Data Management and Sharing Plans (DMSP) NSF, NIH

Policies

National Institutes of Health (NIH)- NOT-OD-21-013
National Science Foundation (NSF)

Overview

It is the expectation of federal sponsors to promote the management and sharing of scientific data that is generated by such sponsored research, as well as emphasizing the establishment of best practices related to data management and appropriate sharing of scientific data.

A formal written data management plan is a required component of a grant proposal for most federal funding agencies. Investigators should follow instruction from the sponsor for compliance with stated application guidelines.

Investigators are encouraged to review notices of award and award terms and conditions for specific requirements, if applicable, for each funded project.

Below is the policy for National Science Foundation (NSF) effective January 18, 2011; and National Institutes of Health (NIH) updated policy effective for proposals submitted January 23, 2023, or after.

National Science Foundation (NSF)
NSF expects that investigators are to share with other researchers the primary data, samples, physical collections, and other supporting materials created or gathers in the course of work under an NSF grant.
Specifically, covered in Chapter XI. Part D. Item 4 of the Proposal & Award Policies and Procedures Guide (PAPPG) published annually. The guidance states that investigators are expected to be prompt with publications, provide data, samples, physical collections, and other materials at no more that minimal cost, if any, to the requestors. Software and inventions created under the grant should be shared or made available widely. Such requirements are made a part of the general grant terms and conditions.

National Institutes of Health (NIH)
Previously, the NIH only required grants with $500,000 per year or more in direct costs to provide a brief explanation of how and when data resulting from the grant would be shared. Beginning in 2023, ALL grant applications or renewals that generate Scientific Data[1] must now include a detailed plan for how data will be managed and shared during the period of performance for the award. This plan will include information on data storage, access policies/procedures, preservation, metadata standards, and distribution approaches.

This information is provided in a research grant application in a data management and sharing plan (DMSP). Note: this DMSP follows the Research Plan as "Other Plan" and does not count towards page limits. The DMSP will be assessed by NIH Program Staff (though peer reviewers will be able to comment on the proposed data management budget). The Institute, Center, or Office (ICO)-approved plan becomes a Term and Condition of the Notice of Award.

[1] The term Scientific Data is defined in the policy as "*The recorded factual material commonly accepted in the scientific community as of sufficient quality to validate and replicate research findings, regardless of whether the data are used to support scholarly publications. Scientific data do not include laboratory notebooks, preliminary analyses, completed case report forms, drafts of scientific papers, plans for future research, peer reviews, communications with colleagues, or physical objects, such as laboratory specimens.*"

Risk

Non-compliance may affect future funding decisions. To avoid possible issues when reporting progress, ensure that your submitted plan contains enough detail for the program officer to be able to evaluate compliance.

If you make changes to your submitted plan, your new plan must be re-approved by NIH. the process **varies** depending on if the change is made prior to award (pre-award) or during the award period of performance (post-award).

Procedure

NSF

A proposal to NSF should include the plan for data management and sharing of the produces of proposed research, in a supplementary documents of no more length than two pages. The plan should plan to include the following:

1. the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;
2. 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);
3. policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
4. policies and provisions for re-use, re-distribution, and the production of derivatives; and
5. plans for archiving data, samples, and other research products, and for preservation of access to them.

Directorates may have other or added requirements, which are specified at: http://www.nsf.gov/bfa/dias/policy/dmp.jsp.

NIH

Planning:

1. **Determine your personal timeline.** If you have an active NIH award going up for renewal with receipt date after January 2023, or if you are planning to submit an NIH proposal this year, then developing a DMSP should be a high priority, especially if you are working with external collaborators as it may take time to set up appropriate data procedures/agreements.
2. **Read through the NIH dedicated site** to familiarize yourself with the changes and with **the policy** itself (including the supplements)
3. **Familiarize yourself with the FAIR principles (Wilkinson et. al, 2016).** The **FAIR** (findable, accessible, interoperable, reusable) data principles are the guiding principles the NIH has used in creating the new policy.
4. **Assess** your own project and data management practices relative to the policy (see the NIH-provided supplements below), especially around documenting existing practices and developing new ones to address the increased emphasis on data sharing and administrative oversight.
5. **Review campus data services** (e.g., computing, storage, consulting) and assess whether they will meet your needs. Also consider **costs** you may need to budget for such as labor for data cleaning and documentation (see the NIH-provided supplement on allowable costs).
    a. Costs to execute the DMSP can be included in the budget as a line item and a brief summary of the DMSP must be provided in the budget justification. Allowable costs

include labor for data curation, preservation, de-identification, and more. The NIH has a provided a list of allowable and unallowable costs.

b. Any costs related to complying with the policy must be paid for up-front during the performance period. For example, costs for long-term data preservation *must be budgeted for in the proposal and paid before the end of the grant*. You may find the NIHM Data Archive (NDA) cost estimation worksheet or the publication Forecasting Costs for Preserving, Archiving, and Promoting Access to Biomedical Data useful.

What to Include in your NIH DMSP:
Address the following six sections in your written plan of two pages or less:

1. **Data Type:** Briefly describe the scientific data to be managed, preserved, and shared, including:
2. **Related Tools, Software and/or Code:** An indication of whether specialized tools will be needed to access or manipulate the shared scientific data to support replication or reuse, and name(s) of the needed tool(s) and software.
3. **Standards:** An indication of what standards will be applied to the scientific data and associated metadata (i.e., data formats, data dictionaries, data identifiers, definitions, unique identifiers, and other data documentation). If the discipline of the research does not have a shared approach to data structures, the Plan may indicate that no consensus data standards exist for this scientific data and metadata.
4. **Data Preservation, Access, and Associated Timelines:** Plans and timelines for data preservation and access, including (a) specific repository or repositories where data will be shared (see tab on the left on repositories); what persistent identifier or other indexing tool will be provided to find and access the data; and when data will become available and for how long it will stay available.
5. **Access, Distribution, or Reuse Considerations:** Any limits that will be placed on access, and why the limits are expected to be placed.
6. **Oversight of Data Management and Sharing:** Indicate how and on what schedule the DMS Plan will be monitored and managed, and by whom.
    a. This should be tailored specifically to your project:

Sample Oversight language as provided by the winner of the DataWorks data management challenge competition.

Oversight of Data Management and Sharing:
Indicate how compliance with the Plan will be monitored and managed, frequency of oversight, and by whom (e.g., titles, roles).
"The PIs for this project, Tracy Crane and Steven Bethard, will ensure that the data management plan is followed by auditing the project personnel on a monthly basis and monitoring the project through an online project management tool (Trello). Sarah Jane Wright is one of the data liaisons between the LIvES project and the current project. She is in charge of the patient outcome data, REDCap, questionnaire data, and patient personal records and identifiers. Sarah ensures that sensitive data is accessed on a case-bycase basis in a secure way through REDCap. Hagan Franks is the second data liaison between the LIvES project and the current project. He is in charge of the original audio telephone recordings. Hagan ensures that sensitive data is accessed on a case-by-case basis in a secure way through UA Box Health. John Culnan and Damian Romero are in charge of data annotation management and annotated files storage and safe-keeping. They provide University of Arizona approved annotators (number = 6) with HIPAA compliant data for annotation, which is required for training supervised machine learning models. They are also in charge of creating machine-learned models. Steven Bethard is responsible for the overview of the machine-learned models. He is in charge of ensuring that the machine-learned models are sufficiently useful for future researchers and HIPAA compliant."

Credit: https://hslguides.osu.edu/nih-dmsp/sample-plans

Use this CHECKLIST to ensure that all six required elements are addressed.

Data Sharing Repositories:

NIH encourages the use of established, subject-specific repositories. To select a repository relevant to your data consider:

1. Is there a specific NIH repository named in the funding announcement?
2. Is there a data repository specific to your discipline?
3. If not, is there a general data repository you can use?
4. The MOspace campus digital repository is another option. It's best suited for small datasets in readily available formats such as Excel, PDF, or Word that can be shared under a Creative Commmons BY-NC-ND License

For additional guidance, see NIH supplemental information on Selecting a Repository.

Visit University of Missouri Libraries Data Management page for practices, repositories, and MoSpace information.

Responsibilities

Below is an outline of responsibilities as they relate to procedure.

Principal Investigator (PI):

- The PI is ultimately responsible for all programmatic and financial aspects of an award, including adherence to the DMSP.
- Ensures a compliant DMSP is included in any proposal to NSF or NIH.
- Ensures compliance with the DMSP when incorporated into a funded award.

Departmental Research Administrator:

- Assists to meet all requirements as described above.

Office of Sponsored Programs Administration (OSPA):

- Reviews Grant Proposal materials to ensure a DMSP is included, if required.
- Reviews Grant Award terms and conditions to determine if the plan has been incorporated.

Resources and Additional Information

- Supplemental Information to the NIH Policy for Data Management and Sharing: Elements of an NIH Data Management and Sharing Plan for a detailed description of these Elements.
- NIH Sample Plans: https://sharing.nih.gov/data-management-and-sharing-policy/planning-and-budgeting-for-data-management-and-sharing/writing-a-data-management-and-sharing-plan#sample-plans
- Final NIH Policy for Data Management and Sharing (2023)
- FAQs for the NIH Policy for Data Management and Sharing (DMS Policy)
- Supplemental Information: Elements of an NIH Data Management and Sharing Plan (2023)
- Supplemental Information: Allowable Costs for Data Management and Sharing (2023)
- Supplemental Information: Selecting a Repository for Data Resulting from NIH-Supported Research
- Supplemental Information: Protecting Privacy When Sharing Human Research Participant Data
- Supplemental Information: Responsible Management and Sharing of American Indian/Alaska Native Participant Data
- Informed Consent for Secondary Research with Data and Biospecimens Guidance and sample language.

Need Help?

If you have questions or comments related to this procedure, contact SPA MU Research OSPA muresearchospa@missouri.edu

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