

Abstract

The United States Government has recently endeavored to increase the accessibility of its scientific research for the general public. Many federal agencies have developed policies that are consistent with the open-access principles laid out by the “Holdren Memo” released by the White House Office of Science and Technology Policy in 2013^a. Agencies have increased the accessibility of taxpayer funded research by developing open-access databases containing metadata and full-text downloads of scientific journal article publications. Our assessment of 10 such repositories across 19 federal research institutions finds that there is variability in the data that are stored, the accessibility of the data in these systems, and the integration of these systems with other commonly used research resources. This work serves as a useful resource for comparing open access efforts across federal agencies and understanding industry standards for publication accessibility.

Background

The Holdren Memo

In 2013, the White House Office of Science and Technology Policy published a memorandum (commonly known as the “Holdren Memo”) requiring large federal research agencies to develop policies intended to provide public access to federally-funded research. The memorandum applies to federal agencies with at least \$100M in research spending per year.

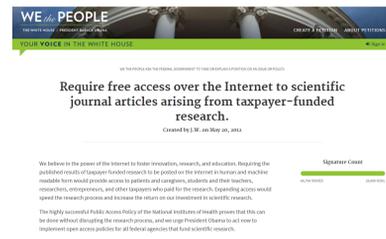


Figure 1. “We the People” petition to the White House requesting public access to taxpayer-funded research (2012)^b

According to the 2013 OSTP memorandum, increasing the accessibility of science:

- Makes it easier for the private sector to benefit from scientific advances resulting from federally-supported research;
- Produces opportunities for improved curation, preservation, analysis, and visualization of results in the scientific community;
- Helps maximize the impact and accountability of federally-supported research; and
- Accelerates the scientific advances, growth of entrepreneurship, and economic impacts of federally-supported research.

“Scientific research supported by the Federal Government catalyzes innovative breakthroughs that drive our economy.”
(2013 White House Memorandum on Increasing Access to the Results of Federally Funded Scientific Research)

Developing Open Access Policies

Open Access Policies Across the Federal Government

Three years after the Holdren Memo was published, the Office of Science and Technology Policy compiled a list of 15 public access plans that captured 98% percent of annual federal research spending. By early fiscal year 2017, public access plans covered the research of 19 separate federal agencies^c (Figure 2).

Agency specific policies vary by content and the level of detail covered in access plans^d. While some policies thoroughly discuss open access issues such as data discoverability and the use of Digital Object Identifiers (DOIs), other policies do not mention these at all. Considerations and limitations for providing public access to federal research include the existence of associated sensitive information, agency specific IT infrastructure limitations, and the norms of specific disciplines.

Figure 2.

Number of US Govt Public Access Policies

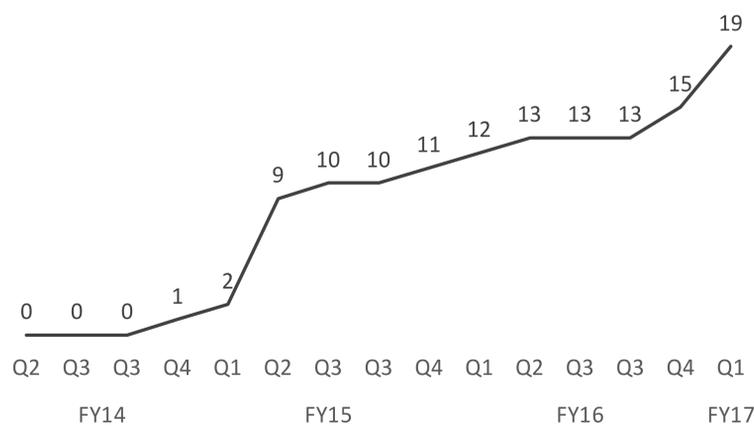


Table 1.

Institution	Database/URL	Number of Records	Full-text Information?	Bulk Metadata Export?	Citation Exporter?	Other Integration?
Department of Defense	PubDefense	10k-100k	✓	✓		
Department of Education	ERIC	More than 1M	✓	✓	✓	
Department of Energy	DOE PAGES	100k-1M	✓	<5k records	✓	ORCID
Department of Transportation	ROSAP	10k-100k	✓	<200 records	✓	
National Oceanic and Atmospheric Administration	NOAA Central Library	10k-100k		✓		
National Science Foundation	NSF Public Access Repository	100k-1M	✓	<5k records	✓	
U.S. Agency for International Development	Development Experience Clearinghouse	100k-1M		✓		
U.S. Forest Service	Treearch	10k-100k	✓			AltMetric
U.S. Geological Survey	USGS Publication Warehouse	10k-100k	✓	✓	✓	ORCID
10 Others	PubMed Central (PMC)	More than 1M	✓	✓	✓	

Sources:

^aHoldren, J. (2013). Increasing Access to the Results of Federally Funded Scientific Research White House Office of Science and Technology Policy
^bHoldren, J. (2012, 8/25/2016). “Require free access over the Internet to scientific journal articles arising from taxpayer-funded research.” Retrieved 9/1/20, 2020, from <https://petitions.obamawhitehouse.archives.gov/response/increasing-public-access-results-scientific-research/>
^cUSGAO (2019). Additional Actions Needed to Improve Public Access to Research Results. Federal Research, United States Government Accountability Office.
^dKriesberg, A., et al. (2017). “An Analysis of Federal Policy on Public Access to Scientific Research Data.” Data Science Journal 16(0): 27

Comparing Publication Repositories Across Institutions

Selection of Repositories

We identified and evaluated 10 publication repositories covering 19 federal research institutions (Table 1). 10 of these institutions use the National Institutes of Health’s PubMed Central as their public repository, while the remaining 9 have developed their own systems to fulfill their open access policies.

These repositories vary widely in their size. 5 of the 10 repositories contain between 10,000 and 100,000 records, while 2 repositories (including PubMed Central) contain greater than 1,000,000 records (Figure 3). It is important to note that some repositories, such as PubMed Central, contain both scientific publications that are and are not funded by federal research dollars.

Full-Text

It is common practice for federal research institutions to provide information regarding full-text availability of journal articles. In 8 of the 10 systems, you can either find information to download full text versions of articles directly through the sites or you can see information on where to access the full text of articles.

Bulk Metadata

9 of 10 publication repositories include features that allow for bulk exports of metadata such as Digital Object Identifiers (DOI), author names, article titles, and publication dates.

Citation Exports

6 of the 10 repositories include functions to directly export citations into citation management software tools such as Endnote.

Other Integration

Some repositories provide integration with other commonly used tools in the research community, such as ORCID’s (which are unique identifiers associated with researchers), and AltMetric (which is a citation and social media tracking tool).

Figure 3.

Number of Open Access Repositories by Size

