

Open Access Publishing: A Study of UC Berkeley Faculty Views and Practices

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Abstract

This paper focuses on University of California Berkeley (Berkeley) faculty's perception and behavior around Open Access (OA) publishing. The study considered faculty answers to specific questions related to OA from the Ithaka Faculty Survey, conducted at Berkeley in October 2018, and related them to the faculty's scholarly output in the Scopus database. Findings from the Faculty Survey show that 71% of Berkeley faculty compared to 64% of faculty nationwide support a transition to OA publishing, which shows strong support for OA at Berkeley. However, when selecting a specific journal to publish in, faculty indicated that a journal having no cost to publish was more important than having no cost to read. After joining faculty's survey responses and their publication output (extracted from Scopus), the data sample included 4,413 articles published by 479 Berkeley faculty between the years 2016 to 2019. With considerable disciplinary differences, the OA publication output for this sample, combining all four types of OA (Green, Gold, Hybrid, and Bronze) using data from Unpaywall, represents 72% of the total publication output. Gold OA articles, which account for 18% of all of the publications, are the focus of our study to compare against faculty's responses in the survey. Overall, the study found that there is a positive correlation between publishing Gold OA and the faculty's support for OA (no cost to read). In contrast, the correlation between publishing Gold OA and the faculty's concern about publishing cost is weak. Publishing costs concerned faculty in all subject areas, whether or not their articles reported research funding. Thus, the Berkeley Library's efforts to pursue transformative publishing agreements and prioritize funding for a program subsidizing publishing fees seem like effective strategies to increase OA.

Introduction

In October 2018, the University of California Berkeley (Berkeley) Library invited all Berkeley faculty members to participate in the Ithaka Faculty Survey. Around this time, Berkeley and the rest of the University of California system had announced a "major UC initiative to transform the scholarly publishing industry."¹ There were numerous communications and conversations regarding scholarly publishing and moving toward Open Access (OA). According to the Faculty Survey, 71% of the faculty respondents at Berkeley, versus 64% nationwide, indicated that they would be happy to see the traditional publication model replaced by an OA publication system.² This suggests that UC's efforts to transform scholarly publishing were aligned with the views of Berkeley faculty.

As part of an ARL Impact Pilot on the topic of "(how) does the library help to increase research productivity and impact?," we decided to investigate the OA productivity of Berkeley faculty and compare faculty's views on OA and scholarly publishing, expressed in the Faculty Survey, to their actual publishing practices. Accordingly, this paper begins with a summary of the Faculty Survey results that pertain to faculty views on OA, which provides a background for our current study. Our study then includes (1) analysis of the survey respondents' 2016–2019 publication output, including OA publications; and (2) analysis of a de-identified dataset that links survey responses with respondents' publication data.

The results of our study provide insights into faculty's attitudes around OA publishing, including the role funding availability and discipline play in faculty's OA publishing. Having greater knowledge of the OA

publishing landscape at Berkeley provides benchmarks that can be used in future analyses, like ones looking at the impact of new transformative publishing agreements. Additionally, this study gives us insight into how the library can better support OA publishing.

Background—2018 Ithaka Faculty Survey

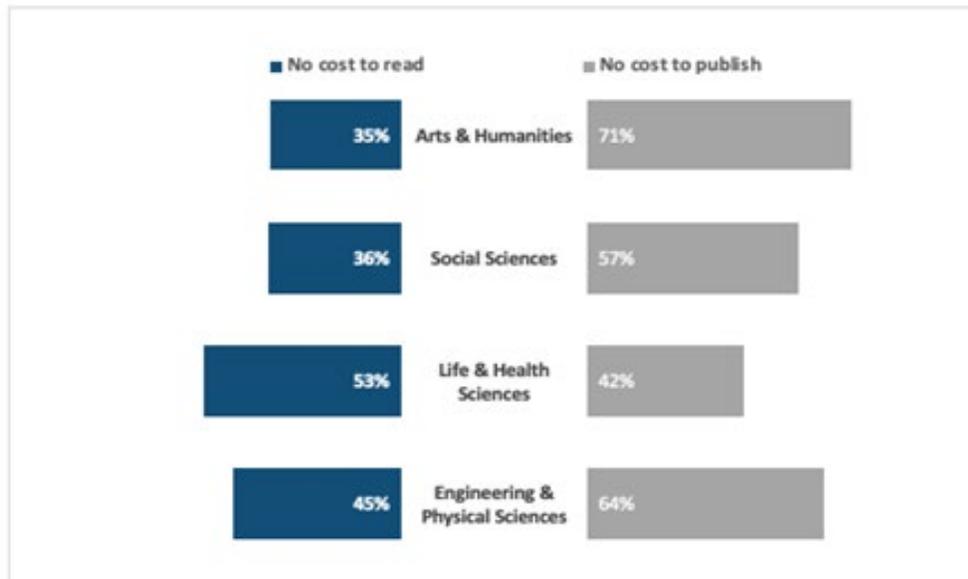
The Berkeley Library partnered with national research organization Ithaka S+R to launch a survey of Berkeley faculty in October 2018. The survey was sent to 2,748 Berkeley faculty members. There were 41 questions, including a number of questions on research dissemination and publication, and 811 faculty responded, which was a 30% response rate.

In order to understand faculty’s perception of OA, we considered faculty’s answers to specific questions about research dissemination and publication. One of the questions was about the factors that influence faculty’s decisions about the journals where they publish their articles. Six hundred seventy-six responses were analyzed for this question. The top two (91%) influencing factors were (1) the journal is widely distributed, and (2) the journal has a high impact factor or an excellent academic reputation, while the third choice (84%) was that the coverage area of the journal is close to the faculty’s immediate area of research.

In contrast, OA factors were ranked lower; 41% of the faculty respondents (compared with 38% nationally) indicated that a journal having no cost to read was very important, while 59% (compared with 70% nationally) indicated that a journal having no cost to publish was very important.

To look at disciplinary differences, we used four broad subject categories based on the faculty’s department: Life and Health Sciences (LHS), Engineering and Physical Sciences (EPS), Social Sciences (SS), and Arts and Humanities (AH). Analyzing the two OA factors by subject groups, it is noticeable that a higher percentage of the faculty in AH value no cost to publish, while a higher percentage of the faculty in LHS value no cost to read (Figure 1).

Figure 1.



Research funding is relevant to a discussion about OA, since some OA publishing channels require costly publishing fees. In another question, faculty were asked if they received external funding for their scholarly research from a public or government grant-making organization (such as the NSF, NIH, NEH,

Social Networks.¹⁰ Availability of PDFs on non-traditional sites can complicate OA studies, and an article's OA status can be a moving target due to actions by authors and publishers that change the article's availability.

Factors influencing authors' publishing decisions and attitudes towards OA

Factors that influence authors' decisions regarding their choice of journals to publish in have been explored in numerous studies. Several papers analyzed data from a survey that was answered by about 2,000 faculty, graduate students, and post-docs at four large research universities in 2015.¹¹ These researchers were asked which eight journal attributes were most important when deciding where to publish their research. Across disciplines and position types, a journal's reputation and fit (with the author's work) were the top two attributes, while OA was the least important.¹² Respondents in the Ithaka S+R U.S. Faculty Surveys, when asked a similar question, have ranked the journal's fit, circulation / readership, and reputation as top attributes over multiple iterations of the survey; a journal making its articles free to read has consistently ranked toward the bottom of the list.¹³ The large 2010 SOAP survey (a convenience sample of over 38,000 researchers biased toward the life and health sciences) also found that OA was one of the least important attributes, despite nearly 90% of the respondents agreeing that their research fields "would or do benefit" from journals publishing OA articles.¹⁴

Although OA may not be a top consideration when publishing, the growth of Gold and author-pays Hybrid OA suggests that many authors do value OA publishing. Broader societal benefits, like increasing access to research, and more personal benefits, like increasing the citations to one's papers, are possible reasons that authors might choose OA. Authors who have a positive attitude toward OA are more likely to publish OA, whether their positive attitude comes from moral conviction of OA as a public good, or from belief that OA serves an author's interests.¹⁵

Nevertheless, publishing in OA journals does not necessarily signify a positive attitude toward OA. Solomon and Bjork surveyed authors who had submitted articles to journals in the Directory of Open Access Journals. Although OA was a factor in their decision of where to publish (60% found it important), fit, quality, and speed of publication were substantially more important to the authors.¹⁶ From the 86 authors of OA articles from their university that responded to their survey, Heaton and colleagues found that a researcher's discipline and peers appeared to strongly influence whether they publish OA, as does availability of funds.¹⁷ However, OA authors were not necessarily OA advocates, and some were suspicious of OA journals as being predatory. Overall, 83% of respondents did place some importance on the journal being OA, and altruism was the most common motivating factor selected. Heaton et al. concluded that "[a]uthor motivations are multifaceted and complex,"¹⁸ so we should be careful not to generalize or make assumptions.

Role of discipline

Researchers in most STEM (Science, Technology, Engineering, and Mathematics) disciplines publish more OA than their colleagues in the Humanities and Social Sciences.¹⁹ There are a number of factors that may contribute to this imbalance. For one, researchers in STEM fields tend to be more positive about OA increasing readership of their work and potentially increasing research quality.²⁰ One reason that STEM authors may be more motivated to increase readership is that they may feel their research has practical real-world implications. However, Bosman and Kramer looked at millions of articles indexed in the Web of Science and found that some applied STEM fields had less OA than the pure sciences,²¹ so it is important to consider disciplinary differences within large subject groups.

Another factor contributing to the imbalance is that many non-STEM fields are more focused on monographs, which offer less opportunity for OA. Also, when publishing journal articles, non-STEM researchers may lack quality OA journals in their field. Additionally, STEM researchers may have more

funds available to pay APCs. Finally, researchers in STEM fields may be more likely to receive funding from federal agencies that require that the resulting research be made OA, which could be achieved through publishing in an OA journal and/or depositing to a Green OA repository. Thus, even researchers that are neutral about OA may publish OA as a requirement of their grants.

Methods

After getting the IRB approval for our research, the publication data for Berkeley's Ithaka Faculty Survey respondents were retrieved from Scopus as of August 2020 using multiple APIs. The publication date range was limited to 2016-2019. The publication output was limited to journal articles and review articles as they are the major OA output, and the question from the Faculty Survey was focused on journal publications. The Scopus article data included information on reported research funding. After establishing the connection between authors' survey responses and publications, the file that contains personal information used as identifiers was deleted. The resulting analysis is only in aggregate and cannot reveal any personally identifiable data.

The OA status information came from Unpaywall by matching the DOIs of the articles with the data in Unpaywall's database. Articles lacking DOIs were excluded from our analyses. Unpaywall defines different categories of OA as follows: Closed are non-OA articles; Green articles are OA in a repository but closed on the publisher website; Gold articles are published in fully OA journals; Hybrid articles are freely available in a non-OA journal on the publisher website under an open license; Bronze articles are also freely available on publisher websites but without an identifiable license.

The study primarily focuses on Gold OA as this category reflects the strongest intention to publish OA. Authors publishing in Gold OA journals know that their article will be immediately available OA and in most cases have paid an APC. The Hybrid OA category includes individual articles that are made immediately OA by an author paying APC. However, under transformative OA agreements negotiated between libraries and some publishers, articles published by affiliated authors become Hybrid OA automatically, with less of an intentional decision on the part of the author. Also, Unpaywall's Hybrid and Bronze categories include articles made available by the publisher after a delay. Green OA articles may also have undergone an embargo prior to being deposited. With Delayed OA in the mix, it is harder to understand the authors' OA publishing intentions. Plus, for categories other than Gold, articles may change categories as embargos and licensing shifts.

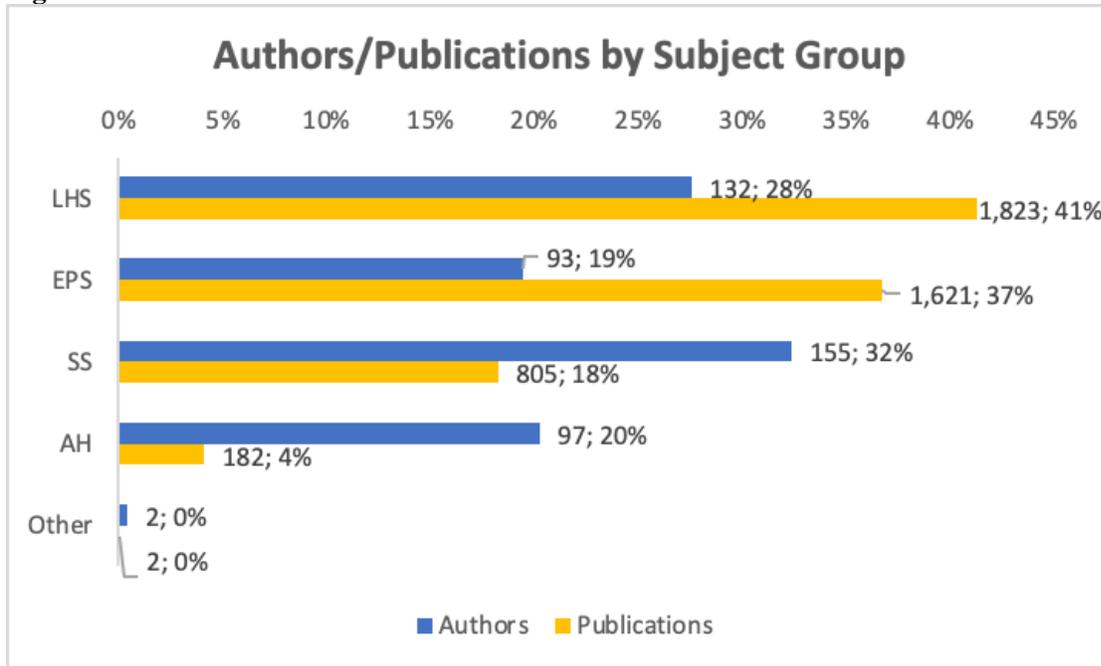
Out of 811 faculty respondents, 509 (63%) authors were identified in Scopus, and the same four subject groups were used to compare disciplines as used in the Faculty Survey. The ability to find authors in Scopus was not consistent across subject groups, 82%-83% for LHS and EPS, 55% for SS, and 43% for AH. Also, for certain disciplines, especially AH, even though the authors are indexed in Scopus, not all of their publications are, especially when journal articles are not the authors' primary publication output format. The research team investigated Worldcat as an alternative tool to collect data about AH faculty publications. However, to keep the analysis consistent with other disciplines, a decision was made to use Scopus as a unified tool for all disciplines, despite the limitations. Further analysis of AH publications would be useful to better understand the OA production for this group.

Among the 509 authors who were identified in Scopus, 479 answered the question about journal publishing preferences. These 479 authors, their survey responses, and the 4,413 articles²² they authored are the focus of our correlation analysis and study.

Overall, 78% of the total publications were authored by STEM faculty, with 41% by LHS authors and 37% by EPS authors (Figure 3). Even though 32% of the authors identified are from SS disciplines, the highest percentage, their publication output only represents 18%. AH publications are even more

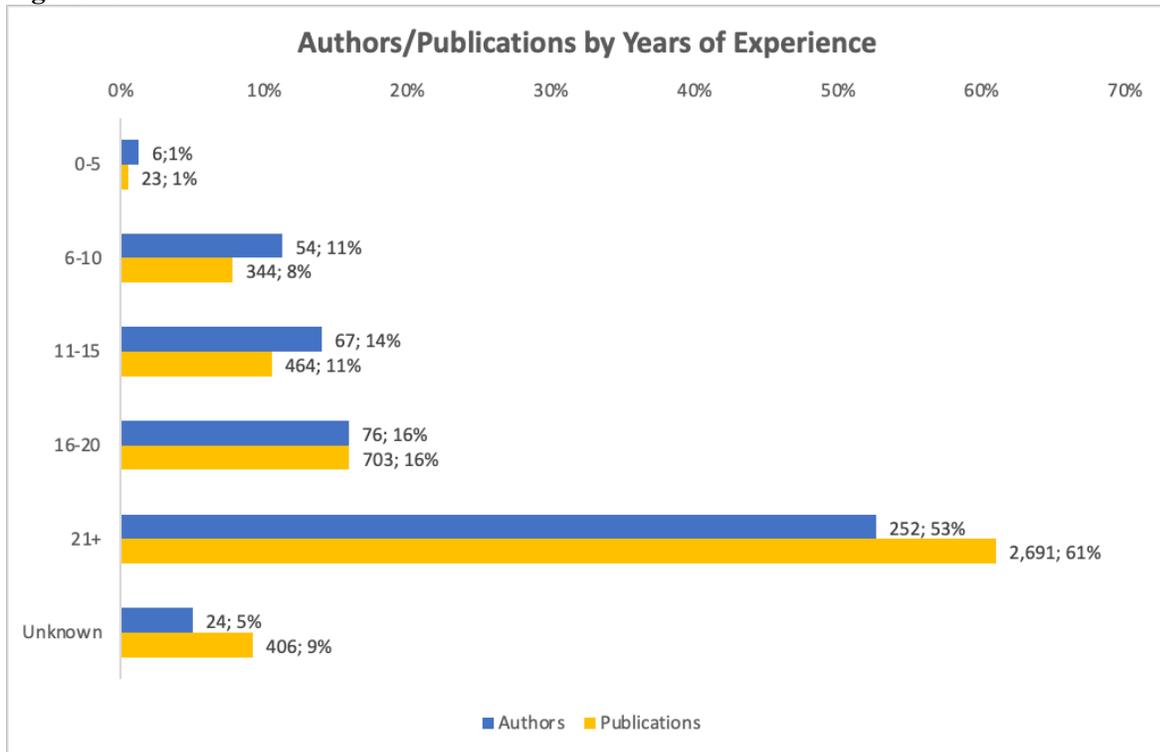
disproportionately represented in the dataset, as only 4% of the total articles are published by 20% of the faculty. Two faculty and their two publications do not fall into one of the subject groups, so they are excluded from the analysis.

Figure 3.



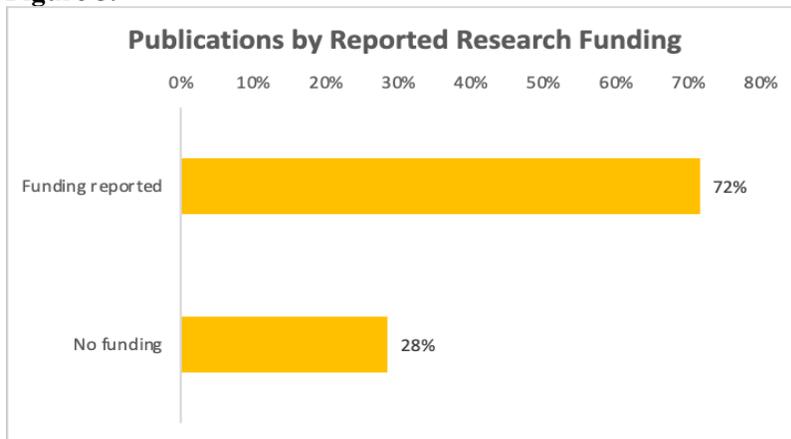
Looking at faculty's years of experience, faculty with at least 21 years of experience represent the majority of the dataset (Figure 4). Fifty-five percent of the articles are published by the most senior faculty, followed by 16–20 years, 11–15 years and 6–10 years.

Figure 4.



Overall, 72% of the articles published by Berkeley faculty were coded with funding information in Scopus while 28% of the articles did not indicate a funding source²³ (Figure 5). However, an article reporting funding does not necessarily mean that Berkeley authors received funding for their research, as the funding information is tied to the articles not to individual authors.

Figure 5.



Results

Large OA output at Berkeley with Gold OA on the rise

For the last four years from 2016 to 2019, the total publication output has been stable, averaging around 1,110 journal articles and review articles per year published by the 479 Berkeley authors. The OA publication output, combining all four types of OA (Green, Gold, Hybrid, and Bronze), represents 72% of

the total publication output (Figure 6). The OA output varies by subject group, ranging from 37% to 78%. LHS has the highest OA publication output, while AH has the lowest.

Figure 6.

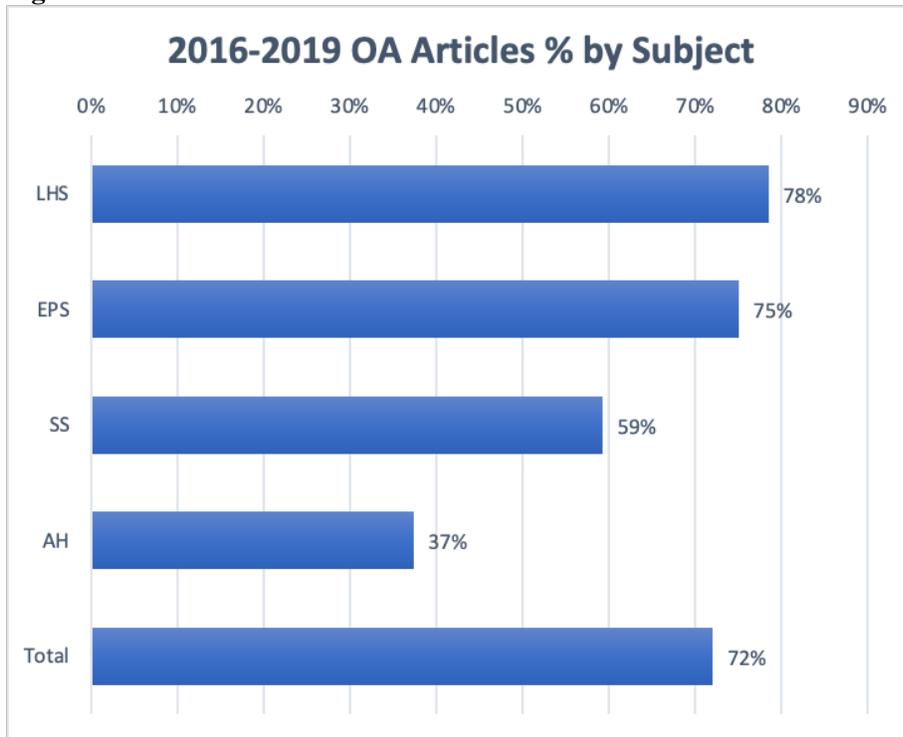
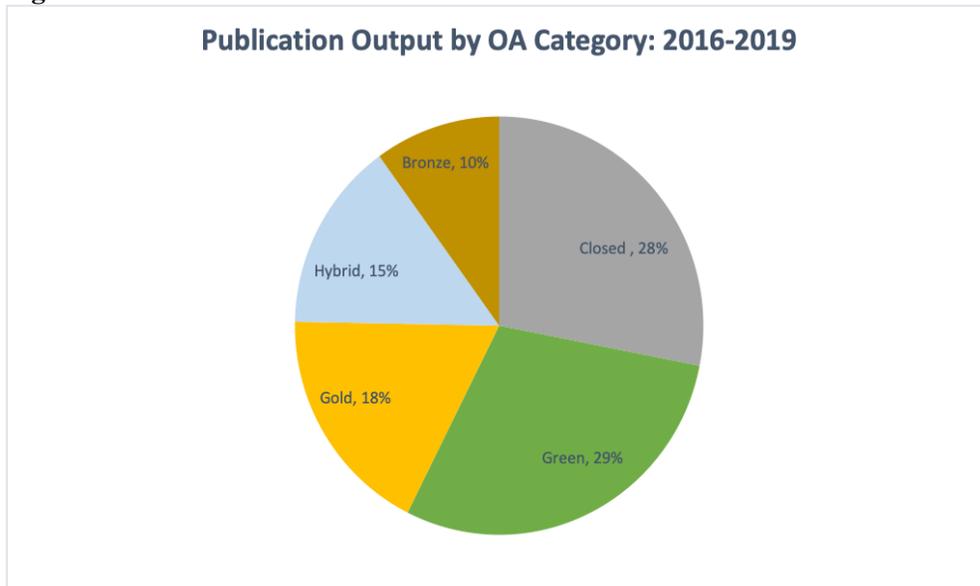


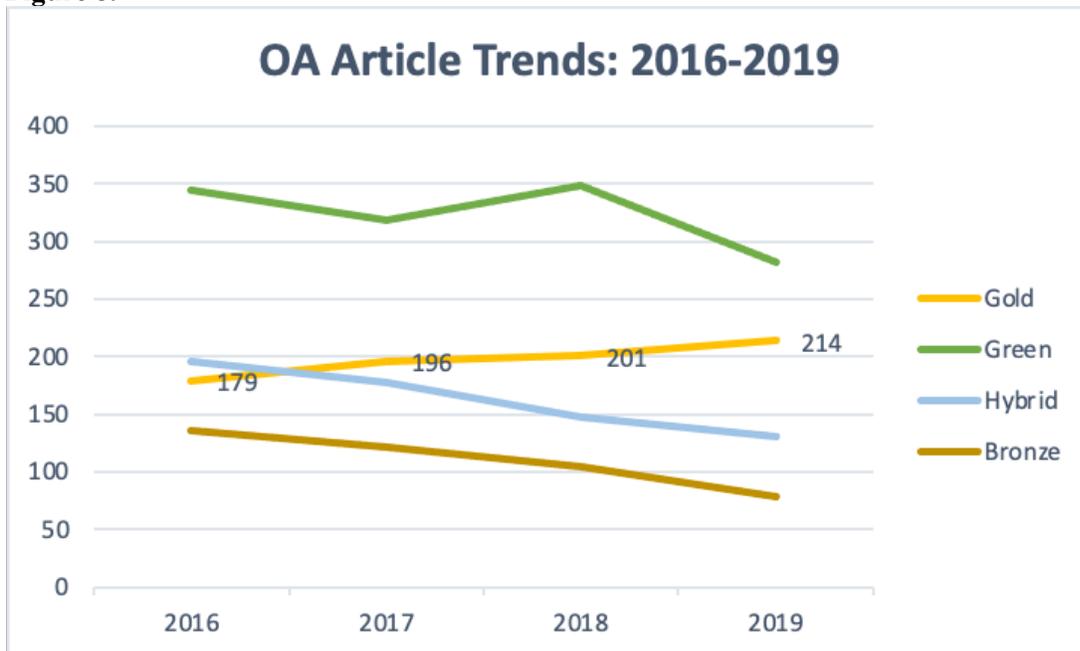
Figure 7 illustrates the output percentages by different OA categories. Among all of the published articles, Green OA, 29%, represents the biggest share. Unpaywall's Green category represents articles that are only available in a repository (not via the publisher), and there are likely articles in the Gold, Hybrid, and Bronze categories that are also in repositories. Thus, the actual percent of articles in repositories is likely higher than 29%. Gold OA publications are the second largest OA contributor at 18%. Hybrid and Bronze together represent over a quarter of the total articles.

Figure 7.



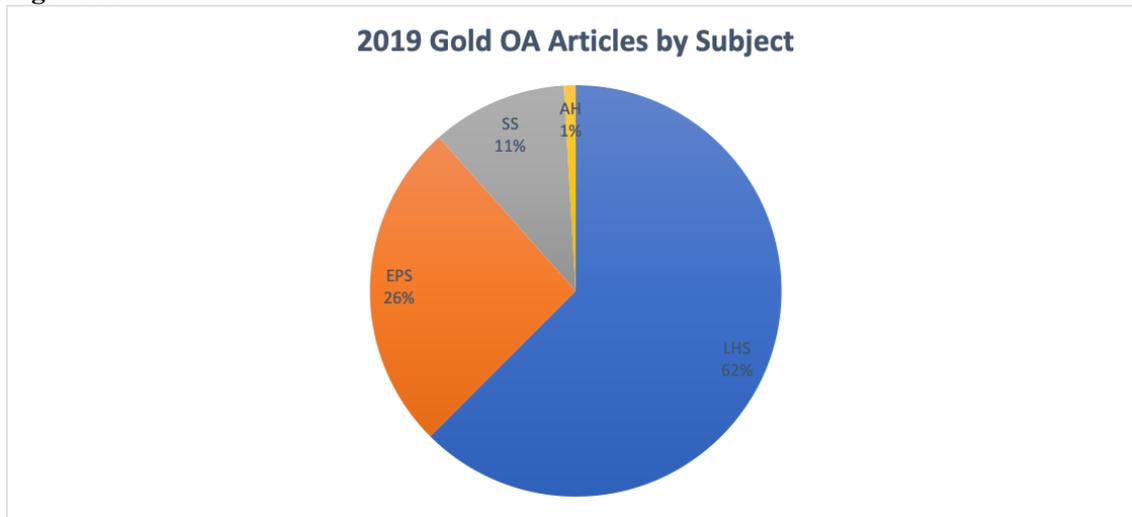
Gold OA output has been steadily increasing over the years (Figure 8), 20% more from 2016 to 2019. The downward trend in the other OA types is at least partly a result of embargos and Delayed OA; it is likely that the OA status of some newer articles will change from Closed to Green, Hybrid, or Bronze after an embargo period.

Figure 8.



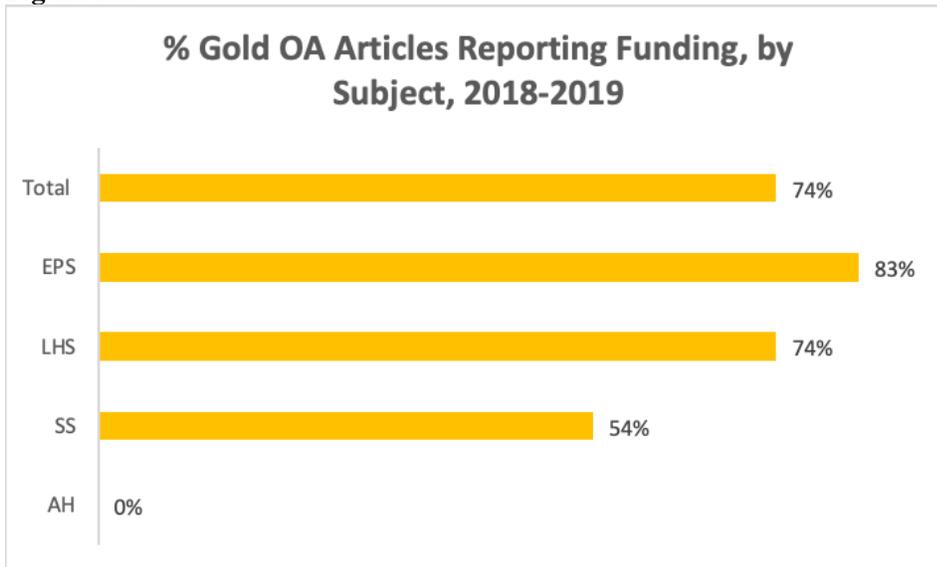
The majority of the Gold OA articles are published by authors in the LHS fields. In the most recent year, 2019, 62% of the Gold OA articles were authored by LHS faculty, 26% by EPS faculty, and 11% by SS faculty (Figure 9). There were only 2 (1%) Gold OA articles authored by AH authors in 2019.

Figure 9.



Based on Scopus data for 2018 to 2019, 74% of the Gold OA articles published by Berkeley authors reported receiving research funding (Figure 10). The highest percentage of Gold OA articles that reported funding are published by authors from EPS, 83%, followed by LHS, 74%, and SS, 54%. None of the three Gold OA articles by AH authors reported funding.

Figure 10.



The more Gold OA articles published, the higher support for OA.

When asked in the Faculty Survey about how important it is that the journal make its articles freely available on the internet so there is no cost to read, 195 of the 479 authors, around 41%, indicated it was very important (Figure 11). They also produced the highest percentage of Gold OA articles: 21% of their publications were Gold OA articles. 40% of the authors were neutral, and 17% of their publications were Gold OA. 19% of the authors considered it not important and 11% of their publications were Gold OA. Thus, faculty who publish more Gold OA feel more strongly that articles should be free to read, while those who publish less Gold OA place little importance on articles being free to read.

Figure 11.

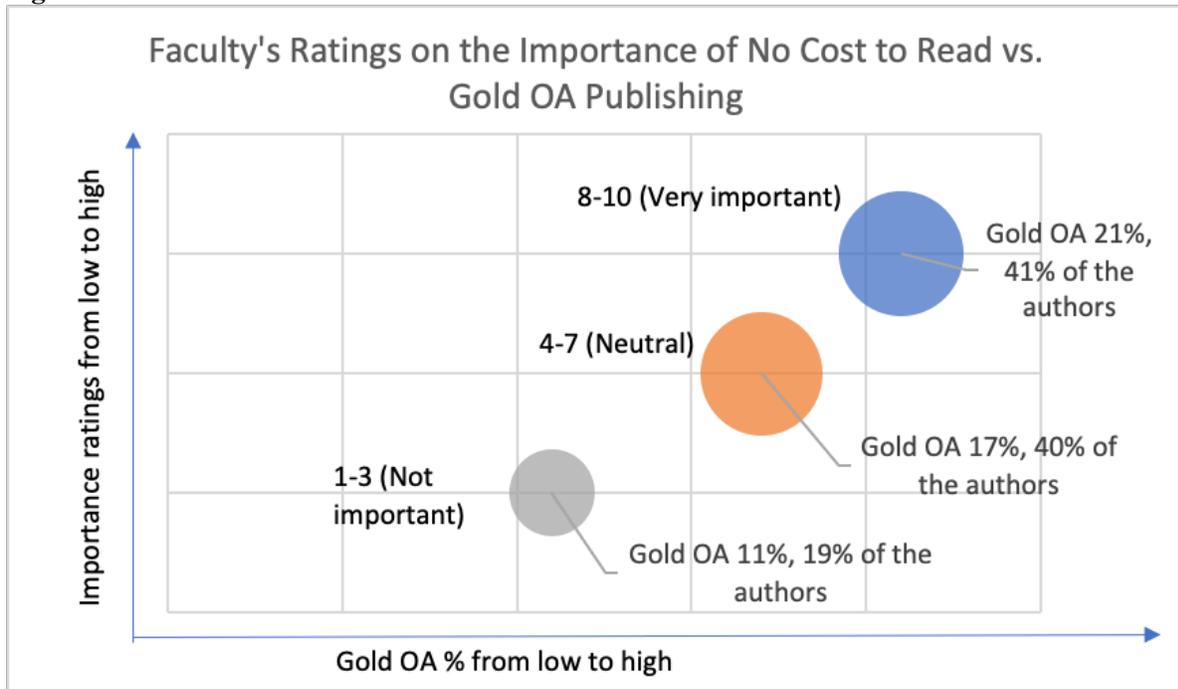
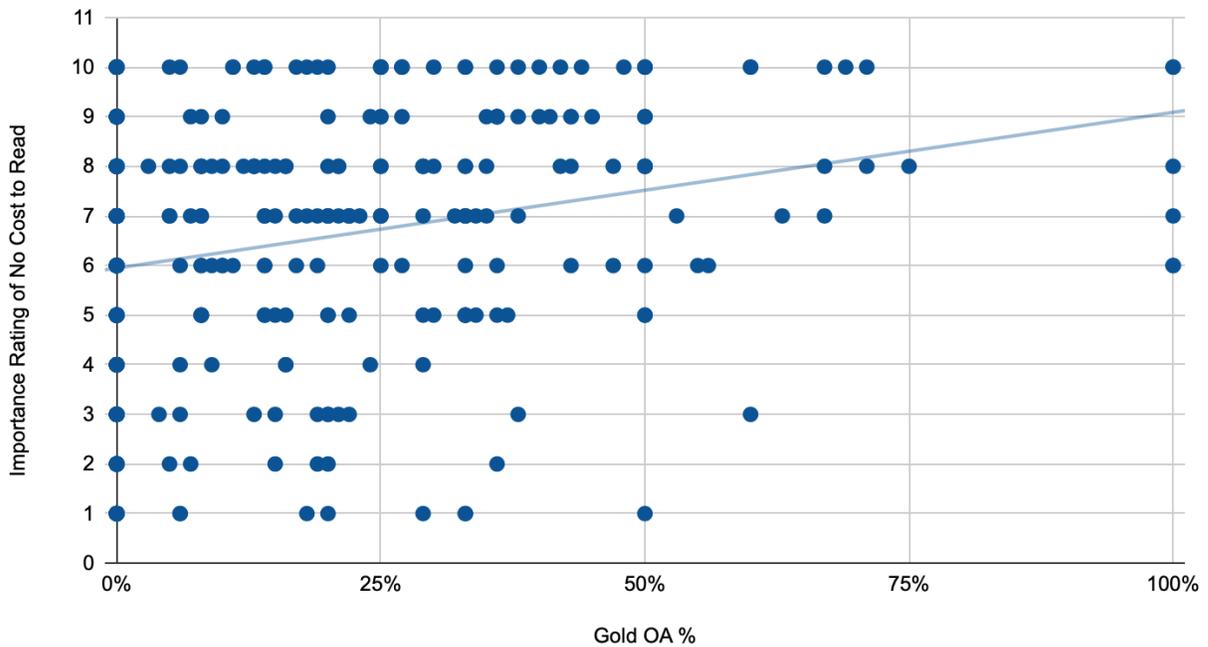


Figure 12 is another depiction of the correlation between faculty's Gold OA publication output and their support for OA, with circles representing each author. The upward trendline shows that the more Gold OA the faculty publishes, the more supportive they are toward OA.

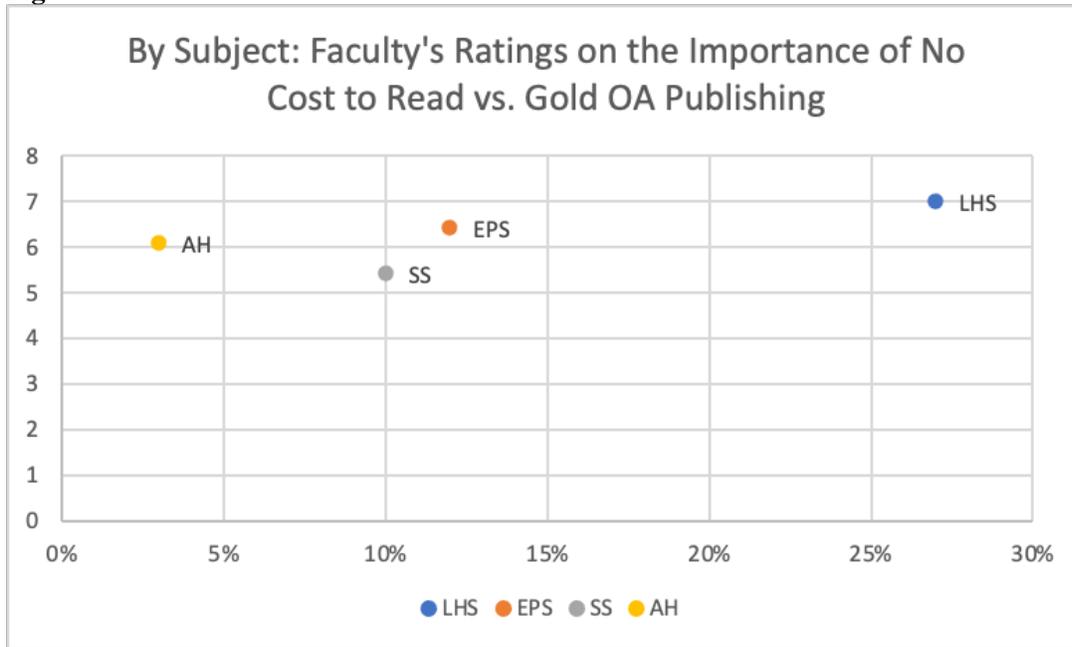
Figure 12.

Correlation between Gold OA% and the Importance of No Cost to Read



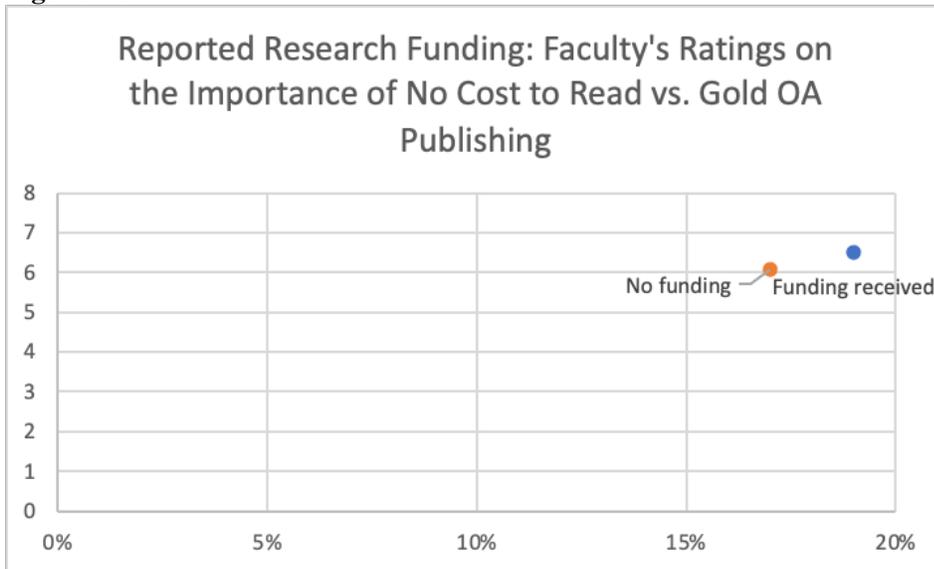
Among all the disciplines, LHS faculty not only are more supportive of OA, they also publish more gold OA articles (see Figure 13). On average, LHS faculty rated higher the importance of no cost to read, and 27% of the LHS faculty’s publications are Gold OA. AH faculty generated the lowest Gold OA output: only 3% of all the articles published by AH faculty are Gold OA. However, their support of no cost to read is not the lowest. The average rating of AH faculty on this survey question is close to EPS faculty and higher than SS faculty. Overall, the differences between the average rated importance among the subject groups ranged from 5.4 to 7.

Figure 13.



Whether or not an article reported research funding and how that related to its OA status and the importance its author placed on articles being free to read was examined. Faculty whose articles received funding considered OA slightly more important than the faculty whose articles didn’t (see Figure 14). They also published more Gold OA. However, between the two groups, the differences in the Gold OA output and in the importance ratings for no cost to read are quite small.

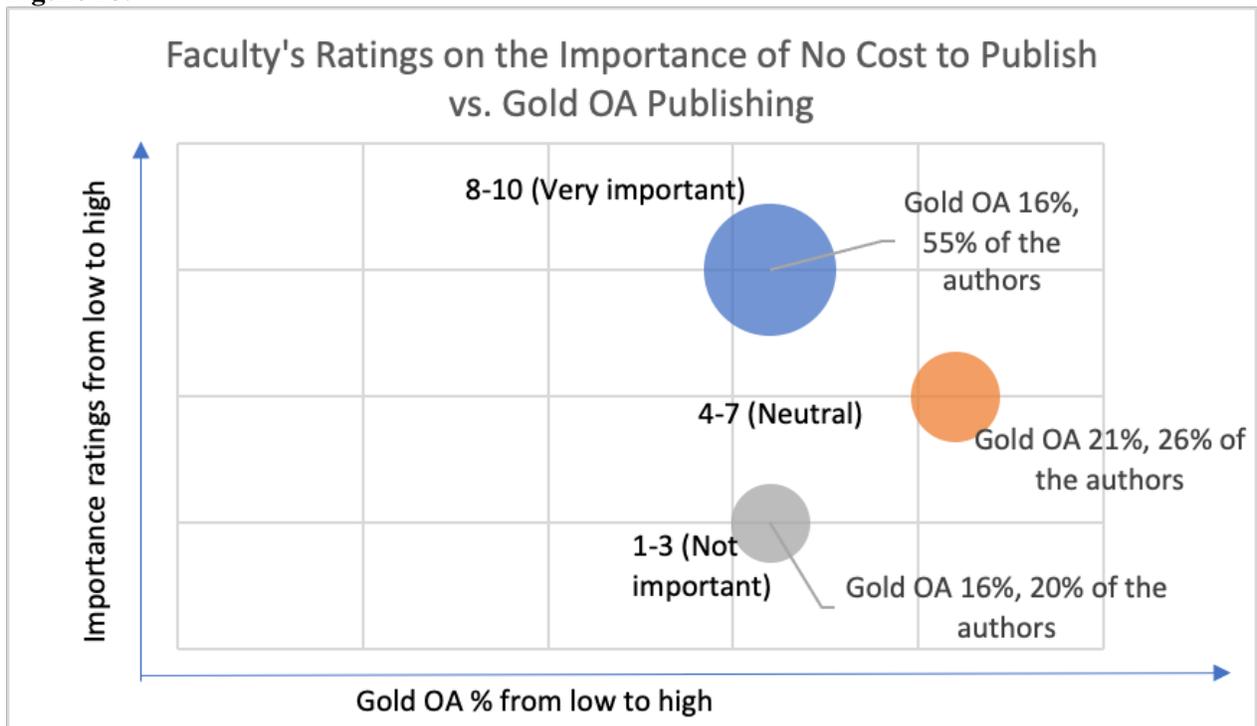
Figure 14.



Perceived importance of no publishing costs

Even though Berkeley has a substantial OA output with Gold OA increasing, more than half of the faculty are still concerned about publication cost. When considering the importance of journals permitting scholars to publish articles for free (without paying APCs), 55% of the authors indicated this was very important, and 16% of this group's publications were Gold OA. Twenty-six percent of the faculty were neutral about cost to publish, and 21% of this group's publications were Gold OA. Only 16% of the faculty considered publishing cost not important, and 20% of this group's publications were Gold OA.

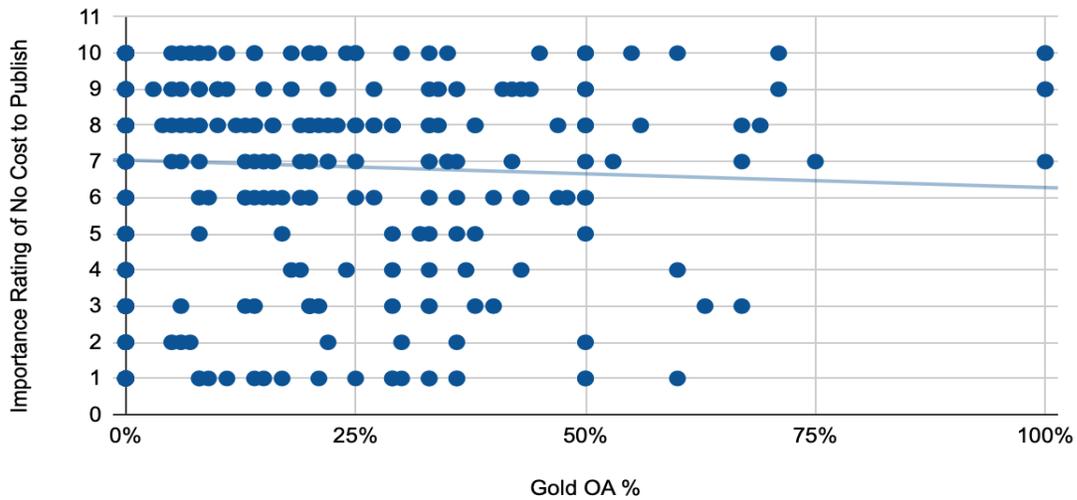
Figure 15.



There was a slight negative correlation between faculty's Gold OA publication output percentages and their perception of the importance of no cost to publish (Figure 16). The more Gold OA articles the faculty published, the less concerned they were about publishing cost. There was more variability in the relationship between faculty's Gold OA publication output percentages and their perception of the importance of no cost to publish that there was for no cost to read (Figure 12).

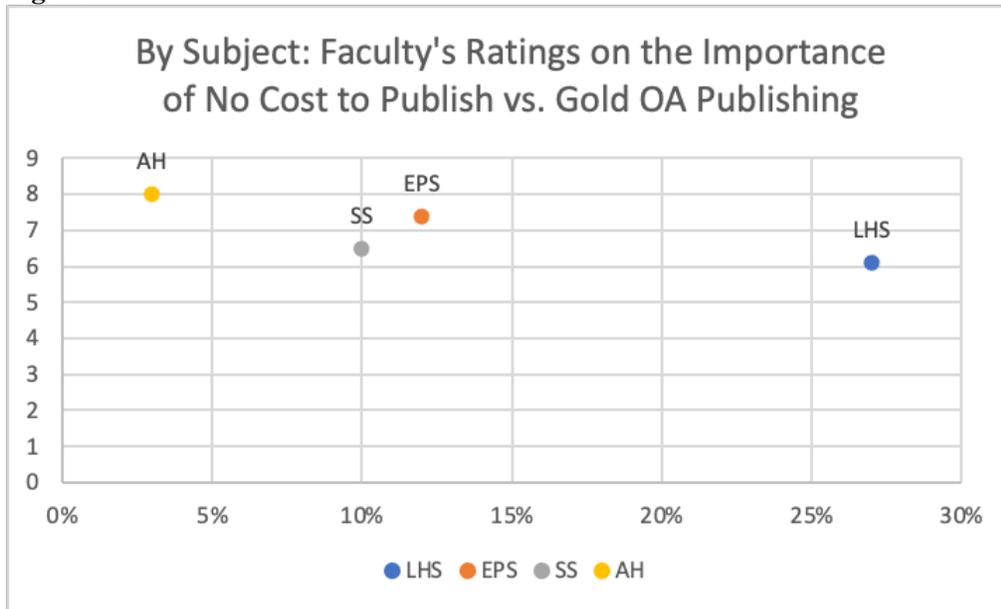
Figure 16.

The Correlation between Gold OA % and the Importance of No Cost to Publish



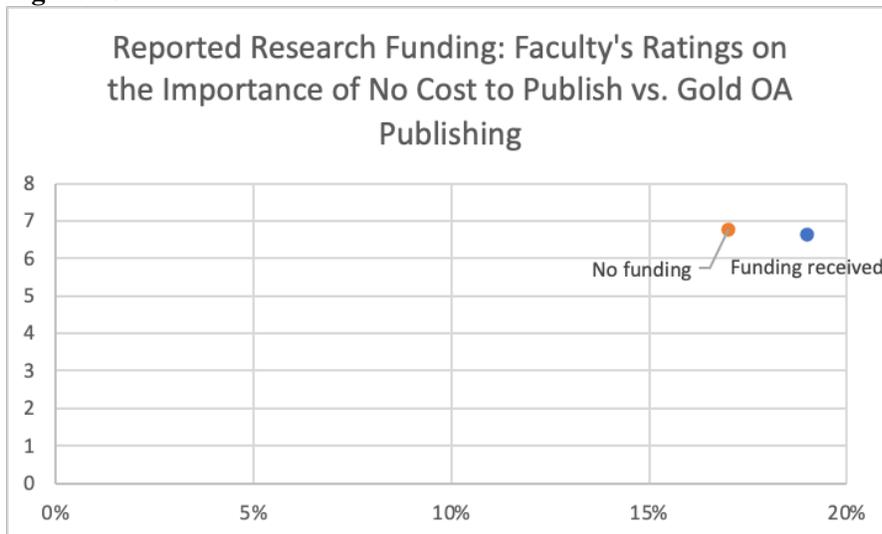
Faculty from different subject groups varied in the levels of importance they assigned to no cost to publish, with average ratings ranging from 6 to 8 (Figure 17). On average, AH faculty felt most strongly that articles should be free to publish, followed by the faculty from EPS. Faculty from SS and LHS considered being free to publish less important.

Figure 17.



The data shows that the faculty whose articles did not report research funding considered no cost to publish slightly more important on average than the faculty with reported funding (Figure 18). However, the difference was quite small.

Figure 18.



Discussion

Limitations

The limitations of Scopus coverage need to be considered while interpreting the study results. Scopus reports that nearly three quarters of its content is in the STEM subject area,²⁴ and as discussed previously, Berkeley AH and SS authors were not well represented in Scopus. The uneven distribution of authors and, especially, articles means it is harder to generalize about Berkeley authors overall based on our results. Another limitation is that Berkeley authors were not necessarily first/corresponding authors, so

they may not have made the decision on where to publish, directly received the funding associated with the article, or been responsible for the article's APC.

A Scopus search for articles and reviews from 2016–2019 with authors affiliated with Berkeley finds that 19% of the publications are Gold OA, which is comparable to the 18% Gold OA articles we found. Thus, this study's sample may at least be representative of Berkeley authors in Scopus overall.

Another limitation is that looking only at Gold OA articles does not show all of the authors' deliberate actions to make their articles available. For example, we were unable to separate out Hybrid articles for which authors paid an APC to make the article immediately OA. Those articles represent a portion, but not all, of Unpaywall's Hybrid category. Also, articles that were immediately deposited in a repository, showing OA intention, would have been lumped together in Unpaywall's Green category with articles that became available after an embargo period. Unpaywall also does not capture articles that authors make available via independent sites like Academic Social Networks.

Another caveat concerning Unpaywall is that Akbaritabar and Stahlschmidt, and Piwowar and colleagues, found some discrepancies between Unpaywall data and the actual availability of article pdfs at publisher sites, with the latter study reporting that Unpaywall's data tended to underestimate actual OA levels.²⁵ Thus, Unpaywall data may not be a perfect representation of an article's availability OA, and, for categories other than Gold, may just provide a snapshot of availability as licenses and embargos change.

UC Berkeley faculty have high rates of Open Access publishing

University of California adopted a Presidential Open Access Policy in 2015²⁶ that requires UC faculty and other employees to make their research publicly available, which can be accomplished by publishing OA and/or by depositing a copy of their scholarly articles in an OA repository. The OA policy and funder mandates undoubtedly have a direct influence on Berkeley faculty's high rate of Green OA, and both likely influence Gold OA publishing as well.

The overall levels of OA found in the study, 72%, were higher than the range (29% - 66%) reported in the review of studies that calculated overall OA levels for articles 2010 and newer.²⁷ Since there are many methods of calculating OA, it seems appropriate to compare our study to other studies that also used Unpaywall (also called oaDOI) to determine an article's OA status.

Piwowar and colleagues looked at a random sample of 100,000 articles accessed by users of the Unpaywall browser extension in 2017 and found 47% of the articles to be OA, with 14% Gold OA.²⁸ Olejniczak and Wilson used Unpaywall data to look at articles from 2014-2018 authored by 182,320 faculty at research institutions, identifying faculty and articles using the Academic Analytics database; they reported an overall OA percent of 46%, with 12% Gold OA.²⁹ Bosman and Kramer used data behind Unpaywall to look at more than 12 million articles and reviews published 2010-2017 that were indexed in Web of Science. They found that OA levels increased from 2010 to 2016, with an overall OA percentage of nearly 30% in 2015 and 2016.³⁰

The aforementioned three studies looked at much larger sets of articles that were derived using different methods. These studies did not use Scopus, so the distribution of disciplines represented by the articles in these studies may have differed from ours, which was heavily biased toward the sciences. Nevertheless, it appears that Berkeley authors have an above-average rate of OA publishing, both overall (72%) and Gold OA (18%).

UC Berkeley faculty show strong support for Open Access

Not only is an above-average proportion of Berkeley-authored articles OA, the Ithaka Faculty Survey indicated that Berkeley faculty's support of OA is also above average (41% rated no cost to read very important, compared to 38% nationally). Although making articles free to read was not the journal characteristic that faculty rated most highly, the average importance for the 479 faculty in our study was 6.5 out of 10, which still indicates support for OA. Additionally, the top publishing characteristic for Berkeley authors in the Faculty Survey was that a journal is circulated widely and is "well-read by scholars in your field;"³¹ wide circulation is of course a benefit of a journal being free to read, though researchers may not always make that connection.

Our study found that faculty who publish more Gold OA feel more strongly about articles having no cost to read. These authors may have experienced individual benefits of OA publishing, such as their articles having been read and cited more, or may feel a personal conviction that research should be openly available, or both. This agrees with other studies that found a positive relationship between OA publishing and pro-OA attitudes.³² These studies also found that peers influence authors to publish OA, so this positive relationship could lead to even more OA publishing at Berkeley.

Concerns about publishing costs and the role of research funding

Our results showed that faculty whose articles reported research funding published more Gold OA. Olejniczak and Wilson found that researchers with grant funding were more likely to publish OA (both total OA, and Gold + Hybrid).³³ Of the nearly 5,000 SOAP survey respondents who indicated a reason for not publishing OA, lack of funding for APCs was given as the most common reason for researchers in most disciplines.³⁴ Weckowska and colleagues found that even bioscience researchers with pro-OA attitudes reported feeling inhibited in their OA publishing by expensive APCs.³⁵

The Ithaka Faculty Survey showed that Berkeley faculty, on average, are less concerned about paying APCs compared to their peers nationally (59% rated no cost to publish very important, compared to 70% nationally). The higher level of funding availability at Berkeley, shown in the Faculty Survey and in the high percent of articles reporting research funding, could make APCs more manageable for Berkeley authors. However, the 479 authors in our study viewed no cost to publish as slightly more important than no cost to read, an average of 6.7 versus 6.5, and the importance level was high whether or not their articles reported research funding.

There are a number of factors that might explain why even authors of articles reporting research funding are concerned about APCs. First of all, article-level funding information is not tied to individual authors. Second, faculty might have been thinking about their general funding situation when they rated the importance of no-cost publishing, which may or may not relate to whether the particular articles we found in Scopus were funded. Third, even Berkeley faculty who can afford APCs may have general concerns about APCs, thinking about, for example, other colleagues and their ability to pay.

Lastly, even faculty who receive funding for their research might not want to, or be able to, allocate research funding for publishing costs. Of the 9,645 SOAP respondents who reported having paid APCs, only 28% said that the fees were included with their research funding, while 31% paid with research funds not meant for APCs, and 24% reported that their institution had paid the APC.³⁶ We have found that authors of articles that report research funding in Scopus still apply to Berkeley Library's BRIL program, which awards funds for APCs for articles in fully-OA (Gold) journals to researchers who lack other funding for APCs. This suggests that even if the research was funded, the funding may not be comprehensive, and there may not be money left for the APC by the time the study gets published. Further research looking into the other funding sources of BRIL recipients might shed more light on these relationships.

Disciplinary differences

This study found that LHS authors, compared to authors from other subject groups, published more OA (total OA and especially Gold OA), felt more strongly about articles being free to read, and were less concerned about publishing cost. These results agree with numerous other studies that have found that Life and Health Sciences authors publish more OA and more Gold OA.³⁷ Erfanmanesh found that the share of OA journals in Scopus is higher for LHS subject areas,³⁸ which suggests that LHS authors have more options for Gold OA publishing. Larivière and Sugimoto found that biomedical researchers had a higher rate of funding OA compliance than other disciplines, and that National Institutes of Health (NIH) had a higher OA compliance than other funders, with more than 40% of NIH funded research available via Gold OA.³⁹ As one recent paper put it, “at least for the medical, life and natural sciences, OA mandates are usually combined with convenient open repositories for depositing articles and with sufficient funds for covering fees for publication in OA journals.”⁴⁰ This contributes to a culture of OA publishing that may or may not correlate with positive OA attitudes on the part of individual authors.

EPS had a slightly smaller total OA percentage than LHS, but its Gold OA percentage was less than half of that of LHS. The culture of posting manuscripts in OA repositories (Green OA) that exists in some EPS subject areas like Physics and Math likely contributes to these differences. Studies have found that Green OA is the most common OA type for these disciplines, though not for Chemistry and Engineering, which tend to have lower levels of OA.⁴¹ Breaking up the EPS authors into specific disciplines could help us better understand OA publishing behavior in this subject group. Overall, EPS faculty felt more strongly that articles should be free to read than SS and AH, and more strongly that articles should be free to publish than both LHS and SS. This could imply that EPS faculty believe in OA, but, at least in some disciplines, prefer to make their research accessible through no-cost Green OA channels.

OA publishing in SS has been found to be higher than AH, but lower than most STEM disciplines, with Green OA being the most prevalent OA type;⁴² our findings agree. We found that SS authors considered no cost to read to be less important when picking a publication outlet than the other three subject groups did, which is consistent with other studies that found low OA attitudes and publishing among SS researchers.⁴³ The infrastructure and culture of OA publishing is less established in the SS than in the sciences.⁴⁴ The 2010 SOAP survey found that lack of quality OA journals was more of a barrier to SS researchers’ OA publishing than lack of funds, and not all OA journals in the Social Sciences require APCs.⁴⁵ Additionally, as our data showed, SS authors do not publish as many journal articles as their STEM colleagues.

Berkeley AH researchers were not well represented in our study since they authored few articles in Scopus, only 37% of which were OA with very little Gold OA. The AH authors in our study felt more strongly about articles being free to read than the SS authors, and more concerned about publishing cost than all three other subject groups. AH faculty lean heavily towards publishing monographs versus journal articles, which limits the number of their OA publications. Also, prestigious AH journals tend not to be Gold OA, and AH faculty, particularly those seeking tenure, may feel pressure to publish in prestigious journals. In addition, funding challenges likely contribute to their concern about publishing cost; according to the Faculty Survey, only 22% of AH faculty reported receiving external funding between 2013 and 2018.⁴⁶ Despite these impediments to Gold OA publishing, it is encouraging to see that Berkeley AH authors still made 37% of their publications OA, since Bosman and Kramer found OA levels for AH researchers to be less than 20%.⁴⁷

Role of the library

In the Ithaca Faculty Survey, 66% of Berkeley faculty respondents found it important that “the library provides active support that helps to increase the productivity of my research and scholarship.”⁴⁸ Other studies have discussed ways libraries could help advocate for and increase OA publishing. For example,

libraries could help with OA ambivalence by helping researchers recognize the difference between Gold OA and predatory journals.⁴⁹

When it comes to making their research open and complying with mandates, some researchers are inhibited by their lack of confidence in their copyright knowledge and by overly cumbersome processes.⁵⁰ This is an argument for making processes related to repository deposits and funding APCs as easy and straightforward as possible. Helping researchers understand copyright and their author rights is a good goal, but easier, more automated systems requiring fewer decisions from researchers could also increase OA.

Establishing dedicated APC funds and negotiating transformative agreements with publishers are ways libraries can help alleviate barriers posed by expensive APCs, since encouraging researchers to budget for APCs in their grants may not be enough. Transformative publishing deals covered APCs for only 3% of papers produced globally in 2020,⁵¹ but as more and more of these agreements are reached, their role in OA will grow.

Conclusions

Our study was small compared to large samples used to study patterns of OA publishing, and large surveys asking about OA attitudes and publishing preferences. However, it was unique in the way it linked attitudes and publishing practices for individuals, and for its focus on Berkeley. Despite its small size, results generally concurred with other studies.

It was encouraging to see the strong support for OA and high rates of OA publishing at Berkeley. One factor making an impact may be UC's Open Access Policy, and another may be the above-average ability of Berkeley faculty to secure research funding. Faculty who publish OA feel more strongly about it, so perhaps the experience of OA publishing will have positive feedback on OA publishing. Other journal factors are still more important to researchers than whether the journal is OA. It may take time before reputable Gold OA journals are available in all disciplines, and for Hybrid options in Closed journals to be more widely available and more affordable. APCs are a concern for faculty in all subject areas, whether or not they have funding, so Berkeley Library's efforts to pursue transformative publishing agreements and prioritize funding for the BRII program are appropriate. Of course, no-cost options such as Green OA and Academic Social Networks are also available to Berkeley researchers who want to make their research more widely available.

We realize that some of our conclusions and findings are more relevant to science faculty, since their articles were the bulk of our study. Exploring other methods to assess the OA publishing of SS and AH faculty so that we can understand their attitudes and practices is an important future direction for our research. We may also use our existing data to look within the science subject groups at individual disciplines, which could provide more insights into differences in OA attitudes and behaviors.

As of March 2021, UC has recent transformative publishing agreements with nine publishers, including a brand-new agreement with Elsevier. Going forward, we will monitor what impact this has on OA levels at Berkeley and perhaps take a more thorough look at Hybrid OA overall. With more institutional support for OA publishing, perceptions of OA may also evolve.

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Endnotes

- ¹ September 25, 2018 campus message from Paul Alivisados, Executive Vice Chancellor and Provost, that included an invitation to a Faculty Forum on Journal Publisher Negotiations and linked to a June 2018 “Call to Action” on Negotiating Journal Agreements at UC.
- ² Chan Li et al., “UC Berkeley Library Faculty Survey 2018 Report,” October 1, 2019.
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- ²² Some of the articles are co-authored by multiple Berkeley faculty who are categorized in different groupings in our analysis.
- ²³ In March 2021, Scopus informed us that their process to extract funding information from acknowledgments in publications was revised in early 2018 and it works best on documents added to Scopus beginning in 2018. Therefore, we limited the funding analysis to only publications from 2018 to 2019.
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