Open Access and Altmetrics: Drivers and Effects

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Q. Does Open Access to scientific articles have benefits to society beyond academia?

ElSabry (2017): “There is strong support of the idea that Open Access has benefits to different groups of people outside side the university/credentialed research institutes. It is not clear how much evidence is available to support these claims, but identifying them would suggest new stakeholders to involve in the conversation and perhaps also inform the ongoing debate about who should bear the cost of Open Access.”

ElSabry (2017): https://doi.org/10.3233/978-1-61499-769-6-34
Potential Source of Evidence: Altmetrics!

But, the true effects of OA are difficult to disentangle:

- Difference in article quality
- Difference in article interest
- Publication venue bias
  - Authorship bias

Discipline  
Country
Articles dataset

- Sampled 1 million articles from the Unpaywall dataset (April 2018) published between 2013 and 2017.

- Classified into OA types:
Bibliographic and altmetric data

• Matched articles in Unpaywall sample to Web of Science* via direct matching of DOIs (‘article’ and ‘review’ documents only).

• Extracted author countries (first author) and subject classifications from Web of Science. Subject classifications were mapped to the Revised Fields of Science and Technology Classification of the Frascati Manual 2002 (=6 top level subject classifications).

• Retrieved altmetric count data from Altmetric.com (September 2019), limited to tweets, blog mentions, news articles, policy mentions, Wikipedia mentions, and Mendeley reads.
Development of OA publishing between 2013-2017
Does OA lead to higher altmetric counts? A crude analysis…
What access types are used by different disciplines?

OA type

- Green
- Gold
- Hybrid
- Bronze
- Closed

Agricultural Sciences
- Green: 10%
- Gold: 20%
- Hybrid: 15%
- Bronze: 5%
- Closed: 50%

Engineering And Technology
- Green: 10%
- Gold: 30%
- Hybrid: 10%
- Bronze: 5%
- Closed: 45%

Humanities
- Green: 20%
- Gold: 20%
- Hybrid: 5%
- Bronze: 10%
- Closed: 45%

Medical And Health Sciences
- Green: 10%
- Gold: 30%
- Hybrid: 25%
- Bronze: 10%
- Closed: 25%

Natural Sciences
- Green: 10%
- Gold: 20%
- Hybrid: 25%
- Bronze: 10%
- Closed: 35%

Social Sciences
- Green: 20%
- Gold: 20%
- Hybrid: 15%
- Bronze: 10%
- Closed: 35%
How do altmetrics vary by access type in different disciplines?

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Mean (Log+1) Altmetric Counts

- Agricultural Sciences
- Engineering And Technology
- Humanities
- Medical And Health Sciences
- Natural Sciences
- Social Sciences
Proportion of OA articles per country
How do altmetrics vary by access type in different countries?
Limitations

- Cannot consider individual authorship factors in isolation
- Many degrees of freedom in data sources
Future work

• Consider other authorship factors: institution, seniority, productivity, collaborations, gender, quality.

• Investigate other bibliometric sources (Scopus, Dimensions)

• Improve understanding of OA publishing demographics and motivations through author surveys

• Compare altmetrics with traditional bibliographic indicators (citations)