Iowa Department of Transportation Office of Research & Analytics
Guidance on Data Management Plan (DMP) Requirements for Federally Funded Research Projects

Version 02, 2016/05/18

Guidance on Data Management Plan (DMP) Sections

DMPs must include the following Research Data Management Documentation Table and Research Data Management Plan Narrative sections (see template on pages 4-6), and should be as detailed as needed to show compliance with the US DOT Public Access Plan and Iowa DOT R&A requirements, while keeping to three (3) pages total, with table.

Section 1: Research Data Management Documentation Table: Please fill out the table as completely as possible before the beginning of the project, and updated as needed. This includes at the end of the project, and after, as derivative publications are created. Provide name(s) of researchers, the name of the project, relevant project numbers, links, and version control. An example table is shown on page 4.

Research Data Management Plan Narrative

Sections 2 through 7 make up the Research Data Management Plan Narrative. Please make them as descriptive as possible by answering as many of the suggested questions as you can.

Section 2: Description of the Data: Provide a description of the data that you will be gathering in the course of your project. You should address the nature, scope, and size of the data that will be collected. Describe the characteristics of the data, their relationship to other data, and provide sufficient detail so that reviewers will understand any disclosure risks that may apply. Discuss value of the data over the long-term.

Possible questions to answer in this section of your DMP:

- What type of data will be produced? (Tabular, sensor, video, audio, etc.)
- How will data be collected? In what formats? (.txt, .cvs, .tiff, etc.)
- Are there special tools or software needed to create/process/visualize the data?
- How will the data collection be documented?
- What project and data identifiers will be assigned?
- Will the data collected be unique or will the data be reproducible? What would happen if the data got lost or became unusable later?
- How much data will there be, and at what growth rate? (1 GB, 3 TB etc.) How often will it change?
- Will you use pre-existing data? If so, from where?
- How will you store, backup, and protect data from lost during the research project?
- Who will potentially use the data?
- Who is responsible for managing the data?
- What value does the data have over the long-term? (Please consider not only your research team, but third parties as well.)

Section 3: Standards to be Used: Your DMP should describe the anticipated formats that your data and related files will use. To the maximum extent practicable, and in accordance with generally accepted practices in your field, your DMP should address how you will use platform-independent and non-proprietary formats to ensure maximum utility of the data in the future. If you are unable to use platform-independent and non-proprietary formats, you should specify the standards and formats that will be used and the rationale for using those standards and formats.

Possible questions to answer in this section of your DMP:

- What formats will the data be in? (.txt, .cvs, .tiff, etc.)
- Are these formats open or proprietary? If proprietary, what is the rationale for using that format?
- What standards will be used for documentation and metadata?
- What directory and file naming convention will be used?
- What documentation or descriptive metadata will you be creating in order to contextualize the data for future users?

Section 4: Data Organization and Description: Your DMP should list how you will organize, document, and describe the data. Descriptive metadata is vital to contextualize the dataset for future data users, including the original data creator. Descriptive metadata should be written following the rules and format of a published metadata schema appropriate to the type of data or to the research discipline.

Possible questions to answer in this section of your DMP:

- What are the file naming conventions to be employed?
- How will the data be organized?
- What metadata schemas are appropriate for describing these types of data?
- What metadata schema will be chosen for this data?

Section 5: Policies for Access: Protecting research participants and guarding against the disclosure of identities and/or confidential business information is an essential norm in scientific research. Your DMP should address these issues and outline the efforts you will take to provide informed consent statements to participants, the steps you will take the protect privacy and confidentiality prior to archiving your data, and any additional concerns. If necessary, describe any division of responsibilities for stewarding and protecting the data among Principal Investigators.

If you will not be able to deidentify the data in a manner that protects privacy and confidentiality while maintaining the utility of the dataset, you should describe the necessary restrictions on access and use. In general, in matters of human subject research, your DMP should describe how your informed consent forms will permit sharing with the research community and whether additional steps, such as an Institutional Review Board (IRB), may be used to protect privacy and confidentiality.

Possible questions to answer in this section of your DMP:

- Does the data contain any personally identifiable information (PII)?
- How will you anonymize or deidentify the data if PII is present?
- What steps will be taken to protect privacy, security, confidentiality, intellectual property or other rights?
- Does your data have any access concerns? Describe the process someone would take to access your data.
- Who controls the data (e.g., funder, PI, student, lab, University)?
- Are there any special privacy or security requirements (e.g., personal data, high-security data)?
- Are there any embargo periods to uphold?

Section 6: Policies for Re-Use, Re-Distribution, and Derivative Products: Describe who will hold the intellectual property rights for the data created by your project. Describe whether you will transfer those rights to a data archive, if appropriate. Identify whether any copyrights apply to the data, as might be the case when using copyrighted instruments. If you will be enforcing terms of use or a requirement for data citation through a license, indicate the license type in your DMP. Describe any other legal requirements that might need to be addressed.

Possible questions to answer in this section of your DMP:

- If you allow others to reuse your data, how will the data be discovered and shared?
- Any sharing requirements (e.g., funder data sharing policy)?
- What license type is being used (e.g.: Creative Commons 0, etc.)
- Who might be the audience for data reuse? Who will use the data now? Later?
- When will the data be published and where?
- What special tools and/or software are needed to work with data?

Section 7: Plans for Archiving and Preservation: Describe how you intend to archive your data and why you have chosen that particular option. You may select from a variety of options including, but not limited to:

- Use of an institutional repository;
- Use of an archive or other community-accepted data storage facility;
- Self-dissemination

You must describe the dataset that is being archived with an appropriate amount of metadata that ensures its discoverability. Whatever archive option you choose, that archive must support the capture and provision of the US Federal Government "Project Open Data Metadata Schema" metadata current at the time of contract signing. ["Project Open Data Metadata Schema" was available at https://project-open-data.cio.gov/v1.1/schema/ as of March 1, 2016.] In addition, the archive you choose must support the creation and maintenance of persistent identifiers and must provide for maintenance of those identifiers throughout the preservation lifecycle of the data. Your plan should address how your archiving and preservation choices meet these requirements.

Possible questions to answer in this section of your DMP:

- What archive will the data be stored in and why was it chosen?
- What is the persistent identifier type used by the archive?
- How will the data be archived for preservation and long-term access?
- How long should it be retained (e.g., 3-5 years, 10-20 years, permanently)?
- What file formats? Are they long-lived?
- Are there data archives that my data is appropriate for (subject-based? Or institutional)?
- Who will maintain my data for the long-term?

Note: Project PIs are responsible for ensuring all final data sets, reports, tech transfer summaries, and other textural products are publically accessible for a period of ten [10] years from the end of the contract period.

Note: Researchers must consult the list of "Data Repositories Conformant with the DOT Public Access Plan" [available at http://ntl.bts.gov/publicaccess/repositories.html , as of March 1, 2016]. If you would like to use a different repository, it must meet the US DOT "Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan" current at the time of contract signing. ["Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan" was available at http://ntl.bts.gov/publicaccess/evaluatingrepositories.html as of March 1, 2016.]

Data Management Plan (DMP) for Iowa DOT Research Projects

Section 1: Research Data Management Documentation Table

Name of Principle Investigator(s) or Contractor(s) and ORCiD number		
Current Project Title, and all previous project titles		
Iowa DOT Project Manager		
Iowa DOT Project number		
Other contract or grant numbers		
Iowa DOT Research-assigned project Digital Object Identifier (DOI), or researcher acquired DOI		
TRB Research in Progress (RiP) Title, Accession Number, and URL		
Project Duration (projected)	**Start Date:**	**End date:**
Do the data management requirements of the US DOT "Plan to Increase Public Access to the Results of Federally-Funded Scientific Research" apply to this project	**Yes or No; and if No, why not:**	
Name(s) of Federal funder(s), Funding Program Name(s), Agency Code(s) and/or Contract/Grant numbers		
DMP Version		
Date DMP amended, if any		
Name and ORCiD number of each author		
Persistent links or identifiers assigned to this project, datasets, reports, or peer reviewed publications generated by this project		
Name and URL of all peer reviewed publications which have been generated from this project		

This table is to be filled out as completely as possible before the beginning of the project, and updated as needed, including at the end of the of the project, and after, as derivative publications are created.

[Note: For ease of copy and paste, a Word .docx template of this table is available at http://publications.iowa.gov/id/eprint/21913]

What constitutes such data will be determined by the Principle Investigator, and the Iowa DOT Research Project Manager. In general, your plan should address final research data. This includes recorded factual material commonly accepted in the scientific community as necessary to validate research findings. As part of your research, you may also generate unique data, which are data that cannot be readily replicated. Your DMP should also address unique data that may arise from your research.
Iowa DOT Office of Research expects the timely release and sharing of data to be no later than the acceptance for publication of the main findings from the final dataset, unless the Principle Investigator will be embargoing the data. In such a case, the data cannot be embargoed for a period longer than twelve (12) months.

Research Data Management Plan Narrative

Section 2: Description of the Data

Provide a description of the data that you will be gathering in the course of your project. You should address the nature, scope, and scale of the data that will be collected. Describe the characteristics of the data, their relationship to other data, and provide sufficient detail so that reviewers will understand any disclosure risks that may apply. Discuss value of the data over the long-term.

Section 3: Standards to be Used

Your DMP should describe the anticipated formats that your data and related files will use. To the maximum extent practicable, and in accordance with generally accepted practices in your field, your DMP should address how you will use platform-independent and non-proprietary formats to ensure maximum utility of the data in the future. If you are unable to use platform-independent and non-proprietary formats, you should specify the standards and formats that will be used and the rationale for using those standards and formats.

Section 4: Data Organization and Description

Your DMP should list how you will organize, document, and describe the data. Descriptive metadata is vital to contextualize the dataset for future data users, including the original data creator. Descriptive metadata should be written following the rules and format of a published metadata schema appropriate to the type of data or to the research discipline.

Section 5: Policies for Access

Protecting research participants and guarding against the disclosure of identities and/or confidential business information is an essential norm in scientific research. Your DMP should address these issues and outline the efforts you will take to provide informed consent statements to participants, the steps you will take the protect privacy and confidentiality prior to archiving your data, and any additional concerns. If you will not be able to deidentify the data in a manner that protects privacy and confidentiality while maintaining the utility of the dataset, you should describe the necessary restrictions on access and use. In general, in matters of human subject research, your DMP should describe how your informed consent forms will permit sharing with the research community and whether additional steps, such as an Institutional Review Board (IRB), may be used to protect privacy and confidentiality.

Section 6: Policies for Re-Use, Re-Distribution, and Derivative Products

Describe who will hold the intellectual property rights for the data created by your project. Describe whether you will transfer those rights to a data archive, if appropriate. Identify whether any copyrights apply to the data, as might be the case when using copyrighted instruments. If you will be enforcing terms of use or a requirement for data citation through a license, indicate the license type in your DMP. Describe any other legal requirements that might need to be addressed.

Section 7: Plans for Archiving and Preservation

Describe how you intend to archive your data and why you have chosen that particular option. You may select from a variety of options including, but not limited to:

- *Use of an institutional repository;*
- *Use of an archive or other community-accepted data storage facility;*
- *Self-dissemination*

You must describe the dataset that is being archived with an appropriate amount of metadata that ensures its discoverability. Whatever archive option you choose, that archive must support the capture and provision of the US Federal Government "Project Open Data Metadata Schema" metadata, available at https://project-open-data.cio.gov/v1.1/schema/ *as of March 1, 2016. In addition, the archive you choose must support the creation and maintenance of persistent identifiers and must provide for maintenance of those identifiers throughout the preservation lifecycle of the data. Your plan should address how your archiving and preservation choices meet these requirements.*

Researchers must consult the list of "Data Repositories Conformant with the DOT Public Access Plan" [available at http://ntl.bts.gov/publicaccess/repositories.html , as of March 1, 2016]. If you would like to use a different repository, it must meet the US DOT "Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan" current at the time of contract signing. ["Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan" was available at http://ntl.bts.gov/publicaccess/evaluatingrepositories.html as of March 1, 2016.]