

# The Cost and Price of Public Access to Scholarly Publications: A Synthesis

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# Executive Summary

In August 2022, the United States (US) White House Office of Science and Technology Policy (OSTP) released *Ensuring Free, Immediate, and Equitable Access to Federally Funded Research*, a policy update to its 2013 *Memorandum on Increasing Access to the Results of Federally Funded Research*. This revised policy guidance, commonly referred to as the “Nelson memo” for then-OSTP Director Dr. Alondra Nelson, updates the 2013 “Holdren memo” and now affects all US federal agencies providing funding for research and development (R&D). The chief differences between the 2013 and 2022 memos are the updated requirement to make US federally funded peer-reviewed articles public access immediately upon publication, without embargo or delay, the expansion of affected agencies to include all federal funders (not just those with more than US\$100M in funding), and increased attention to accessibility, for computational access and human use, and for equitable access to participation in research and publication.

The lead-up to the 31 December 2025 implementation deadline is a period of rapid and intensifying scrutiny of money paid to make scholarly content publicly accessible. In June of 2024, the OSTP released a much-anticipated financial analysis in support of the Nelson memo, *Updated Report to the U.S. Congress on Financing Mechanisms for Open Access Publishing of Federally Funded Research*, which states:

*“OSTP remains committed to promoting author choice in where and how researchers publish and make their research publicly accessible. Part of this commitment includes promoting a scholarly communication ecosystem that allows for different models of providing public access to coexist.”*

(Office of Science and Technology Policy, 2024)

This multi-model ecosystem is the focus of this synthesis report, which complements and benefits from several recent related analyses. This paper outlines the historical developments that have shaped the current landscape, the key financial (cost and payment) stakeholders in the system, and the models and approaches that have developed in the continued shift to public and open access. The literature on this landscape is plentiful but cohesive, “real-world” information on actual costs and payments is lacking and is needed to better support the breadth of stakeholders navigating this landscape.

## About the “Reasonable Costs” project

This paper is one part of a larger effort from the NSF-funded “Investigating ‘reasonable costs’ to achieve public access to federally funded research and scientific data” (NSF Grant No. 2330827, 2023–2025) project team based at Invest in Open Infrastructure,<sup>1</sup> a not-for-profit entity that works to improve funding and resourcing for open technologies and systems supporting research and scholarship. Commonly shorthanded to “[Reasonable Costs](#)” by those familiar with it, the project’s main objective is to “advance our knowledge of the costs involved in publishing US federally funded research outputs in a range of publicly accessible venues.” The project seeks to understand the costs, prices and mechanisms used to pay for providing public access to federally funded research outputs in the US. At the time this report was prepared, our team was also engaged in a series of stakeholder interviews to identify and document the emerging research, publishing, and reporting workflows of a broad range of academic institutions in response to the forthcoming Nelson-era public access requirements.<sup>2</sup> Institutions involved have included independent institutes and labs, as well as many sizes and types of colleges and universities.

This paper is a companion to the February 2024 report [The Cost and Price of Public Access to Research Data: A Synthesis](#).

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<sup>1</sup> <https://investinopen.org/>

<sup>2</sup> For discussion of a system-level treatment of financial flows in the UK, see Lawson, S., Gray, J. & Mauri, M., (2016) “Opening the Black Box of Scholarly Communication Funding: A Public Data Infrastructure for Financial Flows in Academic Publishing”, *Open Library of Humanities* 2(1), e10. doi: <https://doi.org/10.16995/olh.72>

# Introduction

The pace and volume of analyses spurred by the requirement for immediate public access<sup>3</sup> to peer-reviewed scholarly publications as set out by the US White House Office of Science and Technology Policy (OSTP) in its August 2022 policy update *Ensuring Free, Immediate, and Equitable Access to Federally Funded Research* are indicative of its potential for sweeping change.<sup>4</sup> Complying with the memo will require commensurate changes for the breadth of scholarly communication stakeholders implicated in providing access to federally funded research.

The flurry of activity in response to the “Nelson memo” since its issuance in 2022 (and to the launch of Plan S in 2018) has provided a number of recent analyses and developments that have benefited our work to synthesize what is currently known about the cost and price of public access to peer-reviewed scholarly publications. The cumulative effect of these ongoing responses approximates a nearly real-time conversation about issues of money in and access to scholarly publishing, which, as the literature shows, have generated a longstanding and sometimes contentious discussion that is likely to continue apace well past the memo’s 31 December 2025 implementation deadline.

## Defining terms (concepts and models)

Given this history, we start by defining our terms. An earlier report from this project, [The Cost and Price of Public Access to Research Data: A Synthesis](#), defined four key terms that apply across research outputs, including articles. Here, we provide a slightly revised set of these terms and their definitions, distinguishing between libraries and authors as price stakeholders. Price for *libraries* typically refers to annual charges at the individual or bundled journal title level. Price for *authors* is usually transaction-based and at the individual article level, regardless of whether the author, their library, or another office at their research institution makes the actual payment.

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<sup>3</sup> In its August 2022 report *Economic Landscape of Federal Public Access Policy* at <https://www.whitehouse.gov/wp-content/uploads/2022/08/08-2022-OSTP-Public-Access-Congressional-Report.pdf>, the OSTP distinguishes between public and open access: “OSTP and federal agencies draw distinctions between the terms *public access* and *open access*. *Public access* refers to the free availability of federally funded scholarly materials to the public (including publications, data, and other research outputs) and is a policy term; whereas, *open access* refers to a broad set of publication sharing principles and practices, including those required by public access, as adopted by the scientific and publishing communities.”

<sup>4</sup> As noted therein, “Such scholarly publications always include peer-reviewed research articles or final manuscripts published in scholarly journals, and may include peer-reviewed book chapters, editorials, and peer-reviewed conference proceedings published in other scholarly outlets that result from federally funded research.”

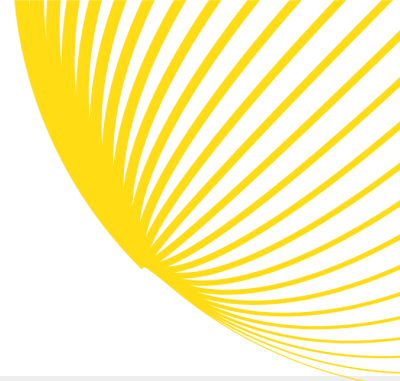


Table 1. Definitions of key terms related to “reasonable costs.”

## Four key definitions

<b>COST</b>	The expenses incurred by <i>publishers</i> and <i>publishing organizations</i> in the course of providing public access to research outputs, or the resources used to produce, deliver, and maintain a research output online. These expenses can be identified, individually or in groups, as <i>cost components</i> .
<b>PRICE</b>	The charges paid by <i>authors</i> or their <i>institutions</i> in the market exchange for the service of providing public access to a published research output.
<b>ALLOWABLE</b>	For US federally funded research, these are the costs incurred in a project that comply with a federal framework of responsible stewardship and that can be funded by federal grant dollars.
<b>REASONABLE</b>	A cost that does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made to incur the cost.

For this report, we have also added additional key terms and concepts (see Table 2) along with our rationale for the scope of the report.

### Scope notes

Scholarly communication is inherently an international endeavour. Though the focus of this report is on public access to scholarly publications in the US, it also draws on sources that originate or focus elsewhere, mostly English-language publications in the United Kingdom (UK) and Europe, as related public and open access efforts can have direct implications for US stakeholders and offer valuable lessons. For example, Plan S,<sup>5</sup> an international effort based in Europe, required immediate Open Access (OA) ahead of the Nelson memo, and developments in its history are directly relevant. The European Commission (EC) recently selected the Canada-based Public Knowledge Project (PKP) to develop its open access Open Research Platform (ORE).<sup>6</sup> UNESCO has an active focus on open access as part of its broader open science Recommendation, “the first international standard setting instrument on open science”.

<sup>5</sup> <https://www.coalition-s.org/>

<sup>6</sup> <https://pkp.sfu.ca/2024/09/12/ojs-infrastructure-for-open-research-europe/>



Table 2. Preferred terms used for key concepts.

## Related terms

<p><b>Scholarly publications</b></p>	<p>The OSTP Nelson memo specifies peer-reviewed scholarly publications which “always include peer-reviewed research articles or final manuscripts published in scholarly journals, and may include peer-reviewed book chapters, editorials, and peer-reviewed conference proceedings published in other scholarly outlets that result from federally funded research.”<sup>7</sup> This paper focuses primarily on the final, peer-reviewed journal articles in part to reflect the bulk of the literature related to cost and price and in part to keep the scope manageable. And though common article types such as editorials, along with outputs like preprints, data and code, may not fall directly under this description, we use the term <i>scholarly publications</i> in this paper to recognize that the landscape in which costs and prices are determined is broader and more interconnected than any single output type.</p>
<p><b>Publishers and publishing organisations</b></p>	<p>This report primarily uses the term <i>publisher</i> but recognizes that, for some <i>publishing organisations</i>, publishing is secondary (or tertiary) to their main functions, and that some reject the term publisher or publishing. The terms <i>publisher</i> and <i>publishing organisations</i> are used to indicate relevant roles or activities, rather than organisation type or alliance with a particular position on or model of public or open access.</p>
<p><b>Public and Open Access</b></p>	<p>The OSTP distinguishes between public and open access: “OSTP and federal agencies draw distinctions between the terms <i>public access</i> and <i>open access</i>. <i>Public access</i> refers to the free availability of federally funded scholarly materials to the public (including publications, data, and other research outputs) and is a policy term, whereas <i>open access</i> refers to a broad set of publication sharing principles and practices, including those required by public access, as adopted by the scientific and publishing communities.”<sup>8</sup> The published literature generally uses the term open access. This report takes care to distinguish the terms as much as possible.</p>
<p><b>Business model types</b></p>	<p>Scholarly publishing has many common business models and here we briefly describe our approach to their terminology. This report describes a set of publishing and collection <i>public access pathways</i>. Models or variations of them that do not apply to the OSTP Nelson memo are included in the report but noted as non-compliant.</p> <p>Terms like bronze, green, gold and diamond/platinum (variations on free or open access) are commonly used, including by the OSTP, and the literature reflects that. These terms are often confusing or contentious. Diamond and another model, Subscribe to Open (S2O), are discussed as emerging developments in this report, otherwise, these types of terms are generally avoided in favour of describing the model clearly. The OSTP uses the common phrase “Transformative Agreements” to describe negotiated, bilateral agreements between libraries/their consortia and individual publishers for a combination of prepaid publishing for authors and institutional content access. This report uses the more neutral term “Read/publish” agreements except when referring to a specific instance.</p> <p>It must be noted that, in general, terms and understanding of the requirements are evolving.</p>

<sup>7</sup> <https://www.whitehouse.gov/wp-content/uploads/2022/08/08-2022-OSTP-Public-Access-Congressional-Report.pdf>

<sup>8</sup> Ibid.

This report considers the breadth of *stakeholders*, who are often interdependent; of *business and publishing models* and related approaches to pricing and price transparency; and of research *disciplines*, which are highly variable in terms of volume and practices related to scholarly publications. This diversity reflects the complexity of addressing what is “reasonable” and complicates comparative analyses, but it is ultimately beneficial to draw lessons from a wide variety of approaches.

IOI’s previous report on reasonable costs, which focused on the data requirements introduced in the 2022 Nelson memo, stated that “transparent, quantitative information on both cost and price is hard to find, and there are few incentives for publishers and repositories of different types to make this information public.” Information on costs involved in peer-reviewed scholarly publishing has an opposite problem.

**There is a long history of information provided on journal publishing costs in non-standard ways and with varying scope and levels of transparency and detail.**

In this report, we are concerned primarily with journal content as the most prevalent current form of “peer-reviewed scholarly publishing,” though we note that other formats, including book chapters, editorials, and conference papers, are specified in the Nelson memo. The economics of publishing these other formats are, of course, part of the broader landscape but they are out of scope for this report.

One reason for focusing the scope of this review on articles is the sheer volume of journal publishing. Publications (articles and some conference proceedings) in science and engineering alone (part of the science, technology, engineering and medicine categories that make up “STEM” publishing) increased by over a third in the US between 2003 and 2022, with open access far outpacing closed access (National Science Board, 2024). In the social sciences (part of the humanities and social sciences that make up “HSS” publishing), journal articles also increased by more than a third between 2011 and 2019, and the number of books published decreased by nearly a quarter during this time (Savage & Olejniczak, 2022). Last year, Hanson et al. described this growth in “The strain on scientific publishing,” discussing the additional requirements on researchers in this accelerated environment (Hanson et al. 2023). Incentives for publishers to keep volume high, issues of research integrity, and the difficulties in keeping up with so much content have all been raised as concerns about this growth. A detailed discussion of this is beyond the scope of this report, but the increase in scale is directly relevant to financial considerations of publishing business models.

This report draws on 25+ years of literature that cuts across disciplines, relies on estimates, and reflects inherited and extrapolated print pricing and other incomplete, imprecise, or niche approaches. Unsurprisingly, consensus or standard formulas for cost and pricing are not revealed. The varied contributions to understanding cost and pricing are treated here as generalizable to the extent that they can further the conversations necessary to understand requirements and compliance in this policy landscape. Standardised, transparent, and interoperable information on agreements, payments and other “real world” information is a gap that, if filled, would improve generalizability.

## Scholarly publishing business models in the digital era

The price of access to scholarly content online has inspired debate dating back to the early scholarly web of the late 1990s/early 2000s, when publishers first started incurring costs for shifting to online production of new content (“front files”) and digitizing existing print journals (“back files”). This shift to online was sometimes done in phases, repeated (e.g. “re-digitization,” as improved technologies allowed for easier, better quality print scans), or it is still in progress. While the open access movement got underway around this time, publisher prices for libraries to subscribe to or purchase online journal content were generally (and often still are) based on print subscription prices (Mellins-Cohen, 2021), often in combination with some offset for existing print library holdings. Early models were generally “print + electronic,” meaning libraries would have subscribed to or purchased both hard copies and electronic access. Over time, this shifted to primarily and exclusively electronic subscription access. This transition largely predated notions of free, public access to *electronic* content (and is generally distinct from broader, established ideals of public library access), but its impact on costs and pricing for content still deeply affects today’s scholarly publishing market.

### The Serials Crisis

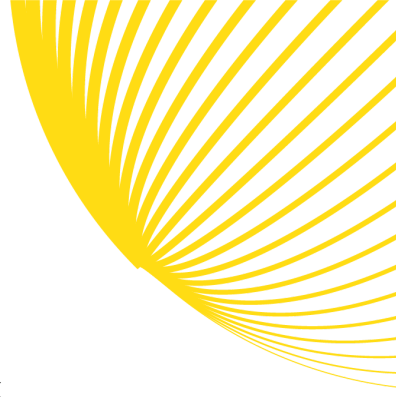
The so-called “Serials Crisis” (when prices for journals started rising significantly, especially as academic library budgets shrank or remained stagnant) may have predated the emergence of the scholarly web, but it still had ramifications for business models and price transparency two decades later. Indeed, it is often cited as a key reason for the rise of the open access movement. *Library Journal*, a popular industry magazine which has for decades published an annual Periodicals Price Survey (including a breakdown by discipline) titled its 2007 report “Serial Wars.”<sup>9</sup>

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<sup>9</sup> Notably, the “Periodicals Price Survey” was an early attempt to bring clarity to research pricing; it can be seen as a precursor to some of the ways that librarians and researchers are working to make more visible other occluded pricing models (e.g., APCs, Read and Publish agreements).

<https://www.libraryjournal.com/story/periodicals-price-survey-2007-serial-wars>





## Bundles

The “Serial Wars” Periodicals Price Survey was published 10 years after the introduction, in 1997, of the “Big Deal,” a common sales model bundling journal subscriptions and purchases. The term refers to the volume and mix of content included for a single line item price (more or less). This had the effect of significantly increasing journals available to subscribing institutions but use of that content, at least as measured by citations, did not show similar growth (Shu et al., 2018). Bundling offered a degree of cost savings and efficiency for publishers. They could manage sales and operations through large packaged subscriptions instead of, for example, invoicing for and managing access controls to highly variable sets of individual titles selected for each institution. Bundling also significantly blinded libraries regarding the price they paid for the specific content their researchers used. Starting with Harvard in 2004, libraries began to “unbundle” their Big Deals<sup>10</sup> in favour of a la carte or smaller packages, often in response to fiscal pressure including those that grew as many bundled rates increased year over year at a rate higher than inflation (Khoo, 2019). With the rise of tools and models like Unsub,<sup>11</sup> unbundling became more widespread, publishers lost a source of revenue they had come to rely on, and libraries regained detailed knowledge and control of their collections. Bundles of different kinds are one of the business models categories mentioned below.

## Author fees

Article Processing Charges (APCs) were introduced in the early 2000s by PLOS and BioMed Central (now called BMC, part of Springer Nature) to help cover publishing costs for open access content (LeMaster et al., 2024). These author fees have been used since then by many publishers at least in part to make up for lost subscription revenue (Limaye, 2022), not only for the specific, impacted OA titles, but also e.g. from revenue losses they incurred when libraries unbundled big deal packages. They are sometimes paid by institutions on behalf of authors.

Prior to APCs, authors’ experiences with publishing related costs were, like early online serials pricing, also rooted in print publishing; mostly page and colour charges, but also submission fees (prices), which persist in some cases.

Spending on APCs has increased significantly by many measures. A recent paper shared an attention-grabbing figure: “globally, a total of \$8.349 billion (\$8.968 billion in 2023 US dollars) were spent on APCs between 2019 and 2023,” for just six large publishers (Haustein et al., 2024). Tracking payments is complex and analyses often rely on

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<sup>10</sup> <https://docs.google.com/spreadsheets/d/1brXHnANwLBCHYo5b79hF6vGF63fdOCSOSiPxCSf0hc/edit?gid=0#gid=0>

<sup>11</sup> <https://unsub.org/>

estimates. These results are usually based on the triangulation of multiple sources, including university, funder, and publisher information (e.g., Pinfield et al., 2015; Solomon & Björk, 2016). Works report considerable variations in the APC prices paid by different institutions (e.g., Pinfield et al., 2015; Pinfield et al., 2017). Some of these use APCs as proxies for price. For example, Ellingson et al. (2021) calculate median APCs while Vacek and Kaliaperumal (2022) calculate OA costs using processing charges. Based on total expenditures in APCs during 2015–2018, *Scientific Reports* and *Nature Communications* are estimated to have received US\$105.1 million and US\$71.1 million in APCs, respectively (Butler et al., 2023). Though the nearly US\$9 billion figure from Haustein et al. garners a lot of attention for being well into the billions, the effort required to make the estimate is itself noteworthy as it underscores the difficulty in following and analysing APC payments.

## Preprints

The growth of preprints, papers typically posted to subject repositories without peer-review, began over 30 years ago with the arXiv server, then focused on physics. They are posted much faster than other scholarly publications, without author fees, and the COVID-19 pandemic fueled their growth (Rzayeva et al., 2023). They have broad acceptance across many disciplines and are especially well-established in the physical and biomedical sciences (Soderberg et al., 2020). Costs and sustainability of preprint servers is outside the scope of this report but their sustainability was investigated in an earlier IOI report (Penfold, 2022).

Though the lack of prepublication peer review leaves them out of the OSTP Nelson memo, preprints are closely tied to scholarly publications in many ways (besides incurring many of the same costs). Papers initially posted as preprints may have peer-reviewed versions published later in journals<sup>12</sup> and both routes involve many of the same organisations, workflows and infrastructures. Recent efforts at preprint review (i.e. the Publish-Review-Curate model) from eLife<sup>13</sup> and championed by cOAlition S<sup>14</sup> and others seem likely to get more use and attention in the coming years.

## Repositories

PubMed Central (PMC),<sup>15</sup> a widely used repository from the US National Library of Medicine, dates back to 2000. Some US federal agencies have their own repositories. The Nelson memo requires that “agency-designated repositories” are specified in each agency’s plan, so their role can be significant.

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<sup>12</sup> Some preprint servers accept author accepted manuscripts (AAMs) or previously published articles..

<sup>13</sup> <https://elifesciences.org/inside-elifesciences/54d63486/elifesciences-s-new-model-changing-the-way-you-share-your-research>

<sup>14</sup> [https://www.coalition-s.org/wp-content/uploads/2023/10/Towards\\_Responsible\\_Publishing\\_web.pdf](https://www.coalition-s.org/wp-content/uploads/2023/10/Towards_Responsible_Publishing_web.pdf)

<sup>15</sup> <https://pmc.ncbi.nlm.nih.gov/>

Like APCs, the emergence of institutional repositories (IRs) in the early 2000s, particularly as options for self-archiving author manuscripts, directly involved authors in the growing complexity of scholarly publishing, despite the common difficulty of getting faculty to participate in using their IRs.

IRs straddle library collection and scholarly communication functions as well as playing a publisher/service provider-type role but they do not typically have a payment function (collecting or disbursing). As we cover in more detail below in “Cost Components,” IRs tend to be fully subsidized by the institution’s library budget. Repositories of various kinds (subject, institutional, government) provide a viable, commonplace open access option in offering services to authors to make their accepted manuscripts immediately available, often along with hosting a variety of non-journal content and related functions. Naturally, those services incur costs (Burns et al., 2013) (and in cases where they use vendor services, prices), of the kinds similar to publishers in terms of outreach to and support for authors, preservation and hosting, and storage and related technical costs (Crow, 2002) but assessing and factoring these costs into discussions of the broader landscape seem to be relatively uncommon.

Institutions as financial participants are generally taken as a given and have multiple roles to play in scholarly publishing as stakeholders in their own right (Slowe 2018) but may not have a clear view of their total costs related to publishing and accessing scholarly content. IRs are common and siloed in each institution so any lack of clarity or transparency makes sustainability in this highly distributed part of the landscape difficult to assess.

## Public access publication and collection pathways

The lack of agreement, clarity, and consistency in the way terms and definitions are used and understood significantly complicates an analysis of the landscape of business models. A recent classification for open business models (Mellins-Cohen, 2024) provides a useful alternative to the familiar, if fraught, colours and metals/precious stones approach (Bronze, Green, Gold and Diamond/Platinum open access) to categorizing open access models. This classification is particularly relevant for discussing multiple stakeholders in what Lawson et al. describe as the “financial flows” in scholarly communication (Lawson et al. 2016).

For its part, the Nelson memo does not specify business models or use common terms like Version of Record (VoR) or Author Accepted Manuscript (AAM). The November 2023 *OSTP Report to the U.S. Congress on Financing Mechanisms for Open Access Publishing of Federally Funded Research* describes five “business models to enable public access to

publications” using the colours approach, while acknowledging that bronze, for example, is not always considered open access. The same US-based report lists five ways that taxes support scholarly publishing. Table 3 draws on both the classification and the 2023 OSTP report to outline a set of pathways for public access to scholarly publications in the US.

The “Alternative” category in Table 3 covers two notable options discussed earlier: deposits to repositories, and preprints. Depositing to repositories is usually done by authors or others in their institution (such as libraries), though as Mellins-Cohen notes, sometimes these deposits are handled by publishers. Preprints are a longstanding, popular model that has grown significantly in recent years; however, because they are not typically peer-reviewed, they are not a focus of OSTP compliance or this report.

The “Cooperative” model shown in Table 3 also includes Subscribe to Open (S2O, discussed in more detail later). While this is recognized as an experimental model by OSTP in its 2024 Financing Mechanisms report, it is unclear if it meets OSTP requirements. A forthcoming journal volume/year is made open access only when or if a certain subscription threshold is met so the access status is not generally known at the time the subscription payment is made or when manuscripts are submitted for publication.

The OSTP report also discusses two additional ways that scholarly publishing is supported by American taxpayers (OSTP, 2024):

- “Researchers dedicate unpaid time to review research articles and serve on editorial boards.”
- “Americans pay direct costs to access content behind paywalls.”

These are not represented in Table 3 since they are not directly relevant to determining whether journal content gets published as public access; however, they are worth noting to provide a fuller picture of the economic landscape.



Table 3. An overview of business model pathways to public access.

Public/Open Access Publication/ Collection Pathway	Features	Financial Stakeholder(s)	Example	OSTP: Fees supporting scholarly publishing <sup>16</sup>
Alternative	Partial, delayed, or access to something other than the VoR <i>Note that a delayed approach is incompatible with OSTP compliance</i>	<b>Publishers, libraries, repositories, authors</b>	<b>Green OA</b> (notably repository models)	2. <b>Researchers</b> pay to publish their articles.  3. <b>Libraries</b> pay for journal <b>subscriptions</b> and <b>transformative agreements</b>
Bundled	Package models, typically priced and/or negotiated in bilateral agreements	<b>Publishers</b> and individual <b>libraries</b> and/or their <b>consortia</b>	Variations of what are commonly referred to as <b>transformative (read/publish) agreements</b>	3. <b>Libraries</b> pay for journal subscriptions and <b>transformative agreements</b>
Cooperative	Dependent on shared participation (of payments)	<b>Publishers</b> and <b>libraries</b>	<b>SCOAP3</b>	3. <b>Libraries</b> pay for journal <b>subscriptions</b> and <b>transformative agreements</b>
Sponsored	Funds from one or more non-library, non-author sources	n/a, as payments are not transacted in this model	<b>Diamond (aka Platinum) open access (OA)</b>	1. <b>Federal agencies</b> fund the research.  <i>Note that this model implies a payment made by the author or a designated agent</i>
Transactional	Individual content items and related fees	<b>Authors</b> ; often involving their <b>libraries</b> and/or <b>institutions</b> for payments	Article Publishing Charges (APCs)	1. <b>Federal agencies</b> fund the research  2. <b>Researchers</b> pay to publish their articles

<sup>16</sup><https://www.whitehouse.gov/wp-content/uploads/2023/11/Open-Access-Publishing-of-Scientific-Research.pdf>



## Business model and stakeholder variety

Publishers are varied in terms of topical focus, publication type(s), and business models. Costs for some publishers may be offset somewhat by advertising revenue. Some publishers produce journals but not books, or focus only on a single discipline; others have broad publishing programmes spanning formats and subjects. Publishers may have offices, staff, and/or third-party service providers in multiple countries. Very small journals may be run by a person or two with day jobs not directly related to publishing and who do not consider themselves publishers. *Publishing organisations* publish alongside the main functions of their jobs or their organizations' missions.

Publishers of all types continue to experiment with business models, pricing, and levels of transparency, such as the examples included below.

### Experimenting with the familiar

Several models have emerged in recent years that adapt or borrow from the traditional subscription model.

#### Subscribe to Open

Subscribe to Open (S2O), a model meant to convert content to open access by achieving a critical mass of subscriptions, was first piloted by *Annual Reviews* in 2020 and now has a dedicated community of practice.<sup>17</sup> If it proves to be a viable option for Nelson memo compliance, it would appear to validate the idea that “When such journals are sustained by institutional site licences, the net benefits to the scientific community are larger than if these journals are sold only by individual subscriptions” (Bergstrom and Bergstrom, 2004). The subscription model is familiar and fits into established roles and workflows. The Open Access Directory from Simmons University shows that the list of S2O titles has grown to 186 and spans a variety of disciplines and publishers.<sup>18</sup>

#### Read/Publish Agreements

The emergence and growth of Read and Publish Agreements,<sup>19</sup> bilateral publisher-library/consortium agreements for journal content, further complicate transparency around pricing by bundling together the licensing for content with some level of waived charges for APCs.

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<sup>17</sup> <https://subscribetoopencommunity.org/>

<sup>18</sup> [https://oad.simmons.edu/oadwiki/Subscribe\\_to\\_Open\\_\(S2O\)\\_journals](https://oad.simmons.edu/oadwiki/Subscribe_to_Open_(S2O)_journals)

<sup>19</sup> <https://www.stm-assoc.org/oa-dashboard-2024/transformative-agreements/>

As with other business models, there are variations of these agreements (Hinchliffe, 2019). Generally, these arrangements are contractually made between an institution and a publisher as part of a package. Instead of the institution paying solely for subscription-based content from that publisher (usually in bundles), in these models, the institution also embeds in its contract a bulk prepayment against APCs, in effect providing its community of faculty, researchers, students, and staff the option to publish open access in the publisher's journal(s) without per-transaction fees. Terms of these agreements may be made public, but the level of detail varies.

Like S2O, the model is familiar to the stakeholders involved, in this case, the publisher-library/consortium negotiation. Several of these high-profile, sometimes protracted negotiations and resulting agreements caught the attention of the scholarly communication community<sup>20</sup> and resources have been developed to support libraries in their negotiations. The ESAC initiative in Germany, for example, shares collected negotiation principles<sup>21</sup> and operates a registry of agreements that now numbers 1,000 agreements from more than 70 countries.<sup>22</sup>

#### ADCs; Read, Publish, and Join; and CAPs

Last year, the American Chemical Society (ACS) introduced a no-embargo repository option called the Article Development Charge (ADC) of US\$2,500 per article.<sup>23</sup> As noted in the Mellins-Cohen classification (Alternative), this is somewhat unusual in the landscape. In an interview in the *Scholarly Kitchen* when it launched, ACS Chief Publishing Officer Sarah Tegen noted that the fee covers costs for their hybrid journals (i.e. combination of open and closed content) from submission to decision (Anderson, 2023).

Another society, the American Physiological Society (APS), introduced a variation on read/publish agreements, "Read, Publish, and Join,"<sup>24</sup> in early 2020. This approach combines access to content (Read) and an OA publishing option (Publish) with membership for authors publishing with the APS. This kind of membership model (Bundled, in the Mellins-Cohen classification) is logical for society publishers who serve specific disciplines; it is less applicable to multidisciplinary publishers (commercial or not-for-profit).

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<sup>20</sup> For two notable examples, see *The Scholarly Kitchen's* coverage of the University of California-Elsevier agreement: <https://scholarlykitchen.sspnet.org/2021/03/16/the-biggest-big-deal/> and The Max Planck Society's discussion of the Projekt Deal-Springer Nature agreement: <https://openaccess.mpg.de/MoU-DEAL-SpringerNature>

<sup>21</sup> <https://esac-initiative.org/guidelines/>

<sup>22</sup> <https://esac-initiative.org/esac-at-1000-and-counting/>

<sup>23</sup> <https://acsopscience.org/researchers/oa-pricing/>

<sup>24</sup> <https://journals.physiology.org/librarians.read-publish-join>

PLoS, a fully open access publisher, introduced the Community Action Publishing (CAP) model (Mellins-Cohen classification: Cooperative) in 2021 with the aim of eliminating APCs and basing the cost to publish on corresponding and contributing authors.<sup>25</sup> The model was introduced for four titles, two of which have a capped 10% margin over publishing recovery costs. Their FAQ addresses the issue of cost recovery for “highly selective” OA titles, saying “They typically have to be very high APCs to cover cost. This is why we’re piloting the collective action model.”<sup>26</sup> The pilot period for this model concluded at the end of 2023 and *PLOS Sustainability and Transformation* was the first of their titles to launch relying entirely on CAP.

This kind of business model experimentation seems likely to continue as long as the market and funding mandates allow it.

## Waivers and exceptions

Authors may qualify for waivers of publishing fees (prices) or other discounts. For example, APCs may be waived by publishers for authors from certain countries. Authors are generally directed to check their eligibility for various options, e.g. to see if their institutions have a read/publish agreement that covers the APC of the journal where they are submitting a manuscript. Libraries that made those agreements make that information available usually through a LibGuide.<sup>27</sup>

Typically these waivers apply to corresponding authors. This could mean that a group of co-authors may be incentivized to select their corresponding author based on whose institution has a waiver with the publisher(s) of their target journals. The extent to which this occurs is of course hard to know but it further complicates the already hard-to-read equation that leads to a “price” for publishing in ways that grant full public access to a work.

Publishers often provide a number of options to offset prices, which can require some time or effort on the part of authors to navigate. When authors determine that a fee is required, they will then need to figure out who makes the payment and how. Some institutions, for example, provide funds to pay for APCs or authors may be able to use their research grants to cover the costs. Because these funds may come from different sources and may or may not be transacted by the authors themselves, payments and workflows for them can be difficult to track and aggregate (Haustein et al., 2024).

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<sup>25</sup> <https://plos.org/resources/community-action-publishing/>

<sup>26</sup> <https://plos.org/resources/for-institutions/faqs/>

<sup>27</sup> Examples are plentiful. The University of Chicago’s guide includes a search function in addition to a list: <https://guides.lib.uchicago.edu/openaccess/agreements>



The combination of author and institution prices may or may not be visible at the institutional level. This largely depends on whether Article Processing Charges (APCs) are paid by authors' institutions (whether individually or via read/publish agreements), by the funders of authors' associated research grants, or by the authors themselves.

## Cost components of publishing

Publishing articles has associated costs in any business model. Though the magnitude of these costs has inspired perennial debate, there is more agreement on how to broadly categorize the related activities and functions that comprise them (their *components*). Published in 2023 by the Open Access Scholarly Publishing Association (OASPA) and the Directory of Open Access Journals (DOAJ), the Open Access Journals Toolkit (OA Toolkit) was developed in response to a community consultation investigating resource needs for open access journal publishing.<sup>28</sup> The Toolkit breaks out costs into three categories: 1) Fixed, 2) Variable and 3) Other (Chiarelli et al., 2023). Fixed costs (also known as indirect costs) remain stable no matter how much a publisher produces or sells; Variable (or direct) costs change based on production and sales numbers; and Other costs represent ad hoc choices not directly related to production (e.g., travel or marketing).

### Examples of costs

The OA Toolkit uses these examples of Fixed (indirect) costs:

- Staff
- Estates/offices
- Information technology (IT)
- Membership costs and service fees, e.g. for digital preservation

For Variable (direct) costs, the Toolkit uses the example of production costs, e.g. registering DOIs. This cost is not fixed because each journal article, for example, will get a DOI; the total depends on the number of articles published. The Toolkit uses ad-hoc costs such as travel and marketing as examples of Other costs, i.e. those that are not themselves components of production. An example scenario not often made explicit is investigation of research or publication ethics that involve staff time and associated legal fees.

In a 2021 paper, "Current market rates for scholarly publishing services," Grossman and Brembs explore Fixed and Variable cost categories in greater detail, including factoring in rejection rates.<sup>29</sup> They provide, for example, three categories for direct/variable costs: 1)

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<sup>28</sup> <https://www.oajournals-toolkit.org/about>

<sup>29</sup> <https://f1000research.com/articles/10-20/v2>

Content acquisition, 2) Content preparation (production) and 3) Content dissemination/archiving. They take the approach of “newcomer to the academic publishing market” and outline specific workflow steps in each category. Their calculations are per-article costs, which is common (and logical), even as it highlights how the journal title-level (and bundled) approaches to library pricing can complicate these discussions. They also make a distinction between publishing and non-publishing costs, including business management, marketing and new technologies, among other costs in the latter.

There are several other examples of cost analyses that provide a significant level of detail that may be instructive. Here are five, spanning more than 20 years:

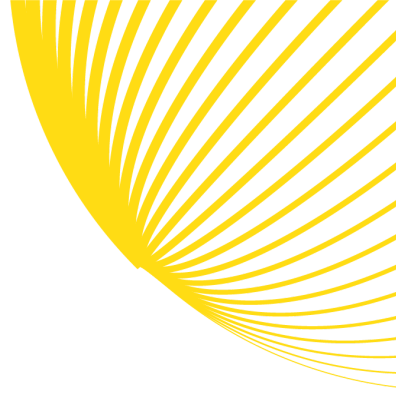
- A 2023 report from the Society Publishers’ Coalition (SocPC) and Dimensions shows, along with other summary financial information, a cost per publication of £730 (US\$791 in current conversion rates) across the Coalition’s 126 members (based on 2018 data) (Science & Hook, 2023).
- In 2021, Grossmann and Brembs considered multiple scenarios to estimate an OA publication cost of around US\$400 with a range from US\$194.89 to US\$723.16, depending on the level of service (providers) and publishing volume (Grossmann and Brembs, 2021).
- In 2017, Martin Paul Eve wrote “How much does it cost to run a small scholarly publisher?” and estimated a cost per article at just over £100 (Eve, 2017).<sup>30</sup>
- In 2008, Julian Fisher asked “Does the publishing process need to cost what it does?” and concluded his analysis with an estimate that “a journal with 50 articles in a year could be published for under US\$4,000.”<sup>31</sup> (Adjusted for inflation, this would now be about US\$6,000) (Fisher, 2008).
- In 1998, Bot et al. published “The Cost of Publishing an Electronic Journal”<sup>32</sup> (distinguishing electronic journals from electronic versions of print journals) which provides a very detailed costing model, estimating multiple technical usage and capacity scenarios for the *Electronic Journal of Comparative Law* (EJCL), concluding that “shared facilities costs assigned for the EJCL are so small that they can be treated as zero in the Costing Model” (Bot et al., 1998).

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<sup>30</sup> <https://eve.gd/2017/02/13/how-much-does-it-cost-to-run-a-small-scholarly-publisher/> Note that in his analysis, travel costs and marketing are in the same category, while in the OA Journals Toolkit, they are separated.

<sup>31</sup> <https://doi.org/10.3998/3336451.0011.204>

<sup>32</sup> <https://www.dlib.org/dlib/november98/11roes.html>



## Complex calculations

Journal articles are increasingly linked to earlier, related works such as preprints and supporting data through scholarly metadata and dedicated repositories.<sup>33</sup> The costs to prepare and provide this linked information for humans and machines developed over time and were not reflected in earlier evaluations of cost and price for the scholarly web, such as in the 1998 EJCL analysis (Bot et al., 1998). Though likely to be of growing significance, these related costs are out of scope for this report for the same, simple reason that other peer-reviewed publications are: their complexity.

The interrelated nature of so much of research and publishing means that functions like preparing and depositing data or publishing book chapters have their own costs and prices yet they cannot often be cleanly isolated from others. Similarly, costs for repositories (and some publishers) can be very difficult to separate out from the institutions in which they are embedded, which often provide in kind services or spread costs out over multiple departments or services.

Inflation, variations in business models, and currency fluctuations are all additional complicating factors in efforts like these. While examples are debatable, granularity is useful for the complexity involved in journal publishing and for reviewing smaller amounts of money where margins may be very thin.

## Cost and price transparency

Since discussions of the Serials Crisis subsided (or arguably mutated), price (and cost) transparency, which can be expected to support efforts at determining reasonable costs by providing actual numbers for comparison, has only become more complex. APC payments, for example, are particularly difficult to track or to trace back to explicit publishing costs.

Many publishers now routinely provide cost and/or price transparency information, albeit with varying degrees of detail (some examples are shared below). Price transparency that scales with the increase in the volume of publishers and journal articles, would require significant time to track and analyse, particularly since this kind of information changes as often as annually and is not generally communicated in standard ways, let alone in machine-readable and interoperable formats. There are efforts toward standardization; to normalise and make transparent the pricing of paywalled content (Mellins-Cohen, 2021) for example. The openCost project, based in Germany, is building infrastructure to

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<sup>33</sup> In today's quickly shifting terrain, these "earlier, related works" may eventually become more integrated and the "articles" may become significantly less expensive if models like "Publish Review Curate" take hold. See [https://www.coalition-s.org/wp-content/uploads/2023/10/Towards\\_Responsible\\_Publishing\\_web.pdf](https://www.coalition-s.org/wp-content/uploads/2023/10/Towards_Responsible_Publishing_web.pdf)

support standardization of this information.<sup>34</sup> And, perhaps the most well-known example is the Journal Comparison Service from Coalition S,<sup>35</sup> discussed below.

## Publisher examples

Looking at examples from publishers that provide cost and price transparency shows a range of approaches and models.

### EMBO

EMBO has openly shared its revenues and costs for several years. Not only have they shared their total revenue; they also break those earnings down by subscriptions (€2.8M), APC charges (€2.3M) and “other” sources (<€1M) and provide details about how many papers (and what types) they published for this total “price” charged to all customers and clients in 2023. They also provide clear details about their costs, both internal staff/office costs (€2.5M) and outsourced (€2.1M) costs.<sup>36</sup> This layout also helps clarify how challenging it is to establish any straightforward “cost per publication” because the costs in any given year include storage and distribution of previously published content as well as new content produced during the year.

### EDP Sciences

While another prominent academic publisher, EDP Sciences, does not provide financial numbers, it does provide an open comparison of its publication costs based on averages within different cost categories (e.g., web hosting/digital, production and editor, layout and copy-editing and marketing/sales/administrative tasks) for both journals with and without an editorial office.<sup>37</sup>

These averages help shed light on where publication costs change depending on the editorial model applied. In particular, production/editor and layout/copy-editing costs make up a slightly smaller part of the whole (46%) in circumstances where editorial work is outsourced; for those journals that do have an editorial office, the relative cost of production/editor and layout/copyediting plus the editorial office (52%) is higher. They also provide a breakdown of their revenues vs publication costs in one portfolio (maths), again focusing on averages rather than financial numbers and this time showing where

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<sup>34</sup> <https://www.opencost.de/en/project/>

<sup>35</sup> <https://www.coalition-s.org/journal-comparison-service/>

<sup>36</sup> <https://www.embo.org/features/the-cost-of-scientific-publishing/> Their original, 2019 blog post, showing their 2017 finances, is an instructive example of transparency: <https://www.embo.org/features/the-publishing-costs-at-embo/>

<sup>37</sup> <https://www.edpsciences.org/en/news-highlights/2994-open-access-and-transparency-edp-sciences-releases-2024-transparency-report-for-mathematics-journals>

revenues are coming from (subscriptions, APCs, etc) and how close they come to covering the publication costs in 2020.

## PLOS

Detailed information about PLOS's APC charges (pricing) is provided within the context of the portfolio of services represented for each section, shown in Table 4 for 2021. Functions such as peer review management, sales and platform development are shown as percentages of each APC.<sup>38</sup>

## Other examples

Other publishers provide different details about their costs and pricing. For example, The Royal Society provides a list of prices for libraries and how they are calculated<sup>39</sup> as well as APCs for authors and what functions they support, e.g. integrity checks.<sup>40</sup> Cambridge University Press (CUP) shares the cost of its publishing program<sup>41</sup> along with how they price their journals.<sup>42</sup> Both publishers include notes about which article types are included or excluded.

Cost components like editorial, production, sales and marketing and hosting platforms are commonly included but with enough variation in scope or terminology, e.g. outsourced vs. in-house, or in the level of granularity that comparisons are difficult. Such efforts may, for example, require interpretation or extrapolation. In some cases, differences are quite clear, for example contributions to societies by their publishers.

The transparency shown in these examples varies in level and degree; such transparency has emerged only in the last several years. It may be considered too soon for agreement on common approaches or to understand what kind of information at what level of detail is helpful to different stakeholders (and if it would be willingly shared). The variety of models used makes comparisons between publishers difficult but it does provide the opportunity to explore particular details about single presses. Emerging developments, like the Plan S Journal Comparison Service, discussed below, and the metadata schema that the openCost project is developing<sup>43</sup> may help normalize approaches and establish a common vocabulary regarding what is shared and what it means.

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<sup>38</sup> <https://theplosblog.plos.org/2023/02/plos-price-transparency-update-2021/>

<sup>39</sup> <https://royalsociety.org/journals/librarians/purchasing/packages/transparent-pricing/>

<sup>40</sup> <https://royalsociety.org/journals/open-access/>

<sup>41</sup> <https://www.cambridge.org/core/open-research/journal-cost-transparency>

<sup>42</sup> <https://www.cambridge.org/core/services/open-access-policies/open-access-journals/transparent-pricing-policy-for-journals>

<sup>43</sup> <https://github.com/opencost-de/opencost/tree/main/doc>

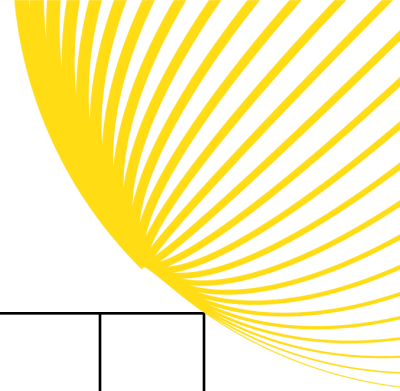
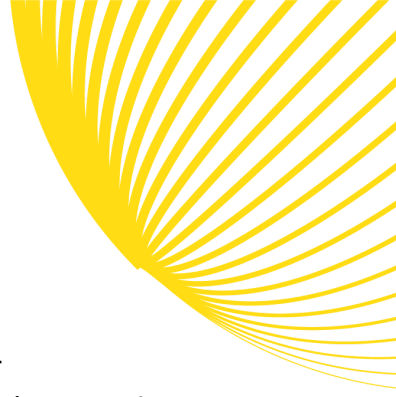


Table 4. 2021 PLOS APC breakdown by function.

	<b>PLOS Computational Biology</b>	<b>PLOS Genetics</b>	<b>PLOS Neglected Tropical Diseases</b>	<b>PLOS Pathogens</b>	<b>PLOS Biology</b>	<b>PLOS Medicine</b>	<b>PLOS ONE</b>
<b>2021 APC price</b>	\$2,575	\$2,575	\$2,420	\$2,575	\$4,000	\$4,000	\$1,749
% of price for journal and community development	10%	12%	10%	11%	24%	23%	10%
% of price from submission to first decision	12%	13%	10%	12%	26%	24%	17%
% of price for peer review management	13%	13%	10%	14%	20%	17%	17%
% of price for services from acceptance to publication	21%	19%	18%	21%	9%	11%	15%
% of price for services after publication	8%	7%	6%	8%	3%	4%	8%
% of price for platform development	9%	9%	15%	8%	2%	7%	9%
% of price for sales & marketing to customers or of articles	18%	18%	21%	15%	13%	15%	17%
% of price for author and customer support	9%	9%	9%	10%	2%	3%	8%



## Beyond OSTP

Prior to the OSTP Nelson Memo in 2022, the US was generally viewed as lagging behind the UK and Europe in open access policy, despite the earlier OSTP “Holdren memo” in 2013. It must be noted that other countries and regions, such as Latin America, continue to lead in this space. It was probably a surprise to some to learn that Indonesia, for example, leads the world in open access publishing, as a result of its national policy (Van Noorden, 2019). The Curtin Open Knowledge Initiative (COKI)<sup>44</sup> provides an Open Access Dashboard showing only two countries in the 90th percentile of open access content (as of 7 October 2024), São Tomé and Príncipe and Indonesia.

Still, the more established and larger funders, libraries, and publishers that dominate the scholarly communication landscape (and employment opportunities within it) in the US, UK and European markets tend to keep attention focused on the policies in these regions.<sup>45</sup> The European Commission and funders like Wellcome in the UK wield a lot of influence and funder mandates are followed with great interest, beyond the researchers most directly affected by them. A number of resources track them and advise on compliance.<sup>46</sup>

It should also be noted here that many institutions have their own open access policies, which may reflect funder mandates, that also play a role in this landscape.

## Plan S

The launch of cOAlition S<sup>47</sup> in 2018 provided important international groundwork for the 2022 OSTP Nelson memo. Unlike other funder mandates which tend to focus on single funders, countries or regions, the Coalition's proposal, Plan S, is from a broad international group of research funders. The major goal of Plan S, backed by the President of Science Europe,<sup>48</sup> is “full and immediate open access” to research articles, to begin in 2021 (a statement and recommendation on books were added later).<sup>49</sup> The plan galvanised and sometimes polarised stakeholder groups across scholarly

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<sup>44</sup> <https://open.coki.ac/>

<sup>45</sup> For example, the URKI open access policy: <https://www.ukri.org/publications/ukri-open-access-policy/>. A recent review of open science policy across Europe includes open access: <https://doi.org/10.1093/scipol/scac082>

<sup>46</sup> For example, The Open Access Journals Toolkit, a resource for OA publishers, provides links to several other resources on its overview page: <https://www.oajournals-toolkit.org/policies/compliance-with-funder-policies-and-mandates> including ROARMap: <https://roarmap.eprints.org/> and Sherpa Juliet: <https://www.sherpa.ac.uk/juliet/> as well as Plan S, which is covered in more detail in this section.

<sup>47</sup> <https://www.coalition-s.org/>

<sup>48</sup> Science Europe is “the association representing major public organisations that fund or perform excellent, ground-breaking research in Europe” <https://scienceeurope.org/>

<sup>49</sup> <https://www.coalition-s.org/coalition-s-statement-on-open-access-for-academic-books/>

communications. The full scope of the Plan is broad and includes other elements of open science such as responsible research assessment, but the focus of the intense debate following the initial announcement of Plan S was squarely on its access requirement and related logistics.

In the evolution of Plan S, there are three main developments.<sup>50</sup> The first is the requirement for price transparency,<sup>51</sup> for which two data collection templates were developed (one is being sunset as of November 2024). In addition to bibliographic metadata, categories of “service information” are collected, including number of articles published, acceptance and desk rejection rates, and median times of milestones such as time of peer review, along with pricing information. This work resulted in the launch of the Journal Comparison Service, which is described as a secure and standardized way for publishers to share this information with their customers.<sup>52</sup> Because the information is considered sensitive, it is shared only with authorized users who register and who have open access agreements with publishers. Though the service (and others that may emerge) is restricted in the level of detail that can be publicly provided, aggregate, anonymized information could be instructive.

The second item of note is actually a pair of developments related to business models. cOAlition S's approach to the APC has evolved over its history and the final outcome is currently undecided.<sup>53</sup> In May 2024, the Bill and Melinda Gates Foundation announced it will end support for APCs starting in 2025, noting its membership in and alignment with cOAlition S.<sup>54</sup> The other is the end of Plan S support for Read/Publish Agreements (they use the term Transformative Arrangements) on principle, after 2024.<sup>55</sup>

The final development to cover here is a framework (Information Power, 2024a) and tool (Information Power, 2024b) for equitable, global pricing. This approach focuses on tackling the difficulties of pricing across countries, including currencies and exchange rates, so it is currently less relevant to the US focus of this review. As this report was being finalized, the Plan S Beyond article-based charges working group launched a beta version of a tool to help answer the question “How Equitable Is It?”<sup>56</sup> The uptake and evolution of these developments will be instructive to watch as they are implemented and refined over time.

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<sup>50</sup> Note: the Publish-Review-Curate model was mentioned earlier in the Preprints and Complex calculations sections.

<sup>51</sup> <https://www.coalition-s.org/coalition-s-announces-price-transparency-requirements/>

<sup>52</sup> <https://www.coalition-s.org/journal-comparison-service/>

<sup>53</sup> <https://www.coalition-s.org/beyond-article-based-charges-working-group-an-update-on-progress/>

<sup>54</sup> <https://gatesfoundationoa.zendesk.com/hc/en-us/articles/24810787662100-Policy-Refresh-2025-Overview>

<sup>55</sup> <https://www.coalition-s.org/coalition-s-confirms-the-end-of-its-financial-support-for-open-access-publishing-under-transformative-arrangements-after-2024/>

<sup>56</sup> <https://coalitions.typeform.com/Equity-Tool?typeform-source=t.co>



Taken together, the evolution of Plan S and the sometimes fierce response to it can be interpreted as underscoring the complexity and variety of the global scholarly publishing landscape and the value of supporting policy with practical resources developed with stakeholder input.

## A view across disciplines

In discussions of journals and money, the focus is often on STEM disciplines which tend to receive greater funding and publish in higher volume than HSS disciplines. All federal agencies are affected by the 2022 Nelson memo and they encompass many different disciplines that have significant variations in content and formats. And though these differences are often significant, scholarly communication infrastructures (including human infrastructure) and workflows are not often that segmented; these environments “cross borders.” Adapting to requirements like the OSTP memo, whether the changes are welcomed or not, may mean adapting large swaths of systems and operations, rather than making more targeted or selective changes. A recent analysis of funded publications by Schares highlights the limitations in the current environment for answering what seem like basic questions such as “Which publishers tend to publish federally funded articles?”<sup>57</sup> The metadata requirements introduced by the Nelson memo require identifying sources of funding, a key limitation noted in a recent bibliometric analysis of the memo (Schares, 2023) indicating that a significant level of adaptation is needed for publisher compliance.

In addition, the wide range of subscription prices and APCs across disciplines makes clear that pricing is not a simple multiplier of the cost per submission plus the cost of each peer-reviewed article.

Klebel and Ross-Hellauer (2023) show a wide range of APC averages across disciplines from 2009–2019 for OA titles in the DOAJ (as such, outliers that garner a lot of attention like the APC for *Nature* (US\$12,290), which is not a fully open access title, are not included). The 2023 *Library Journal* Periodicals Price Survey (“Going for Gold, Deep in the Red”)<sup>58</sup> does not cover the same ten years but it does use similar categories and shows a similarly wide range of subscription prices across discipline categories. Table 5 highlights disciplinary differences in both APCs and subscription prices.

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<sup>57</sup> [https://doi.org/10.1162/qss\\_a\\_00237](https://doi.org/10.1162/qss_a_00237)

<sup>58</sup> <https://www.libraryjournal.com/story/going-for-gold-deep-in-the-red>



Table 5. A selection of APCs and subscription price ranges for different disciplines.

Discipline	Average 2023 APC (\$USD)	Average 2023 Subscription Price (\$USD)
Biology	\$2118	\$3360–\$4430
Chemistry	\$1824	\$6227–\$7276
Geography	\$971	\$1865–\$2805
Geology	\$1343	\$3337–\$3806
History	\$225	\$565–\$601
Physics	\$1217	\$4953–\$5881
Political Science	\$250	\$983–\$1051
Sociology	\$170	\$1203–\$1303

Table 5 draws from both the Klebel and Ross-Hellauer paper and the Library Journal Periodical Price Survey, using only those disciplines with the same terms in each. The Periodical Price Survey uses multiple sources. Subscription figures are expressed here as a range to reflect the multiple sources used.

## Conclusions

Given the current landscape and the history that led to this point, "...promoting a scholarly communication ecosystem that allows for different models of providing public access to coexist" (OSTP 2024) seems highly likely for the near future. Addressing the question of what is reasonable may be facilitated by each stakeholder answering it as a starting point for a larger conversation about what is practical, sustainable, and incentivizes best practice research communications at the broader system level.

As the landscape evolves, particularly toward implementation of the OSTP requirement and as details emerge of the Diamond Open Access Alliance<sup>59</sup> launched in the summer of 2024, practicalities will come into sharper focus. In the meantime, the Appropriations Committee of the US House of Representatives has thrown into question whether the

<sup>59</sup> <https://www.unesco.org/en/articles/announcing-global-diamond-open-access-alliance>

Nelson memo will be delayed or whether federal funds can be used to implement it,<sup>60</sup> as the US heads into what appears to be a tight race for President. The net effect of pre- and post-OSTP memo discussions and research on issues of access and funding may be viewed as thorough preparation for collective action toward a shared implementation of public (or open) access, regardless of which mandates launched the effort. In other words, the groundwork has been laid and an access milestone is within reach.

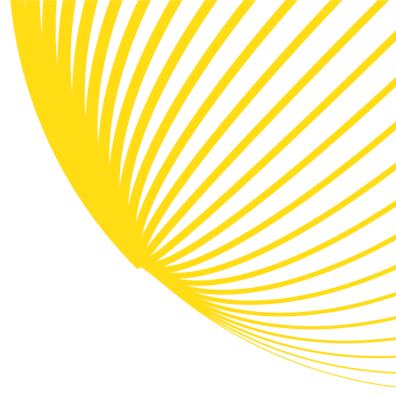
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<sup>60</sup> This widely covered development began in 2023 when the Committee introduced Section 552 in its Fiscal Year 2024 bill: "SEC. 552. None of the funds made available by this or any other Act may be used to implement, administer, apply, enforce, or carry out the Office of Science and Technology Policy's August 25, 2022, Memorandum to Executive Departments and Agencies entitled, "Ensuring Free, Immediate, and Equitable Access to Federally Funded Research." For coverage, see, for example, *The Scholarly Kitchen*: <https://scholarlykitchen.sspnet.org/2023/07/24/guest-post-the-nelson-memo-and-public-access-are-under-attack-will-powerful-incumbents-come-to-its-rescue/> and The Association of Research Libraries (ARL) <https://www.arl.org/our-priorities/advocacy-public-policy/partner-letters/appropriations/open-access-working-group-letter-on-public-access/>. As required by Congress, the 2024 OSTP *Updated Report to the U.S. Congress on Financing Mechanisms for Open Access Publishing of Federally Funded Research* cited in this report was provided in response. *The Brief* from Clarke & Esposito has been reporting on this since the initial bill was introduced and covers it in some detail in its June 2024 issue #66 "(No) Impact Statement": <https://www.ce-strategy.com/the-brief/no-impact-statement/>



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