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WILFRID LAURIER UNIVERSITY

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Wilfrid Laurier University
Research Data Management Institutional Strategy

1. Preamble

The Wilfrid Laurier University Research Data Management Strategy is mandated by the Tri-Agency Research Data Management Policy (March 2021). The institutional strategy must be publicly available by March 1, 2023.

2. Periodic Review

This Strategy is valid from March 1, 2023 outlined herein and is valid until further notice. This Strategy should be reviewed at a minimum every three years; however, in lieu of a review during any period specified, the current Strategy will remain in effect.

Review Period: Every 36 months
Previous Review Date: N/A
Next Review Date: March 1, 2026

3. Principles

As part of its commitment to research excellence, Wilfrid Laurier University (Laurier) recognizes the positive impact that research data management (RDM) brings to the research enterprise. Research data are a critical research output that enable data synthesis, data reproducibility, and the dissemination of knowledge. The management of research data is guided by RDM best practices, subject-matter knowledge, and a policy landscape that includes universities, grant agencies, publishers, Indigenous communities, researchers, and data management professionals. Laurier is committed to promoting research methodologies and providing institutional supports that include established RDM best practices. These include:

- Developing and operationalizing Data Management Plans (DMPs), which describe how research data will be organized, described, stored, shared, and archived during the life of a research program and after its completion
- Providing reliable, secure data storage infrastructure for data processing, storage, and backup
    - *Note*: This is dependent on ICT capacity and dedicated, funded resources. This capacity does not exist in the current state but continues to be worked towards for the future.
- Curating research data for reuse through data description, metadata enrichment, and documentation
- Honouring and complying with ethical and legal obligations to the collection, use, and sharing of sensitive data, including data associated with Indigenous peoples
- Publishing shareable research data and other outputs in open repositories for access, distribution, and archiving

4. Scope

Laurier's Research Data Management Strategy identifies researchers' RDM requirements and the institutional services and supports that underpin good data stewardship practices. Laurier researchers can use these supports to improve their research data management practices and meet their RDM commitments to granting bodies, Indigenous partners, research participants, publishers, and other community members.

The Laurier Research Data Management Strategy is informed by Tri-Agency's RDM requirements and expectations, which are outlined in its 2021 Research Data Management Policy and 2016 Statement of Principles on Digital Data Management. The Laurier RDM Strategy applies to all research activities at the University regardless of their grant status.

5. RDM Responsibilities and Institutional Supports

5.1 Data Management Planning

Tri-Agency Requirement:

All grant proposals submitted to the agencies should include methodologies that reflect best practices in RDM. For certain funding opportunities, the agencies will require data management plans (DMPs) to be submitted to the appropriate agency at the time of application, as outlined in the call for proposals; in these cases, the DMPs will be considered in the adjudication process.

For research conducted by and with First Nations, Métis and Inuit communities, collectives and organizations, DMPs must be co-developed with these communities, collectives and organizations, in accordance with RDM principles or DMP formats that they accept. DMPs in the context of research by and with First Nations, Métis and Inuit communities, collectives and organizations should recognize Indigenous data sovereignty and include options for renegotiation of the DMP.

Researcher Responsibilities

DMPs help researchers better understand the technologies, people, and resources required to manage their research inputs and outputs. DMPs also describe how research data will be organized, described, stored, shared, and archived during the life of a research project and after project completion. Special attention should be afforded to data sensitivity and Indigenous data sovereignty.

Researchers should create DMPs when designing their research program. Any research proposal submitted for Tri-Agency funding must either include a DMP or at least articulate methodologies that reflect best practices in RDM; this requirement will be disclosed in the application process. Tri-Agency funding opportunities that require a full DMP will consider the DMP as part of the adjudication process. The University encourages researchers to develop DMPs for both funded and unfunded research.

Data management plans associated with research that is conducted by or with Indigenous communities must be co-developed with these communities, be held in a format they accept, and include options for renegotiation. Indigenous research partners will guide and determine how their data is collected, stored, used, and preserved, during and after the life of the project.

University Supports

The Laurier Library provides DMP consultation services to researchers in all fields. This includes consultation and support for writing a DMP with the Tri-Agency recommended *DMP Assistant*. The Library also provides DMP training to research teams, graduate students and academic departments. Office of Research Services grant facilitation staff provide guidance to researchers applying to grant opportunities with DMP requirements.

- Laurier Library Research Data Services
- Office of Research Services Grant Facilitation Services

5.2 Data Storage

Tri-Agency Statement:

Research Data should be collected and stored throughout the research project using software and formats that ensure secure storage, and enable preservation of and access to the data well beyond the duration of the research project.

Researcher Responsibilities

Researchers should collect, store, and back up research data on platforms that enable file security and file integrity while adhering to theirs and the University's ethical and legal obligations. Researchers should consult with ICT, ideally at the time of developing a DMP, to identify ICT-approved solutions for their active-phase data storage needs. Researchers are also expected to adhere to legislation, including FIPPA, PHIPA, AODA, and other provincial and federal statutes. Researchers should consult with the Legal Services and Privacy Office for questions or concerns.

University Supports

ICT Active Research Data Storage Solutions

ICT offers a variety of storage solutions including on-premise centralized storage and cloud storage for active research. These storage solutions are University approved and offer high-volume storage of data, robust security functions, and data backup during the life of a research project. It is important to note that some of these options have a capital and/or an operational cost associated with them that is the responsibility of the researcher to fund. These solutions include:

- On-Premise Storage
  - Available through Laurier's on-premise infrastructure and servers
    - *Note*: This is dependent on ICT capacity and dedicated, funded resources. This capacity does not exist in the current state but continues to be worked towards for the future.
- Cloud Storage or Shared Cloud Storage
  - OneDrive for Business – Individual business/document storage
  - SharePoint Online – Departmental and large-project cloud storage
  - Virtual servers – large-project cloud storage
- ICT Storage Consulting Services and recommendations can be requested via a ticket to the ICT Service Desk

Links:

- Technology to Support Research
- Research IT Consultation Request - Submit a ticket for assistance with storage consulting requests

Indigenous Data Storage with Indigenous Communities

In line with the concept of Indigenous self-determination, and in an effort to support Indigenous communities to conduct research and partner with the broader research community, Laurier will work collaboratively with researchers to understand data storage needs within the Indigenous communities that they are working with. The guidance of Indigenous communities is important in this collaboration with the university.

5.3 Data Curation

Tri-Agency Statement:

All research data should be accompanied by metadata that accord with international and disciplinary best practices to enable future users to access, understand and reuse the data.

Researcher Responsibilities

Researchers should be familiar with research data curation standards in their field and apply these practices to their work. Research data should be documented, described, and organized to enable findability and reuse. This includes developing clean, error-free datasets as well as including documentation and code that contextualizes collection, processing, and analysis methodologies to improve understanding and enable reuse.

University Supports

The Laurier Library offers data curation consultation and training opportunities, including data organization, file naming and description, version control, and documentation. Research data archived with the Library in its *Borealis* data repository will be curated according to best practices that improve findability, access, interoperability, and reuse.

- Laurier Library Research Data Services

5.4 Data Deposit

Tri-Agency Requirement:

Grant recipients are required to deposit into a digital repository all digital research data, metadata and code that directly support the research conclusions in journal publications and pre-prints that arise from agency-supported research. Determining what counts as relevant research data, and which data should be preserved, is often highly contextual and should be guided by disciplinary norms.

The deposit must be made by time of publication. The choice of repository may be guided by disciplinary expectations and the recipient's own judgment, but in all cases the repository must ensure safe storage, preservation, and curation of the data.

Grant recipients are not required to share their data. However, the agencies expect researchers to provide appropriate access to the data where ethical, cultural, legal and commercial requirements allow, and in accordance with the FAIR principles and the standards of their disciplines. Whenever possible, these data, metadata and code should be linked to the publication with a persistent digital identifier.

For research conducted by and with First Nations, Métis and Inuit communities, collectives and organizations, these communities, collectives or organizations will guide and ultimately determine how the data are collected, used and preserved, and have the right to repatriate the data. This could result in exceptions to the data deposit requirement.

Researcher Responsibilities

Research data that supports publications must be deposited into a repository for archiving, access, and use. The repository must be able to professionally curate, store, and preserve research data; a researcher's hard drive or OneDrive is not a repository. Researchers must ensure that data be "as open as possible and as closed as necessary." Researchers should identify potential data repositories when writing their DMPs.

Data associated with research conducted by and with Indigenous communities and organizations will be subject to these communities' conditions and may result in exceptions to data deposit. These exceptions can include deposit of raw or processed data in the community's repository or a repository of their choosing.

University Supports

Researchers can archive their research data with the Library's *Borealis* data repository. All data submitted to *Borealis* is curated according to best practices that improve its discovery, access, and re-use. Data must be open access and non-sensitive. Researchers who require restricted data deposit services may consult with the Library to find a suitable repository.

- Laurier Library Research Data Services

5.5 Sensitive Data

Tri-Agency Statement:

Research data must be managed in agreement with all commercial, legal and ethical obligations.

Data management should be performed in accordance with the requirements of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans - 2nd edition*. This statement provides guidance on data management aspects of research involving humans, such as consent, privacy and confidentiality, Indigenous Peoples' rights, secondary use of data and data linkage. Data management should also be performed in accordance with the requirements of the *Tri-Agency Framework: Responsible Conduct of Research.*

Researcher Responsibilities

Sensitive data includes but is not limited to research involving human participants, research conducted by or with Indigenous communities or about Indigenous resources, proprietary data, and industry data. The management of sensitive data is dependent on disciplinary norms, university and granting body policy instruments, and legislation. Researchers whose work involves sensitive data must articulate their collection, storage, access, retention, and disposition plans in a data management plan. At the very least, researchers should store sensitive data only on authorized and approved Laurier software, platforms and devices. Sensitive data should be encrypted, and care should be afforded to its access, sharing, linking, and publication. The Library and ICT can give guidance on sensitive data handling as capacity allows. Dedicated and funded ICT resource capacity continues to be worked towards for the future.

University Supports

The Laurier Library consults on sensitive data handling, storage, and disposition as well as the development of data management plans. Researchers can consult with the Office of Research Services and the REB regarding research involving human participants. ICT consults with researchers on finding software solutions, approving software for use, advising on licensing costs, as well as recommending secure data storage and transfer solutions (with costs associated), in alignment with Laurier's Privacy and Security Impact Assessment (PSIA) process and 9.5 External Information Technology and Cloud Services policy. The Laurier Library, ICT and the REB are currently developing institutional guidelines for safeguarding sensitive participant data.

- Laurier Library Research Data Services
- Research Ethics Board Guidelines
- Research IT Consultation Request - Submit a ticket for assistance with storage consulting requests

5.6 Indigenous Data

Tri-Agency Requirement:

In line with the concept of Indigenous self-determination and in an effort to support Indigenous communities to conduct research and partner with the broader research community, the agencies recognize that data related to research by and with the First Nations, Métis, or Inuit whose traditional and ancestral territories are in Canada must be managed in accordance with data management principles developed and approved by these communities, and on the basis of free, prior and informed consent. This includes, but is not limited to, considerations of Indigenous data sovereignty, as well as data collection, ownership, protection, use, and sharing. The principles of Ownership, Control, Access and Possession (OCAP®) are one model for First Nations data governance, but this model does not necessarily respond to the needs and values of distinct First Nations, Métis, and Inuit communities, collectives and organizations. The agencies recognize that a distinctions-based approach is needed to ensure that the unique rights, interests and circumstances of the First Nations, Métis and Inuit are acknowledged, affirmed, and implemented.

Researcher Responsibilities

Researchers' RDM best practices must recognize Indigenous data sovereignty and honour their Indigenous partners' data ownership rights. Data management plans associated with research that is conducted by or with Indigenous communities must be co-developed with these communities, be held in a format they accept, and include options for renegotiation. Indigenous research partners will guide and determine how their data is collected, used, and preserved.

Laurier researchers must recognize and accommodate their Indigenous partners' data rights of ownership, control, access, and possession, which can include location or co-location of data on community infrastructure. Indigenous research partners also have the right to repatriate research data, even after data deposit. Special attention must be made by researchers and research support staff to the vulnerabilities of their Indigenous research partners within the research process, and their actions should be guided by the ethical practices of their subject area as well as University supports such as the Research Ethics Board and Privacy and Security Impact Assessment (PSIA) process. Researchers should stay informed of and be guided by Indigenous research data stewardship instruments such as the First Nations Principles of OCAP®, the Manitoba Metis Federation's OCAS Principles, the Inuit Tapiriit Kanatami National Inuit Strategy on Research, and the GIDA CARE Principles.

University Supports

Wilfrid Laurier University recognizes the data sovereignty rights of its Indigenous research and community partners. Its research data management strategy is informed by the concepts of Indigenous data ownership, control, access, and possession. Laurier will provide consultation, training, and support in the development of values-based relationships with its Indigenous partners and in the stewardship of Indigenous research data.

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6. Compliance

Tri-Agency Requirement:

By accepting agency funds, institutions and researchers accept the terms and conditions as set out in the agencies' policies, agreements and guidelines. In the event of an alleged breach of agency policy, agreement or guideline, the agency may take steps outlined in accordance with the Tri-Agency Framework: Responsible Conduct of Research to deal with the allegation.

Researcher Responsibilities

As part of their understanding of the broader policy framework guiding research, Laurier Researchers should understand the Tri-Agency RDM Policy and Statement of Principles of Digital Data Management, and apply them to their work.

University Supports

The Office of Research Services will consult with researchers to clarify policy documents and researcher obligations. The Library holds regular data management information sessions that introduce RDM, Tri-Agency policies, and institutional supports.

7. Relevant Policies

7.1 Laurier Policies

- 9.1 Use of Information Technology
- 9.4 Information Security Policy Statement
- 9.5 External Information Technology and Cloud Services
- 10.1 Information Availability and Privacy Protection
- 10.4 Records Management
- 11.3 Ownership of Student-Created Intellectual Property
- 11.13 Ethics Review of Research Involving Humans
- 11.14 Policy for the Responsible Conduct of Research
- 12.2 Student Code of Conduct: Academic Misconduct

7.2 External Policies

- Tri-Agency Research Data Management Policy
- Tri-Agency Statement of Principles on Digital Data Management
- Tri-Agency Framework: Responsible Conduct of Research
- Tri-Agency Policy Statement: Ethical Conduct for Research Involving Humans
- Tri-Agency Open Access Policy on Publications
- CIHR Health Research and Health-Related Data Framework
- SSHRC Research Data Archiving Policy

8. Definitions

Definitions are adapted from the CODATA (Committee on Data of the International Science Council) Research Data Management Terminology.

Research Data:

Data that are used as primary sources to support technical or scientific enquiry, research, scholarship, or artistic activity, and that are used as evidence in the research process and/or are commonly accepted in the research community as necessary to validate research findings and results. All other digital and non-digital content have the potential of becoming research data. Research data may be experimental data, observational data, operational data, third party data, public sector data, monitoring data, processed data, or repurposed data.

Data Management Plan:

A formal statement describing how research data will be managed and documented throughout a research project and the terms regarding the subsequent deposit of the data with a data repository for long-term management and preservation.

Metadata:

Literally, “data about data”; data that defines and describes the characteristics of other data, used to improve both business and technical understanding of data and data-related processes. Business metadata includes the names and business definitions of subject areas, entities and attributes, attribute data types and other attribute properties, range descriptions, valid domain values and their definitions. Technical metadata includes physical database table and column names, column properties, and the properties of other database objects, including how data is stored. Process metadata is data that defines and describes the characteristics of other system elements (processes, business rules, programs, jobs, tools, etc.). Data stewardship metadata is data about data stewards, stewardship processes and responsibility assignments.

Data Repository:

Repositories preserve, manage, and provide access to many types of digital materials in a variety of formats. Materials in online repositories are curated to enable search, discovery, and reuse. There must be sufficient control for the digital material to be authentic, reliable, accessible, and usable on a continuing basis.