**Data Management Plan (DMP)**

**CHUSJ Institutional Template**

**Also available on** [**DMP Assistant**](https://dmp-pgd.ca/)**.**

Welcome to the CHU Sainte-Justine's DMP (Data Management Plan) template.

The Research Data Management (RDM) Support Team has developed this Research Data Management Plan (DMP) template to facilitate the work of research teams. The use of the Word version of the institutional template or of the [**DMP Assistant**](https://dmp-pgd.ca/) shows that our teams understand the importance of RDM. Your proactivity in the use of these tools is appreciated.

In the near future, the [**funding agencies**](https://science.gc.ca/site/science/en/interagency-research-funding/policies-and-guidelines/research-data-management) will require that each grant application be accompanied by a DMP. We invite you to familiarize yourself with this tool in preparation for the rollout of this requirement. The DMP is a **living document** that will follow you during your study. Keep **updating** it as your project progresses.

For more information and resources related to research data management, visit the [**CHU Sainte-Justine Libraries website**](https://enseignement.chusj.org/fr/bibliotheques/les-Ressources/Gestion-de-donnees-de-recherche).

Do you have any questions? In need of support for your DMP? Contact us: [**soutien.gdr.hsj@ssss.gouv.qc.ca**](mailto:soutien.gdr.hsj@ssss.gouv.qc.ca).

**Don't forget to remove the guidelines, resources, and examples once you’ve completed your plan!**

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# Project Details

**Project Title:**

**Project Abstract:**

**Project Start & End:**

**Contributors:**

# Data Collection

This section addresses data collection, including data types, file formats, naming conventions, and data organization – factors that will improve the usability of your data and contribute to the success of your project.

1.1 Describe the types of data, the potential data sources acquired as part of this study, and the formats in which your data will be collected. Will the formats chosen allow for future reuse of your data? Will third-party software be required to open files?

Guidance

Be as specific as possible about the types of data you will collect (digital data, images, audio, video, text, tabular data, modeling data, geospatial data, instrumentation data, clinical data, administrative data, electronic patient records, imaging data, survey data, etc.) as well as the file/data formats.

For each type of data acquired or collected, be as specific as possible by mentioning the related formats.

*Proprietary formats that require the use of specialized software or hardware are not recommended, but may be required for some methods of analysis or data collection. Consider turning any proprietary file formats into*[***formats suitable for preservation***](https://www.canada.ca/en/heritage-information-network/services/digital-preservation/recommendations-file-format.html) *for easy access and reuse.*

*If you plan to convert your data to an open format when your project is complete,* ***mention it and mention the phase of the project at which the conversion will occur****. Collection formats and preservation formats can be different (e.g., data collected in Microsoft Excel but stored in .csv format).*

Resources

[***Digital Preservation File Format Recommendations***](https://www.canada.ca/en/heritage-information-network/services/digital-preservation/recommendations-file-format.html)*, guide by the Department of Canadian Heritage*

[***Guide on recommended formats***](https://numerique.banq.qc.ca/patrimoine/details/52327/4076856)*, guide by the BAnQ (French only)*

*For more information on open and closed formats, see* [***DORANum***](https://doranum.fr/wp-content/uploads/FS2_liste_indicative_formats_V1.pdf) *(French only).*

*To learn more about formats that facilitate the reuse, sharing, and long-term access of data, see* [***UK Data Service***](https://ukdataservice.ac.uk/learning-hub/research-data-management/)*.*

Example

*Data collected during this study includes:*

* *Recordings of clinical interviews (video, .mp4)*
* *Transcript of clinical interviews (text, .rtf)*
* *Survey results*
* *Neuroimaging images (in .dcm)*
* *Clinical data (in .csv)*
* *Vital signs*
* *Body temperature*
* *Patient’s blood type*
* *Patient’s admission date*

1.2 How do you plan to acquire the data used in this study?

Original data created as part of the study

Pre-existing data from a previous research project

Data from external partners (e.g. ISQ, MSSS, etc.)

Pre-existing data from online deposits (e.g. Borealis)

Other:

Guidance

*For each acquisition method selected above, describe the data sources you will be using.*

*If you plan on using pre-existing data, describe their source (name, location, URL) as well as how you will obtain and integrate it to your study. Describe any end-user licenses assigned to the pre-existing data, or the terms of use that you must abide by.*

*If you plan to combine original research data with pre-existing data, describe the pairing process here.*

*Resources*

[***Datasets available through the Institut de la statistique du Québec (ISQ)***](https://statistique.quebec.ca/en/institut/services-for-researchers/data)

[***Reusing data, why and how?***](https://bibliotheque.uqac.ca/c.php?g=723711&p=5180030)*, guide by the Université du Québec à Chicoutimi (French only)*

*Example*

Original data created as part of the study

*Survey responses will be collected using REDCap and then exported to Excel (tabular data, .csv).*

1.3 What standards and procedures will you be using to structure, name and manage your file versions to help you and others better understand the way your data and files are organised?

Guidance

*Logical file structures, informative naming conventions, and clear file versioning all help make better use of your data during and after your research project. These0 practices will help you and your research team ensure that you are always using the correct version of your data, reduce confusion about copies saved on different computers or media, and help the team better structure files.*

*Describe the procedures and conventions that your team will implement to ensure uniformity in file naming and version control, including examples that will be used for this study.*

*Resources*

[***File naming and organization of data***](https://www.uottawa.ca/library/research-data-management/data-management-plan/file-naming-organization-data)*, guide by the University of Ottawa Libraries*

[***Naming files and folders***](https://cours.ebsi.umontreal.ca/sci6005/co/nommage.html)*, guide by the EBSI at Université de Montréal (French only)*

*Example*

*The file titles will be structured as follows: Projecttitle\_yyyymmdd\_content\_AA\_v0*

*Where AA is the initials of the team member who created the file and v0 is the version of the file.*

*Ex: LEUCAProject\_20200418\_ethicsmeeting\_BF\_v3.rtf*

*IMProjet\_20210105\_results\_SP\_v1.txt*

# Documentation and Metadata

Data is rarely explicit, which is why all research data must be accompanied by metadata (information that describes the data according to community best practices).

Metadata standards vary from discipline to discipline, but they generally indicate who created the data, when and how it was created, its quality, accuracy and precision, and other characteristics necessary to facilitate the discovery, understanding and reuse of the data. Any restrictions on the use of the data should be explained in the metadata and, to the extent possible, information should be provided on how to obtain approved access to the data.

Provide insights about your data, so others can better understand, interpret, and potentially reuse your data for secondary analysis.

2.1 What documentation will be needed for the data to be read and interpreted correctly in the future?

*Guidance*

*Data documentation should include all information relevant to the conduct of your study, as well as the information required to ensure the reusability and interpretability of your data by other researchers.*

*In particular, good documentation includes information about the study and its context.*

*It may be relevant to document other elements, such as:*

* *Study protocol;*
* *Lab notebook;*
* *Research methodology;*
* *Interview guide;*
* *Blank questionnaires;*
* *Details of softwares used;*
* *Variable definitions;*
* *Study-specific vocabulary;*
* *Classification systems;*
* *Units of measurement;*
* *Hypotheses;*
* *Types and formats of all data and files;*
* *Description of the data collected and the associated collection methods;*
* *Description of analyses and coding performed on the data (including syntax files);*
* *Contributor details and team members reponsibilities/tasks;*
* *Data dictionary;*
* *Level of security applicable to study data.*

*Describe the types of documents that will be created, their formats, and how they will contribute to the accurate interpretation of your data.*

*Resources*

[***Guide to writing “readme” style metadata***](https://data.research.cornell.edu/data-management/sharing/readme/)*, guide by Cornell University*

[***« Readme »***](https://uqtr.libguides.com/ld.php?content_id=35593298) ***file template****, Université du Québec à Trois-Rivières (French only)*

[***How to Make a Data Dictionary***](https://help.osf.io/article/217-how-to-make-a-data-dictionary)*, guide by the Center for Open Science*

[***Levels of security***](https://www.tpsgc-pwgsc.gc.ca/esc-src/protection-safeguarding/niveaux-levels-eng.html)*, guide by the National Security and Defence Ministry*

[***eLabFTW***](https://crchusj.elab.one/login.php)*, the CRCHUSJ’s Electronic Lab Notebook platform*

[***Using a digital lab notebook***](https://www.datacc.org/bonnes-pratiques/utiliser-un-cahier-de-laboratoire-numerique/)*, guide by DATACC (French only)*

*Example*

*Here are the documents that will be created to ensure the reusability and interoperability of our data.*

1. *Study master document containing the research protocol, collection/analysis tools details (name, version number, etc.), analysis procedures, hypotheses and the tracking sheet for any major changes made to the study data.*
2. *Questionnaires master document containing the interview guide, blank questionnaires and syntax files for coding of collected data.*
3. *Data dictionary exported from REDCap containing questionnaire codes and variables.*
4. *README.txt files containing the description of the data collected according to the method and dataset, as well as the XML (Extensive Markup Language) files containing the metadata.*
5. *The final DMP, including tracked changes.*

2.2 How will you make sure that all the documentation will be created or entered consistently throughout your project?

*Guidance*

*Consider how you will enter this information, where it will be stored, and who will be involved in the data entry.*

*Ideally, these elements are thought through ahead of data collection and analysis, but it is never too late to correct habits and implement* ***consistent documentation practices****.*

*Documenting data should be an integral part of team members’ responsibilities and project operations. It is therefore recommended that you regularly consult with the members of your research team to keep track of possible changes in data collection or processing that should be taken into consideration during data entry. Answer by specifying who will be responsible for documenting your data, the tools used, and the times or intervals at which the uniformity of the data documentation will be verified.*

*Example*

*Protocols for metadata documentation will be established before the start of collection and drafted collectively. These protocols will contain the standards, expectations and processes for data collection. Each member of the team will be involved in the documentation of the metadata, but it will be Jean Lavoie’s responsibility to verify the uniformity of the documentation. This verification will be done monthly until the end of the project.*

2.3 If you use a metadata standard or tools to document and describe your data, list them here.

*Guidance*

*In addition to the general metadata standards, there are several field-specific standards. One should favour metadata schemas that are standardised, open, and machine-readable. Choosing a scheme that meets these criteria ensures the efficient exchange of information between users and systems.*

*Your data documentation can also include a controlled vocabulary specific to your field, which is a standardised terminology list for describing information.*

*Using a tool to document your research data can simplify versioning, as well as keep notes, codes and software all in one place.*

*If you will be using tools to document and describe your data (e.g. GitHub, OSF, Procols.io, etc.), mention it.*

*Resources*

[***Data documentation***](https://bib.umontreal.ca/gerer-diffuser/gestion-donnees-recherche?tab=5343034)*, guide by the Université de Montréal Libraries (French only)*

[***Metadata***](https://ukdataservice.ac.uk/learning-hub/research-data-management/document-your-data/metadata/)*, guide by the UK Data Service*

*Example*

*We will be using the* [***BIDS***](https://bids-specification.readthedocs.io/en/stable/) *(Brain Imaging Data Structure) standard to structure and name our neuroimaging data. All scans will be converted to JSON format and organised according to the BIDS directory scheme.*

*MeSH terms will be used to standardise the description of our data.*

# Storage and Backup

The security and integrity of your data depends on planning how your research data will be stored and backed up during and after your research project. Proper storage and backup not only helps protect research data from catastrophic losses (due to software and hardware failures, viruses, hackers, natural disasters, human error, etc.), but also facilitates proper access by researchers.

This section only tackles **active data** (in-project data; hot data). For long-term preservation, see the **Preservation** section.

3.1 What are the anticipated storage needs for your project (in megabytes, gigabytes, terabytes, etc.)?

*Guidance*

*Estimating the size of the data you'll produce is at the heart of your backup and storage strategy. Your estimate of storage space requirements should consider requirements for file versioning, data formats, backups, and the growth in the number of files over time.*

*Example*

*We estimate that we will produce approximately 200 surveys, 50 interviews (30 to 40 minutes each, 128 kbps audio quality) and approximately 300 text files.*

*The total size of the data, accounting for versions (raw, master, analysis), is estimated to be less than 125 GB.*

3.2 How and where will your data be stored and backed up during your research project?

*Guidance*

*The risk of losing data due to human error, natural disasters, or other mishaps can be mitigated by following the 3-2-1 rule:*

* *Have at least* ***3*** *copies of your data.*
* *Store copies on* ***2*** *different types of media.*
* *Keep* ***1*** *backup copy offsite.*

*Each storage method has advantages and disadvantages that must be taken into consideration when determining the most appropriate solution for the particularities of your research project.*

*Removable media (DVDs, USB flash drives, etc.) is not recommended. Fixed media (desktop or laptop hard disk drives) should only be used in combination with networked media (network drives or cloud-based servers).*

*Describe, as precisely as possible, the devices/platforms on which your data will be stored. How do the selected storage locations keep your data safe? Who will have access to it?*

*If you have* ***hard copies*** *of your data (paper), mention where it will be stored and the steps you will take to make sure it’s safe and secure.*

*Example*

*The research data will be collected by the team members and stored on their network hard drives, then uploaded to the Calcul Québec server every week. All the data hosted on the Calcul Québec server will be uploaded to the CHUSJ's network server to preserve it once the project is complete.*

3.3 How will the research team and other collaborators access, modify and contribute to the data throughout the project?

*Guidance*

*The ideal solution meets the following criteria:*

1. *Facilitates collaboration;*
2. *Ensures data security;*
3. *Requires minimal training.*

*Describe the user groups and the access they will be granted. Also describe the security measures associated with the data sharing and collaboration platform of your choice. Transferring files via email is not a robust or secure solution. Similarly, commercial file-sharing services (such as Google Drive and Dropbox) facilitate the exchange of files, but do not represent a permanent, secure solution or comply with the requirements for hosting on Canadian soil.*

*Example*

*Each member of the research team (researchers, interns and authorized staff members) has a password-protected account on the Calcul Québec platform. Access to our secure project space is assigned by the Principal Investigator. This access allows one to view and edit the data.*

# Preservation

This section will help you develop your preservation strategy to ensure that your data will be available and usable for the foreseeable future after your project ends. The data archiving strategy will depend on

* the potential reuse value;
* the data archiving or destruction requirements you must abide by;
* the resources required for the sound organization of data and to ensure that it remains usable in the future.

In some cases, it may be desirable to retain all versions of the data (e.g., raw, processed, analyzed, final data), but in other cases, it may be preferable to retain only selected or definitive data (e.g., transcripts instead of audio interviews).

4.1 Where will you deposit your data to store it for the long term and to access it after the end of your research project?

*Guidance*

*Ideally, the issue of research data preservation is considered early in your project. It's best to be prepared, to make sure that all team members are on the same page. Data archiving decisions may be dictated by internal policies, external policies (e.g., funding agencies, journal publishers), or an understanding of the enduring value of a given dataset.*

*The need to preserve data in the short term (e.g., for peer review purposes) or in the long term (for data of enduring value) will influence your choice of a data archive or repository. A useful analogy is the creation of a "living will" for data: a plan that outlines how future researchers will continue to have access to data.*

*Wondering about the value of your data or which data repositories would be right for it? Contact the Research Data Management Support Service at* [***soutien.gdr.hsj@ssss.gouv.qc.ca***](mailto:soutien.gdr.hsj@ssss.gouv.qc.ca)*.*

*Example*

*After the end of the research project, the data collected will be kept on the CHUSJ's internal server for a period of one year so that it is available in the event that a verification of our results is necessary. As our data has potential enduring value, the end of the project will also be the time when our team will produce a data paper to spread the word about the existence of the data generated as part of our study.*

*Once the year is up, the principal investigator will be in charge of compressing the files, with the exception of the video files because they are likely to identify the participants, and archiving them in Borealis.*

4.2 Outline how you will make sure that your data is ready for preservation.

*Guidance*

*Consider: file formats for archiving that preserve the integrity of the data; anonymization and de-identification of files, including documentation files.*

*Some data formats are ideal for* ***long-term data preservation****. For example, non-proprietary file formats, such as text (.txt) and comma-separated values (.csv), are considered formats designed for archiving. The UK Data Archive provides a* [***useful table***](https://ukdataservice.ac.uk/learning-hub/research-data-management/format-your-data/recommended-formats/)*of file formats for various types of data. It is important to remember that files that are converted from one format to another may lose information (e.g., by converting an uncompressed TIFF file to a compressed JPG file). Thus, changes to file formats must be documented.*

*Determine the steps to take at the end of a project to ensure that the data you choose to preserve or share is anonymous, error-free, and converted to the recommended formats with minimal risk of data loss.*

*Resources*

[***Anonymize and De-identify***](https://researchdata.library.ubc.ca/deposit/anonymize-and-de-identify/)*, guide by the University of British Columbia Libraries*

[***Anonymising quantitative data***](https://ukdataservice.ac.uk/learning-hub/research-data-management/anonymisation/anonymising-quantitative-data/)*, guide by the UK Data Service*

[***Anonymising qualitative data***](https://ukdataservice.ac.uk/learning-hub/research-data-management/anonymisation/anonymising-qualitative-data/)*, guide by the UK Data Service*

*Example*

*Data that can identify participants will be anonymised before it is preserved. Notably, participant names will be replaced with randomized unique identifiers and clinical data will be anonymized to prevent participant identification.*

*We are confident that the .csv and .rtf formats are not a barrier to data reuse, which is why we will use these formats for preservation.*

# Sharing and Reuse

Most Canadian granting agencies now have policies requiring that research data be shared at the time of publication of research results or within a reasonable period of time. There is necessarily a balance between the legitimate desire of researchers to maximize the results of their research through publication and the contribution of data sharing to the visibility and impact of research. In addition, it is equally important to protect participants’ privacy and to handle sensitive data appropriately.

The CHUSJ Research Ethics Board is your best ally for any question related to secondary use or clinical data sharing. Be sure to communicate your questions and concerns to them **before the project begins**.

5.1 What data will you share and in what form will you share it (e.g., raw, processed, analyzed, final data)?

*Guidance*

***Raw data*** *is data obtained directly from the instrument, simulation or survey.*

***Processed data*** *is the result of some manipulation of the raw data in order to eliminate errors or outliers, to prepare the data for analysis, to obtain new variables, or to anonymize human participants.*

***Analysed data*** *is the results of a qualitative, statistical or mathematical analysis of the processed data. They can be presented in the form of graphics, graphs or statistical tables.*

***Final data*** *is processed data that has been converted, as required, into a format that can be preserved. Teams must review any data that may need to be shared (in order to meet institutional or funding requirements) and data that may be restricted due to confidentiality, privacy, and intellectual property concerns.*

*Example*

*The results of the processed surveys will be made available. The .csv file containing them will be processed to remove any direct identifiers. Interview transcripts (.rtf) will also be processed to remove any direct identifiers. Clinical data (.csv) will only be available upon request, following the health data access procedure established at the CHUSJ.*

5.2 Have you given any thought to the kind of end-user license to include with your data?

*Guidance*

*Licenses determine the permitted uses of your data. Funding agencies and data repositories may have* ***user licensing requirements****. If not, they can guide you through creating a license. Once the license is created, include a copy of your license with your data management plan. Please note that only the owners of the intellectual property rights can issue a license, so it is essential to specify who owns these rights when creating a license.*

*There are several types of standard licenses available to researchers. In fact, for most datasets, it’s easier to use a standard license rather than designing a custom license. Please note that even if you choose to make your data public, it is best to explicitly state this using a license such as Creative Commons’ CC0.*

*If you work with data from Indigenous communities that have determined collective ownership of the data collected, the intellectual property rights may not belong to you. If so, mention which community has the rights to the data collected.*

*Resources*

[***Open Data Commons Licenses***](https://opendatacommons.org/licenses/)

[***Creative Commons License Choose***](https://chooser-beta.creativecommons.org/)

[***How to License Research Data***](https://www.dcc.ac.uk/guidance/how-guides/license-research-data)*, guide by the Digital Curation Centre*

[***Understanding the First Nations Principles of OCAP***](https://fnigc.ca/ocap-training/)*, guide by the FNIGC*

[***Toolbox of research principles in an aboriginal context***](https://cssspnql.com/en/produit/toolbox-of-research-principles-in-an-aboriginal-context-peer-reviewed-contributions/)*, designed by the First Nations of Quebec and Labrador Health and Social Services Commission – FNQLHSSC*

*Example*

*The principal investigator (Jean Tremblay) will be the owner of the intellectual property rights of the data and will be responsible for obtaining a CC license. The license has yet to be established, but we already know that a reuse of the data will be permitted, as stipulated in the consent forms signed by our participants. In addition, we have agreed to allow secondary sharing of reused data only in cases where the data is licensed for reuse.*

5.3 How will you make your data accessible to the research community?

Field-specific repository (e.g. found on re3data)

General repository (e.g. Borealis)

Word of mouth

Publications (e.g. article, data paper, etc.)

Conferences

Social networks (e.g. ORCID, Twitter, LinkedIn, ResearchGate, Google Scholar, etc.)

Other:

*Guidance*

*Specify your choices.*

*How will the data be accessed (web service, ftp, etc.)? Whenever possible, choose a repository that will assign a constant identifier (such as a DOI, Digital Object Identifier) to your dataset. This will ensure stable access to the dataset and allow it to be found through a variety of search tools.*

*One of the best ways to refer other researchers to your deposited datasets is to cite them in the same way as other types of publications (articles, books, procedures). Please note that some data repositories also link datasets to related articles, thereby increasing the visibility of publications.*

*There are now a few dozen data journals, which are scholarly journals made up of generally peer-reviewed articles presenting datasets. This type of article is also becoming more common in traditional scholarly journals. The publication of a* ***data paper*** *allows you to publicize the existence of your data without publicly publishing your dataset.*

[***Borealis***](https://borealisdata.ca/fr/)*, also known as the Canadian Dataverse, is a general data repository where you can upload your research data if it* ***does not contain any information that could identify your participants****. By browsing this deposit, you will be able to establish whether the institution with which you are affiliated holds a deposit space on Borealis. You can also check out* [***Re3data***](https://www.re3data.org/) *to discover data repositories specific to your research field.*

*Resources*

[***How to Cite Datasets and Link to Publications***](https://www.dcc.ac.uk/guidance/how-guides/cite-datasets)*, guide by the Digital Curation Centre*

[***What is a data paper?***](https://coop-ist.cirad.fr/gerer-des-donnees/publier-un-data-paper/1-qu-est-ce-qu-un-data-paper)*, guide by the CIRAD (French only)*

[***Persistent identifiers***](https://doranum.fr/identifiants-perennes-pid/)*, guide by DORANum (French only)*

*Example*

Field-specific repository (e.g. found on re3data)

Publications (e.g. article, data paper, etc.)

Social networks (e.g. ORCID, Twitter, LinkedIn, ResearchGate, Google Scholar, etc.)

*A Digital Object Identifier (DOI) was created for this dataset with the assistance of DataCite Canada. As mentioned in question 4.1, we plan to publish a data article to publicize the existence of our data.*

*Some of the data (survey responses and anonymized interview transcripts) will be published in a disciplinary repository.*

*The data will also be publicized on the ORCID accounts of the team members once our results are published.*

# Responsibilities and Resources

Data management refers to the "what" and "how" of data management operations throughout the project lifecycle.

Data stewardship focuses on "who" is responsible for ensuring that data management is done.

For example, a large research project will have several people in charge. The Principal Investigator will be responsible for determining at the beginning of the project which individuals on the team will have data management responsibilities during and after the project.

6.1 Designate who will be responsible for data management during and after the project and the key data management tasks that person will be responsible for.

*Guidance*

*While building your data management plan, you’ve identified important data management activities for your project.*

*Identify the persons or organizations responsible for the implementation and maintenance of the data management plan, as well as their affiliations and contact information, if applicable.*

*Mention any tools or training needed to prepare staff for these duties.*

*Example*

*Jean Tremblay, PhD, from the Université de Montréal, will be the person responsible for setting up and updating this data management plan. It will also be the point of contact for any questions related to research data. As principal investigator, he will be responsible for assessing the training needs of the researchers involved. You can contact him at* [*jean.tremblay.hsj@ssss.gouv.qc.ca*](mailto:jean.tremblay.hsj@ssss.gouv.qc.ca)*.*

6.2 How will you administer responsibilities for data management activities if there are significant changes in personnel, including a change in principal investigator?

*Guidance*

*As changes within research teams are common, make sure that your team members are prepared to take responsibility for the data management plan and ensure that it is updated regularly.*

*Indicate a succession planning strategy for this data in the event that one or more data custodians leave the project (for example, a graduate student who leaves after graduation).*

*Describe the procedure to be followed in the event that the Principal Investigator leaves the project. In some cases, a co-investigator or the department or division overseeing the research will assume responsibility.*

*Example*

*If Dr. Tremblay were to leave the project, his responsibilities regarding the data management plan would be entrusted to Guillaume Dion.*

*If these two people are not able to fulfill their responsibilities, another member of the team will be responsible for overseeing the implementation of the data management plan, with the agreement of the research team.*

6.3 What resources will you need to implement your data management plan? Have you estimated the overall cost of data management?

*Guidance*

*This assessment should include the data management costs incurred during the project as well as the costs required for longer-term data support after the project ends. Considerations in the last category of expenses include the costs of maintaining and providing long-term access to the data.*

*Some funding agencies explicitly indicate the support they will provide in order to meet the costs associated with the preparation of the data to be deposited. This may include the technical aspects of data management, training requirements, file storage and backup, and the work of non-project personnel.*

*Example*

*The costs associated with managing research data are expected to be in the range of $1500 to $2000 CAD per year (these costs include the time required to ensure that the DMP is respected, the cost of local storage, etc.) In addition, archiving the data at the end of the project is expected to represent a one-time cost of $500 CAD.*

# Ethics and Legal Compliance

Researchers and their teams need to be aware of the ethical and legal policies and processes that their research data management must follow.

In your data management plan, you must outline how you will prepare, store, share and archive your data in a way that ensures that participant information is protected from disclosure, harmful use or inappropriate links to other personal data throughout the research lifecycle.

There may be situations where certain data and metadata **cannot be made public** due to legal policies or considerations. However, in the spirit of open science, the default position should be that all research data and metadata should be public.

7.1 If your project includes sensitive data, how will you make sure that it is managed securely and that the data is accessible only to approved project members?

*Guidance*

*Examine where and how sensitive data with recognized long-term value should be made available and to whom, and for how long it should be archived. These decisions must comply with the requirements of the Research Ethics Board. The methods used to share data will depend on a number of factors such as the type, size, complexity and sensitivity of the data. Describe the anticipated problems with data sharing, as well as the causes and possible measures to mitigate them. Issues may include, but are not limited to, confidentiality, lack of consent, or concerns about intellectual property rights. In some cases, an embargo period may be justified; these cases may be defined in a funding agency's Research Data Policy.*

*Restrictions can be imposed by limiting physical access to storage devices, saving data to computers that do not have access to the external network (i.e., access to the Internet), password protection, or encoding files. Sensitive data should never be shared via email or cloud storage services like Dropbox.*

*Example*

*Access to research data stored on the CHUSJ server will require two-factor verification with the Microsoft Verify application.*

*Only users with a CHUSJ institutional email address, who have been verified by the project coordinator, will be allowed to access the data.*

7.2 What strategies will you implement to manage secondary uses of sensitive data, if any?

*Guidance*

*Obtaining appropriate consent from research participants is an important step in assuring the Research Ethics Board that research data can be shared with researchers outside of your project.*

*The declaration of consent may indicate certain conditions specifying the use of the data by other researchers. For example, it may stipulate that the data will only be shared for non-profit research purposes or that the data will not be cross-referenced with personal data from other sources.*

*Example*

*The dataset needed to verify the results will be indexed on the Zenodo data sharing platform. This indexing element will contain basic bibliographic, quantitative and qualitative information about the research project.*

*To access the actual data, users will need to contact the research coordinator and give a description of how they plan to reuse the data, and sign an agreement to ensure that the data is used ethically. Requests for data reuse will be evaluated on a case-by-case basis.*

7.3 How will you handle legal, ethical and intellectual property issues?

*Guidance*

*Compliance with privacy regulations and laws that may impose content restrictions in data should be discussed with your institution's research office or privacy officer. The input of the Research Ethics Board is also essential in this process.*

*Describe data ownership, licensing, and intellectual property. The conditions set out for the re-use of data must be clearly stated and comply with relevant legal and ethical requirements, where applicable (e.g. participant consent, permissions, restrictions, contracts with private sector partners, etc.).*

*If your data will be collected from Indigenous communities, mention how you will ensure that you comply with the* [***CARE Principles***](https://www.gida-global.org/care) *and* [***OCAP Principles***](https://fnigc.ca/ocap-training/)*.*

*Example*

*The project received authorization from the CHUSJ ethics committee before it began. Various concerns related to data management were brought to the attention of the committee. Any issues that may represent an ethical or legal obstacle will be brought to the attention of the committee in order to resolve the situation as soon as possible.*

*The file for this project on Nagano will also be updated regularly, so that the CHUSJ administration is aware of any changes concerning the storage, archiving and security of our project's research data.*