

12-31-2014

# Will Open Access Get Me Cited? An Analysis of the Efficacy of Open Access Publishing in Political Science

Amy Atchison

Valparaiso University, amy.atchison@valpo.edu

Jonathan Bull

Valparaiso University, Jon.Bull@valpo.edu

Follow this and additional works at: [http://scholar.valpo.edu/ccls\\_fac\\_pub](http://scholar.valpo.edu/ccls_fac_pub)



Part of the [Other Political Science Commons](#), [Scholarly Communication Commons](#), and the [Scholarly Publishing Commons](#)

---

## Recommended Citation

Amy Atchison and Jonathan Bull. "Will Open Access Get Me Cited? An Analysis of the Efficacy of Open Access Publishing in Political Science" *PS: Political Science & Politics* 48.1 (2015): 129-137.

This Article is brought to you for free and open access by the Library Services at ValpoScholar. It has been accepted for inclusion in Library Faculty Publications by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at [scholar@valpo.edu](mailto:scholar@valpo.edu).

# **Will Open Access Get Me Cited? An Analysis of the Efficacy of Open Access Publishing in Political Science\***

**Amy Atchison**, *Valparaiso University*

**Jonathan Bull**, *Valparaiso University*

## **ABSTRACT**

The digital revolution has made it easier for Political Scientists to share and access high-quality research online. However, many of these articles are stored in proprietary databases that some institutions cannot afford. High-quality, peer reviewed, top-tier journal articles that have been made open access (freely available online) should theoretically be more easily accessed and cited than articles of similar quality that are only available to paying customers. Research into the efficacy of Open Access (OA) publishing has thus far focused mainly on the natural sciences, and the results have been mixed. Because OA has not been as widely adopted in the social sciences, disciplines like Political Science have received very little attention in the OA research. In this paper, we seek to determine the efficacy of OA in Political Science. Our primary hypothesis is that OA articles will be cited at higher rates than articles that are toll access (TA), meaning only available to paying customers. We test this by analyzing the mean citation rates of OA and TA articles from eight top-ranked Political Science journals. We find that OA publication results in a clear citation advantage in Political Science publishing.

## **INTRODUCTION**

As academic publishing has transitioned from print periodicals to electronic periodicals, the process by which Political Scientists share research has become increasingly easier. A considerable amount of high-quality Political Science research is now available at the click

\*This is the Post-Print version of this paper (final draft post-refereeing). For the final published version, please visit <http://dx.doi.org/10.1017/S1049096514001668>.

of a button; however, the majority of published articles in the discipline are locked behind paywalls. Subscription rates to journals and scholarly databases are becoming increasingly expensive, putting them out of reach for budget-conscious researchers and institutions. As a result, traditional publishers have developed a number of methods to make their journal articles freely available online; the industry refers to this as Open Access (OA) publishing. Many proponents of OA argue that this greater accessibility gives OA articles a citation advantage over Toll Access (TA) articles that are not freely available (Antelman 2004; Davis 2011; Gargouri et al. 2010).

It is important to note that the term “open access” signifies different things. For many, “freely available” scholarship is associated with working papers, non-peer reviewed work, or online journals with lax peer review standards. In this paper, however, we are examining articles that have been published in top-tier journals, but that have been converted into OA scholarship because papers have been self-archived on authors’ personal websites and/or in institutional repositories.<sup>1</sup> This is what the industry refers to as “Green” OA (Suber 2012).<sup>2</sup> In the case of our study, these articles have been made “green,” (available to the general public, free of charge) after rigorous peer review.<sup>3</sup> The journals we include are: the American Political Science Review, the American Journal of Political Science, Public Opinion Quarterly, the Journal of Conflict Resolution, Political Analysis, Political Geography, the Annual Review of Political Science, and Comparative Political Science.

Our research question is straightforward: will making my article open access increase the number of citations an article receives? The social sciences have been slow adopters of OA (Calise et al. 2010). In contrast, mathematics, engineering, and the natural sciences were

early adopters of OA. Thus, this research question has been examined in those disciplines. Results have been mixed, but are generally positive regarding advantageous OA citation effects (OACE) in these disciplines (Doty 2013). However, to the best of our knowledge, Political Science publications have never been the sole focus of research into OA citation advantage. Thus, this study contributes to the ongoing debate regarding OA efficacy, but also serves as a starting point for serious research on OA in Political Science.

Our primary hypothesis is that OA articles in the discipline will be cited at higher rates than articles that are not freely available online. We test this by examining the citation rates of all of the articles published in these eight journals over a two year period. We first determine which of the articles have been made open access and which are still toll access; we then examine mean citation rates of the OA and TA articles to determine whether or not there is a citation advantage for the articles that have been made OA. The fact that some journals have permissive self-archiving policies while others are more restrictive adds variation to the data, as does the fact that authors may choose not to take advantage of OA policies and thus will not self-archive their work. Given these parameters, we further hypothesize that the more permissive self-archiving policies from top publishers will result in greater citation advantage. We proceed as follows: We first articulate our argument in the context of the extant OA literature. This is followed by a discussion of our data and methodological considerations. We then present our results and discuss their implications for OA publishing in the discipline. We conclude by noting possibilities for continued research on the efficacy of OA publishing in Political Science.

## **OPEN ACCESS AND CITATION ADVANTAGE**

Since at least the 1980s, subscription prices of U.S. academic publications have been rising faster than the rate of inflation (Dingley 2005). As a result, academic institutions, particularly college and university libraries, have had to alter purchasing strategies for acquiring and/or renewing databases, journals, monographs (books), and other academic resources (Greco et al. 2006). This situation, commonly referred to as the “Serials Crisis,” has had an impact across the spectrum of academic publishing (Greco et al. 2007). In response to the crisis, some called for scholars to reconsider publishing with inflationary/over-priced journals (Parks 2002), and for academic libraries to make their access to these inflationary journals as economically efficient as possible (Pascarelli 1990). No alternative has shown as much traction as OA publishing, however. For the purposes of this study, we use the classic definition of OA in which an article “is available online to be read for free by anyone, anytime, anywhere – as long as they have Internet access” (Crawford 2011, 1). Despite the broad definition, we have narrowed the OA field by focusing solely on articles published in top Political Science journals. None of these journals are freely available *in toto* (which would be referred to as “Gold” OA). By definition, this restricts our study to “Green” OA, meaning articles that have been self-archived by the author and/or sponsoring institution.

OA advocates argue that disciplines will benefit from free access to information (Calise and De Rosa 2008; Papin–Ramcharan and Dawe 2006) and that increased use of OA publishing will help to stem the “serials crisis” (Calise and De Rosa 2008; Papin–Ramcharan and Dawe 2006; Harnad and Brody 2004; May 2005). In addition, advocates argue that OA will increase research efficacy as measured by citation counts and/or citation impact factor. In spite of the budgetary imperative to reduce costs and the potential citation advantage for

authors, buy-in for OA publishing has been largely limited to disciplines in the physical and natural sciences, as well as engineering and mathematics. Because these disciplines have been heavily invested in OA for many years, they have been the focus of the preponderance of research into the OA citation effect (OACE).

Although researchers have generally found a positive correlation between OA and research impact, it is important to note that results have varied and the issue is not settled (Doty 2013). For example, Lawrence (2001) found a citation advantage for OA articles in Computer Sciences, while at the same time, Anderson, Sack, Krause and O'Keefe (2001) found no citation advantage for OA articles in Medicine. In later research, Harnad and Brody (2004) reported a citation advantage for OA articles in Mathematics and Physics, while Kurtz et al (2005) found no citation advantage for OA articles in Astrophysics. More recent research has, however, provided more support for the conventional wisdom that OA benefits citation counts. For example, a four-discipline study (including Economics, Applied Mathematics, Ecology, and Sociology) found that the OACE is positive across all of the disciplines in the study, but that the degree varies between disciplines (Norris et al. 2008). Also, in recent unpublished research, McCabe and Snyder (2014) found citation advantage for science journals with OA publishing models, though this citation increase was possibly a "superstar effect," as it was primarily found in the higher-tier journals.<sup>4</sup>

Despite our earlier reference to a study that included Economics and Sociology (Norris et al. 2008), only a handful of OACE studies have included the social sciences. This is commonly attributed to low adoption of OA in these disciplines. However, recent scholarship indicates that the prevalence of OA publishing is increasing rapidly in the social sciences generally, and Political Science specifically (Nentwich 2008). Indeed, a recent

\*This is the Post-Print version of this paper (final draft post-refereeing). For the final published version, please visit <http://dx.doi.org/10.1017/S1049096514001668>.

study (Gargouri et al. 2012, 5) estimates that between 1998 and 2006 about 28% of social science articles were OA; that average increased to 36% when the authors studied the data from 2005-2010. In addition, the number of OA Political Science journals listed in the Directory of Open Access Journals increased by over 50% between 2010 and 2013 (Bjørnshauge et al. 2013; Calise et al. 2010).<sup>5</sup> Online self-archiving and archiving in institutional repositories complicate efforts to quantify the volume of Political Science articles that are OA; the estimates vary from 5% (Hajjem et al. 2005) to 30% (Antelman 2006). Despite this ambiguity, it is generally accepted that between the increasing number of OA journals and the more liberal self-archiving policies many journals are adopting, the percentage of Political Science articles that are OA is increasing (Nentwich 2008). However, just as in the natural sciences, the literature presents varied results on the efficacy of OA in different social science disciplines. For example, Antleman (2004, 375-376) found that while Political Science accounted for only 29% of the OA articles in her study, those articles received the highest citation advantage in the study. Similarly, Haajem, Harnad, and Gingras (2005), in a ten-discipline study that includes Political Science, found that OA articles consistently have more citations than non-OA articles from the same journal/year. However, Evans and Reimer (2009) found that the social sciences receive negligible benefit from OA. Most recently, Xia & Nakanishi (2012) found that Anthropologists receive a significant citation advantage from OA publishing and that it is independent of journal ranking (i.e. no “superstar effect”). Although mixed, the greater volume of positive findings in the social sciences leads us to our first hypothesis regarding OA in Political Science:

**H<sub>1</sub>:** OA articles in will be cited at higher rates than articles that are TA only.

## **PUBLISHER SELF-ARCHIVING POLICIES AND OPEN ACCESS CITATION EFFECT**

As we noted above, the two primary approaches academic publishers have taken to OA publishing are “Gold OA” and “Green OA.” Gold OA is open access provided by the journals, often at a cost to the researchers or the sponsoring institution(s). Green OA is instead provided either by institutional and/or subject repositories, or by individuals posting to their personal/academic websites (Suber 2012, 53). Gold OA has recently been the subject of a symposium at the International Studies Association, the results of which have been published in *International Studies Perspectives* (Gleditsch 2012). In the symposium, Mehlum (2012) makes a strong case for Gold OA, citing concerns regarding equality of access for researchers in developing countries.<sup>6</sup> He also discusses economic and pricing concerns, noting that we could treat research as a public good.

However, there is a strong counter-argument, as articulated by both Thompson (2012) and Gleditsch (2012). While neither of these authors is opposed to OA publishing *per se*, both note that there is a considerable economic downside to OA for our professional organizations and editorial offices. A professional association may receive up to one-third of its operating budget from publishers’ payments for exclusive publication rights to the association’s journal (Thompson 2012). In addition, editorial offices are kept afloat by publisher subsidies and royalties; if association-sponsored journals were to transition to gold OA, Gleditsch (2012) argues, those editorial offices and the quality control service they provide would be endangered. Thus, Gold OA does pose some serious concerns for associations and their flagship journals.

However, only a fraction of journals – about 5% in 2004 – would fit the definition of Gold OA (Harnad and Brody 2004). Indeed, only an estimated 2% of all OA articles published in

\*This is the Post-Print version of this paper (final draft post-refereeing). For the final published version, please visit <http://dx.doi.org/10.1017/S1049096514001668>.



2011 were in Gold OA journals; in the social sciences, this number drops to less than 1% (Gargouri et al. 2012, 6). In contrast, an estimated 90% of journals are “Green OA,” giving permission to authors in these journals to self-archive some version of their article (Harnad and Brody 2004). Within the Green OA category, publishers have adopted a wide range of copyright and self-archiving policies. Among the larger publishers of Political Science journals (e.g. Wiley, Oxford, Cambridge, Elsevier, Sage, etc.), the most common publisher policies either fall into the permissive or restrictive categories. For the purposes of this paper, “permissive” publisher policies allow authors to self-archive any version of the paper, including the publisher’s PDF. “Restrictive” publisher policies only allow authors to self-archive the pre-print (prior to peer review) version. When publishers explicitly allow self-archiving of the published version of the article, it is reasonable to expect that more authors and institutions will do so. This leads to our secondary hypothesis:

**H<sub>2</sub>:** Permissive copyright and self-archiving policies will lead to higher mean citation rates.

## **DATA & METHODS**

### ***Data & Methodological Considerations***

Antelman’s study of OA efficacy (2004) is considered an origin article in OA citation analysis research, providing some of the earliest evidence of the efficacy of OA publishing. Antelman’s work remains one of only a handful of articles that specifically address OA and Political Science. In the 2004 study, Political Science was studied in contrast with philosophy, engineering, and mathematics. As noted above, Antelman found that Political Science registered the highest effect of OA on mean citation rates. However, her N was relatively small (299 Political Science articles), and her study did not control for journal influence. This, along with a lack of fixed time periods and self-selection bias, is one of the

three most oft-cited methodological problems in the study of OA impact (Craig et al. 2007). We follow Antelman in testing our hypotheses by comparing mean citation rates, but improve on the outstanding methodological challenges.

First, when the researcher does not account for journal influence, articles published in more influential journals are compared to articles published in less influential journals. We control for the issue of journal influence by including only those journals that have been consistently ranked among the top twenty Political Science journals in the Journal Citation Report between 2007 and 2011. This ensures that only journals with comparable levels of influence are included in the study. It is important to note that in including these journals, we make no assumptions about journal quality; we simply use the JCR ranking as a measure of research impact.

Second, in the absence of a fixed time period, a study will include old articles in comparison with recently-published articles; this can skew the citation counts, thus biasing the results. We control for this by limiting the articles to only those published in 2007 and 2008. This ensures that the articles included in the study have had time to become widely circulated and cited. A further advantage of this approach is that it allows us to compare mean citation rates not just for OA versus TA articles from similarly ranked journals, but also OA and TA articles within the *same* journal for the same time period (Harnad and Brody 2004).

The final major methodological criticism of the extant literature is that, when an OA advantage is found, it may be the result of self-selection bias rather than OA; critics argue that the biggest names are more likely to self-archive and that all authors are more likely to archive their best papers (Hajjem et al. 2005). However, as several other scholars point out, the self-selection bias argument is flawed (Antelman 2004; Gargouri et al. 2010; Hajjem et

al. 2005). First, Antelman dismisses the idea of “biggest names” self-selection bias, noting that authors tend either to self-archive all of their work or none of it. Second, if self-selection of “best papers” were the primary causal factor, then it would be logical to expect that self-archived OA articles would have higher citation rates than articles for which OA is mandatory.<sup>7</sup> However, Gargouri et al. (2010) tested the citation advantage for mandatory-OA articles versus voluntarily-OA articles and found no self-selection bias. Third, the final flaw in the self-selection bias argument is that researchers must have access to articles in order to cite them; given the periodicals crisis in academic publishing, no research center can afford to purchase subscriptions to all journals (Hajjem et al. 2005). Thus, it is logical to conclude that OA, not self-selection, is a causal factor in citation advantage findings.

### ***Data Collection***

We started by examining the Journal Citation Report (JCR) data to determine which journals were consistently ranked (by impact factor) in the top twenty Political Science journals between 2007 and 2011. Only eight journals are ranked in the top twenty in all five years; these are shown in Table 1, below. We use the JCR rankings to select our data sample because impact factor is an indicator of researchers’ use of a specific journal (Antelman 2004). Additionally, we use only journals that are highly ranked over a five-year period because JCR impact factor score can be unduly influenced by a few highly-cited articles (Seglen 1997). As a result, each year’s top twenty rankings include journals that have benefitted from a high number of citations for a small number of articles, rather than a high number of citations for the journal as a whole. Given these issues in the impact factor calculation, high impact factor in *one* JCR is not a guarantee that a journal is regularly consulted in the discipline. However, high impact factors over a five-year period are a

reasonable indicator that Political Scientists have consistently cited articles from these eight journals at high rates.

[Table 1, about here]

After comparing the 2007-2011 JCR reports to determine which journals were top ranked in all five reports, we gathered all the articles published in these journals in 2007 and 2008. Then, we used the Publish or Perish (PoP) software program (Harzing 2007) to query Google Scholar and retrieve the citation counts for each article in the data set. We excluded book reviews, letters to the editor, conference programs/proceedings, presidential addresses, and membership meeting notes; we included replies to other authors as these are often cited in literature reviews. In the event that the PoP query returned duplicate citation count records, the record with the lower citation count was excluded from this sample. We then used PoP's built-in Google Scholar queries to determine whether or not each article in the sample is openly available, in any format, online. These formats, as defined in the Sherpa-RoMEO Publisher Copyright Policies & Self-Archiving Database (Sherpa-RoMEO) include:

- Pre-print : the version of the paper before peer review
- Post-print: the version of the paper after peer-review, with revisions having been made
- Publisher's post-print: the publisher's PDF version (post-publication)

We then used Sherpa-RoMEO to determine if the journal is subject to permissive or restrictive self-archiving policies.<sup>8</sup> The end result is a database of 727 observations, each observation representing a single article and its citation count.

### ***Descriptive Statistics***

Our results must be understood in the context of the data sample, thus it is important to present a few descriptive statistics. As noted, our sample size is 727 articles. Of these, 404 (55.5%) articles are OA in some form. This is somewhat surprising, given that much of the extant literature indicates that the social sciences have not adopted OA publishing at high rates. While it is true that no mainstream Political Science journals have converted to Gold OA (Bjørnshauge et al. 2013), the data presented here indicate that individual Political Scientists are making publications OA at fairly high rates. Overall OA frequency is reported in Table 2a, below.

[Table 2a, about here]

It is remarkable that while the vast majority (>75%) of the OA articles in this sample are publisher PDFs, over 45% of these publisher PDFs are from *restrictive* publishers. This may indicate that authors are either ignorant of, or indifferent to, the provisions of their publisher copyright agreements. However, it may also indicate that, because citation of unpublished work is uncommon in Political Science, authors self-archive the publisher PDF in the hope of more citations. Furthermore, of the 410 articles published by permissive publishers, 48% have not been self-archived. This indicates that Political Scientists are not fully taking advantage of author-friendly copyright agreements. Table 2b shows OA frequency by publisher policy classification; Table 2c presents the variation in OA frequency and publisher policies classification by journal.

[Tables 2b and 2c, about here]

The descriptive statistics provide prima facie evidence that OA articles are cited more frequently than non-OA articles; this can be seen in Figure 1 and Table 3. As shown in Table 3, the mean citation rate in the sample size is 51. The mean citation rate for OA articles is

70, while for TA articles it is 28; thus the number of citations is about two and a half times higher for OA articles in this sample. As also shown in Table 3, the mean citation rates for OA articles are higher not just across the full sample, but also within the samples for each journal. We see also wide variations in the mean citation rates between journals, from an average difference of only 18 citations between OA and TA articles in POQ to an average difference of over 100 citations between OA and TA articles in the ARPS.

[Figure 1, about here]

[Table 3, about here]

## **RESULTS AND DISCUSSION**

Because our sample cannot, *a priori*, be assumed to be normally distributed, we used the nonparametric Wilcoxon-Mann-Whitney (WMW) test, also known as the Mann-Whitney U, to test difference of means (Großer and Schram 2006; Munck and Snyder 2007). We first tested our primary hypothesis: OA will lead to more citations than TA. The WMW results indicate that OA articles have significantly higher mean citation rates than do TA articles. This holds both across the data sample, and within each of the included journals. Thus, OA publication results in a clear and significant citation advantage. The results of these tests are presented in Table 4, below. To confirm these findings, we logged the citation rate and conducted an independent samples T-test; the results also indicate that OA articles are cited at a significantly lower rate than TA articles, which again demonstrates an OA citation advantage ( $T=11.5$ ,  $p<0.0000$ ). Given the citation advantage, these results indicate that if Political Scientists want to be cited at higher rates, they should either publish with journals that allow authors to self-archive freely or they should push for more restrictive journals to offer self-archiving.<sup>9</sup> Furthermore, our data indicate that nearly half of the authors whose

copyright agreements allow them to self-archive the final version (publisher PDF) do not do so. The citation advantage provided by OA publishing indicates that authors should take advantage of the permissiveness of their copyright agreements if they wish to be cited at higher rates.

[Table 4, about here]

Next we turn to our secondary hypothesis: more permissive publisher self-archiving policies will lead to higher citation counts. The WMW analysis, conducted on the full sample and presented in Table 5, seems to suggest that permissive publisher policies are associated with higher citation rates. However, further data analysis contradicts this initial result. For example, the journal with the highest OA frequency (Political Analysis, 74%) is subject to restrictive policies, while the journal with the lowest OA frequency (Political Geography, 23%) is subject to permissive policies. This would suggest that, at least superficially, publisher policies are not a causal factor in citation advantage.

This descriptive finding is confirmed by additional difference of means testing. We selected the OA population of 404 records, and tested the mean citation rates (by self-archiving permissiveness) within that subset of the sample. The results, presented in Table 5, indicate that although positive, there is no statistically significant citation advantage to publishing with a more permissive journal. This is counterintuitive, and it must be noted that this finding may be an artifact of the data. As noted above, a large percentage (45%) of the OA articles in our sample have been posted in violation of the publisher's copyright and self-archiving policies, and a similarly large percentage (48%) of the articles subject to permissive policies have not been made OA. It is equally likely, however, that lack of education regarding self-archiving leads authors to simply sign the copyright agreement.

[Table 5, about here]

## **CONCLUSION**

By using standard OACE research methods to evaluate citation rates for the top Political Science journals, this paper marks an important step for the discipline. Our results have implications not just for authors, but also for institutions and publishers. As the series crisis persists, alternative publication models such as Gold and Green OA will continue to be developed, explored, and evaluated. For authors, wider acceptance or rejection of OA publishing models will hinge on the perceived and measured impact of those publications in their respective academic fields. This study provides evidence that OA is beneficial to Political Scientists; when researchers find the full-text version of a high-quality article without being prompted for payment, they are more likely to use it in their own research. However, the data indicate that although Political Scientists do seem to be self-archiving at relatively high rates, many are not self-archiving even when permissive self-archiving policies allow it. Although our research indicates that publisher permissiveness does not give a citation advantage, it does indicate a citation advantage for freely available articles. Thus, Political Scientists should be self-archiving whenever their copyright agreements permit.

This brings up two issues, however. First, researchers are often ill-informed about the ins and outs of their copyright agreements. Second, many researchers lack the technical skills or resources that would enable them to self-archive their work. These problems can be solved at the institutional level. Many institutions have hired specialists to help authors with copyright agreements, and have started institutional repositories to make it easier for



authors to self-archive. The benefit to the institution is that self-archiving can help to raise both the researchers' research profiles and the institution's.

Finally, the results presented in this paper have implications for publishers, as well. As noted above, we found that articles from more restrictive journals are often self-archived at higher rates than those subject to more permissive self-archiving policies. This indicates that some Political Scientists may be self-archiving in violation of their copyright agreements, whether knowingly or not. While publishers have historically ignored these violations, recent news indicates that some publishers may be less likely to overlook them in the future. In late 2013, science publishing giant Elsevier served takedown notices to dozens of institutions and websites, demanding that these entities remove articles that had been posted without Elsevier's permission (Peterson, 2013). If more publishers follow Elsevier's lead, it may become more important that Political Scientists either publish with journals that have permissive policies, or push more restrictive publishers for self-archiving exceptions in their copyright agreements. Indeed, if publishers start to enforce copyright agreements more stringently, authors may increasingly favor OA in order to find a wider audience for their work.

The clear OA citation advantage found in this study indicates that Political Scientists can increase access to/use of their research by self-archiving. However, more research is needed. Although our data set includes the largest sample of Political Science OA and TA articles tested to date, it is still a fairly narrow sample. First, we restricted the time to two years of data to ensure that the observations were comparable in terms of opportunity to accrue citations. Second, there is a slightly wider spectrum of publisher policies than is represented in this study. The data set only includes journals with highly permissive

publishing policies (authors can self-archive any version), and those with moderately restrictive policies (authors can self-archive preprints only). Thus, the study excludes publisher policies that prohibit all self-archiving. While in theory these should be cited at a much lower rate, our study indicates that this is not likely the case; the inclusion of observations from fully-restrictive publications would be an interesting expansion of the study. Also, given the “superstar effect” found in some recent research, it would be useful to investigate relative journal ranking as a factor in OA citation advantage. Finally, as the major associations in the discipline enforce their requirements that authors upload conference papers, it will be important to study the effects of this type of pre-print on citation rates.

### **Acknowledgements**

The authors would like to thank Jennifer M. Piscopo, Gregg B. Johnson, Patricia Boling, James Paul Old, the Purdue University PIRCAT workshop participants, and the anonymous reviewers for their helpful comments and suggestions.

### **Biographical Information**

**Amy Atchison** is an assistant professor in the department of political science and international relations at Valparaiso University. She can be reached at [amy.atchison@valpo.edu](mailto:amy.atchison@valpo.edu).

**Jonathan Bull** is an assistant professor of library sciences at the Christopher Center for Library and Information Resources, Valparaiso University. He can be reached at [jon.bull@valpo.edu](mailto:jon.bull@valpo.edu).

## Notes

---

1 “Institutional Repository” is defined as a set of “digital collections capturing and preserving the intellectual output of a single or multi-university community.” (Johnson 2002, NP)

2 In contrast, journals that have been made fully open access by the publishers are known as “Gold” OA, and are outside the scope of this article.

3 This is typically done by the author and/or the supporting institution, although one occasionally finds the final publisher PDF posted to a course website to which the author is unconnected.

4 McCabe & Snyder describe the “Superstar effect,” noting that “open access benefits higher-quality journals more than lower-quality.” In a recent conference paper on OACE in civil engineering, Koler-Povh, Turk, & Južnič (2013) found a similar effect.

5 While none of these journals are considered “mainstream,” it is an indicator that OA is growing in the discipline.

6 He does note that there is a very strong Developing Nations Initiative that ensures articles are free or low-cost for researchers in developing states.

7 Some universities require that all faculty/researcher publications be made OA.

8 Our classifications of “permissive” and “restrictive” are based on the Sherpa-RoMEO green (can upload any version) and yellow (can archive pre-print/pre-refereed version) classifications, respectively (Publisher Copyright Policies & Self-Archiving Database 2013).

9 The authors of this paper do not wish to encourage violation of publishers’ copyright agreements; authors who wish to self-archive publications from more restrictive publishers can find more information on copyright agreements and open access addenda at: <http://www.sparc.arl.org/audience/authors>

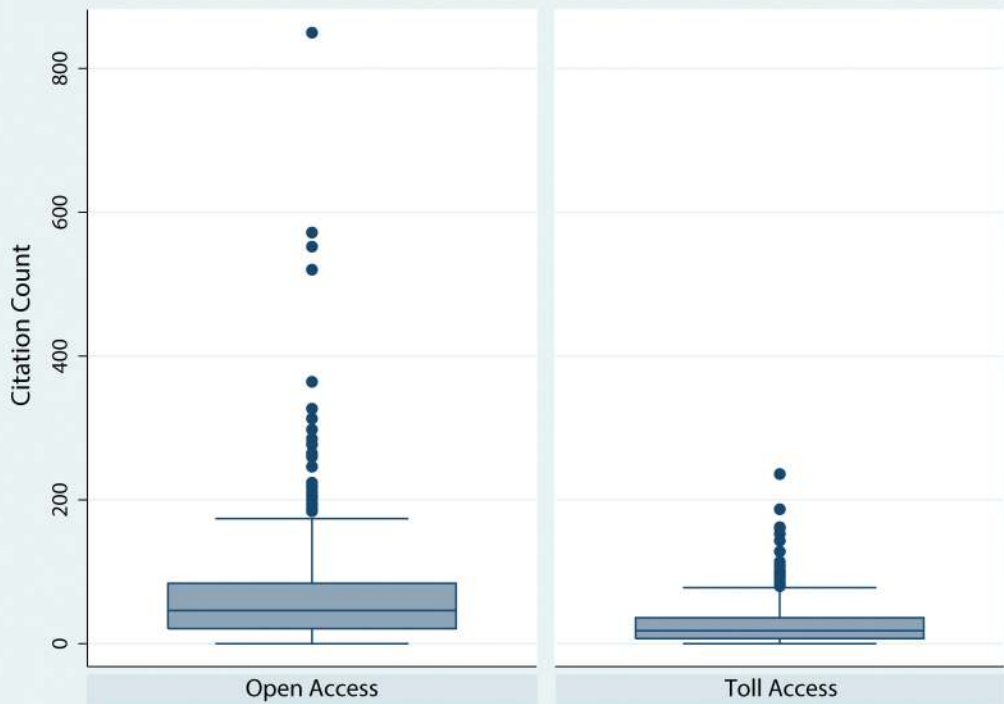
## References

- Anderson, Kent, John Sack, Lisa Krauss, and Lori O'Keefe. 2001. "Publishing online-only peer-reviewed biomedical literature: three years of citation, author perception, and usage experience." *Journal of Electronic Publishing* 6 (3).
- Antelman, Kristin. 2004. "Do Open-Access Articles Have a Greater Research Impact?" *College & Research Libraries* 65 (5):372-382.
- . 2006. "Self-archiving practice and the influence of publisher policies in the social sciences." *Learned Publishing* 19 (2):85-95.
- Bjørnshauge, Lars, Rikard Brage, Sonja Brage, and Lotte Jørgensen. 2013. "Directory of Open Access Journals." ed. [www.doaj.org](http://www.doaj.org). Lund, Sweden.
- Calise, Mauro, and Rosanna De Rosa. 2008. "E-Research: An Introduction to On-line Political Science Sources for Beginners (and Skeptics)." *International Political Science Review* 29 (5):595-618.
- Calise, Mauro, Rosanna de Rosa, and Xavier Fernandez Marin. 2010. "Electronic Publishing, Knowledge Sharing and Open Access: A New Environment for Political Science." *European Political Science* 9 (S1):S50-S60.
- Craig, Iain D., Andrew M. Plume, Marie E. McVeigh, James Pringle, and Mayur Amin. 2007. "Do open access articles have greater citation impact?: A critical review of the literature." *Journal of Informetrics* 1 (3):239-248.
- Crawford, Walt. 2011. *Open Access: What You Need to Know Now*. Chicago: American Library Association.
- Davis, Phillip M. 2011. "Open access, readership, citations: a randomized controlled trial of scientific journal publishing." *The FASEB Journal* 25 (7):2129-2134.
- Dingley, Brenda. 2005. "U.S. Periodical Prices - 2005." American Library Association.
- Doty, R Christopher. 2013. "Tenure-Track Science Faculty and the 'Open Access Citation Effect'." *Journal of Librarianship and Scholarly Communication* 1 (3):6.
- Evans, James A., and Jacob Reimer. 2009. "Open Access and Global Participation in Science." *Science* 323 (5917):1025.
- Gargouri, Yassine, Chawki Hajjem, Vincent Larivière, Yves Gingras, Les Carr, Tim Brody, and Stevan Harnad. 2010. "Self-Selected or Mandated, Open Access Increases Citation Impact for Higher Quality Research." *PLoS ONE* 5 (10):1-12.
- Gargouri, Yassine, Vincent Larivière, Yves Gingras, Les Carr, and Stevan Harnad. 2012. "Green and gold open access percentages and growth, by discipline." *arXiv preprint arXiv:1206.3664*.
- Gleditsch, Nils Petter. 2012. "Open Access in International Relations: A Symposium." *International Studies Perspectives* 13 (3):211-215.
- Greco, Albert N, Robert F Jones, Robert M Wharton, and Hooman Estelami. 2007. "The changing college and university library market for university press books and journals: 1997–2004." *Journal of Scholarly Publishing* 39 (1):1-32.
- Greco, Albert N, Robert M Wharton, Hooman Estelami, and Robert F Jones. 2006. "The state of scholarly journal publishing: 1981-2000." *Journal of Scholarly Publishing* 37 (3):155-214.
- Großer, Jens, and Arthur Schram. 2006. "Neighborhood Information Exchange and Voter Participation: An Experimental Study." *The American Political Science Review* 100 (2):235-248.
- Hajjem, Chawki, Stevan Harnad, and Yves Gingras. 2005. "Ten-Year Cross-Disciplinary Comparison of the Growth of Open Access and How it Increases Research Citation Impact." *Bulletin of the IEEE Computer Society Technical Committee on Data Engineering*.
- Harnad, Stevan, and Tim Brody. 2004. "Comparing the Impact of Open Access (OA) vs. Non-OA Articles in the Same Journals." *D-Lib Magazine* 10 (6).
- Harzing, Anne-Wil. *Publish or Perish* 2007. <http://www.harzing.com/pop.htm>

- Johnson, Richard K. 2002. "Partnering with faculty to enhance scholarly communication." *D-Lib Magazine* 8 (11).
- Koler-Povh, Teja, Goran Turk, and Primož Južnič. 2013. Does the Open Access Business Model Have a Significant Impact on the Citation of Publications? Case Study in the Field of Civil Engineering. Paper read at 5th Belgrade International Open Access Conference 2012.
- Kurtz, Michael J., Guenther Eichhorn, Alberto Accomazzi, Carolyn Grant, Markus Demleitner, Edwin Henneken, and Stephen S. Murray. 2005. "The effect of use and access on citations." *Information Processing & Management* 41 (6):1395-1402.
- Lawrence, Steve. 2001. "Free online availability substantially increases a paper's impact." *Nature* 411 (6837):521-521.
- May, Christopher. 2005. "the academy's new electronic order? open source journals and publishing political science." *European Political Science* 4 (1):14-24.
- McCabe, Mark, and Christopher M Snyder. 2014. "Identifying the Effect of Open Access on Citations Using a Panel of Science Journals." *Economic Inquiry*.
- Mehlum, Halvor. 2012. "The Case for Open Access Publishing." *International Studies Perspectives* 13 (3):216-223.
- Munck, Gerardo L., and Richard Snyder. 2007. "Debating the Direction of Comparative Politics: An Analysis of Leading Journals." *Comparative Political Studies* 40 (1):5-31.
- Nentwich, Michael. 2008. "Political Science on the Web: Prospects and Challenges." *European Political Science* 7 (2):220-229.
- Norris, Michael, Charles Oppenheim, and Fytton Rowland. 2008. "The citation advantage of open-access articles." *Journal of the American Society for Information Science and Technology* 59 (12):1963-1972.
- Papin-Ramcharan, Jennifer, and Richard A. Dawe. 2006. "open access publishing: a developing country view." *First Monday* 11 (6).
- Parks, Robert P. 2002. "The Faustian grip of academic publishing." *Journal of Economic Methodology* 9 (3):317-335.
- Pascarella, Anne M. 1990. "Coping strategies for libraries facing the serials pricing crisis." *Serials Review* 16 (1):75-80.
- Publisher Copyright Policies & Self-Archiving Database*. University of Nottingham 2013. <http://www.sherpa.ac.uk/romeo/index.php?fidnum=|&mode=simple&la=en>
- Seglen, Per O. 1997. "Why the impact factor of journals should not be used for evaluating research." *British Medical Journal* 314 (7079).
- Suber, Peter. 2012. *Open access*. Cambridge, Mass.: MIT Press.
- Thompson, William R. 2012. "Why Journal Editors Have Other and More Pressing Concerns." *International Studies Perspectives* 13 (3):224-227.
- Xia, Jingfeng, and Katie Nakanishi. 2012. "Self-selection and the citation advantage of open access articles." *Online Information Review* 36 (1):40-51.

**Figure**

**Figure 1: Citation Rates by Open Access Status**



## Tables

**Table 1: Annual Journal Citation Ranks, by Journal (2007-20011)**

<b>Journal Title</b>	<b>Journal Abbreviation</b>	<b>2007 Rank</b>	<b>2008 Rank</b>	<b>2009 Rank</b>	<b>2010 Rank</b>	<b>2011 Rank</b>
<b>American Political Science Review</b>	APSR	2	10	2	1	1
<b>American Journal of Political Science</b>	AJPS	3	3	4	3	2
<b>Public Opinion Quarterly</b>	POQ	4	6	13	8	3
<b>Journal of Conflict Resolution</b>	JCR	5	9	15	9	4
<b>Political Analysis</b>	PA	1	1	1	10	5
<b>Political Geography</b>	PG	6	4	6	14	8
<b>Annual Review of Political Science</b>	ARPS	13	7	3	2	12
<b>Comparative Political Studies</b>	CPS	15	11	19	12	17



**Table 2a: Open Access Frequency**

OA Status	OA Type	Freq.	% of Total OA	% of Total Observations
All OA		404	-	56%
	Pre-Print	59	15%	8%
	Author Post-Print	29	7%	4%
	Publisher Post-print	315	78%	43%
TA		323	-	44%

N = 727; percentages may not add to 100% due to rounding

**Table 2b: Open Access Frequency Rates and Publisher Policies**

OA Status	OA Type	Publisher Policies**	Frequency	% of Total OA	% of Total Observations
All OA		P	211	52%	29%
All OA		R	193	48%	27%
	Pre-Print	P	30	7%	4%
	Pre-Print	R	29	7%	4%
	Author Post-Print	P	12	3%	2%
	Author Post-Print	R	17	4%	2%
	Publisher Post-print	P	169	41%	23%
	Publisher Post-print	R	146	36%	20%
TA		P	199	-	27%
TA		R	124	-	17%

N = 727; percentages may not add to 100% due to rounding

\*\*P=Permissive; R=Restrictive

**Table 2c: Open Access Frequency Rates and Publisher Policies by Journal**

Data Source	OA Frequency*	Pre-Print	Author Post	Publisher Post (Publisher PDF)	Publisher Policies**
APSR	69%	6	3	56	P
AJPS	63%	13	1	65	R
POQ	49%	8	5	33	R
JCR	60%	10	1	37	P
PA	74%	7	4	32	R
PG	23%	8	3	22	P
ARPS	62%	1	7	16	R
CPS	53%	6	5	54	P

\*Percentages rounded to the nearest whole number; \*\*P=Permissive; R=Restrictive

**Table 3: Comparison of Mean Citation Rates between Open Access & Toll Access Articles**

<b>Source</b>	<b>OA Status</b>	<b>N</b>	<b>Mean Citations</b>	<b>Standard Deviation</b>	<b>Min Citations</b>	<b>Max Citations</b>
All	OA	404	70.27	84.02	0	850
All	TA	323	27.70	31.92	0	236
APSR	OA	66	78.60	69.28	3	327
APSR	TA	28	36.18	53.57	1	236
AJPS	OA	79	75.56	61.03	7	285
AJPS	TA	47	41.83	36.86	2	187
POQ	OA	47	52.21	53.42	0	278
POQ	TA	48	34.04	36.63	0	161
JCR	OA	48	51.63	46.94	5	211
JCR	TA	32	24.41	23.39	0	99
PA	OA	42	81.64	149.67	5	850
PA	TA	15	19.07	15.82	0	52
PG	OA	33	59.85	71.28	1	298
PG	TA	81	16.67	20.20	0	128
ARPS	OA	24	134.92	158.50	6	572
ARPS	TA	15	34.67	34.75	6	143
CPS	OA	65	56.28	54.15	0	277
CPS	TA	57	24.49	22.81	0	114

**Table 4: Wilcoxon-Mann-Whitney Difference of Means Results, by Data Source**

<b>Data Source</b>	<b>N</b>	<b>Z Score</b>
<b>All Journals</b>	727	10.6***
<b>APSR</b>	94	4.1***
<b>AJPS</b>	126	3.5***
<b>POQ</b>	95	2.1**
<b>JCR</b>	80	3.3***
<b>PA</b>	57	2.8***
<b>PG</b>	114	3.7***
<b>ARPS</b>	39	2.7***
<b>CPS</b>	122	3.8***

\*\*\* p<0.01, \*\* p<0.05

**Table 5: Wilcoxon-Mann-Whitney Difference of Means Results by Publisher Policy**

<b>Data Source</b>	<b>N</b>	<b>Z Score</b>
<b>All Journals</b>	727	4.2***
<b>Permissive Journals</b>	404	1.2

\*\*\* p<0.01, \*\* p<0.05