**Strengthening Mobility And Revolutionizing Transportation (SMART) Grant Program**

**EXHIBIT D (PROJECT EVALUATION PHASE): Data Management Plan Guidance for SMART Grant Recipients**

USDOT will utilize the guidance on Data Management Plans developed by the Bureau of Transportation Statistics[1]. This guidance is excerpted below.

**Data Management Plans (DMPs) Content Overview**

A data management plan (DMP) describes how researchers will handle digital data both during and after a research project. DMPs will describe how the research proposal conforms to DOT policy on the dissemination and sharing of research results. Each plan should include a 2-3 page narrative description covering:

- The final research data to be produced in the course of the project;
- The standards to be used for data and metadata format and content;
- Policies for access and sharing the final research data, including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, and other rights or requirements;
- Policies and provisions for re-use, re-distribution, and the production of derivatives; and
- Plans for archiving final research data and other research products, and for preservation of access to them.

DOT-funded research projects are expected to be conducted pursuant to the approved DMP. A DMP may evolve as the research project evolves and should be reviewed for possible revision whenever a data management procedure is changed.

**Guidance on DMP Sections**

**Data Description:** Provide a description of the data that you will be gathering in the course of your project. 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.

As general guidance you may consider addressing the following:

1. Name the data, data collection project, or data producing program.
2. Describe the purpose of the research.
3. Describe the data that will be generated in terms of nature and scale (e.g., numerical data, image data, text sequences, video, audio, database, modeling data, source code, etc.).
4. Describe methods for creating the data (e.g., simulated; observed; experimental; software; physical collections; sensors; satellite; enforcement activities; researcher-generated databases, tables, and/or spreadsheets; instrument generated digital data output such as images and video; etc).
5. Discuss the period of time data will be collected and frequency of update.

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[1] United States. Department of Transportation. (2022). Creating Data Management Plans for Extramural Research. https://doi.org/10.21949/1520571

6. If using existing data, describe the relationship between the data you are collecting and existing data.
7. List potential users of the data.
8. Discuss the potential value of the data have over the long-term for not only your institution, but also for the public.
9. If you request permission not to make data publicly accessible, explain rationale for lack of public access.
10. Indicate the party responsible for managing the data.
11. Describe how you will check for adherence to this data management plan.

**Standards Used:** 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. Identify the metadata standards you will use to describe the data.

As general guidance you may consider addressing the following:

1. List in what format(s) the data will be collected. Indicate if they are open or proprietary.
2. If you are using proprietary data formats, discuss your rationale for using those standards and formats.
3. Describe how versions of data be signified and/or controlled.
4. If the file format(s) you are using is(are) not standard to your field, describe how you will document the alternative you are using.
5. List what documentation you will be creating in order to make the data understandable by other researchers.
6. Indicate what metadata schema you are using to describe the data. If the metadata schema is not one standard for your field, discuss your rationale for using that scheme.
7. Describe how will the metadata be managed and stored.
8. Indicate what tools or software is required to read or view the data.
9. Describe your quality control measures.

**Access Policies:** Describe any access restrictions that may apply to your data. In general, data from research projects funded wholly or in part by U.S. DOT must be made publicly accessible. Exceptions to this policy are data that contain personally identifiable information, confidential business information, or classified information.

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 (e.g., embargo periods for your data). If necessary, describe any division of responsibilities for stewarding and protecting the data among Principal Investigators or other project staff.

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.

As general guidance you may consider addressing the following:

1. Describe what data will be publicly shared, how data files will be shared, and how others will access them.
2. Indicate whether the data contain private or confidential information. If so:
    o Discuss how will you guard against disclosure of identities and/or confidential business information.
    o List what processes you will follow to provide informed consent to participants.
    o State the party responsible for protecting the data.
3. Describe what, if any, privacy, ethical, or confidentiality concerns are raised due to data sharing.
4. If applicable, describe how you will deidentify your data before sharing. If not:
    o Identify what restrictions on access and use you will place on the data.
    o Discuss additional steps, if any you will use to protect privacy and confidentiality.

**Re-Use, Redistribution, and Derivative Products Policies:** 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 as much in your DMP. Describe any other legal requirements that might need to be addressed.

As general guidance you may consider addressing the following:

1. Name who has the right to manage the data.
2. Indicate who holds the intellectual property rights to the data.
3. List any copyrights to the data. If so, indicate who owns them.
4. Discuss any rights be transferred to a data archive.
5. Describe how your data will be licensed for reuse, redistribution, and derivative products.

**Archiving and Preservation Plans:** 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 a minimum 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. In addition, the archive you choose must support the creation and maintenance of persistent identifiers (e.g., DOIs, handles, etc.) 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.

As general guidance you may consider addressing the following:

1. Discuss how you intend to archive your data and where (include URL).
2. Indicate the approximate time period between data collection and submission to the archive.
3. Identify where data will be stored prior to being sent to an archive. You should also:

4. Describe how back-up, disaster recovery, off-site data storage, and other redundant storage strategies will be used to ensure the data's security and integrity.
5. Describe how data will be protected from accidental or malicious modification or deletion prior to receipt by the archive.
6. Discuss your chosen data archive's policies and practices for back-up, disaster recovery, off-site data storage, and other redundant storage strategies to ensure the data's security and integrity for the long-term.
7. Indicate how long the chosen archive will retain the data.
8. Indicate if the chosen archive employs, or allows for the recording of, persistent identifiers linked to the data.
9. Discuss how your chosen data repository meets the criteria outlined on the Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan page.

**Example Data Management Plans**

Example US DOT Public Access Plan Data Management Plans from various institutions can be found in the US DOT Public Access Data Management Plans collection.