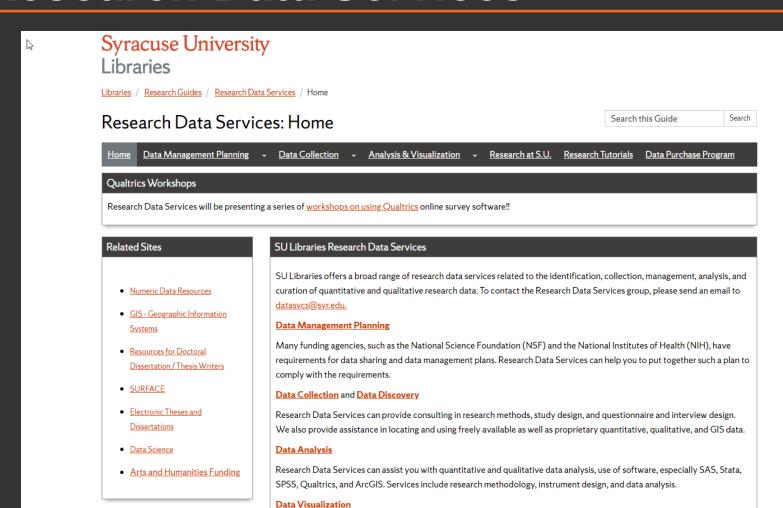




Data Management Plans

PAUL H. BERN, PH.D. OCTOBER 30, 2019



Research Data Services can help you identify data visualization and GIS tools and resources.



Contact Us

What Is a Data Management Plan?

- » A DMP describes how you will collect, organize, store, secure, back up, preserve and share your data
- w the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;
- w the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
- » policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
- » policies and provisions for re-use, re-distribution, and the production of derivatives; and
- » plans for archiving data, samples, and other research products, and for preservation of access to them.

http://www.nsf.gov/pubs/policydocs/pappguide/nsf11001/gpg_2.jsp#dmp



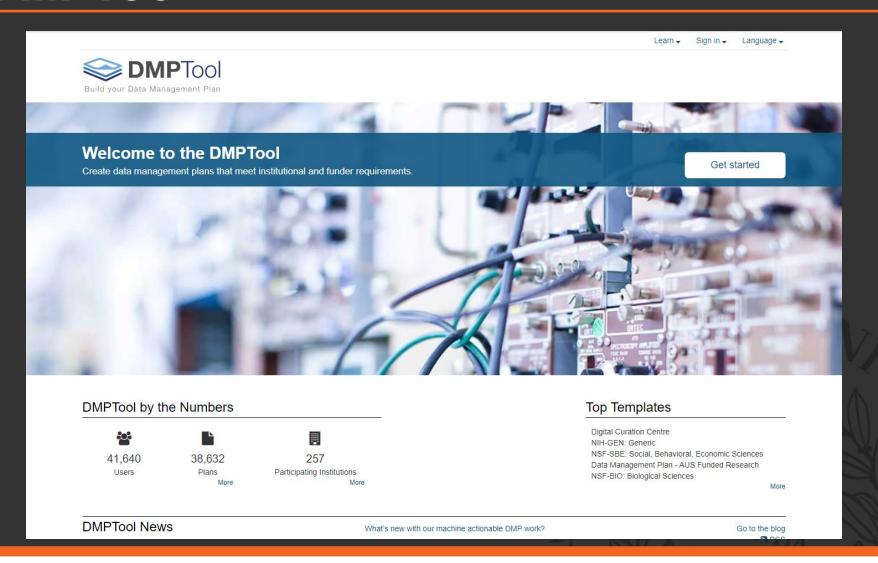
Points to Ponder

- » Data format and size over the course of the project
- » Retention period
- » Privacy and security requirements IRB!
- » A plan to back up the data
- Who needs to access the data during the project and how they will do so
- » Designate a data manager
- The tools or software needed to create, process, visualize the data



- Online tool to assist in completing a DMP
- » Has templates for all NSF and NIH directorates as well as several other funding agencies
- » Has samples, suggestions
- » https://dmptool.org/







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Notice: Successfully signed in

My Dashboard

Create plan

The table below lists the plans that you have created, and that have been shared with you by others. You can edit, share, download, make a copy, or remove these plans at any time.

| Project Title 💠 | Template | Edited ~ | Role | Test | Visibility | Shared | |
|-----------------|--------------------------------------------------------------------|------------|-------|------|------------|--------|----------|
| tst | Institute of Education Sciences (U.S. Department of Education IES) | 03-22-2018 | Owner | | Private | No | Actions▼ |
| doe | Institute of Education Sciences (US Dept of Education) | 04-03-2015 | Owner | • | N/A | No | Actions▼ |
| doj | NSF-SBE: Social, Behavioral, Economic Sciences | 04-03-2015 | Owner | ✓ | N/A | No | Actions▼ |

Syracuse University Plans

The table below lists the plans that users at your organization have created and shared within your organization. This allows you to download a PDF and view their plans as samples or to discover new research data.

| Project Title ▼ | Template | Owner | Updated \$ | Download | |
|---------------------------------------|-------------------------------------------------------|------------------|------------|----------|--|
| Listening to offshore ecosystems: rem | BCO-DMO NSF OCE: Biological and Chemical Oceanography | sparks@syr.edu | 02-08-2018 | | |
| Engaging College Sports Fans and Stud | NSF-EHR: Education and Human Resources | easchiff@syr.edu | 11-07-2018 | ß | |

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Funder Requirements

Templates for data management plans are based on the specific requirements listed in funder policy documents. The DMPTool maintains these templates, however, researchers should always consult the program officers and policy documents directly for authoritative guidance. Sample plans are provided by a funder or another trusted party.

| Q | Search | |
|---|--------|--|
| | | |

| Template | Download | Funder \$ | Last Updated 🗢 | Funder Links | Sample Plans (if available) |
|-------------------------------------------------------------------------------------|----------|-----------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Alfred P. Sloan Foundation | ₩ D | Alfred P. Sloan Foundation | 04-18-2018 | Sloan Grant Proposal Guidelines | |
| Arctic Data Center: NSF Polar Programs [DRAFT] | | National Science Foundation (NSF) | 08-23-2018 | NSF Arctic Data Center DMP Resources | |
| BCO-DMO NSF OCE: Biological and Chemical Oceanography | w L | National Science Foundation (NSF) | 04-24-2018 | NSF OCE Sample and Data Policy NSF GEO Directorate Guidance | |
| Department of Defense (DOD) | w B | Department of Defense (DOD) | 09-13-2018 | DOD Public Access Plan Data Archiving Plans for NIJ Funding Applicants | |
| Department of Energy (DOE): Generic | w L | Department of Energy (DOE) | 04-25-2018 | DOE Policy for Digital Research Data Management DOE Suggested Elements for a Data Management Plan | |
| Department of Energy (DOE): Office of Energy Efficiency and Renewable Energy (EERE) | w B | Department of Energy (DOE) | 08-02-2019 | EERE Digital Data Management Suggested Elements for an EERE Data Management Plan | |
| Department of Energy (DOE): Office of Science | w L | Department of Energy (DOE) | 04-10-2018 | DOE Office of Science Statement on Digital Data Management DOE Suggested Elements for a Data Management Plan | |
| Digital Curation Centre | w D | Digital Curation Centre (DCC) | 05-29-2018 | | |



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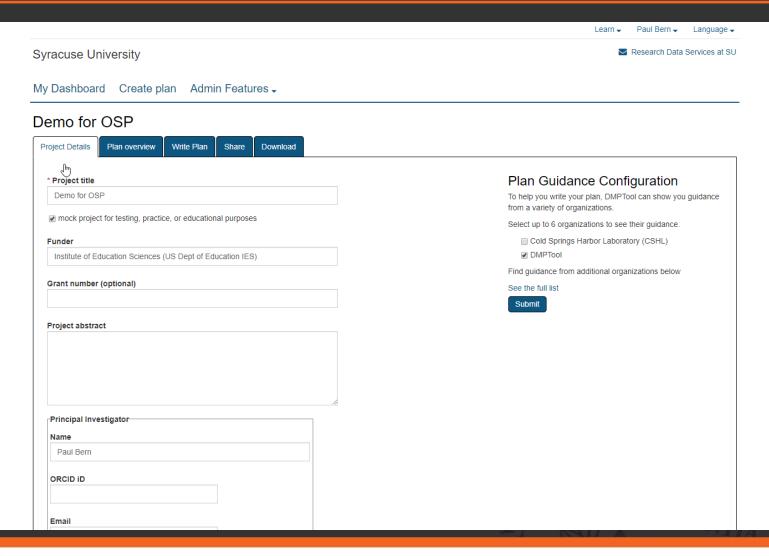
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Public DMPs

Public DMPs are plans created using the DMPTool service and shared publicly by their owners. They are not vetted for quality, completeness, or adherence to funder guidelines.

| Q Search | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------|----------------------------|--------------|
| Project Title | Template \$ | Organization | Owner | Download |
| Example 1 | NSF-GEN: Generic | SF-GEN: Generic The University of Texas at Arlington (UTA) | | 凸 |
| Análise de série temporais | Institute of Education Sciences (U.S. Department of Education IES) | Non Partner Institution | Douglas Chagas | 区 |
| Protected Areas in the Southwest Atlantic Ocean | NSF-GEN: Generic | Non Partner Institution | Ralf Riedel | B |
| Experimental investigation of the dynamics of trapped non-wetting droplets subjected to the seismic stimulation in constricted tubes | Digital Curation Centre | Missouri University of Science and Technology (MST) | Wen Deng | <u>R</u> |
| The Jakalteko language of Guadalupe Victoria: documenting a highly endangered dialect of the Mayan language Jakalteko-Popti' [jac] in Chiapas, Mexico | NSF-SBE: Social, Behavioral, Economic Sciences | University of Wisconsin- Madison | GRANT ARMSTRONG | 以 |
| FRG20-S: Cosmic-Ray Acceleration Based on Cyclotron Auto-Resonance | Data Management Plan - AUS Funded Research | American University of Sharjah (AUS) | Yousef Salamin | B |
| Collaborative Research: Quantifying the ecological role of Gulf of Maine deep sea coral gardens at multiple spatial scales. | BCO-DMO NSF OCE: Biological and Chemical Oceanography | University of Maine System (UMS) | Rhian Waller | R |
| green city development plan for sebeta city | Digital Curation Centre | Non Partner Institution | manaye teshome | 区 |
| The prevalence of contagious infections in Adama city | Digital Curation Centre | Non Partner Institution | Geleta Dugassa Barka | 凶 |
| CAREER: Sexual Orientation and Gender Identity Discrimination | NSF-SBE: Social, Behavioral, Economic Sciences | Tulane University | Patrick Button | <u>R</u> |







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Demo for OSP

Project Details Plan overview Write Plan Share Download

Institute of Education Sciences (U.S. Department of Education IES)

This plan is based on the "Institute of Education Sciences (U.S. Department of Education IES)" template provided by Institute of Education Sciences (U.S. Department of Education IES).

Instructions

Write plan

Type of data to be shared

· Type of data to be shared

Procedures for managing privacy and confidentiality

· Procedures for managing and for maintaining the privacy and confidentiality of the data to be shared

Roles and responsibilities

Roles and responsibilities of project or institutional staff in the management and long-term preservation—to the extent legally permissible—of research data, including a discussion of any
changes to the roles and responsibilities that will occur should the PD/PI and/or Co-PDs/Co-PIs leave the project or institution.

Expected schedule for data sharing

Expected schedule for data access, including how long the data will remain accessible (at least 10 years, unless a shorter period of time is required to comply with applicable Federal or State
laws or agreements promulgated to ensure compliance with such laws in which the destruction of records or personal information is required within a shorter period of time) and
acknowledgement that the timeframe of data accessibility will be reviewed at the time of annual progress reviews and revised as necessary.

Format of the final dataset

. Format of the final dataset and any standards to which the data conform.

Documentation to be provided

Documentation to be provided.

Method of data sharing

Location where data will be stored and method of data access (e.g., via a publicly accessible data archive, institutional repository, or from the Project Director/Principal Investigator).

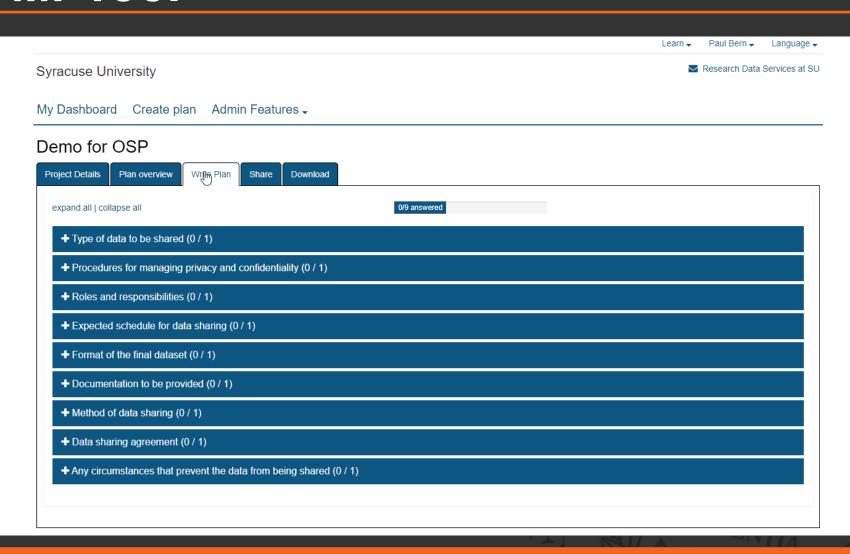
Data sharing agreement

· Address whether or not a data agreement that specifies conditions under which the data will be made accessible is required.

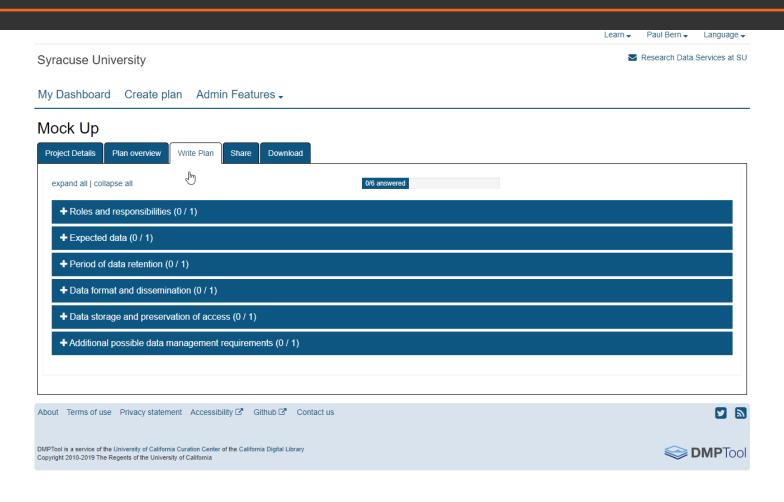
Any circumstances that prevent the data from being shared

Any circumstances that prevent all or some of the data from being made accessible. This includes data that may fall under multiple statutes and hence must meet the privacy and
confidentiality requirements for each applicable statute (e.g., data covered by the Common Rule for Protection of Human Subjects, FERPA, the Health Insurance Portability and Accountability
Act of 1006 (HIDAA). Privacy Pulls (45, CSE) Part 450, and 150, part 450, part 450,

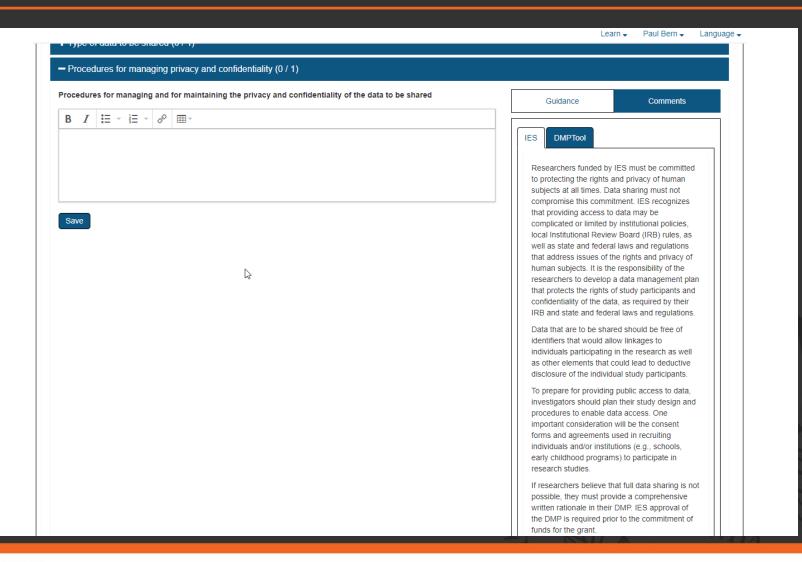




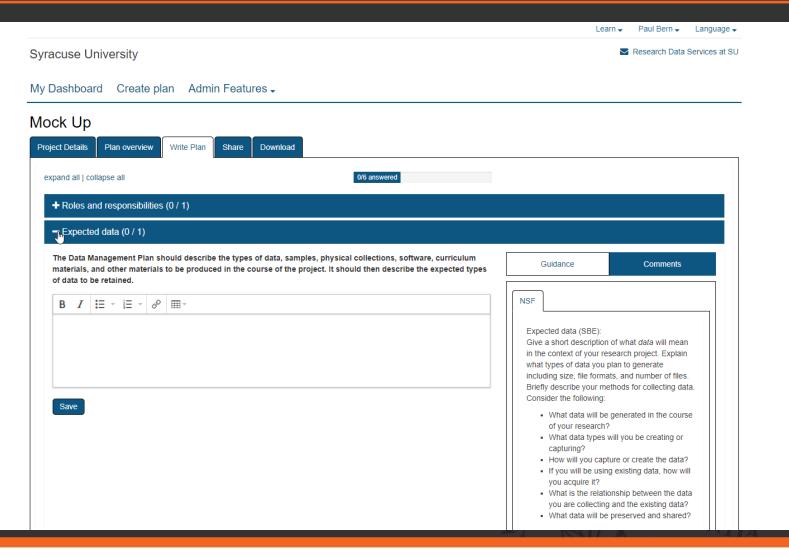








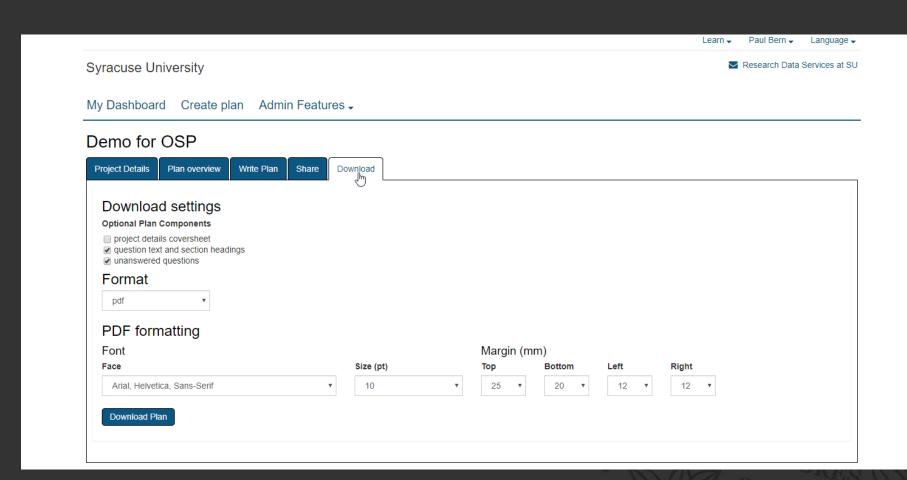






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| ne questions to enable these options. Note: test plans are set to private visibility t | oy default. |
| | |
| on that they have access to this plan. | |
| Permissions | |
| Owner | |
| | on that they have access to this plan. Permissions |







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Online Research Tools

Researchers may find the following tools useful in their work. Emphasis is given to free (or at least having free components) and online tools or services.

Electronic Lab Notebooks:

- · Electronic Lab Notebooks Guide for prospective users; Information for researchers who are interested in adopting an Electronic Lab Notebook system for documenting research and managing data.
- · ELN at Harvard Medical School The Electronic Lab Notebook Matrix has been created to aid researchers in the process of identifying a usable Electronic Lab Notebook solutions to meet their specific research needs. Through this resource, researchers can compare and contrast the numerous solutions available today, and also explore individual options in-depth.
- RSpace An ELN for researchers to organize, manage and collaborate on their projects.

Data Management and Sharing

Many funding agencies, particularly the National Science Foundation and the National Institutes of Health, require grant recipients to make their data public after a certain amount of time. The exact specifications regarding who, when and how to publish your data vary depending on the funding directorate and the exact nature of your research. Nonetheless, there has been a fundamental shift from keeping the data private to making it public. To ensure the usability of the data and protection of the subjects participating in the study, grant applicants are required to submit a Data Management or Data Sharing Plan. This plan is a brief outline of what data you will collect, how you will collect it, how you will keep it safe during the course of your project, and how and where you will make it public ally available.

Be sure to also look at our page on Data Curation.

Research Data Services can assist you in preparing your DMP. It is best to send an email to Research Data Services to set up an appointment so we can discuss your project.

Federal Funding Agency Guidelines

Dear Colleague Letter: Effective Practices for Data - Published May 20, 2019, this letter announces that new NSF Data Management Plans must include persistent IDs for data (i.e., a DOI) and must be machine-readable. The letter specifically encourages the use of DMPTool (see below) to generate DMPs.

Federal Agency Access Compliance - A comprehensive guide to federal public access policies

OSTP Responses - A table summarizing the Federal public access policies



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Electronic Lab Notebooks:

 Electronic Lab Notebooks -Guide for prospective users; Information for researchers who are interested in adopting an Electronic Lab Notebook system for documenting

research and managing data.

ELN at Harvard Medical
 School - The Electronic Lab
 Notebook Matrix has been
 created to aid researchers in
 the process of identifying a
 usable Electronic Lab
 Notebook solutions to meet
 their specific research needs.
 Through this resource,
 researchers can compare and
 contrast the numerous
 solutions available today, and
 also explore individual options
 in-depth.

Data Curation

Research Data Services can assist you in preparing your data for publishing as well as finding a suitable repository in which to place it. Given that different repositories have different rules regarding what can be stored and how, we strongly recommend that you consult with us as early in the research process as possible. Also, be aware that most repositories have a size limit for individual files as well as total size limit for all files in a project. Below are some links to help you get started:

- <u>DataCite</u> Provides DOIs for data, by searching their database, you can find appropriate repositories for your data.
- re3data.org / Registry of Research Data Repositories (formerly Databib)
- PLOS.org List of Recommended Repositories The PLOS family of journals requires authors to publish their data as a condition of publishing their manuscript; this is their list of acceptable repositories.
- <u>Comparison of general data repositories</u> a spreadsheet comparing some of the most common repositories

Choosing among the many repositories can be a rather daunting task. Here are some things to consider when making your decision:

Is the repository a reputable source? Don't put your data just anywhere
just to fulfill the terms of your grant. After doing all that work, why not get
the most out of it by putting it in a repository that will preserve your data
and make it discoverable? Repositories that other researchers in your
discipline are a good place to start. Make sure it is endorsed by a funding
agency, scholarly journal, professional society, library, or if it is listed in the
Registry of Research Data Repositories. Other things to consider are how



Notebook Matrix has been created to aid researchers in the process of identifying a usable Electronic Lab Notebook solutions to meet their specific research needs. Through this resource, researchers can compare and contrast the numerous solutions available today, and also explore individual options in-depth.

- RSpace An ELN for researchers to organize, manage and collaborate on their projects.
- <u>Hivebench</u> Biology-focused experiment, lab and project management.
- <u>Docollab</u> Project management system, collaboration.
- Benchling Life Sciences focused experiment, lab and project management.

Data Analysis/Visualization:

- TableauPublic Free version of their desktop and online data visualization platform. All data uploaded to TableauPublic is available to everyone on the Internet. The paid versions allow restricted access.
- StatCrunch Simple online data analysis and survey package.

or the most common repositories

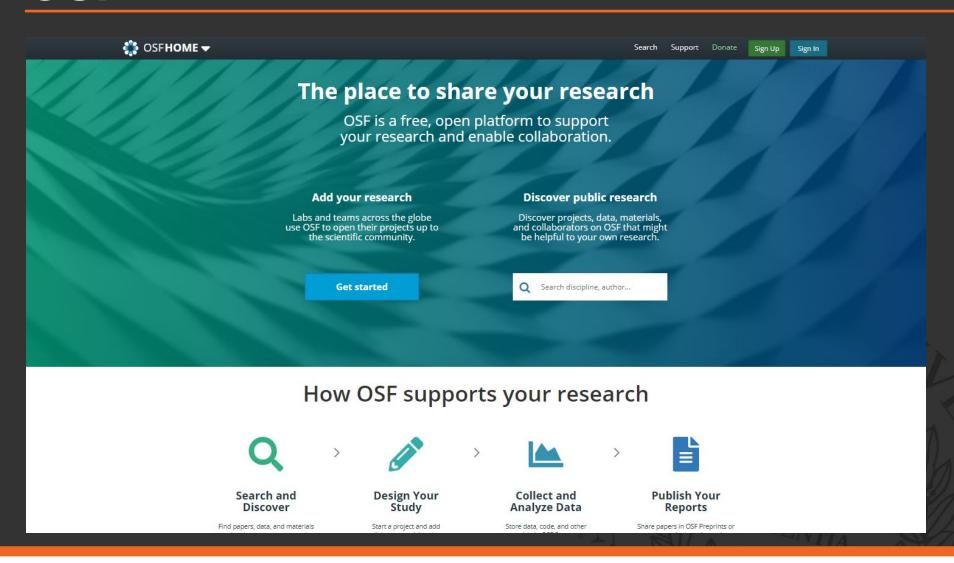
Choosing among the many repositories can be a rather daunting task. Here are some things to consider when making your decision:

- Is the repository a reputable source? Don't put your data just anywhere just to fulfill the terms of your grant. After doing all that work, why not get the most out of it by putting it in a repository that will preserve your data and make it discoverable? Repositories that other researchers in your discipline are a good place to start. Make sure it is endorsed by a funding agency, scholarly journal, professional society, library, or if it is listed in the Registry of Research Data Repositories. Other things to consider are how long the repository has been in existence, how much data are archived there and how often that data has been downloaded.
- You also want other researchers to be able to find your data! Two very important steps in this is making sure the file has a Digital Object Identifier (DOI) and proper metadata. A DOI is a permanent identifier that will always apply to your data regardless of where it is stored. This allows others to properly cite your data and allow even more researchers to find your data. Metadata is the information about the files filename, creation date, size, etc. (as well as a codebook, questionnaires, programs, etc needed to make proper use of the data). Metadata is used to not only describe your data, but make it findable by common search engines as well as the search function of the repository.
- What file formats does the repository allow? Your data may be in a special format having been collected by specialized lab equipment. You will need to make sure that the repository can handle the types of files you have produced.
- What are your legal rights? Be sure you have read and understand the terms of service for the repository. Do you need to transfer copyright of your data? Who owns the data once you deposit it? What of you want or need to remove the data? Along the same lines, what license agreements can you place on your data allowing how others can use it? There are dozens of different kinds of licenses such as those from Creative Commons as well as some pertaining specifically to computer programs and other types of files. You want to make sure you use the license appropriate for your project, funder and journal.
- How sustainable is the repository? Will the repository be in existence 5, 10
 or even 20 years from now? How is it being funded? What will happen to
 your data if the repository closes? What kind of preservation/disaster
 plans do they have? What does the repository do to ensure the integrity of
 the files do they make regular checks that they have not been corrupted
 and therefore unusable?
- What features does it have beyond just storing your data? Several repositories can integrate with other services such as Github and DMPTool

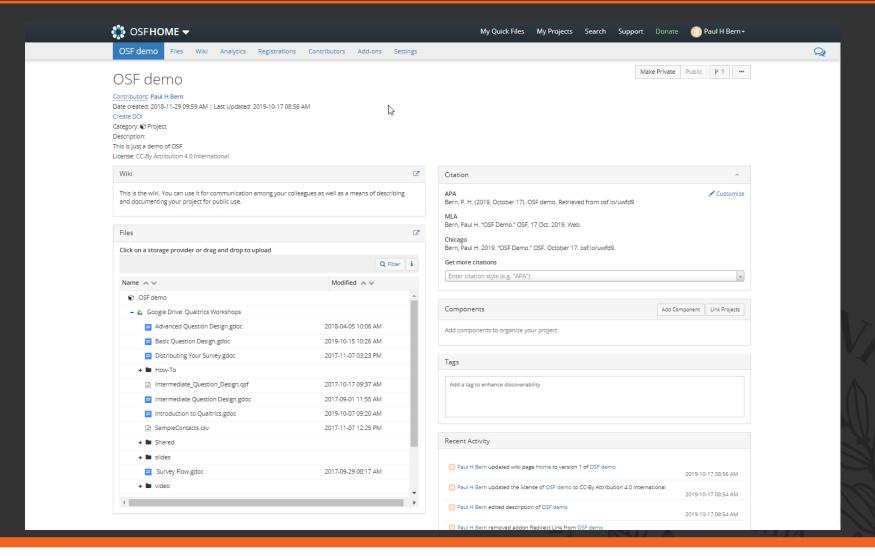


| | Comparison of Data Repositories 🔅 🔳 File Edit View Insert Format Data Tools Add-ons Help Accessibility All changes saved in Drive | | | | | | | | | |
|-----|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 10 | 応 つ 高 쿠 100% ▼ \$ % .0ੵ .00ੵ 123▼ Calibri ▼ 11 ▼ B I S A ♠. 田 冠 ▼ 三▼ 〒▼ P)▼ ▼ ▼ GD 韓 函 ▼ ▼ Σ ▼ | | | | | | | | | |
| fx | γ Service | | | | | | | | | |
| | A | В | С | D | E | F | G | Н | I I | |
| 1 : | Service | Disciplines | Workflow/Embargo | Types of Files | Size Limit | Cost | Licensing | Usage Statistics | Notes | |
| 4 | Mendeley | Any | Yes | Any | 10G per dataset; can connect to other services such as Google Drive, dropbox | Free up to 10G. May develop fee structure in the future | Several | Yes | Mendeley is an interdisciplinary data repository administered by Elsevier. It has many of the standard features of a data repository (DOI, indexing, downlaod stats, etc). It is currently free to researchers, supported by the institution's contract with Elsevier, but there may be charges in the future. | |
| 5 | Figshare | | Yes, provides workspace | Any | 5G per file; 20G private; unlimited public | Free up to size limits, contact for fees above. | Any | Only for Institutions | Figshare is a general- purpose data repository. It is not discipline-specific, allows for many types of licensing, collaborative workspace, workflow with publishers, usage and download stats | |
| | Open Science Framework | Any 🎝 | Yes | Any | 5G per file though larger files can be stored elsewhere and linked to OSF (link to your Gsuite account and get unlimited storgae) | Free | Several, can create your own | Yes | OSF is the only repository developed with the whole research lifecycle in mind. OSF provides collaborative workspace, the ability to have private and public pages for the same project, and the ability to store project manuscripts with the data. | |
| 7 | Zenodo | Any | Yes | Any | 50G per dataset | | Several | Yes | Zenodo is developed and run by CERN and is funded by the European Commission, Alfred P Sloan foundation and others. Although it accepts data from any discipline, it is heavy on the STEM disciplines. | |
| 8 | | Social and Behavioral Sciences | Yes | Any | | Free | | Yes | ICPSR was founded in 1962 and is considered the standard in data curation. Only researchers from emeber institutions may deposit at ICPSR. Unlike most other archives, ICPSR will curate the data where the "data are organized, described, cleaned, enhanced, and preserved for public use." ICPSR is specifically mentioned by the NSF Social, Behavioral and Economic Sciences Directorate as a suitable archive. https://www.nsf.gov/sbe/ses/common/archive.jsp | |
| 9 | | Social and Behavioral Sciences | | Any | 2G | Free | Attribution 4.0 Creative Commons License | Yes | OpenICPSR is run by the main ICPSR service. Unlike ICPSR, anyone may deposit data at OpenICPSR and the data are not curated. | |
| | | Qualitative Social Science | draft, review and published versions | Any | | Cost for deposit very, please contact QDR for specifics. | Creative Commons Attribution Share-Alike | Yes | QDR is a unique and first-of-its-kind repository in the U.S. Specifically dedicated to archiving qualitative data from virtually any discipline, QDR will work with researchers in crafting DMPs and well as preparing their | |

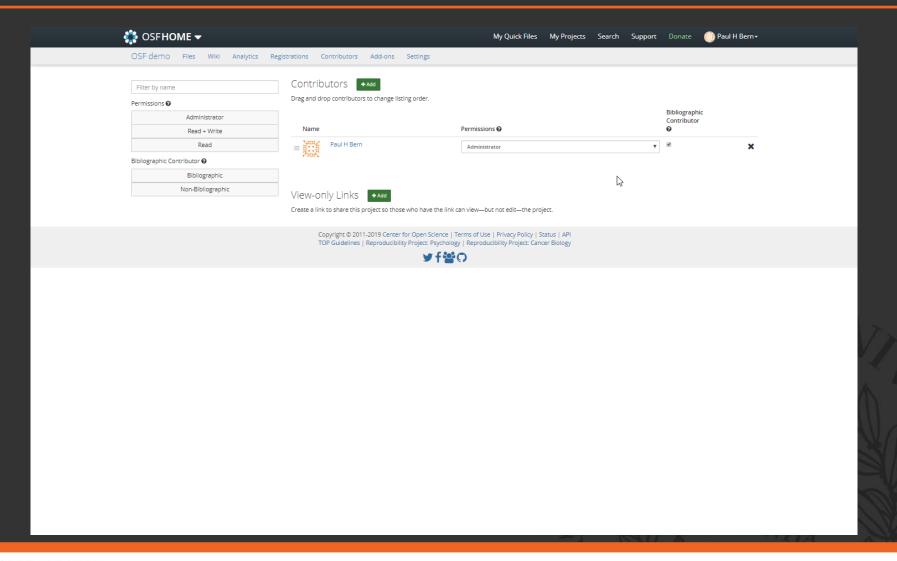




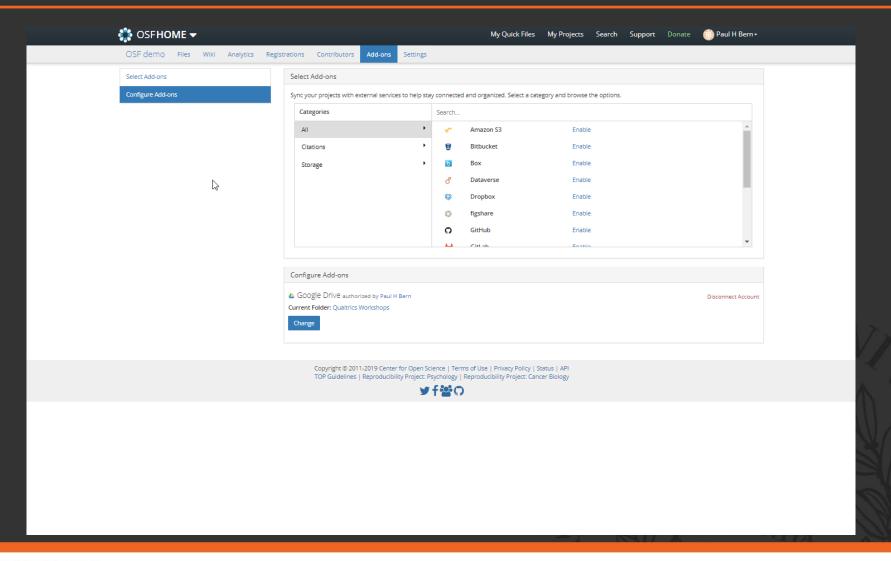














Thank you!

- » phbern@syr.edu
- » http://researchguides.library.syr.edu/dataservices



