

Library Supported Open Access Funds: Criteria, Impact, and Viability

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Volume 14, numéro 4, 2019

URI : <https://id.erudit.org/iderudit/1088915ar>

DOI : <https://doi.org/10.18438/eblip29623>

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Éditeur(s)

University of Alberta Library

ISSN

1715-720X (numérique)

[Découvrir la revue](#)

Citer cet article

Click, A. & Borchardt, R. (2019). Library Supported Open Access Funds: Criteria, Impact, and Viability. *Evidence Based Library and Information Practice*, 14(4), 21–37. <https://doi.org/10.18438/eblip29623>

Résumé de l'article

Objective – This study analyzes scholarly publications supported by library open access funds, including author demographics, journal trends, and article impact. It also identifies and summarizes open access fund criteria and viability. The goal is to better understand the sustainability of open access funds, as well as identify potential best practices for institutions with open access funds.

Methods – Publication data was solicited from universities with open access (OA) funds, and supplemented with publication and author metrics, including Journal Impact Factor, Altmetric Attention Score, and author h-index. Additionally, data was collected from OA fund websites, including fund criteria and guidelines.

Results – Library OA funds tend to support faculty in science and medical fields. Impact varied widely, especially between disciplines, but a limited measurement indicated an overall smaller relative impact of publications funded by library OA funds. Many open access funds operate using similar criteria related to author and publication eligibility, which seem to be largely successful at avoiding the funding of articles published in predatory journals.

Conclusions – Libraries have successfully funded many publications using criteria that could constitute best practices in this area. However, institutions with OA funds may need to identify opportunities to increase support for high-impact publications, as well as consider the financial stability of these funds. Alternative models for OA support are discussed in the context of an ever-changing open access landscape.

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Research Article

Library Supported Open Access Funds: Criteria, Impact, and Viability

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Received: 13 Aug. 2019

Accepted: 12 Oct. 2019

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DOI: 10.18438/eblip29623

Abstract

Objective – This study analyzes scholarly publications supported by library open access funds, including author demographics, journal trends, and article impact. It also identifies and summarizes open access fund criteria and viability. The goal is to better understand the sustainability of open access funds, as well as identify potential best practices for institutions with open access funds.

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Conclusions – Libraries have successfully funded many publications using criteria that could constitute best practices in this area. However, institutions with OA funds may need to identify opportunities to increase support for high-impact publications, as well as consider the financial stability of these funds. Alternative models for OA support are discussed in the context of an ever-changing open access landscape.

Introduction

Libraries have been supporting open access (OA) publishing for more than a decade, often by administering funds dedicated to paying article processing charges (APCs). The literature provides some insight into the design, implementation, and evaluation of library OA funds, but no study has collected and analyzed the scholarship published using these funds. This study involved building a dataset of almost 1,200 publications funded by library OA funds collected from 16 universities. The authors compiled descriptive statistics and conducted an analysis of the research impact of a subset of the publications. In addition, the details and criteria of 55 active library OA funds were collected in order to better contextualize impact and identify trends in funding models.

The scholarly communications landscape is currently in a state of flux. Plan S was rolled out in the fall of 2018, with the goal of “making full and immediate open access a reality” (cOAlition S, n.d.). The University of California system has made headlines by canceling access to Elsevier after failing to agree on funding for OA publications (Kell, 2019). Librarians are exploring options and deciding how to best support OA efforts, and this research will inform these efforts. Those considering the implementation of a new fund, thinking about

making changes to funding support for OA, or designing marketing and outreach plans around OA may find the results of this study to be useful.

Literature Review

In *Knowledge Unbound*, Suber (2016) defines the APC in this way:

A fee charged by some OA journals when accepting an article for publication, in order to cover the costs of production. It's one way to cover production costs without charging readers and erecting access barriers. While the invoice goes to the author, the fee is usually paid by the author's funder or employer rather than by the author out of pocket. (p. 413).

University of California Berkeley librarians laid out their argument for institutional open access funds as early as 2010 (Eckman & Weil, 2010). That same year, however, an opinion piece in *D-Lib Magazine* argued *against* institutional funds for paying gold OA APCs in favor of green OA self-archiving mandates (Harnad, 2010). Regardless, North American libraries have been providing OA funds to pay APCs since 2008, according to SPARC's (2018) *Open Access Funds in Action* report. Often these funds combine Gold OA with Green OA by paying APCs but

also requiring authors to deposit manuscripts in the institutional repository.

The research on open access funds is sparse, and generally focuses on surveying librarians about perspectives on OA, or collecting feedback from fund recipients. There are also a number of case studies describing the implementation of specific OA funds (Pinfield, 2010; Price, Engelson, Vance, Richardson, & Henry, 2017; Sinn, Woodson, & Cyzyk, 2017; Zuniga & Hoffecker, 2016), which will not be discussed in this review of the literature. Similarly, while concerns about the rise of so-called predatory publishing have been well documented, their implications for open access funds have not been well researched (Berger, 2017).

An international survey of libraries published in 2015 showed that almost one quarter of the respondents offered OA funding to authors provided by the institutional administration, library or academic departments (Lara, 2015). Librarians surveyed about their libraries' funds all used these funds to promote OA on their campuses to some degree. Monson, Highby, and Rathe (2014) found that some were "ambitious advocates" who hoped for "significant changes in campus culture," while others simply hoped to convince faculty to consider OA publishing a viable option (p. 317-318). A survey of faculty at large public universities that explored opinions about and behaviors toward OA demonstrated that respondents had varying expectations of library OA funding. Around 30% of total respondents felt that the library should *not* be expected to pay APCs, while half of the life sciences or medical faculty felt that it was appropriate for the library to contribute from \$500 to \$4,000 for APCs (Tenopir et al., 2017).

In 2015, librarians at Grand Valley State University surveyed the 50 recipients who received funds to pay OA article processing charges over the 4 years that the fund had been active. Most faculty indicated that they chose to publish OA in order to increase the visibility of

their work. Many expressed support for the OA movement, and noted that they would not have been able to pay the APC without the library OA fund (Beaubien, Garrison, & Way, 2016). University of California Berkeley librarians also surveyed the 138 recipients of APC funding from the Berkeley Research Impact Initiative (BRII). Funding recipients felt that "that their articles received more attention and had a greater impact that they might have had in a subscription journal" (Teplitzky & Phillips, 2016).

Aims

This study was designed to explore the impact of the literature supported by library OA funds, as well as summarize fund guidelines and criteria. Our research questions include: What types of authors and publications are libraries supporting with OA funds? What is the research impact of these publications? How are library OA funds structured and maintained? Answering these questions allowed us to consider of future viability of OA funds in academia, as well as identify trends and potential best practices for institutions looking to establish or evaluate an OA fund.

Methods

Dataset Collection

Using SPARC's 2016 list of library OA funds, we contacted 63 college and university libraries to request data on funded OA publications (Scholarly Publishing and Academic Resources Coalition [SPARC], 2018). We provided a spreadsheet template (see Appendix A for included fields) with instructions to either send existing data or complete as much of the template as possible. The 16 libraries listed in Table 1 responded. From these responses we built a dataset of almost 1,200 articles, including data on discipline, authorship, journal, publisher and DOI. We chose a subset of 453 articles –

Table 1

List of Universities that Contributed Funded Article Information to the Study Dataset

| | |
|---|--|
| George Mason University | University of Massachusetts Amherst |
| Johns Hopkins University | University of North Carolina at Greensboro |
| University of California, Irvine | University of Oklahoma |
| University of California, San Francisco | University of Pennsylvania |
| University of California, Santa Barbara | University of Pittsburgh |
| University of California, Santa Clara | University of Rhode Island |
| University of Colorado Boulder | Virginia Tech |
| University of Iowa | Wake Forest University |

those published in 2014 and 2016 - for additional impact analysis.

Impact Analysis

In March 2019, we collected citation counts and Altmetric Attention Scores for each article published in 2014 and 2016 using the Dimensions database (Digital Science, n.d.-b). We also collected Journal Impact Factors (JIF) from Journal Citation Reports and Scimago Journal Ranking (SJR) from ScimagoJR for each journal, along with their inclusion status in the Directory of Open Access Journals (DOAJ). Finally, we used Web of Science to identify the higher h-index between the first and last author of each article for 450 of 453 publications. We were unable to find author information in Web of Science for three articles.

To compare the relative impact of the articles in our dataset to that of similar publications, we measured the average weighted Relative Citation Ratio of all 2014/2016 PLOS publications in our dataset as compared to all PLoS articles published in the middle (late

June/early July) of the same year ("Relative Citation Ratio," 2017).

Fund Identification and Criteria Analysis

The November 2018 version of the SPARC Open Access Funds in Action sheet listed 64 current and former college and university OA funds (Scholarly Publishing and Academic Resources Coalition [SPARC], 2018). To update this list, we searched Google for additional funds, using the search statement "site:.edu 'open access fund.'" We found an additional 23 OA funds, for a total of 87 identified funds. Note that the SPARC list is based on self-reported data, and thus its accuracy depends on librarians knowing that it exists and also sending fund information annually. Only 55 of the 87 funds appeared to be currently active - the remaining 32 funds had either indicated a cease in operations on their website or on the SPARC list, or no longer maintained a discoverable website. In July 2019, we collected information from these 55 websites regarding the funds and their criteria, using Google to identify each individual fund website. We entered information regarding each fund's

guidelines and criteria into a Google Form (see Appendix B).

Findings

Funded Article Dataset

The average number of funded articles per OA fund per year ranged from 3 to more than 46, with an average of 21 and median of 16 articles.

Nearly $\frac{3}{4}$ of funded applicants were classified as faculty. Seven of the responding institutions tracked faculty status, and in those institutions, 56% of funded articles were published by faculty classified as “tenure,” including tenure-track faculty. Authors were predominantly affiliated with either medicine/health, or science institutions or departments, with 69% of articles in the dataset published in these combined categories. Similarly, $\frac{2}{3}$ of the journals in which funded articles appeared were classified as science or medicine. Articles were published in PLoS One more than any other journal, representing 19% of total funded publications.

The dataset included payment data for 885 articles, demonstrating that these 16 libraries had paid more than 1.2 million USD for APCs between 2009 and 2018. Note that some of these funds had been in existence for close to a decade, and some for just a couple of years. A few funding programs had ended by the time we requested data on the supported publications.

For additional demographic information and descriptive findings from the initial dataset, please refer to slides from a 2016 presentation (Click & Borchardt, 2017).

Impact

To better understand the impact of library funded OA publications, we analyzed several metrics at the article, journal, and author level for articles published in 2014 and 2016.

Additionally, in order to better contextualize some of these citation counts, we compared citation ratios from PLoS articles in our dataset with all PLoS articles published mid-year in the same years.

Article-level Metrics

Article citation counts varied widely, with a range from 0 to 194 for the combined 2014 and 2016 article dataset. The average citation count was 8.9, while the median was five. The Altmetric Attention Scores for our article subset ranged from 0 to 685. The average Score was 15.8, and the median was 2. The Altmetric Attention Score is “a weighted count of all of the mentions Altmetric has tracked for an individual research output, and is designed as an indicator of the amount and reach of the attention an item has received” (Williams, 2016). It includes mentions in policy documents, blogs, tweets, course syllabi, Reddit and more (Digital Science, 2015). Figure 1 directly compares the citation count and Altmetric Attention Score for all articles.

Breaking down articles by journal subject category, we found a range of average citation counts and Altmetric Attention Scores for each discipline. The highest average citation count was for articles published in engineering journals, at 11.66 average citations, while articles in science journals had the highest average Altmetric Attention Score with 20.01, as shown in Table 2.

Journal-level Metrics

The majority of the articles (65%) in the 2014 and 2016 dataset were published in journals that had Journal Impact Factors (JIF), ranging from .451 to 40.137, with an average JIF of 3.7 and median of 3.234. For context, the mean 2016 JIFs for social science journals was 1.199, engineering and technology 1.989, and clinical medicine 2.976, although a direct comparison with our data is not appropriate as the subject categories

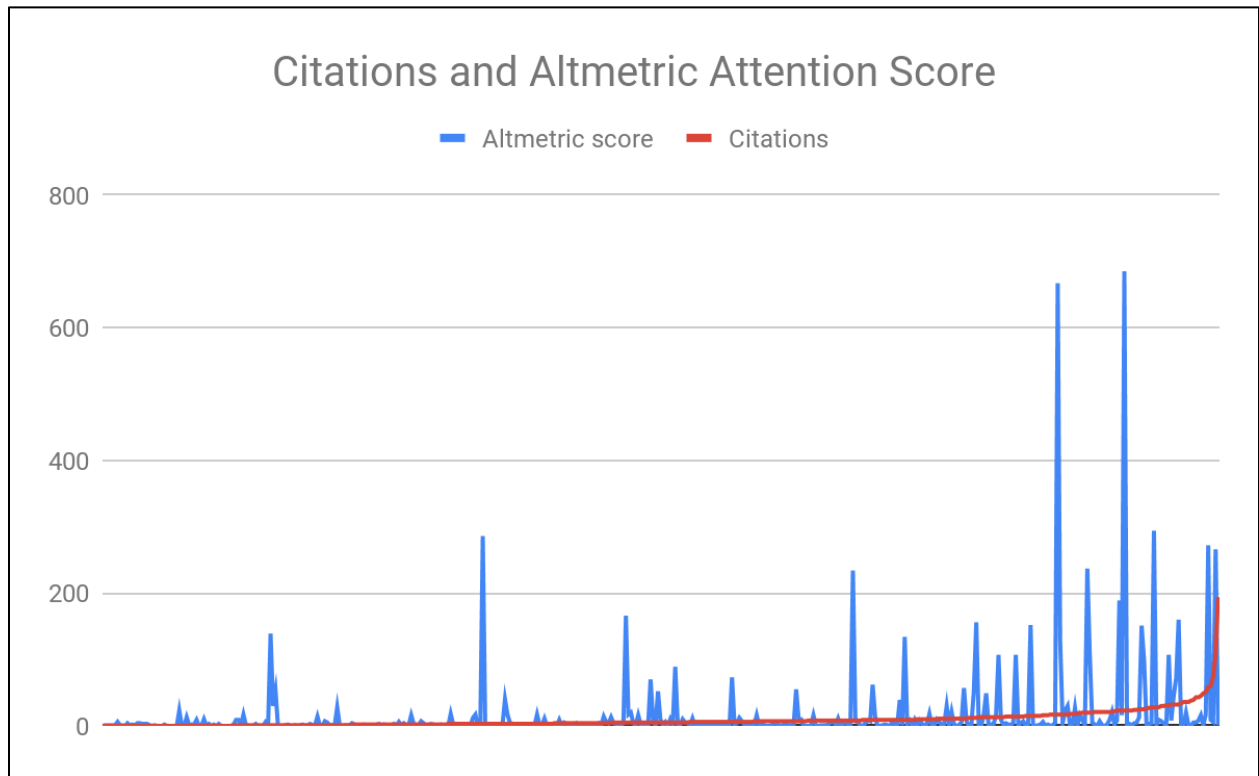


Figure 1
Comparison of citation counts and Altmetric Attention Scores for all articles in the 2014/2016 publication dataset.

Table 2
Disciplinary Breakdown of Average Citation Count and Altmetric Attention Scores in the 2014/2016 Publication Dataset

| | Agriculture | Engineering | Humanities | Medicine/ Health | Sciences | Social Sciences |
|--|-------------|-------------|------------|---------------------|----------|--------------------|
| Average Citation Count | 9.22 | 11.66 | 1.67 | 8.88 | 8.77 | 3.58 |
| Average Altmetric Attention Score | 10.61 | 8.72 | 0.33 | 14.95 | 20.01 | 11.25 |

are not necessarily defined in the same way (Larivière & Sugimoto, 2019). By contrast, 90% of the articles in the subset were indexed by SCImago and had Scimago Journal Rank (SJR) scores. The SJR scores ranged from 0.106 to

18.389, with an average of 1.75 and median of 1.455. See Table 3 for average JIF and SJR by discipline. The range of JIFs and SJRs for all articles are displayed in Figure 2.

Table 3

Disciplinary Breakdown of Average Journal Impact Factor (JIF) and Scimago Journal Rankings (SJR) for Journals in the 2014/2016 Publication Dataset

| Academic Discipline | Average JIF | Average SJR |
|---------------------|-------------|-------------|
| Agriculture | 3.129 | 1.509 |
| Engineering | 3.101 | 1.323 |
| Humanities | 2.441 | 1.013 |
| Medicine/Health | 3.761 | 1.675 |
| Science | 4.002 | 2.061 |
| Social Science | 2.933 | 1.036 |

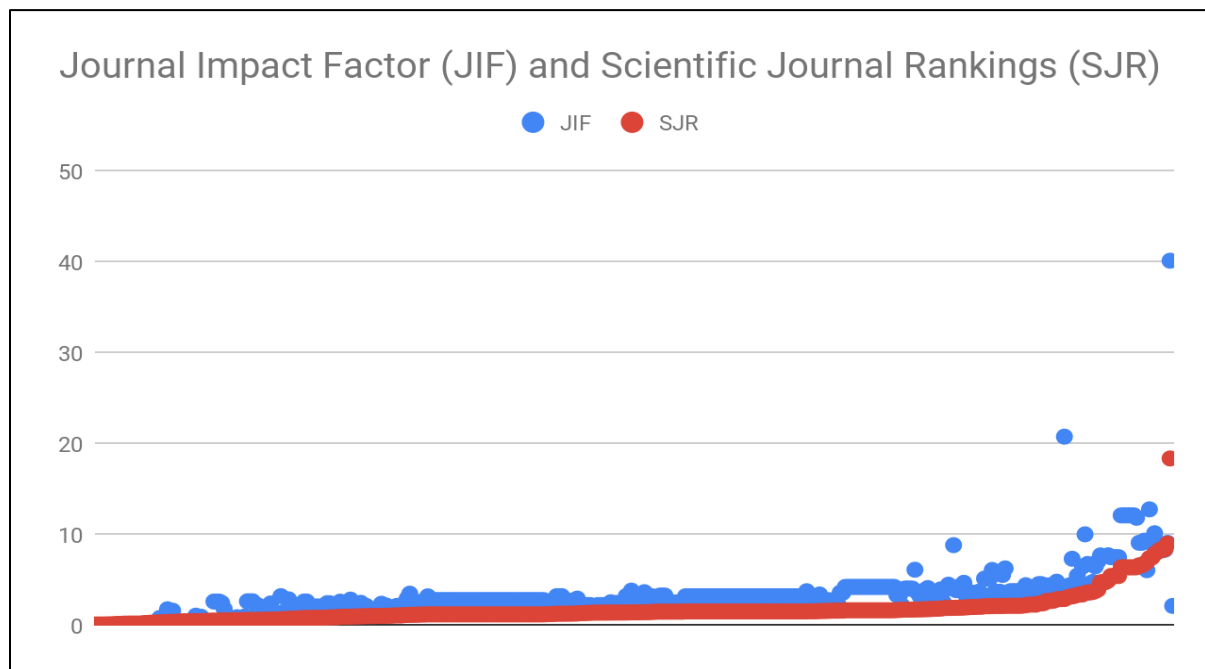


Figure 2

Comparison of Journal Impact Factor (JIF) and SCImago Journal Rankings (SJR) for journals in the 2014/2016 publication dataset.

Author-level Metrics

H-indices were found for all but three publications in the 2014 and 2016 dataset. The h-index is an “author-level metric calculated from the count of citations to an author’s set of publications” (“H-index,” 2017). If an author’s h-index is seven, this means that the author has published at least seven articles and each of them have been cited at least seven times. In this study, we looked up the h-index for the first and last author of each paper in the subset of articles, and used the higher numbers. We looked at both because in some disciplines the lead author is first and in others last. H-indices ranged from 0 to 108, with an average of 25.3 and median of 22.

OA Funds and Criteria

Of the 87 funds identified, only 55 (63%) were active as of July 2019. We collected and summarized fund guidelines and evaluative criteria related to author eligibility, publication eligibility, and funding details.

Author Eligibility

Nearly all of the funds analyzed listed faculty as eligible fund recipients, with the majority (50 out of 55) listing all faculty, with another four specifying tenure-track or non-tenured faculty. Graduate students were the next most common group, listed by 48 of the 55 funds (including 1 fund specifically for graduate students), followed by staff and post-docs. Undergraduate students and researchers were also listed at lower rates, with a few other groups, such as emeriti and fellows, selectively mentioned. Several libraries give priority to graduate students, early career faculty, and applicants who have not previously received OA funding. Some require that the corresponding or lead author apply for funding.

In total, 36% of funds had some form of policy dealing with multiple authors. Often, these policies indicated that the level of funding

would be prorated by the number of authors, and funding would only be given proportionately to the percentage of authors associated with the institution.

Most of the funds also specified that the funds only be used when the author had exhausted other sources of funding, though this criteria was variously worded. While most stipulated that library funds be considered “last resort,” some specifically excluded researchers with grant funds, such as those with an NIH grant.

38% of the funds either requested or mandated that a version of the article be placed in the institution’s repository. The wording often indicated that this step was automated, usually by the library, as part of the funding process.

Publication Eligibility

Every one of the funds covered journal articles, though their journal inclusion criteria differed as discussed below. It was found that 15 explicitly cover monographs, 12 cover book chapters, 4 cover conference proceedings, and 3 cover datasets. However, in the vast majority of cases these other publication types are not specifically excluded - but neither are they mentioned - leaving their final eligibility unknown (or perhaps simply untested).

Every fund listed criteria the publication must meet in order to be eligible for funding, though in many cases, several criteria were used in conjunction to determine eligibility. The most common criterion mentioned was inclusion in the Directory of Open Access Journals (DOAJ), followed by Open Access Scholarly Publishers Association (OASPA) membership or compliance with OASPA membership criteria. See Figure 3 for the most common publication criteria. Although we did not track this specifically, we noticed that many funds require authors to include an acknowledgement statement with their articles, such as “Publication of this article was funded by the

ABC University Libraries Open Access Publishing Fund.”

Hybrid publications, or journals which require a subscription but make individual articles open access for an additional fee, were excluded by 50 of the 55 funds. Of the remaining five, two explicitly allowed for hybrid publication funding, one evaluated hybrid journals on a case-by-case basis, and two were unknown based on the listed criteria. One fund that allows hybrid publications offers a higher pay rate for fully OA versus hybrid. In a previous survey with a smaller sample, 6 out of 10 libraries declined to provide OA funds for hybrid publications (Monson et al., 2014).

Funding

For 43 out of 55 funds, a definitive source or sources of funding were identified. Of those, 93% indicated that funding came from the library, while 14% listed the Provost’s office.

Also listed were Offices of Research, Vice Provost or Vice Chancellor’s offices, individual schools or colleges, Office of Academic Affairs, faculty senate, and an emeriti association. A small survey of 10 universities published in 2014 also found the Provost’s Office and the Office of Research to be common funding partners for OA funds (Monson et al., 2014).

Most of the library funds (87%) have a maximum reimbursement per article, ranging from 750 CDN (570 USD as of 5 August 2019) to 4,000 USD. The most common reimbursement maximums are 1,500 USD and 3,000 USD (see Figure 4 for more detail). The few funds that specifically address monographs commonly have a 5000 USD limit, although one offered 7,500 USD. In addition, 2/3 of the funds have a maximum reimbursement per author per year, most commonly 3,000 USD. Interestingly, two funds require that authors first request a waiver or reduction of publishing charges prior to applying for library OA funds.

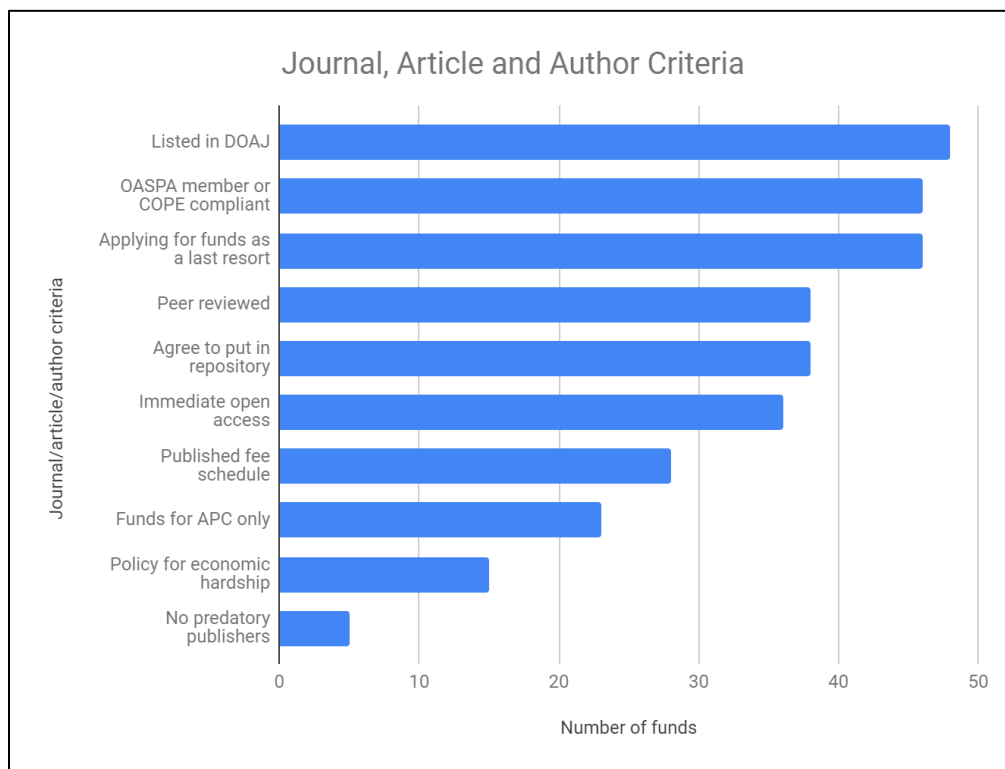


Figure 3 Most commonly-mentioned journal, article, and author criteria present on OA fund websites.

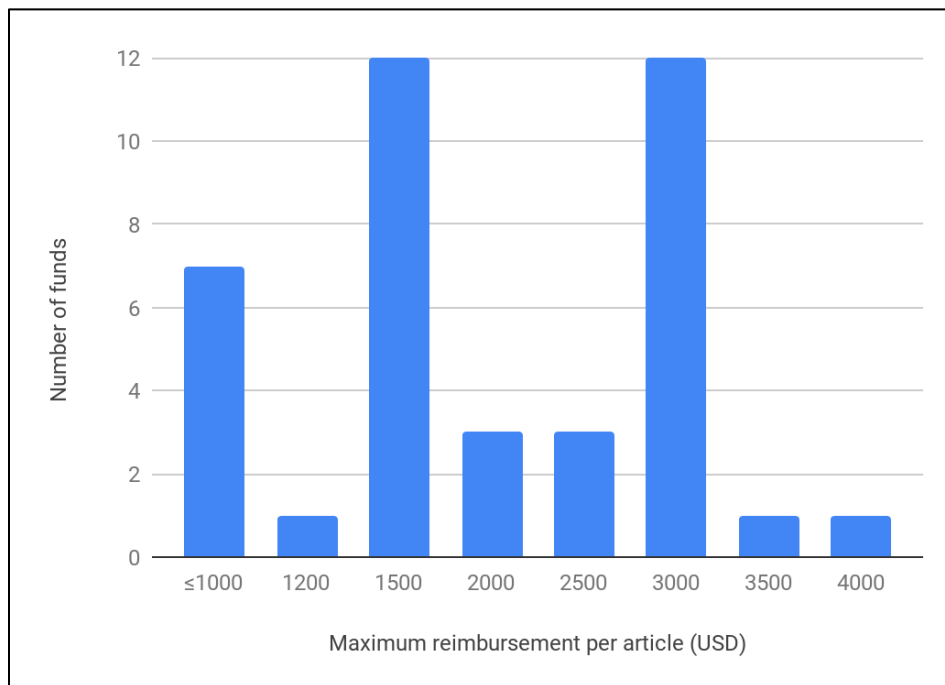


Figure 4
Distribution of maximum reimbursement per article amounts present in OA fund criteria.

Discussion

Impact

We observed that science and medicine largely dominated both the overall funded publication output as well as impact metrics, which is generally consistent with disciplinary trends in higher education (Clarivate Analytics, n.d.; Digital Science, n.d.-a).

Looking at the impact metrics, both the range of citation counts and h-indexes were broader than we had anticipated. Clearly, some high-impact research is being funded with library OA funds, despite two common fund restrictions that could limit impact: The “last resort” requirement makes it less likely that a grant-funded project would be funded (on the assumption that grant-funded projects have a higher likelihood of being high-impact research), and the near-universal limit of hybrid publication funding mostly eliminates the ability to fund articles for publication in many of the highest-impact

subscription model journals. These high-impact publications confirm that faculty’s self-reported interest in OA publishing to increase their visibility discussed earlier is legitimate, and can result in not only a high citation count but also in a high Altmetric Attention Score (Beaubien et al., 2016; Teplitzky & Phillips, 2016).

However, the RCR comparisons for the PLoS articles indicate that, based on the limited comparison, these funded articles have a slightly lower impact based on their citation counts as compared to similarly published research outside the dataset. This could be due to the two limiting criteria for funds described above. Regardless, it represents an opportunity for libraries with OA funds to increase outreach efforts to researchers and labs considered to be high-impact at their institution. While we see some mixed results from overall relative impact and attention of this dataset, messaging around visibility remains a viable selling point to faculty considering OA publication, with plenty of examples of high-visibility work being funded.

Effectiveness of OA Fund Criteria

In a 2015 study, only 1/3 of the libraries that provide OA funding indicated that they had evaluative criteria in place for funding requests. Some respondents noted that funded articles must be published in fully OA journals and hybrid journals do not qualify, with 35% requiring listing in the DOAJ. This study found that 27% of the libraries simply provided funding on faculty request (Lara, 2015). Our study observed a much higher rate of evaluative criteria, with virtually every OA fund listing guidelines and requirements on their websites, indicating a large trend toward the development of criteria in the past several years.

We were interested to explore the effectiveness of these criteria, and did so by checking the journals in our sample for predatory publishers. Predatory publishers – sometimes called deceptive publishers – charge publication fees but make false claims about their publication practices. These publishers, which tend to be OA, may accept and publish articles with little to no peer review or editing, falsely list scholars as editorial board members, and/or fail to be transparent regarding APCs. Identifying predatory publishers can be a challenge. Jeffrey Beall ran a popular website tracking predatory publishers, which was deactivated in 2017 (Basken, 2017). Currently, Cabell's provides a blacklist of deceptive and predatory journals, using a list of criteria that are categorized as severe (e.g., the journal gives a fake ISSN, the journal includes scholars on an editorial board without their knowledge or permission), moderate (e.g., the journal's website does not have a clearly stated peer review policy), and minor (e.g., the publisher or its journals are not listed in standard periodical directories or are not widely catalogued in library databases) (Toutloff, 2019). We used a different tool, however, to evaluate journals in our sample. We identified 20 journals in our 2014/2016 sample that were not indexed by ScimagoJR. We used a list of questions from Think. Check.

Submit to evaluate those 20 journals (e.g., Is the journal clear about the type of peer review it uses?) and found 4 did not "pass" this checklist (Think. Check. Submit., n.d.). However, we could not determine whether these four journals were predatory, or simply struggling publications with unclear or incomplete information on their websites. For example, one of the four journals is a Sage publication, but does not provide APC information or discuss adherence to or compliance with any open access initiatives such as COPE, OASPA, or DOAJ. The lack of clarity for these four journals mirrors Jain and Singh's (2019) findings that predatory publishers are 'evolving' with criteria checklists, making these kinds of evaluations more difficult, though they base their findings on Beall's criteria rather than Think. Check. Submit.

A 2017 commentary in *Nature Human Behavior* discussing stakeholders affected by predatory journals suggests explicit exclusion of predatory journals in OA fund criteria as one mechanism for deterring researchers from predatory publication (Lalu, Shamseer, Cobey, & Moher, 2017). Two older papers that surveyed librarians also mentioned using Beall's List in OA fund criteria to identify predatory or low quality journals (Lara, 2015; Monson et al., 2014). However, 2 of the 55 OA funds we examined still mentioned Beall's list - a sign that libraries have not entirely kept current with OA journal evaluation practices (or, at the very least, that their websites are no longer accurate reflections of current practice). Librarians and other OA funders must continue to monitor evolving practices for evaluation of predatory publications, such as Cabell's and Think. Check. Submit, in order to maintain the effectiveness of OA fund criteria.

Viability of OA Funds

37% of the OA funds that we identified via our data collection, SPARC's OA Funds in Action list, and Google searching are no longer active as

of summer 2019. Given the relatively short time that OA funds have been in existence, this rate of default points to a potentially troubling viability for OA funds. Whether OA funds will continue to be funded may largely depend on other concurrent OA and library initiatives, such as big deal cancellations and Plan S compliance, which could help determine the future OA landscape and more sustainable funding models.

Funding sources could also play a critical role in the future viability of these funds. In a 2015 survey of libraries that provide OA funding, 70% stated that OA funds came from the existing materials budget, and 24% indicated that they came from a new budget allotment unrelated to materials (Lara, 2015). We posit that, in the age of uncertain library budgets for many libraries, identification of non-library campus partners may be critical for the long-term continuation of these funds. Examples of distributed funding include IUPUI's fund, which lists no less than 13 campus partners contributing to the fund; and Wake Forest, which cost-shares publication fees equally between the library, Office of Research and Sponsored Programs, and the author's department (IUPUI University Library, n.d.; Wake Forest University Library, n.d.).

We observed several cost-saving measures employed by OA funds, including maximum article and author fees, as well as article funding at less than 100%, all of which may also help contribute to the sustainability of these funds. In the 2015 survey, "about 80% of respondents were unsure or stated that there is no established maximum, 19% stated that there is a maximum fee in place. Nearly all of the respondents whose institutions have an established ceiling for funding placed the maximum price in the range of \$2,000–3,000" (Lara, 2015, p. 7). This shift from 19% in 2015 to the 87% of funds in 2019 with price capping suggests that future viability may be dependent on limiting these funds, at least for now. One of

the more innovative approaches to price capping we observed was University of Massachusetts Amherst's OA fund, which started at 50% fee coverage, with increased coverage earned through additional criteria, such as early-career authors, first-time applicants, a non-profit or society publisher, and having an ORCID (UMass Amherst Libraries, n.d.).

Future Research & Directions

We see an opportunity to further investigate OA funds in order to establish more concrete best practices. We have seen shifts in criteria models used by funds - but have these shifts contributed to the success or failure of individual funds? Are funds with more distributed funding models more sustainable? Our findings hint at these possibilities, but more research would help clarify these potential best practices. We also see value in continuing to monitor institutional funding for OA as the scholarly communications landscape continues to change. Many possibilities for OA rely on financial support from libraries, and a coordinated approach toward funding models may be the key to the success or failure of broad OA adoption.

Alternative OA support models are already emerging. For example, Reinsfelder and Pike (2018) urge a shift away from libraries spending funds on APCs and towards crowdfunded models like Knowledge Unlatched, SCOAP³, and Unglue.it. They argue that \$25,000 would pay approximately 12.5 journal APCs, but would fund 471 new OA books through a Knowledge Unlatched pledge. Likewise, Berger (2017) argues that advocacy by libraries for different funding models de-commodifies scholarship, and will also "mortally wound" predatory publishers' viability. Some universities in the U.S. are starting to make this shift. In 2019, the University of Arizona Libraries transitioned away from their Open Access Publishing Fund, establishing an Open Access Investment Fund. Instead of paying

individual APCs for OA publications, the Libraries will now pay for institutional memberships with specific publishers that include APC discounts, as well as initiatives with “wide potential global impact” like arXiv and the Open Textbook Network (University of Arizona University Libraries, 2019).

Conclusion

Libraries in North America are clearly dedicated to supporting the OA movement, and in recent years this has meant providing authors with funds to pay APCs. This study explores the articles published via library OA funds at 16 universities and their impact, as well as the guidelines and criteria set forth in 55 funds. Findings indicate that research impact is a useful tool for increasing faculty support of OA and that existing fund criteria have been refined over recent years to encourage publication in mostly high-quality journals. OA funds have supported researchers in a wide range of disciplines and career stages, with STEM fields and researchers being the most frequently-supported by these funds. However, there is some evidence to suggest that these funds may not be supporting the highest impact research, possibly as a result of fund criteria restrictions. The overall OA landscape is shifting, and the APC model may not prove to be viable. Price capping of funds and distributed funding models may increase the sustainability of these funds in the future. Regardless of the administrative details behind funding, the ways that institutions choose to financially support OA will continue to evolve as the OA movement develops.

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Appendix A
Library Fund Data Collection Fields

| Institutional Details | Publication Details |
|--------------------------------------|----------------------------|
| Institution Name | Journal Title |
| Private or Public | Indexed in DOAJ (Y/N) |
| Carnegie Classification (e.g., R2) | Hybrid (Y/N) |
| Author Details | Journal Impact Factor |
| Discipline | Journal Publisher |
| Author Name | Article Details |
| Co-Authors (Y/N) | Article Title |
| International Collaborators (Y/N) | Reimbursement Amount |
| Status (e.g., faculty, grad student) | Reimbursement Year |
| Tenure (Y/N) | Publication Year |
| Email | doi |
| H-index | |

Appendix B
OA Fund Criteria Data Collection Form

1. Name of University: _____

2. Who is eligible for these funds? (check all that apply)
 - Faculty (all)
 - Faculty (tenure track specified)
 - Staff
 - Undergraduate students
 - Graduate students
 - Postdocs
 - Researchers
 - Other: _____

3. What types of publications are eligible? (check all that apply)
 - Journal articles
 - Book chapters
 - Monographs
 - Other: _____

4. Which criteria must the publication meet? (check all that apply)
 - Peer reviewed
 - Listed in DOAJ
 - Listed in DOAB
 - OASPA member or compliant
 - Immediate open access
 - Published fee schedule
 - Policy for economic hardship

- NOT on Beall's list
 - No predatory publishers
 - Agree to put in repository
 - OA fund is last resort
 - APC only (e.g., no submission fees)
 - Other: _____
5. Hybrid allowed?
- Yes
 - No
 - Case-by-case
 - Other: _____
6. Is there a maximum reimbursement per article?
- Yes
 - No
7. What is the maximum reimbursement per article? _____
8. Is there a maximum reimbursement per author per year?
- Yes
 - No
9. What is the maximum reimbursement per author per year? _____
10. Limited to 1 publication per author per year?
- Yes
 - No
11. Multiple author policy?
- Yes
 - No
12. Source of funds? (check all that apply)
- Provost's Office
 - Library
 - Other: _____
13. Notes: _____