STI 2018 Conference Proceedings

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ISBN: 978-90-9031204-0

23rd International Conference on Science and Technology Indicators (STI 2018)
"Science, Technology and Innovation indicators in transition"
12 - 14 September 2018 | Leiden, The Netherlands
#STI18LDN

Differences between Altmetric Data Sources – A Case Study[1]

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Introduction

Since its inception in 2010 (Priem et al., 2010) altmetrics has been actively promoted as a new means for the evaluation of science and scientists, especially suited to capture broader impact. One of the most widely used altmetric indicator nowadays is readership count, most often measured by number of bookmarking events on reference manager Mendeley. Studies have shown that this is one of the most prevalent altmetric events currently captured (Haustein, Bowman, & Costas, 2016), and the one that is most correlating with citation counts (Mohammadi & Thelwall., 2014). Since this indicator is generated by altmetric aggregators such as Altmetric.com and PlumX, it becomes important to examine the extent of readership coverage across the data source itself (Mendeley) and two major aggregators (Altmetric and Plum X).

Research Questions

The aim of this study is to examine the number of altmetric counts reported by Mendeley, Altmetric.com and PlumX at two points in time: in June 2017 and in April 2018 and to compare the reported altmetrics at each data collection point.
The two main research questions in this study were:

1. Do the different data sources report the same readership counts when data was downloaded on the same day?
2. Are there any changes in the readership counts over time?

Data Collection

We examined articles from JASIST (acronym for the Journal of the American Society for Information and Technology between 2001 and 2013, and for the Journal of the Association for Information Science and Technology from 2014 and onwards. The dataset included articles and reviews published between 2010 and mid 2017 (issues 1 to 7). The initial data collection took place on June 29, 2017, and the second round of data collection on March 29, 2018. The dataset is comprised of 2,666 articles and 62 reviews, altogether 2,728 items (referred to as "articles"

[1] We thank Mike Thelwall for developing Webometric Analyst (http://lexiurl.wlv.ac.uk/), which was used to collect data from Mendeley and Altmetric.

or "documents"). Data from Mendeley and Altmetric.com were collected by using the Webometric Analyst. Data from PlumX was collected from a dedicated dashboard licensed by the authors.

Main Findings

Mendeley Data Coverage improvement

Compared to the result published in 2017 (Bar-Ilan & Halevi, 2017), in 2018 Altmetric reported Mendeley readership counts for 1,157 documents (42.4%), and PlumX for 2,376 (87.1%). A probable reason for the huge increase in PlumX's Mendeley coverage is that both Mendeley and PlumX are now owned by Elsevier. Figures 1a and 1b show the number of documents for which Mendeley readership counts were reported by the three sources in 2017 and 2018 respectively.

Figure 1a. Overlap in 2017

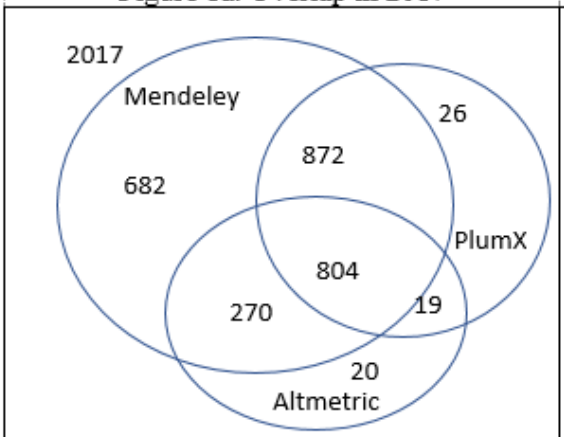
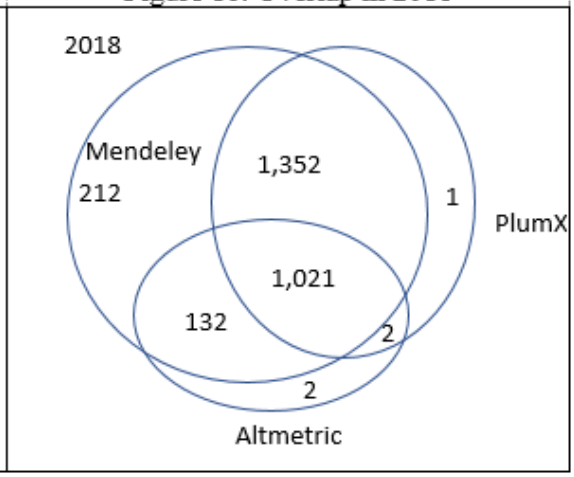


Figure 1b. Overlap in 2018



Increased readership over time

As can be seen in table 1 there is a significant increase in the total number of readers from 2017 to 2018. Some of the readership increase is due to increased coverage.

Table 1: Readership counts reported by the sources in 2017 and 2018

	Mendeley17	MA17	MP17	Mendeley18	MA18	MP18
sum of readers	82,040	36,678	47,617	87,917	45,555	81,449
articles with readers	2,628	1,113	1,721	2,690	1,156	2,375
% of total	96.3%	40.8%	63.1%	98.6%	42.4%	87.1%
average # readers	31.22	32.95	27.67	32.68	39.41	34.29
std	43.34	51.32	35.28	46.02	59.52	50.60
median	18	17	17	22	22	20
max	732	727	361	897	897	916

M – Mendeley, MA, MP – Mendeley reader counts reported by Altmetric and PlumX respectively

Twitter, Blogs, Wikipedia and Mainstream News – Almetric vs. PlumX
For this analysis, we consider a subset of 1091 articles published between 2012 and mid-2017 to ensure that Twitter activity is recorded. The Twitter coverage has grown between 2017 and 2018, however there was a slight drop in the average number of tweets per tweeted article.

Table 2. Twitter counts as reported by Altmetric.com and PlumX in 2017 and 2018

	articles A17	articles P17	articles A18	articles P18
sum of tweets	6,702	7,195	6,813	6,658
articles with tweets	837	724	853	820
% of total	76.7%	66.4%	78.2%	75.2%
average # tweets	7.89	9.94	7.99	8.12
std	20.66	36.16	20.36	20.87
median	4	4	4	4
max	402	723	405	408

The coverage of blogs, Wikipedia and mainstream news is growing, but is still negligible as can be seen in Table 3 and reported in previous studies (Thelwall et al., 2013; Costas et al., 2015). Here, again, PlumX showed a greater improvement in coverage.

Table 3. Blog, Wikipedia and mainstream news mentions as reported by Altmetric and PlumX in 2017 and 2018

	# articles in blog	sum of blog mentions	# articles in Wikipedia	sum of Wikipedia mentions	# articles in news	sum of news
Altmetric17	153	265	82	108	25	55
PlumX17	37	62	77	103	7	9
Altmetric18	169	313	100	126	30	72
PlumX18	49	70	112	160	24	41

Conclusion
In this paper we showed that there are differences in indicators' counts provided by various altmetric sources. There is, however, better alignment between the two data collection points which is seen in the diminishing gaps between them. Especially encouraging is the significant increase in coverage of readership counts by PlumX coupled with the increase in the overlap between Altmetric.com and PlumX.

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