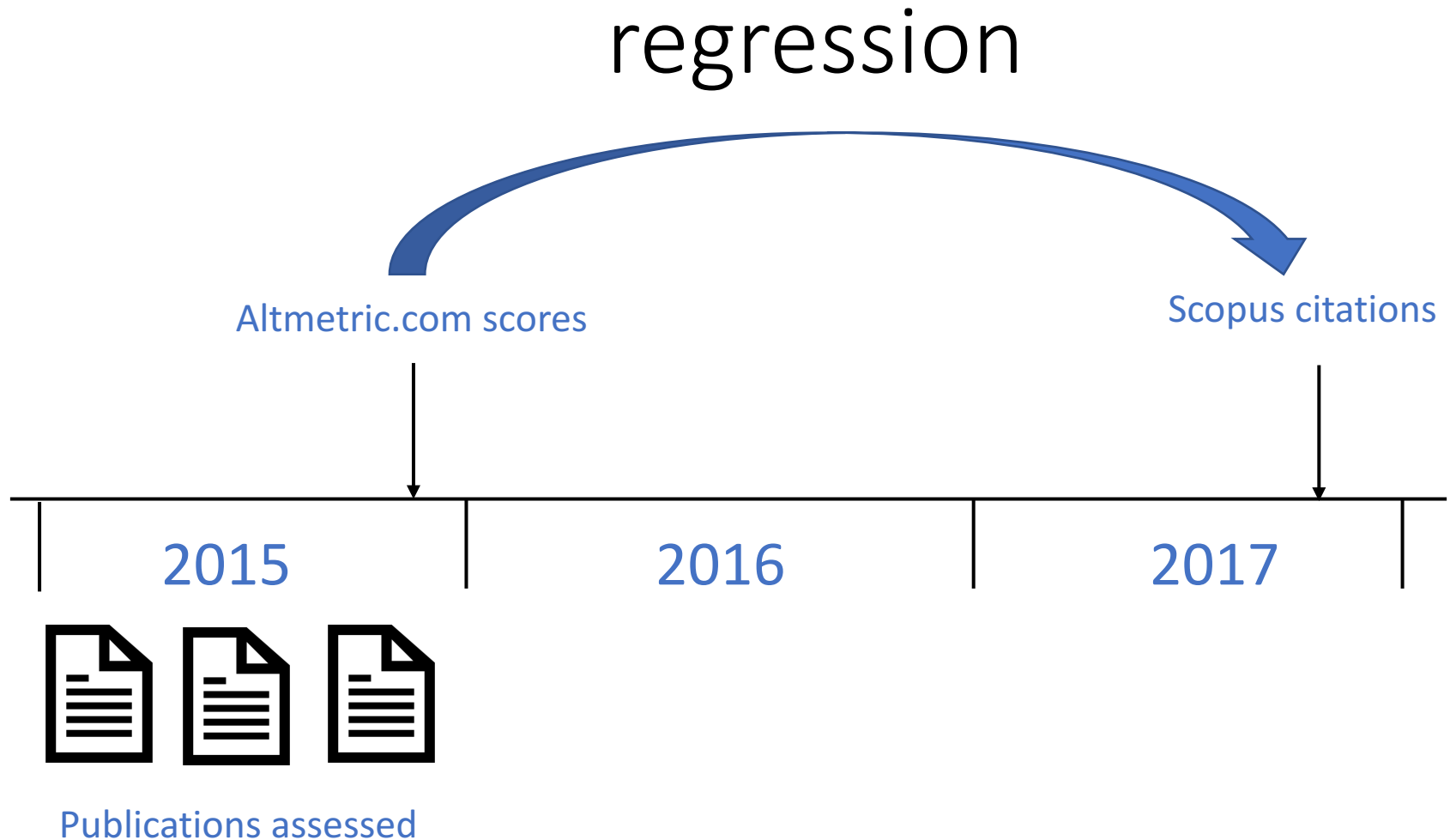
New study dataset

- Articles from 2015 in 30 narrow Scopus fields
  - E.g., Ecological Modeling, Equine, History

- Altmetric.com scores from November 2015
  - Almost a year after publication for some articles
  - Before publication for other articles
  - Almetric.com data sharing scheme for researchers
  - Separate scores for Mendeley, blogs, Twitter, news, Facebook, G+, Wikipedia, videos, CiteULike, Connotea, F1000

- Scopus citation counts from October 2017

Research method details

- OLS linear regression to identify which Altmetric.com indicators from 2015 could predict 2017 Scopus citation counts

- Log normalisation to deal with skewed data (small numbers of very high values)

- Articles without matching Altmetric.com records discarded
  - Solves problem of Altmetric.com data from before December-published articles
  - Keeping these articles gives slightly weaker results

Thelwall, M. & Nevill, T. (2018). Could scientists use Altmetric.com scores to predict longer term citation counts? *Journal of Informetrics*, 12(1), 237–248.

Linear regression results
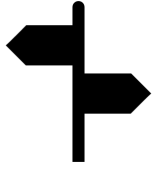
- For 29 out of 30 fields, 2015 Altmetric.com data significantly predicted 2017 Scopus citation counts

- Mendeley reader counts always a statistically significant predictor

- Other indicators sometimes statistically significant predictors (never: Connotea, F1000)

- Altmetric.com scores from 2015 "explain" about 20% of citation scores from 2017

Altmetric.com scores

Scopus citations

| 2015 | 2016 | 2017 |

Comparison with impact factors

- Researchers might use an impact factor (average citations per article for recent articles) for the journal to estimate its likely future citation impact

- This strategy was evaluated, using the Scopus CiteScore, similar to WoS JIF
  - "average number of citations received in a calendar year by all items published in that journal in the preceding three years."

- Used latest CiteScore available in November 2015

https://journalmetrics.scopus.com/index.php/Faqs

Altmetric.com & CiteScore regression Percentage of variance explained (R^2)

The optimal combination of data to predict future citation counts is CiteScore and Altmetric.com data

| Field | Articles | Independent variables | | | R^2 |
		Altmetric without Mendeley	Altmetric with Mendeley	Altmetric, Mendeley, CiteScore	CiteScore only
Agronomy & Crop Sci	1251	9%	23%	36%	26%
History	1532	5%	24%	35%	27%
Aging	1557	7%	25%	30%	12%
Accounting	542	4%	23%	35%	25%
Bioengineering	2061	15%	22%	43%	34%
Analytical Chemistry	1736	5%	15%	28%	19%
Artificial Intelligence	922	2%	20%	29%	18%
Info. Systems & Man	362	7%	26%	39%	24%
Atmospheric Science	2640	7%	17%	20%	9%

Conclusions

- Prediction works but there is not a simple universal formula

- Prediction is greatly complicated by articles being published throughout the year

- Human prediction with common sense will probably work better than statistical prediction

- Don't take scores *too* seriously since there is plenty of "unexplained" variance

Altmetric.com scores

Scopus citations

2015

2016

2017