University of Guelph RDM Researcher Perspective Survey Report

Winter 2023

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With contributions from the University of Guelph RDM Strategy Working Group (2022-23), Institutional Research and Planning, and Research Services Office - Research Communications

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Executive Summary

Introduction

On March 15th, 2021 the Tri-Agency (the agencies) formally launched the Research Data Management Policy[1] with the objective of supporting "Canadian research excellence by promoting sound data management and data stewardship practices". A central component of this policy is the requirement for postsecondary institutions and research hospitals eligible to administer CIHR, NSERC or SSHRC funds to create an Institutional Research Data Management (RDM) strategy and to notify the agencies when it has been completed by March 1st, 2023.

In preparation of the Institutional RDM Strategy, the RDM working group designed, distributed and analyzed a survey to gather the RDM perspectives of University of Guelph researchers on data curation training and consultations, data sharing, and data management training and consultations. The survey also gathered demographics and general RDM information from the researchers.

This report summarizes U of G researcher perspectives of RDM and will inform the development of the Institutional RDM Strategy on campus.

[1] https://science.gc.ca/site/science/en/interagency-research-funding/policies-and-guidelines/research-data-management/tri-agency-research-data-management-policy

Methods

A twenty-eight question online survey was disseminated using Qualtrics. A copy of the survey is available in Appendix A. This survey was distributed to Faculty, Graduate Students, Undergraduate Student Research Award (USRA) recipients, Research Technicians, Postdoctoral Researchers, Research Assistants, Deans, Associate Dean Research and Graduate Studies (ADRGSs) and College Research Managers (CRMs). It was also disseminated as news items on the University of Guelph and University of Guelph webpages. As well, Research Alerts[2] were distributed under the category of "Research Policies and Guidelines". Direct emails invitations were sent to ADRGSs and CRMs directly from the Office of Research.

Initially responses were collected between October 15 and November 11, 2022, with an extension to November 16, 2022, to increase response rate.

In total, 179 responses were collected. All data was collected anonymously, although respondents were invited to share the name of the college and school/department they were affiliated with. The disaggregated survey data was only available to the authors of this report, not shared, and only used for program planning purposes and evaluation only. This was outlined on the survey landing page.

This report summarizes U of G researcher perspectives of RDM and will inform the development of the Institutional RDM Strategy on campus.

[2] https://www.uoguelph.ca/research/alerts/

Results

Respondent Demographics

For this survey, the largest number of respondents were from OAC (23.9%, n = 43) followed by CBS (20.6%, n = 37), then CSAHS (16.7%, n = 30). The lowest response was from the COA and Other (4.4%, n = 8) and Lang (8.9%, n = 16) (Figure 1).

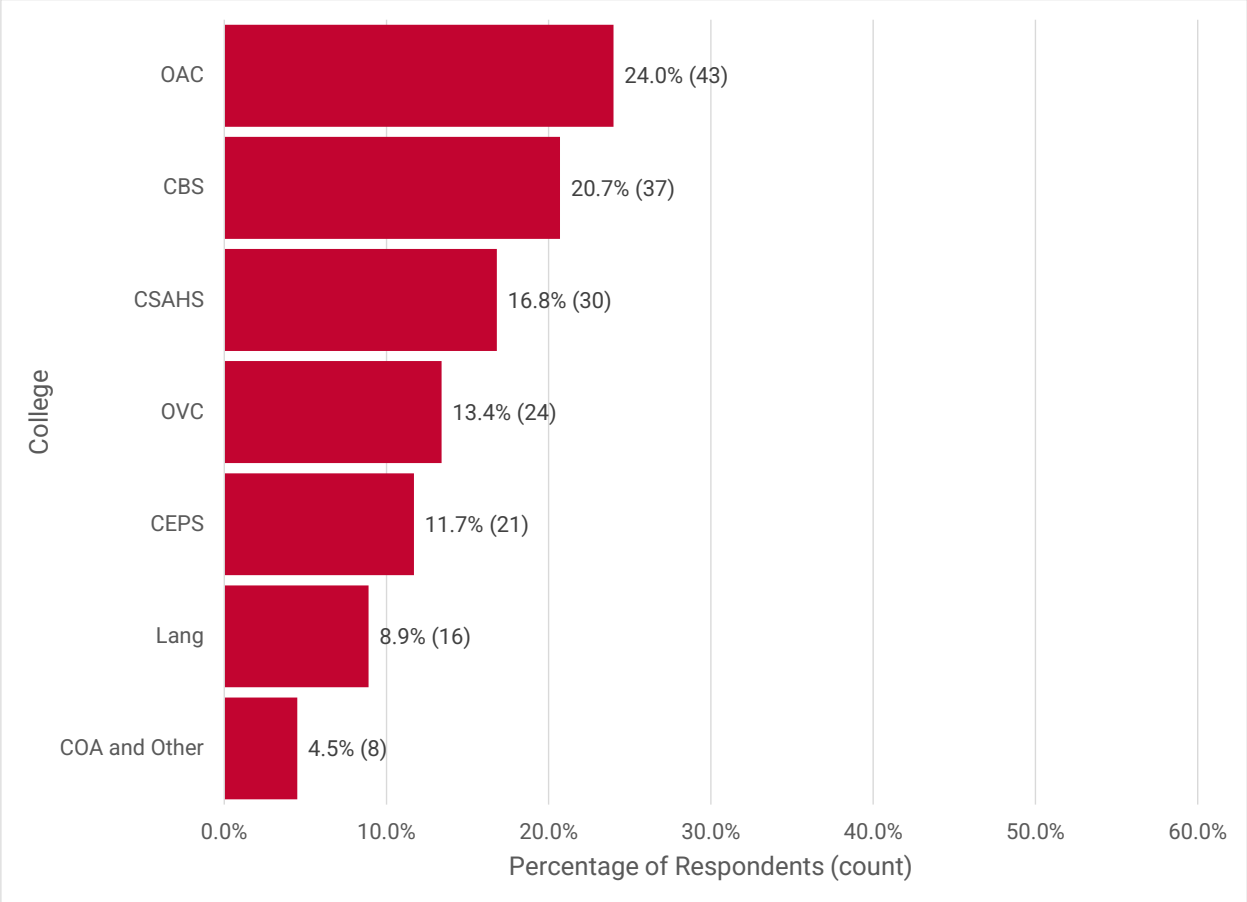


Figure 1: What is your college affiliation? Select one. (n = 179)

Most respondents were assistant, associate, and full professors (55.1%, n = 97) and graduate and undergraduate students (31.5%, n = 56). We had responses from research staff (6.2%, n = 11) which included research scientist, research associate, research coordinator, program manager and research assistant and other (7.3%, n = 13) which included lecturer, post doc and adjunct professors. (Figure 2)

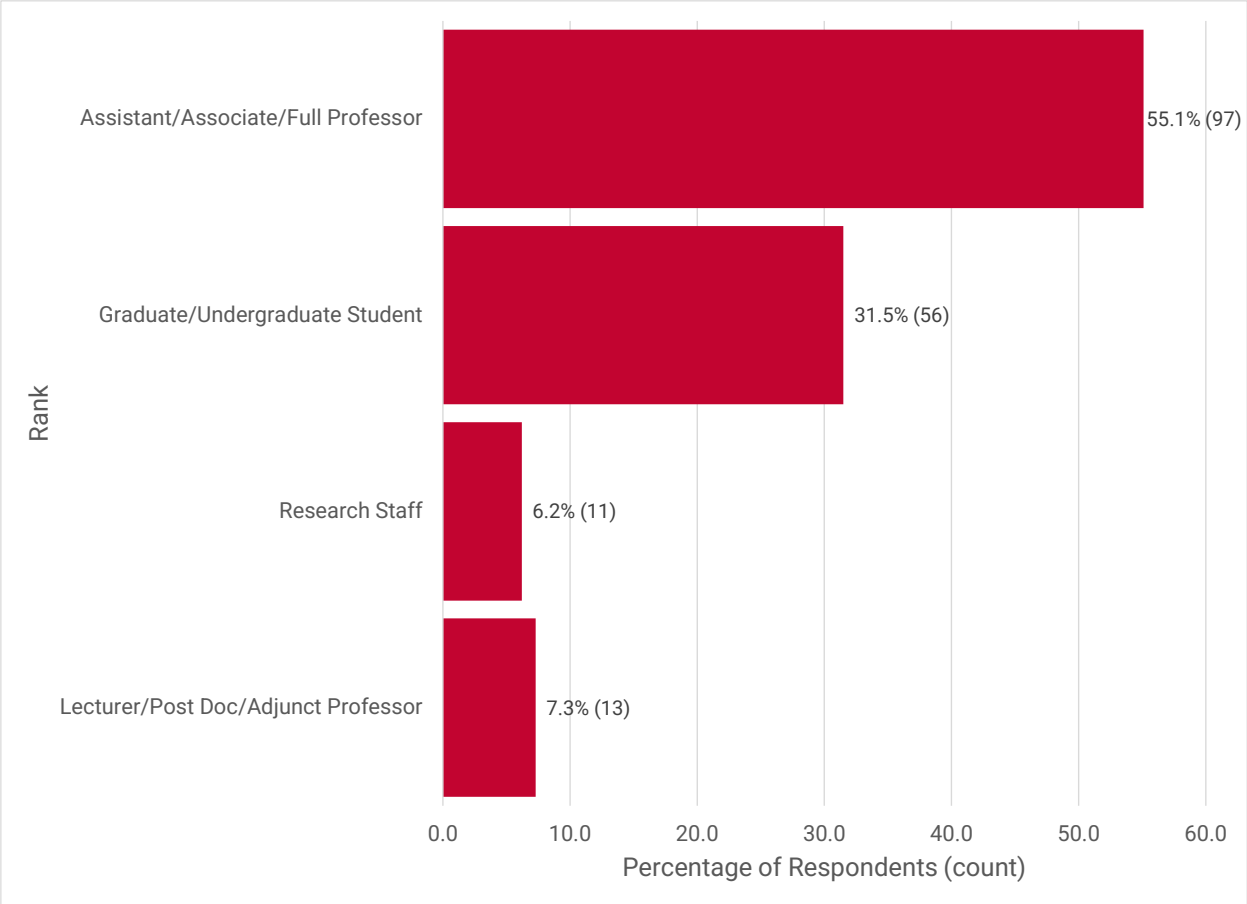


Figure 2: Please indicate your rank at the University of Guelph. Select one. (n = 177)

Of the respondents identifying as either an assistant, associate, and full professor 44.8% (n = 47) were late career, 31.4% (n = 33) mid-career and 23.8% (n = 25) early career. (Figure 3)

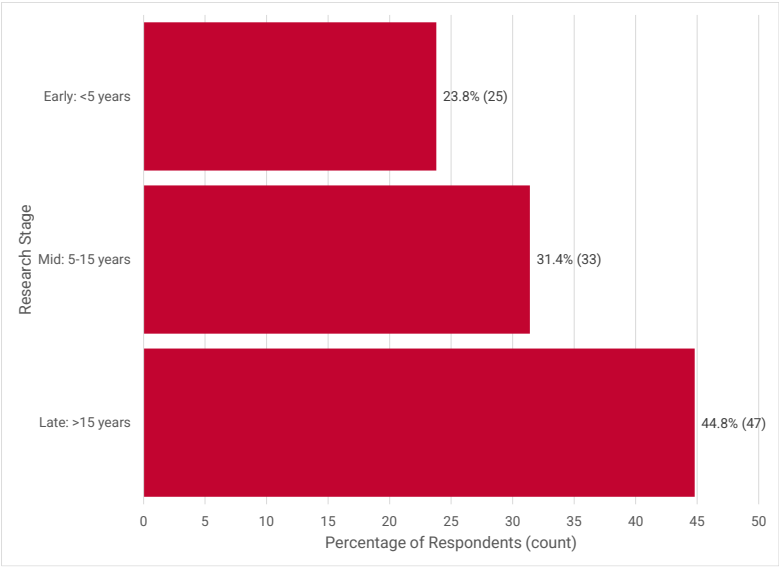


Figure 3:At what stage in your independent research position are you at? Select one. (n = 105)

General RDM Questions

Learning Research Data Management Skills Through Coursework

Around 60% (n = 33) of undergraduate and graduate students have been taught about data organization and describing data as part of their coursework but 25% (n = 14) have not been taught these concepts and about 16% (n = 9) were unsure if these concepts were covered. (Figure 4)

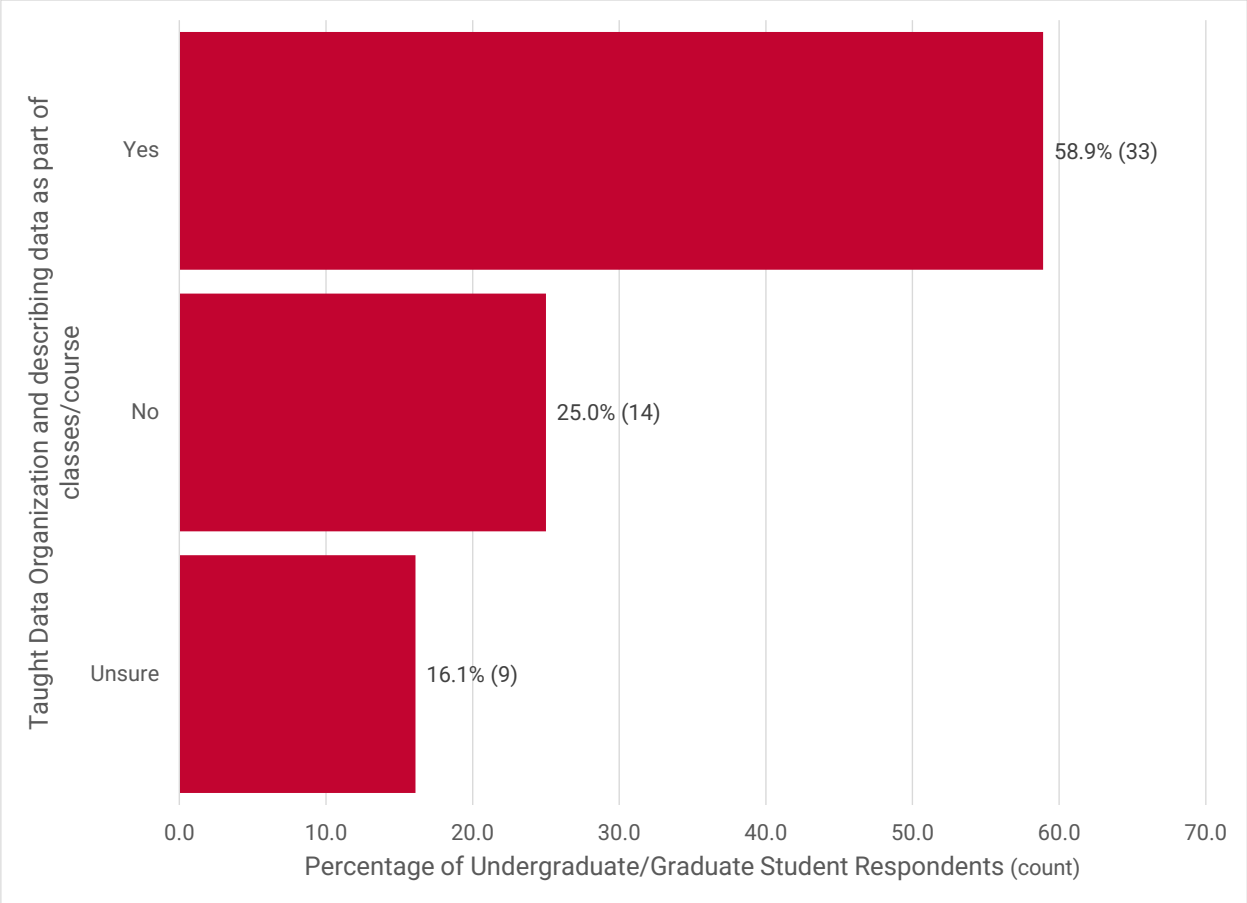


Figure 4: Have you been taught about data organization and describing data as part of your undergraduate or graduate classes/courses?(n = 56)

Research Data Collected and/or Created by Researchers

On campus over 45% of respondents reported to collect and/or create research data of numerical (CSV, XLS, SPSS, etc.), text (TXT, DOC, PDF, RTF, etc.) and multimedia nature (JPEG, TIFF, MPEG, MP3, etc.). Between around 26 to 30% of researchers work with software (Java, Perl, Python, R, etc.), instrument specific (Olympus Confocal, microscope data format, FLIR Infrared (SEQ), etc.) and model data (3D, statistical, similitude, casual, etc.). Least common research data collected and/or research data is geospatial (raster, vector, grid, etc.) in nature. (Figure 5)

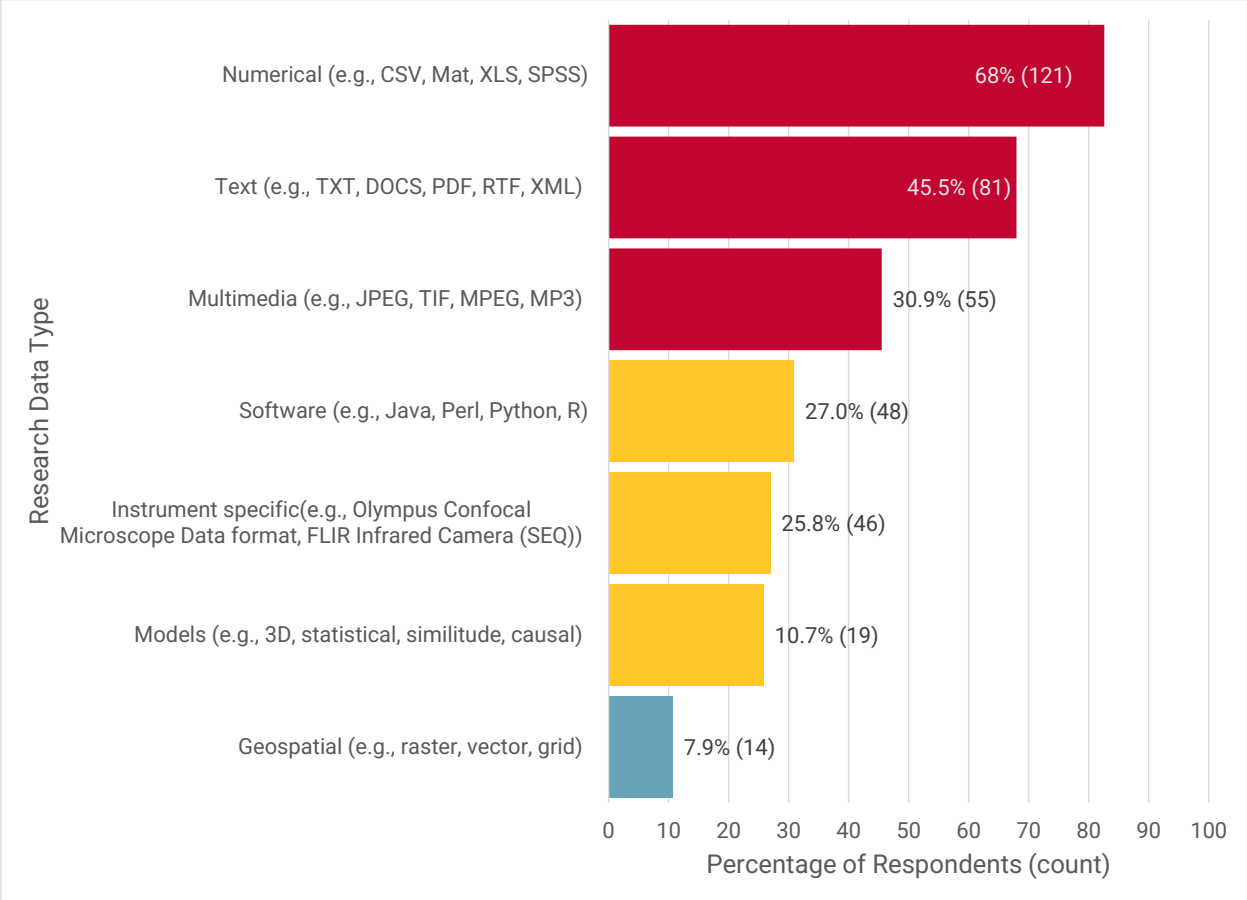


Figure 5: What type of research data do you typically collect/create in an average research project? Select all that apply. (n = 178)

Data Analysis and Manipulation Software Usage

The most used software for analysis and manipulation of research data reported by researchers on campus is MS Excel (79.8%) and R (54.9%). About 36% to 20% of researchers use Qualtrics (36.4%), SPSS (32.9%), Python (25.4%), SAS (23.1%), and NVivo (22.0%). Software with lower use include ArcGIS (12.7%), MATLAB (12.1%), Stata (9.2%) and Prism GraphPad (6.4%). (Figure 6)

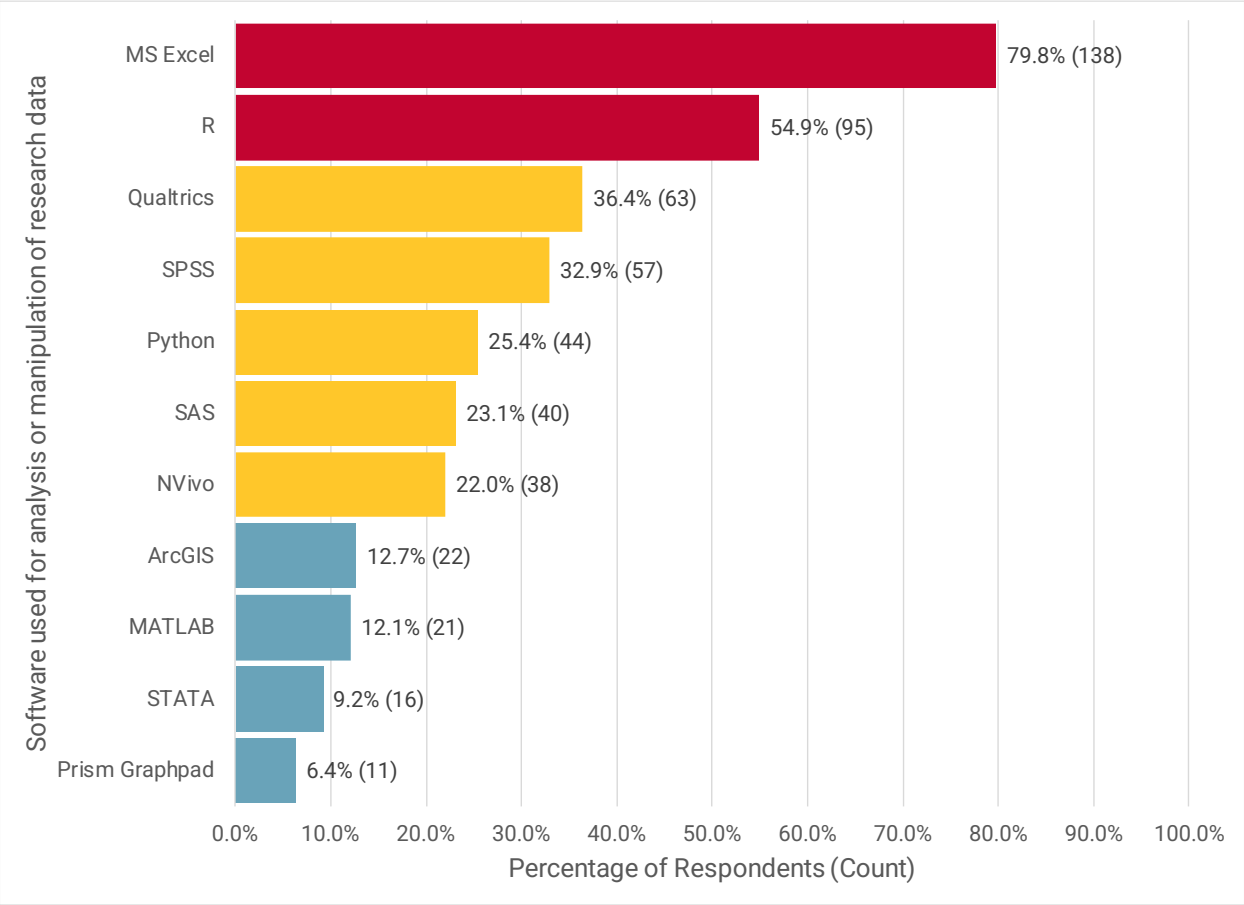


Figure 6: Please indicate any software used for analysis or manipulation of your research data. Select all that apply. (n = 174)

Active Data Storage

Active data storage part occurs when data is collected and accessed during a research project. At U of G, approximately 60% and greater of researchers report using laptop hard drive (66.7%, n = 116), cloud/web-based solutions (65.5%, n = 111), external hard drive (58.0%, n = 101), and computer hard drive (58.0%, n = 101) for their active data storage. Approximately under 40% of researchers use shared drive/university/departmental server (42.0%, n = 71), flash drive/USB (36.8%, n = 64), physical copies retained in boxes/cabinets/etc. (23.6%, n = 41) and hard drive of instrument/censor which generates data (17.2%, n = 30). Grid/high performance computing (HPC) center has the lowest usage on campus at 5.7% (n = 10). (Figure 7)

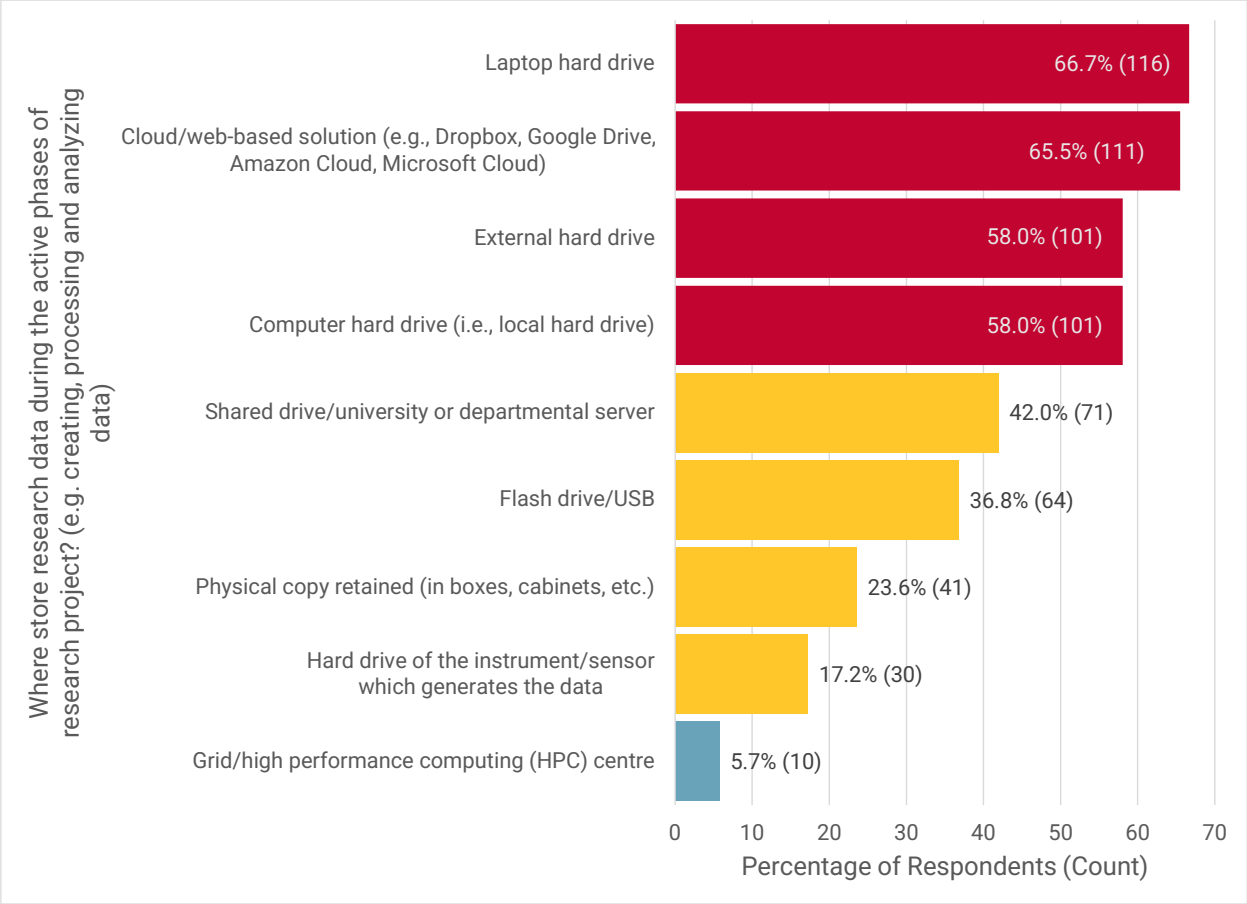


Figure 7: Please indicate any software used for analysis or manipulation of your research data. Select all that apply. (n = 177)

End of Research Data Storage

At the end of a research project, data will need to be deposited into a repository and/or archive. Most commonly researchers (over 36.0%) are using external hard drives (50.0%, n = 89), laptop hard drive (40.4%, n = 72), computer hard drive (39.9%, n = 71), and shared drive/university/departmental server (36.0%, n = 64). Around 20% to 16% of researchers are using physical copies retained in boxes and cabinets (21.3%, n = 38), external data repository (21.3%, n = 38), and flash drive/USB (16.3%, n = 29). Under 7.0% of researchers use hard drive of the instrument/sensor which generates data (6.7%, n = 12), grid/HPC centre (3.9%, n = 7), not sure (3.4%, n = 6) and CD/DVD (2.8%, n = 5).

It is promising to see researchers are not using CD/DVDs, hard drive of instruments and sensors used to generate data, and flash drives/USBs which are not designed for long term storage. On the flip side, it is promising to see researchers are using external data repositories such as Artstor, Cambridge Structural Database, Cancer Imaging Archive, CWRC, Dryad, Figshare, GenBank, GitHub, HathiTrust, Institutional Repository, PeptideAtlas, Protein, Data Bank, tDAR, etc.

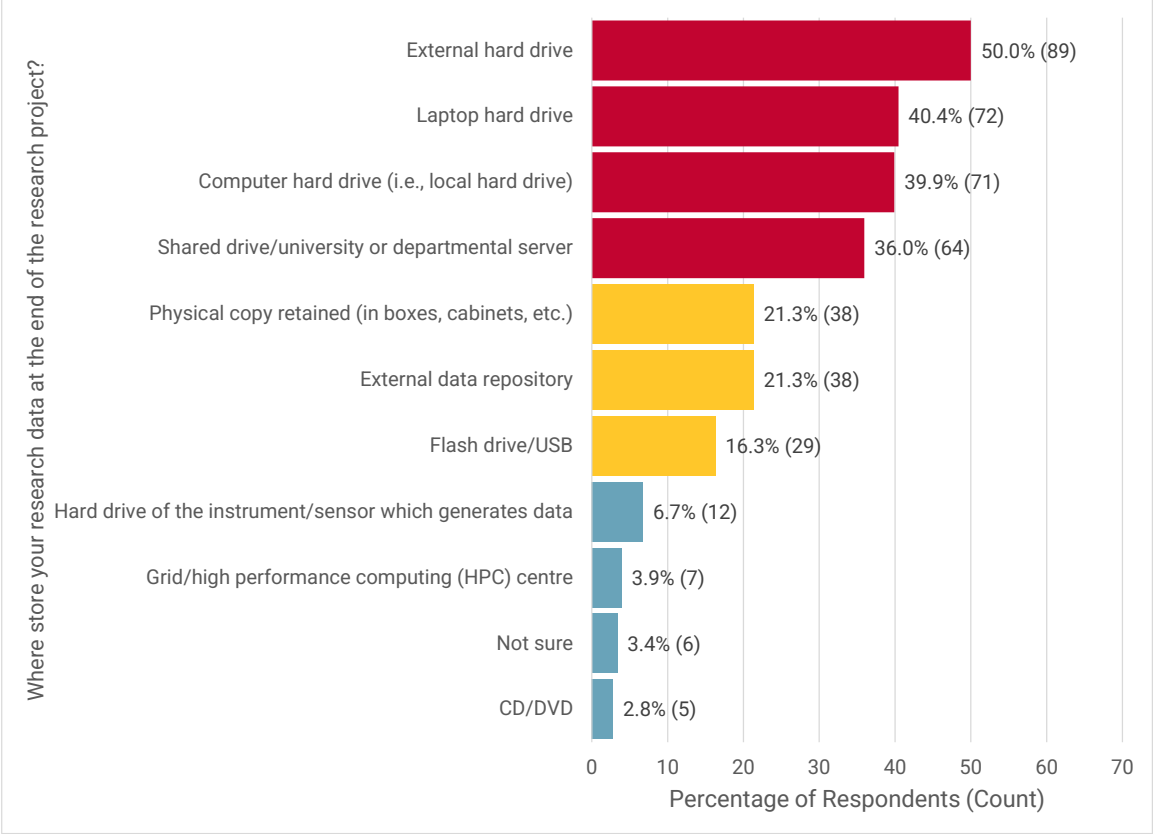


Figure 8: Please indicate where you will store your research data at the end of the research project. Select all that apply. (n = 178)

Collaborative Platforms

Collaborative platforms are used by researchers to connect with other researchers from other disciplines, institutions, and sectors. The use of this technology allows for the development of efficient and effective workflows and RDM. In the survey, the top four collaborative platforms used by researchers are MS Teams (67.6%, n = 117), Google Docs (54.3%, n = 94), MS SharePoint (32.4%, n = 56) and GitHub (20.2%, n = 35).

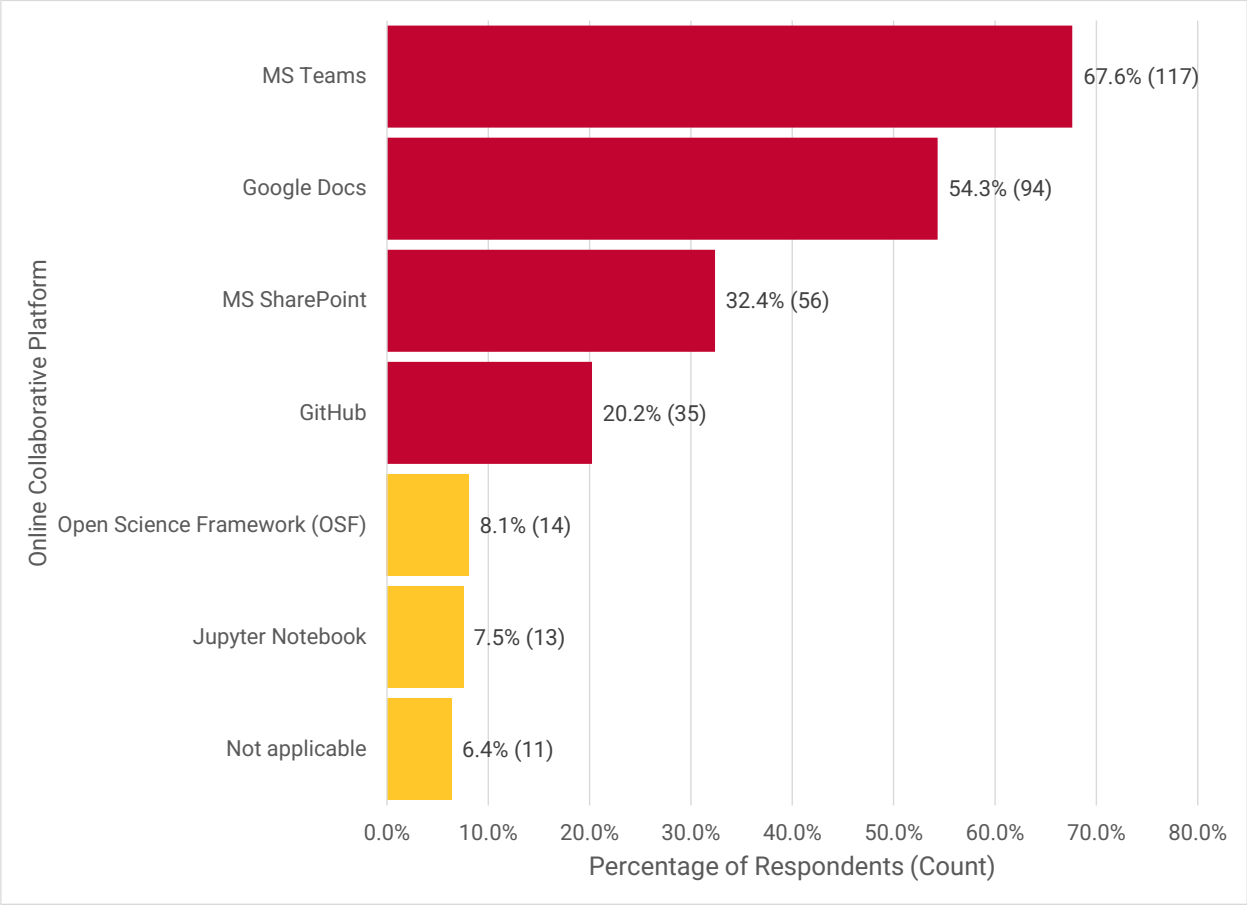


Figure 9: Please indicate which, if any, of these online collaborative platforms you have used as part of a research team. Select all that apply. (n = 173)

Indigenous Research Data

For the survey, researchers were asked if they were doing or planning research with Indigenous community, 15 researchers reported they were with First Nations, 6 with Inuit and 6 with Indigenous communities other than First Nations and Inuit.

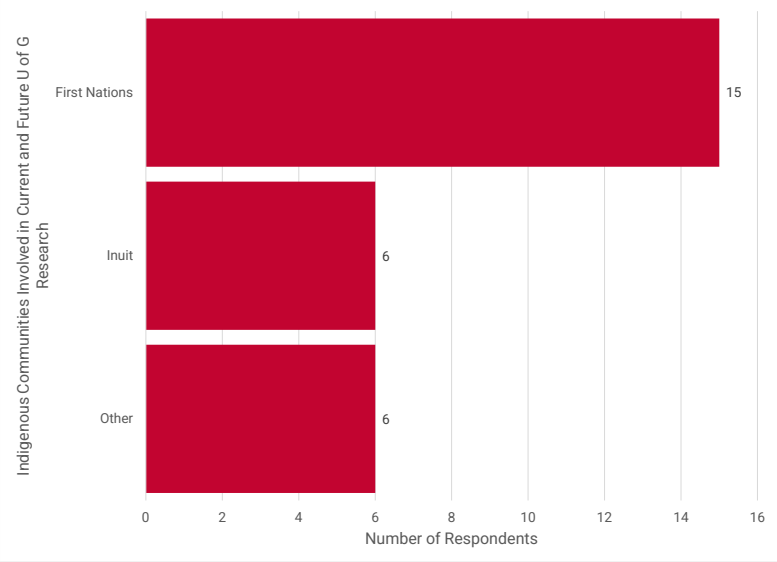


Figure 10: Are you doing or planning research with Indigenous communities? Select all that apply.

In the survey, 19 researchers reported they did not know about resources listed in the question on how to work with data related with Indigenous communities but, 11 reported knowing about First Nations Principles of OCAP.

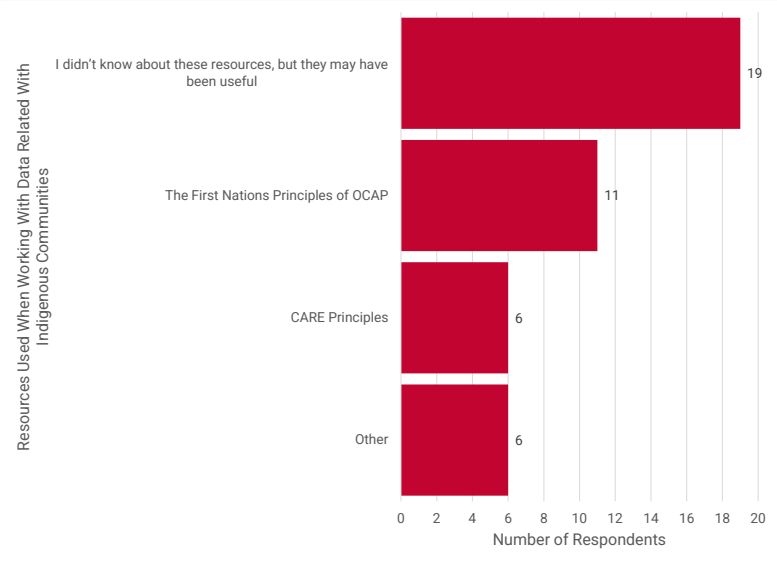


Figure 11: Have you used any of the following resources when working with data related with Indigenous communities?

Data Curation Training and Consultation

As part of this survey, researchers were asked a series of questions about their current practices and opinions on data curation (i.e., organizing, formatting, and describing data). Along with how they share their process of creating, organizing, and maintaining data sets so they can be accessed and used by people looking for information.

In the survey, 55.1% (n = 98) of respondents reported their research team utilizes shared practices and/or protocols for curating research data. About 19% (n = 46) of respondents reported unsure if their teams are using data curation practices and/or protocols but, 25.8% reported their teams are not.

Resources, Tools, or Software Used by Researchers to Aid in Curating Research Data

Training opportunities were reported as the most popular aid used in curating research data by 38.8% (n = 62) of respondents. Popularity of other resources, tools and software aids used to curate research data is shown in Figure 12.

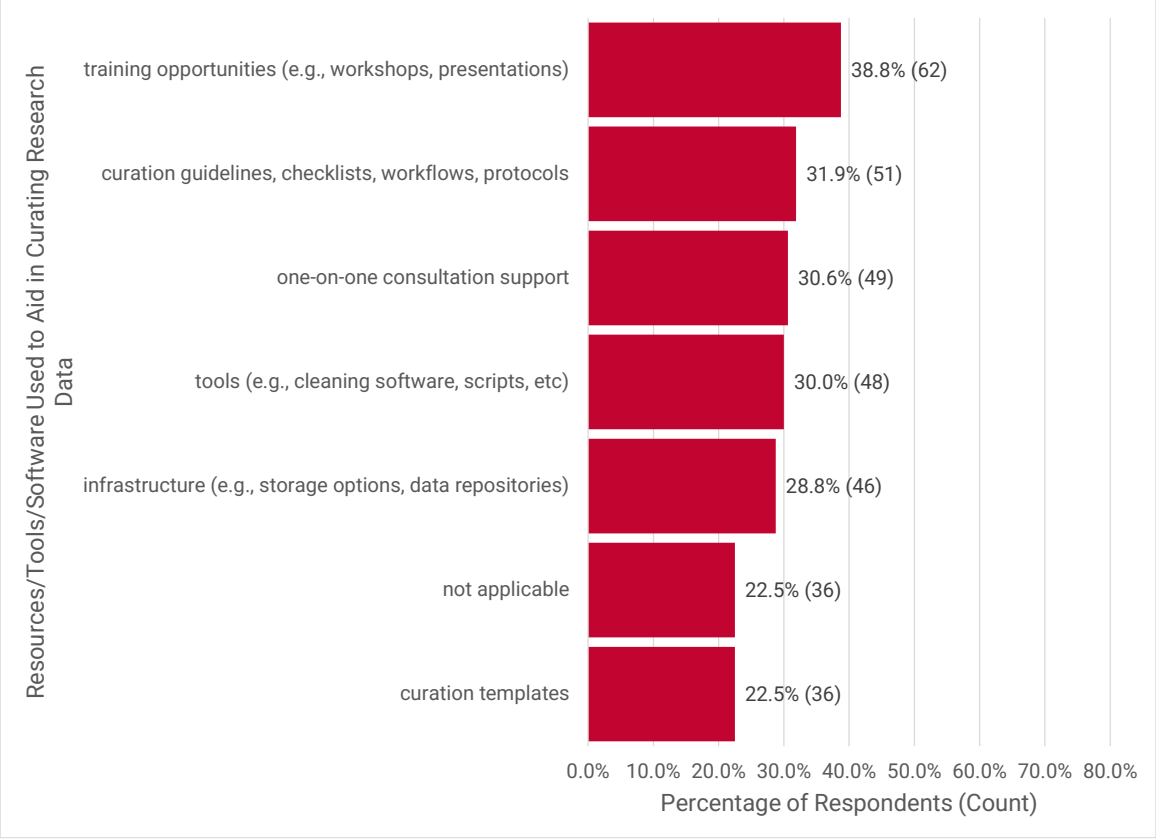


Figure 12: Have you used any of the following resources, tools, or software to aid in curating your research data? Select all that apply. (n = 160)

Usage of Data Curation Templates or Guidance documents offered by the Library

Respondents that indicated they have used “curation templates” or “curation guidelines, checklists, workflows, protocols” were asked if they were aware the Library offers data curation templates and curation guidance documents. 72.1% (n = 44) of respondents were not aware of the resources available. But, of the respondents that were aware of the Library data curation aids reported being aware of the data deposit guide (n = 10), data submission guide (n = 7), read me template (n = 7), dataset metadata template (n = 7), codebook/variable template (n = 6) and data licensing guidance (n = 5).

The top two practices employed when curating research data reported by respondents was “organize and prepare data files including documenting relationship between files, file formats, file names, file contents, etc.” and “document descriptive information about the dataset (who, what, where, why, and how)”. Only 19.5% (n = 33) of respondents define “the terms of access/reuse” which was the lowest response for this question. (Figure 13).

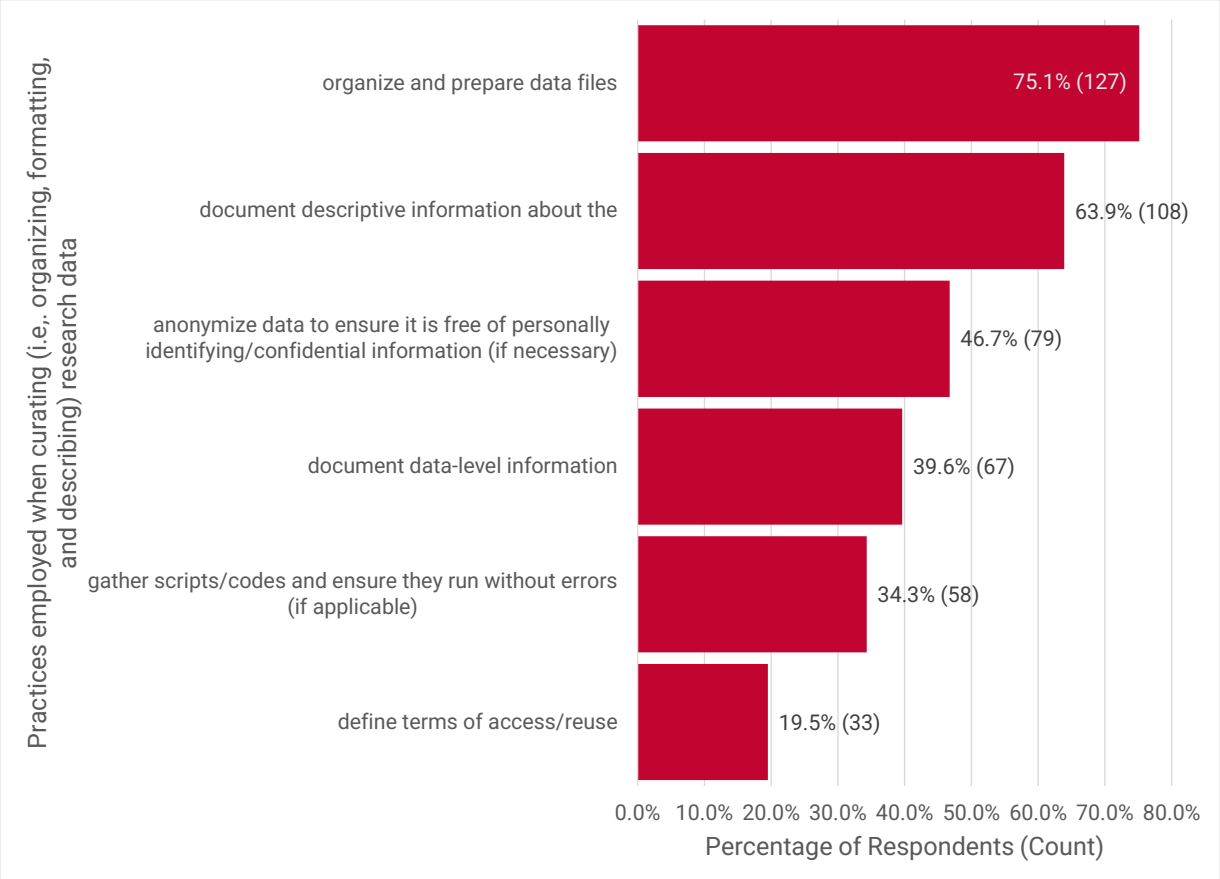


Figure 13: What types of practices do you employ when curating (i.e,. organizing, formatting, and describing) your research data? Select all that apply. (n = 169)

Data Sharing

Data sharing one of the activities of "open science can lead to greater collaboration, increased confidence in findings and goodwill between researchers"[3]. The survey gathered feedback from respondents about their current practices and opinions on sharing their research data.

Methods Used to Share Research Data

Respondents were first asked "How they currently share their research data?". A summary of the responses is show in Figure 14. About 55% (n = 97) of respondents reported, they only share by personal request. Around 20% of responding researchers are not currently sharing their data.

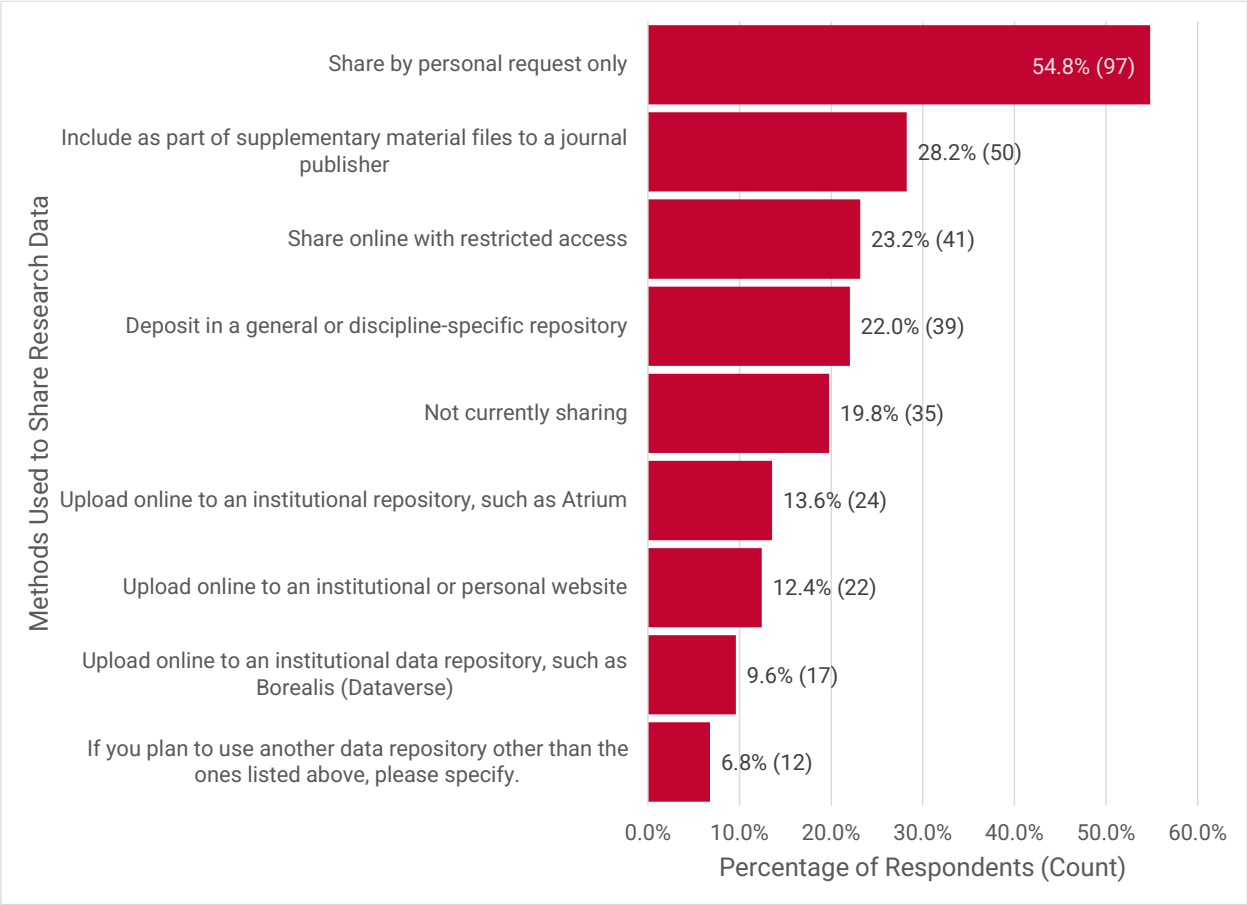


Figure 14: How do you currently share your research data? Select all that apply. (n = 177)

[3] https://www.nature.com/articles/d41586-019-01506-x

Restrictions or Embargoes Impacting Researcher's Ability to Share Data with Others

It is important for researchers to share their data to the wider research community, but restrictions or embargoes may impede the sharing of data. There are many reasons access to research data might be restricted due to privacy, confidentiality, or ethics concerns. Data embargoes are used by researchers to limit access and sharing of the data for a limited period. This temporary restriction allows researchers a limited period of time to work with the data and publish findings before the data is made public. The two top restrictions/embargoes that impact researcher's ability to share data with others included "needing to publish the results of the data analysis before the data can be shared" and "the data are subject to privacy, confidentiality or ethics restrictions". (Figure 15)

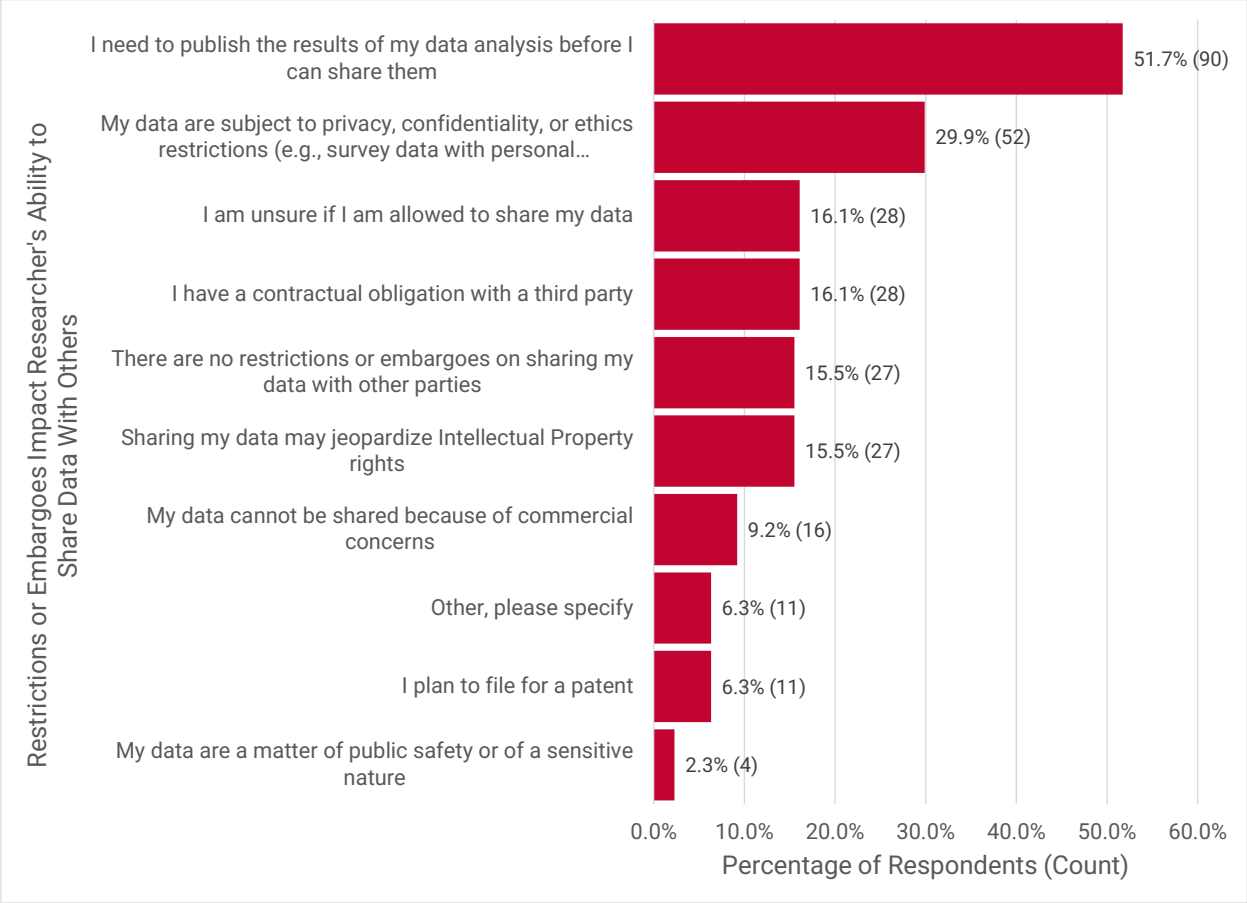


Figure 15: Which of the following restrictions or embargoes impact your ability to share your data with others? Select all that apply. (n = 174)

Groups Researchers Willing to Share Research Data Not Affected by Any Restrictions or Embargoes

Sharing research data reduces duplication and encourages reproducibility and replicability and facilitates the reuse and repurposing of data by other researchers. Researchers are more likely to share their research data with researchers they have a closer working relationship with. Also, 22.4% (n = 36) of researchers are willing to share indigenous data back to the community when given the opportunity.

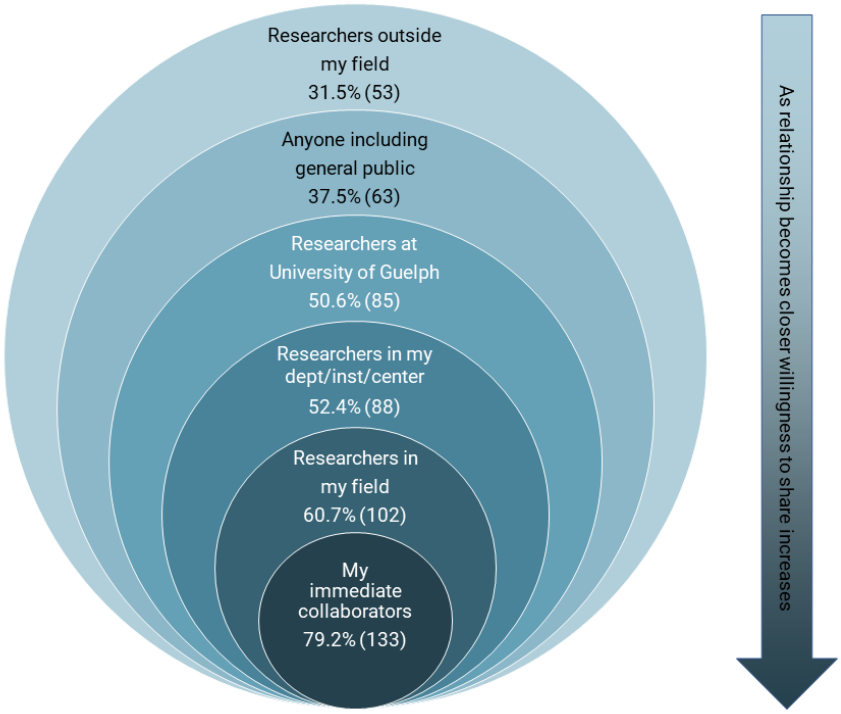


Figure 16: If your research data are not affected by any restrictions or embargoes with whom would you be willing to share them? Select all that apply. (n = 168)

Reasons For Not Willing to Share Research Data and Associated Methods/Tools/Algorithms

There are many reasons researchers are not willing to share their research data and associated methods, tools and/or algorithms. These reasons could be both practical (i.e., insufficient time, no place to put the data) and professional (i.e., wish to derive more value from data, lack of credit). In this survey, the top reason was that the data files are incomplete or not finished (45.6%, n = 78) followed by that they want to still derive value from the data (35.7%, n = 61). At the bottom of the list was that the funding body does not require sharing the data (6.4%, n = 14) and they don't believe the data should be shared (8.2%, n = 14).

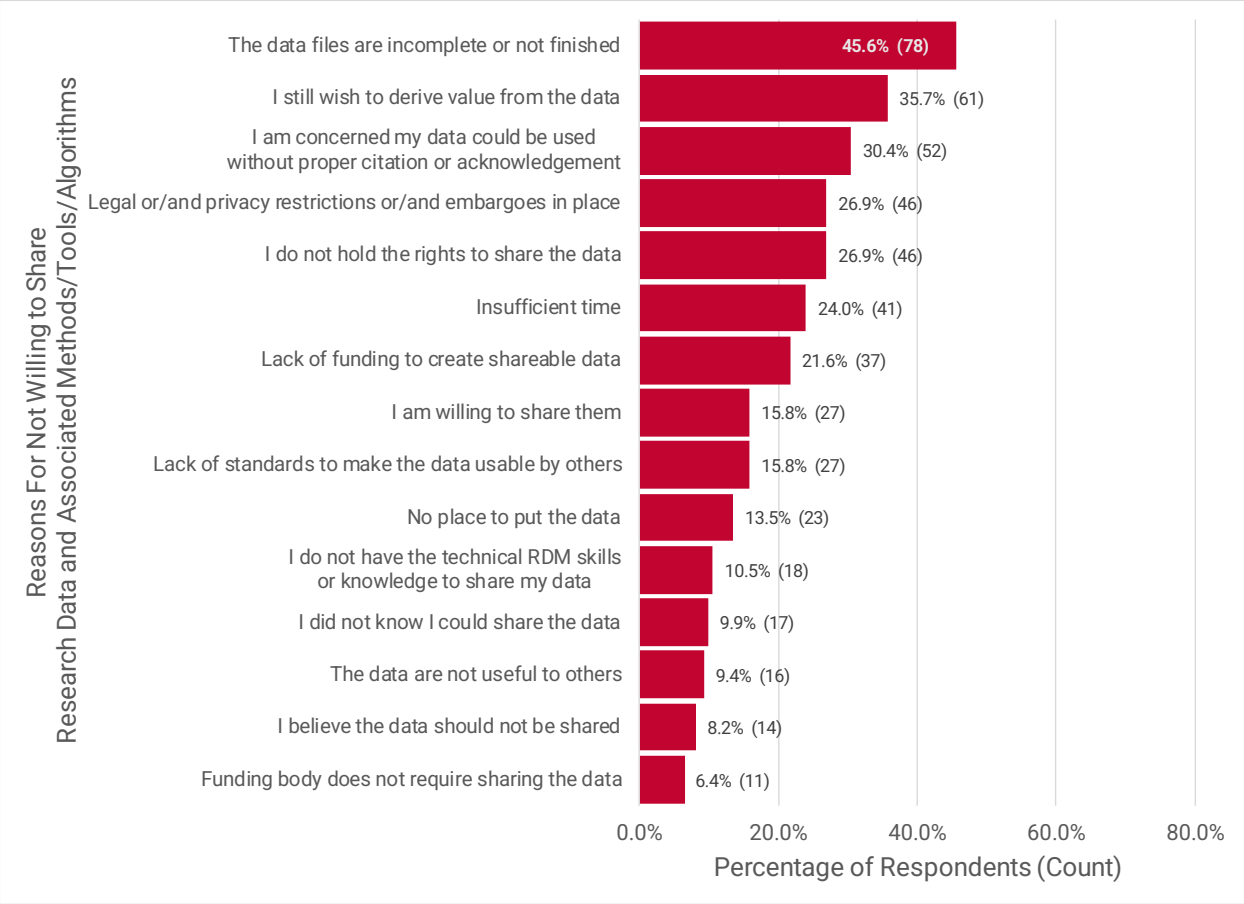


Figure 17: For which reasons, if any, would you not be willing to share your research data and associated methods/tools/algorithms? Select all that apply. (n = 171)

Benefits in Sharing Research Data

Nearly more half of the respondents agree with all the benefits in sharing research data presented to them in the survey questions. Only 4.0% (n = 7) did not see any benefits to sharing their data.

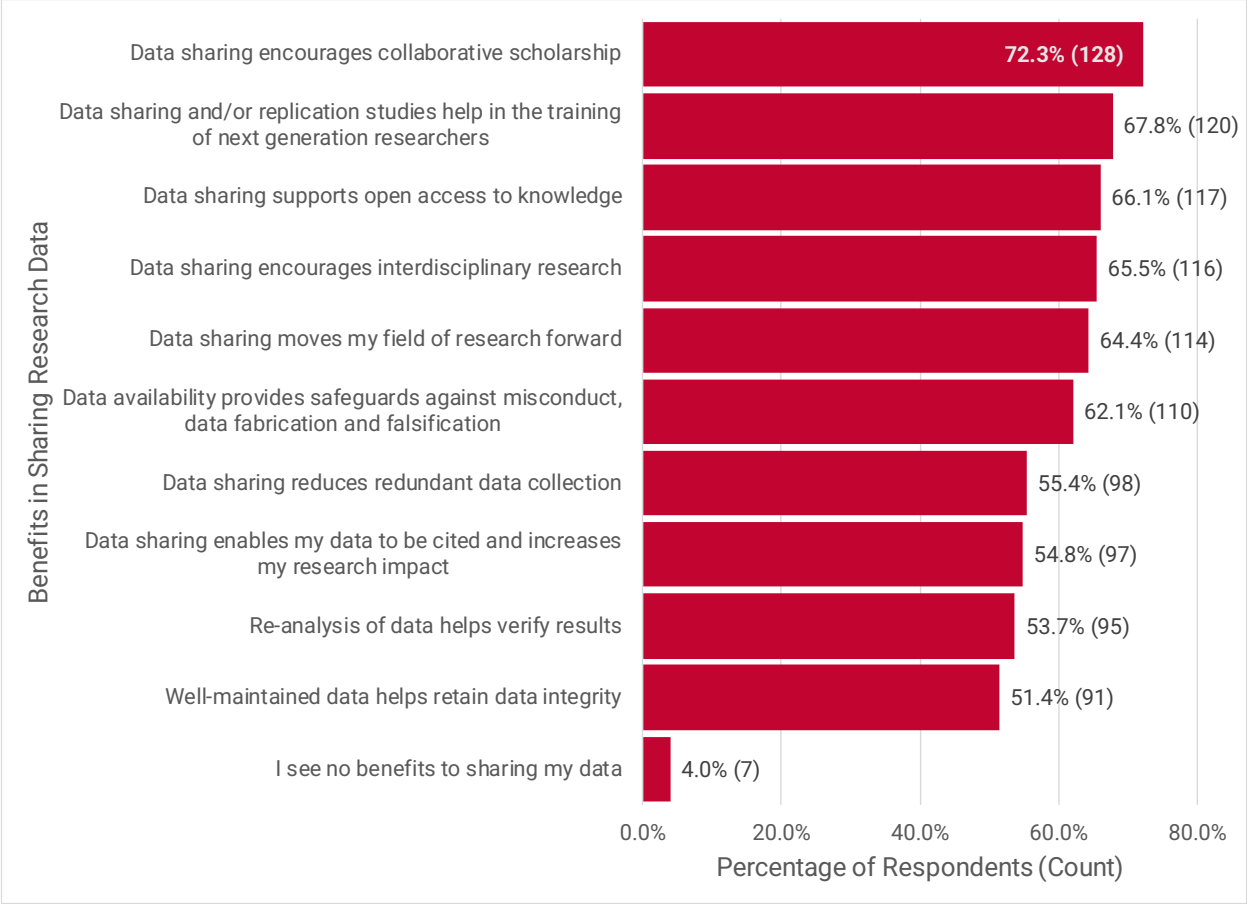


Figure 18: What benefits do you see in sharing your research data? Select all that apply. (n = 177)

Data Management Plan (DMP) Training/Consultation

Researchers were asked about their current practices and opinions on creating and following a Data Management Plan (DMP) which is a formal document that outlines how data are to be handled both during a research project and after the project is completed. Around 28% (n = 49) of respondents have completed a DMP but, 72.3% (128) have not.

Beneficial Supports for DMP Creation

The top two beneficial supports for creating DMP include using examples of DMPs from other research projects in the researcher's field along with consultations and resources including workshops/webinars and resulting workshop materials provided by the U of G RDM Librarian.

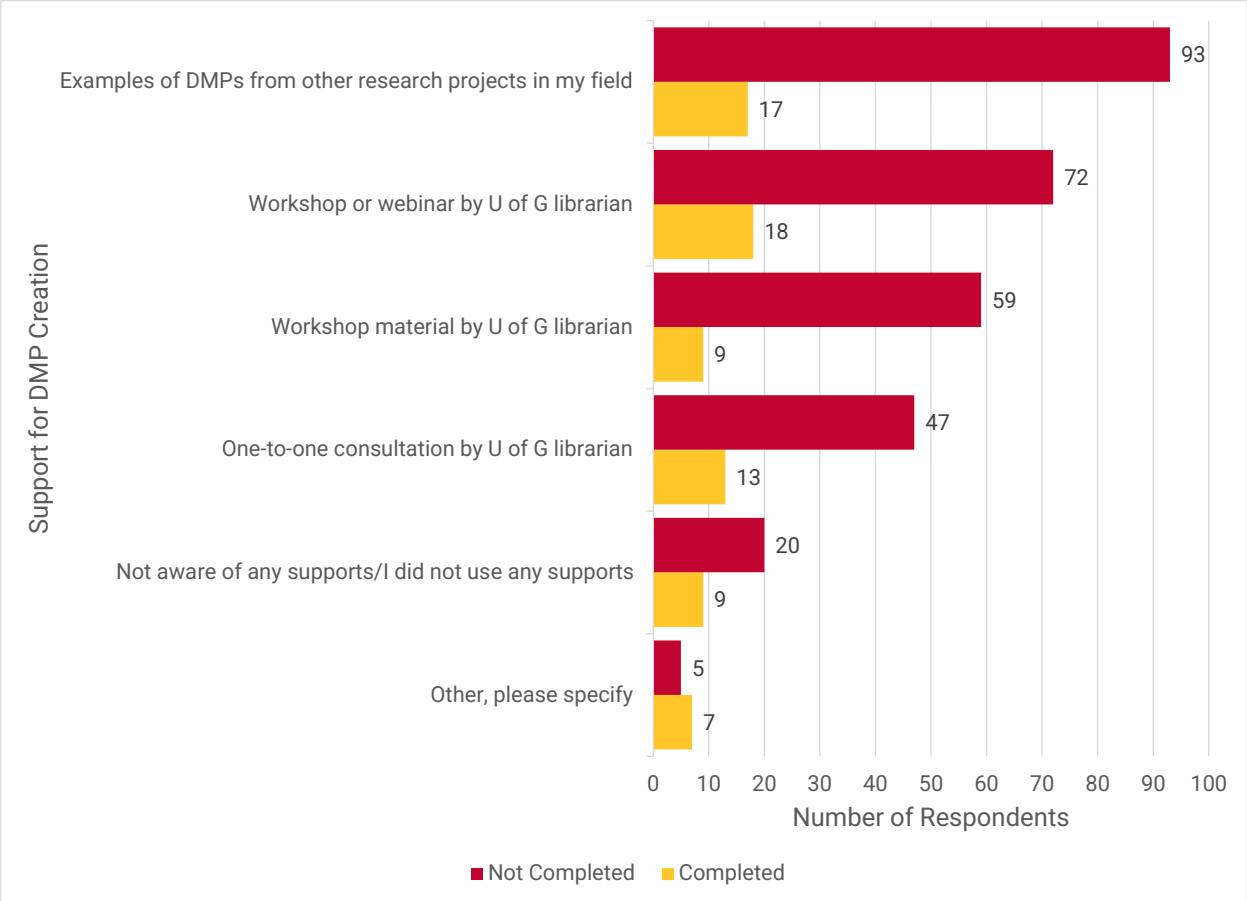


Figure 19: What supports do you feel would be beneficial to creating one? Select all that apply.

Benefits in Developing DMP

Many respondents agree with all the benefits in of developing a DMP presented to them in the survey questions. Only 9.8% (n = 17) did not see any benefits to sharing their data.

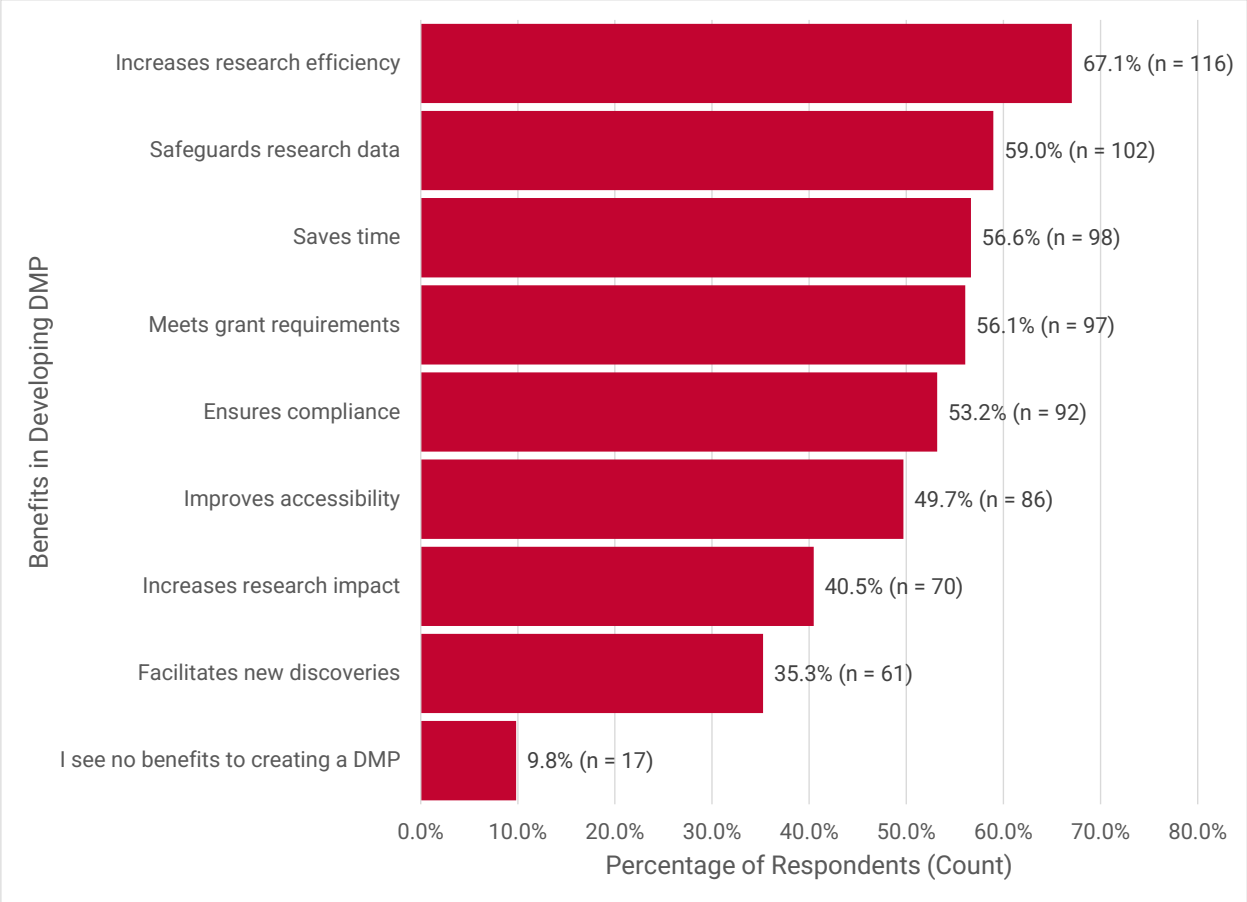
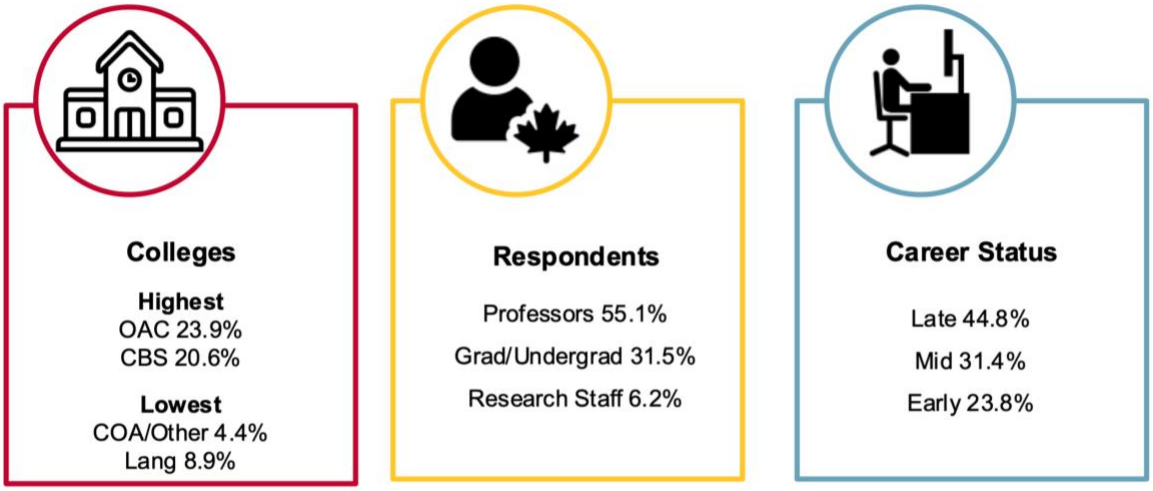


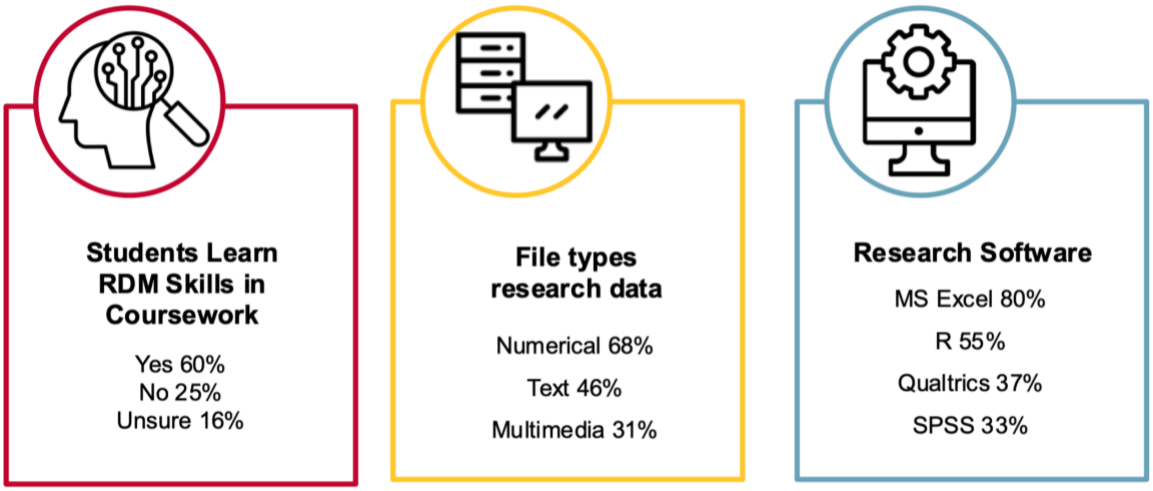
Figure 20:What benefits do you see in developing a DMP? Select all that apply. If you see no benefits, choose 'I see no benefits to sharing my data'. (n = 173)

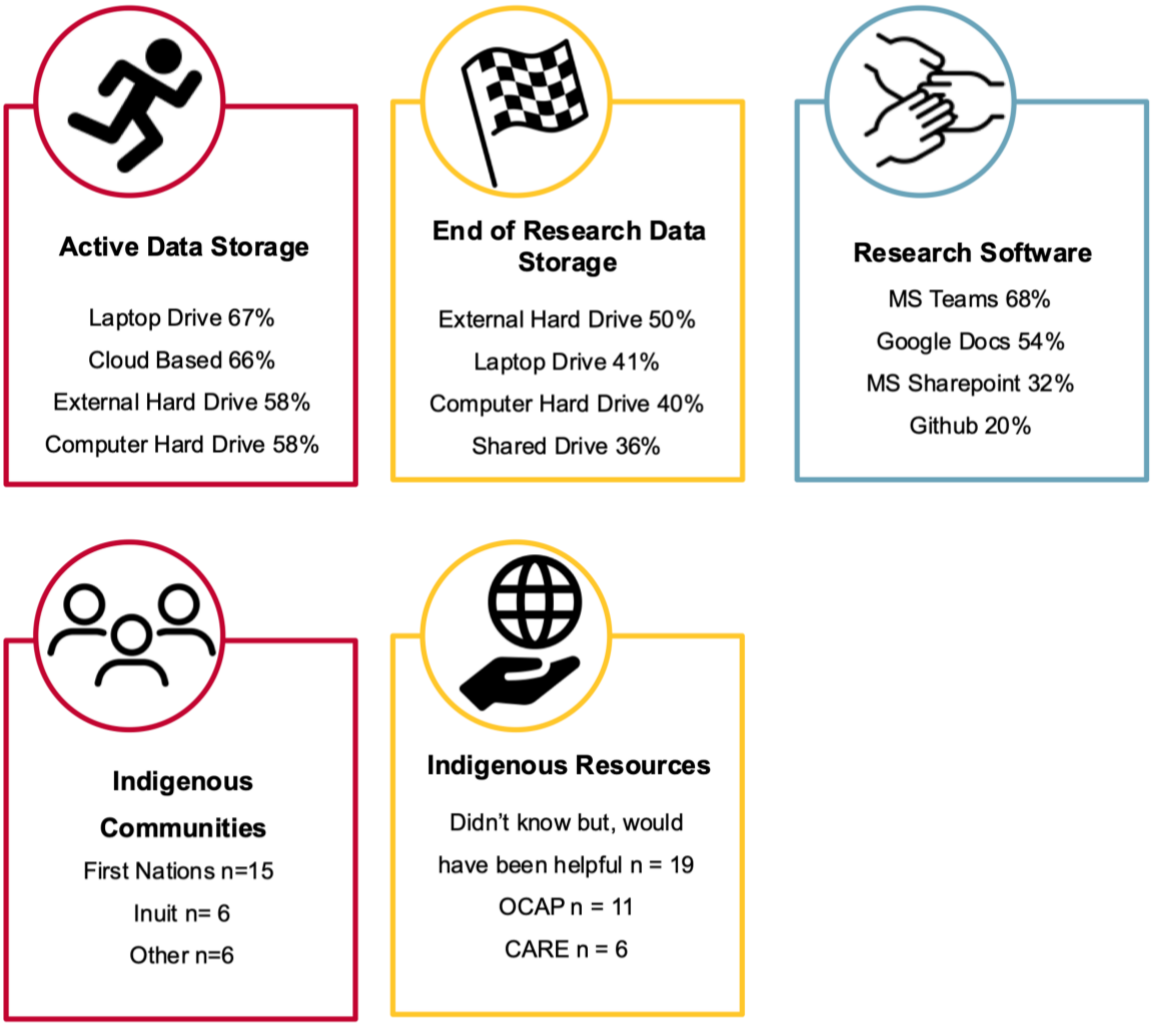
Summary

Respondent Demographics

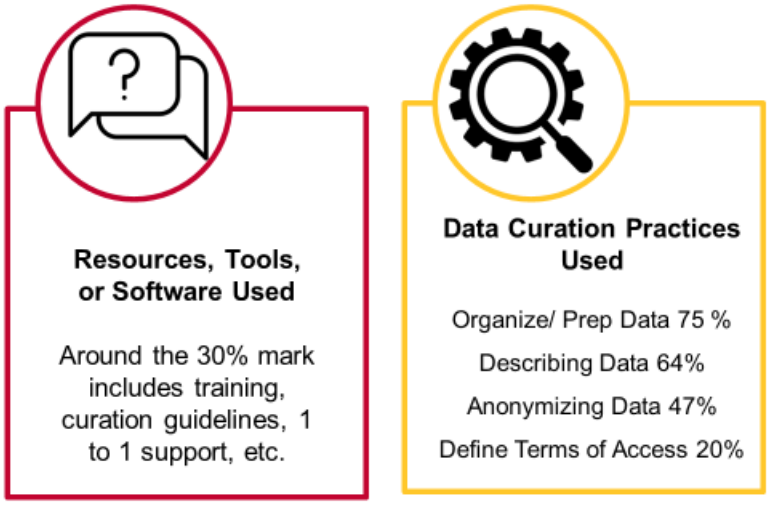


General RDM Questions

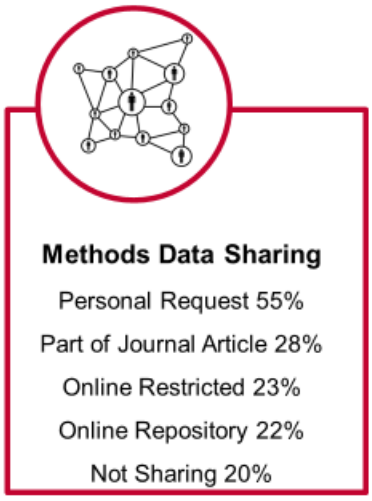


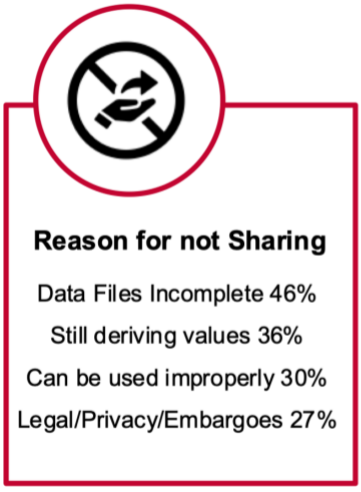


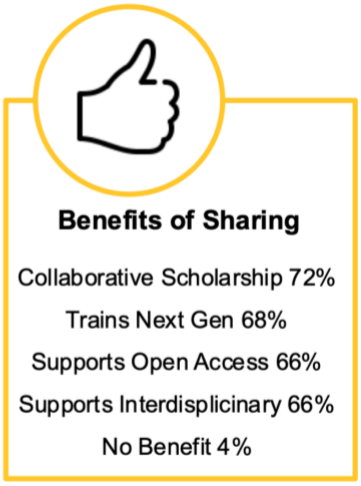
Data Curation Training and Consultation



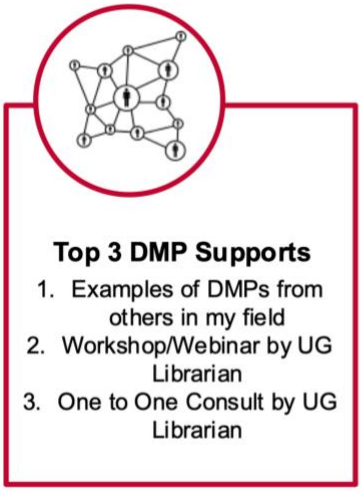
Data Sharing







Data Management Plan (DMP) Training/Consultation



Recommendations

This report summarized the RDM perspectives of U of G researchers. To support all researchers towards the adoption of RDM practices, it is recommended:

- Further outreach to researchers on the benefits of sharing research data and use of either institutional or disciplinary specific repositories when there are not restrictions or embargoes on research data as an end of research data storage.
- Expand RDM outreach to colleges with lower response rate to better understand the disciplinary differences across the institution.
- Ensure the unique rights, interests and circumstances of First Nations, the Métis Nation and Inuit are respected by adopting a distinction based RDM approach for research involving First Nations, the Métis Nation and Inuit communities and their data, such as OCAP (Ownership, Control, Access, and Possession) and CARE (Collective benefit, Authority to control, Responsibility, and Ethics).
- Refine and improve the supports available to researchers when developing and modifying DMPs.

Appendix A

RDM Researcher Perspective

Start of Block: Intro and Consent

Assessing Current Research Data Management (RDM) Practices of U of G Researchers Survey
In Canada, the Tri-Agency Statement of Principles on Digital Data Management promotes digital data management practices and data stewardship through its Research Data Management (RDM) Policy. As part of this policy, the University of Guelph will be required to have a publicly available RDM institutional strategy. The Tri-Agency will require researchers to submit Data Management Plans (DMPs) and deposit into a digital repository all research data, metadata, and code supporting the research conclusions resulting from agency-supported research. In response, the University of Guelph RDM Strategy Working Group was established to consult with researchers to create a U of G RDM Strategy.
You are invited to participate in the survey to gather information on the current Research Data Management (RDM) practices of researchers. The information gathered through this survey will assist the RDM Institutional Strategy Working Group with summarizing the current state of RDM, informing the formation of additional RDM supports and resources, and creating the RDM institutional strategy. We're looking for your response by November 16, 2022.

This survey is anonymous and takes between 15 to 20 minutes to complete. Your participation is voluntary, and you may leave any questions blank. If you decide to participate, please be assured that your responses will be kept confidential, and individual survey responses will not be shared. The results from this survey will be used for program planning and evaluation. A report summarizing the aggregate survey results will be shared publicly with the research community soon after the survey closes. Participation in the survey will in no way impact your academic or employment standing at the university.

Any questions can be directed to Karina McInnis, Associate Vice-President Research Services avpres@uoguelph.ca, or Barbara McDonald, Associate University Librarian Research barbara.mcdonald@uoguelph.ca.

Thank you for taking the time to complete and share this survey.
The Canadian RDM Survey was used as a reference and guide for questions in this survey.

By clicking, the "I consent" button you are consenting to take part in the survey.

- ○ I consent
- ○ I do not consent

Skip To: End of Survey If By clicking, the "I consent" button you are consenting to take part in the survey. = I do not consent

End of Block: Intro and Consent

Start of Block: Demographics / General RDM Questions

Demographics/General RDM Questions

What is your college affiliation? Select one.

- ○ College of Arts
- ○ College of Biological Science
- ○ College of Engineering & Physical Sciences
- ○ College of Social & Applied Human Sciences
- ○ Gordon S. Lang School of Business & Economics
- ○ Ontario Agricultural College
- ○ Ontario Veterinary College
- ○ Other _____

Display This Question:

If What is your college affiliation? Select one. != Other

Demographics/General RDM Questions

Display This Question:

If What is your college affiliation? Select one. = College of Arts

What is your school/department?

- ○ School of Languages and Literatures
- ○ School of English & Theatre Studies
- ○ School of Fine Art and Music
- ○ Department of Philosophy
- ○ Department of History

Display This Question:

If What is your college affiliation? Select one. = College of Biological Science

What is your school/department?

- ○ Department of Human Health and Nutritional Sciences
- ○ Department of Integrative Biology
- ○ Department of Molecular and Cellular Biology

Display This Question:

If What is your college affiliation? Select one. = College of Engineering & Physical Sciences

What is your school/department?

- ○ Department of Chemistry
- ○ Department of Mathematics & Statistics
- ○ Department of Physics
- ○ School of Computer Science
- ○ School of Engineering

Display This Question:

If What is your college affiliation? Select one. = College of Social & Applied Human Sciences

What is your school/department?

- ○ Criminal Justice and Public Policy
- ○ Family Relations & Applied Nutrition
- ○ Geography, Environment & Geomatics
- ○ Guelph Institute of Development Studies
- ○ Political Science
- ○ Psychology
- ○ Sociology & Anthropology

Display This Question:

If What is your college affiliation? Select one. = Gordon S. Lang School of Business & Economics

What is your school/department?

- ○ Department of Economics & Finance
- ○ Department of Management
- ○ Department of Marketing & Consumer Studies
- ○ School of Hospitality, Food & Tourism Management
- ○ Executive Programs (MBA / MA Leadership)

Display This Question:

If What is your college affiliation? Select one. = Ontario Agricultural College

What is your school/department?

- ○ Department of Animal Biosciences
- ○ Department of Food, Agricultural and Resource Economics
- ○ Department of Food Science
- ○ School of Environmental Design and Rural Development
- ○ School of Environmental Sciences
- ○ Department of Plant Agriculture

Display This Question:

If What is your college affiliation? Select one. = Ontario Veterinary College

What is your school/department?

- ○ Department of Biomedical Sciences
- ○ Department of Clinical Studies
- ○ Department of Pathobiology
- ○ Department of Population Medicine
- ○ Health Sciences Centre

Please indicate your rank at the University of Guelph. Select one.

- ○ Undergraduate Student
- ○ Graduate Student
- ○ Postdoctoral Fellow
- ○ Lecturer
- ○ Adjunct Professor
- ○ Assistant/Associate/Full Professor
- ○ Librarian
- ○ Professor Emeritus
- ○ Other, please specify _____

Display This Question:

If Please indicate your rank at the University of Guelph. Select one. = Undergraduate Student

Or Please indicate your rank at the University of Guelph. Select one. = Graduate Student

Or Please indicate your rank at the University of Guelph. Select one. = Assistant/Associate/Full Professor

Or Please indicate your rank at the University of Guelph. Select one. = Postdoctoral Fellow

Or Please indicate your rank at the University of Guelph. Select one. = Professor Emeritus

Demographics/General RDM Questions

Display This Question:

If Please indicate your rank at the University of Guelph. Select one. = Postdoctoral Fellow

Or Please indicate your rank at the University of Guelph. Select one. = Assistant/Associate/Full Professor

Or Please indicate your rank at the University of Guelph. Select one. = Professor Emeritus

At what stage in your independent research position are you at? Select one.

- ○ **Early career:** assumed my first independent research-related appointment less than 5 years ago
- ○ **Mid career:** assumed my independent research position 5-15 years ago
- ○ **Late:** assumed my independent research position more than 15 years

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Display This Question:

If Please indicate your rank at the University of Guelph. Select one. = Postdoctoral Fellow

Or Please indicate your rank at the University of Guelph. Select one. = Assistant/Associate/Full Professor

Or Please indicate your rank at the University of Guelph. Select one. = Professor Emeritus

Over the course of your career, how many projects have you had PI or leadership responsibility? Select one.

- ○ 1-2 research projects
- ○ 3-5 research projects
- ○ >5 research projects
- ○ Not sure
- ○ Not applicable

Display This Question:

If Please indicate your rank at the University of Guelph. Select one. = Undergraduate Student

Or Please indicate your rank at the University of Guelph. Select one. = Graduate Student

Have you been taught about data organization and describing data as part of your undergraduate or graduate classes/courses?

- ○ Yes
- ○ No
- ○ Unsure

Display This Question:

If Have you been taught about data organization and describing data as part of your undergraduate or... = Yes

If yes, what course were you taught about data organization and describing data ?

_____

Demographics/General RDM Questions

What type of research data do you typically collect/create in a average research project? Select all that apply.

- [ ] Geospatial (e.g., raster, vector, grid)
- [ ] Instrument specific (e.g., Olympus Confocal Microscope Data format, FLIR Infrared Camera (SEQ))
- [ ] Models (e.g., 3D, statistical, similitude, causal)
- [ ] Multimedia (e.g., JPEG, TIF, MPEG, MP3)
- [ ] Numerical (e.g., CSV, Mat, XLS, SPSS)
- [ ] Software (e.g., Java, Perl, Python, R)
- [ ] Text (e.g., TXT, DOCS, PDF, RTF, XML)
- [ ] Other (e.g., discipline specific), please specify _____

Considering the projects you have conducted over the past five years, how much data storage do you estimate you used in an average project? Select one.

- ○ < 1GB (Gigabyte)
- ○ 1GB to < 10GB
- ○ 10GB to < 50GB
- ○ 50GB to < 500GB
- ○ 500GB to < 1000GB
- ○ 1TB to < 4TB (Terabyte)
- ○ 4TB to 500TB
- ○ >500TB
- ○ Not sure
- ○ Not applicable, please specify _____

Please indicate any software used for analysis or manipulation of your research data. Select all that apply.

- [ ] ArcGIS
- [ ] Maple
- [ ] MATLAB
- [ ] MS Excel
- [ ] NVivo
- [ ] OpenRefine
- [ ] Python
- [ ] Qualtrics
- [ ] R
- [ ] SAS
- [ ] SPSS
- [ ] STATA
- [ ] Other, please specify _____

Please indicate where you will store your research data during the active phases of your research project (e.g. creating, processing and analyzing data). Select all that apply.

- ☐ Flash drive/USB
- ☐ CD/DVD
- ☐ Computer hard drive (i.e., local hard drive)
- ☐ Laptop hard drive
- ☐ External hard drive
- ☐ Hard drive of the instrument/sensor which generates the data
- ☐ Shared drive/ university or departmental server
- ☐ Cloud/web-based solution (e.g., Dropbox, Google Drive, Amazon Cloud, Microsoft Cloud)
- ☐ Grid/high performance computing (HPC) centre
- ☐ Physical copy retained (in boxes, cabinets, etc.)
- ☐ ⊗ Not sure
- ☐ Other, please specify _____

Demographics/General RDM Questions

Please indicate where you will store your research data at the end of your the research project. Select all that apply.

- ☐ Flash drive/USB
- ☐ CD/DVD
- ☐ Computer hard drive (i.e., local hard drive)
- ☐ Laptop hard drive
- ☐ External hard drive
- ☐ Hard drive of the instrument/sensor which generates the data
- ☐ Shared drive/ university or departmental server
- ☐ Cloud/web-based solution (e.g., Dropbox, Google Drive, Amazon Cloud, Microsoft Cloud)
- ☐ External data repository (e.g., Artstor, Cambridge Structural Database, Cancer Imaging Archive, CWRC, Dryad, Figshare, GenBank, GitHub, HathiTrust, Institutional Repository, PeptideAtlas, Protein, Data Bank, tDAR)
- ☐ Grid/high performance computing (HPC) centre
- ☐ Physical copy retained (in boxes, cabinets, etc.)
- ☐ ⊗ Not sure
- ☐ Other, please specify _____

Please indicate which, if any, of these online collaborative platforms you have used as part of a research team. Select all that apply.

- [ ] GitHub
- [ ] Google Docs
- [ ] Jupyter Notebook
- [ ] MS SharePoint
- [ ] MS Teams
- [ ] Open Science Framework (OSF)
- [ ] Other, please specify _____
- [ ] ⊗ Not applicable

Are you doing or planning research with Indigenous communities? Select all that apply.

- [ ] First Nations
- [ ] Métis
- [ ] Inuit
- [ ] Urban Indigenous
- [ ] Other Indigenous, please specify _____
- [ ] ⊗ Not applicable

Have you used any of the following resources when working with data related with Indigenous communities?

- [ ] The First Nations Principles of OCAP (https://fnigc.ca/ocap-training/)
- [ ] National Inuit Strategy on Research (https://www.itk.ca/projects/national-inuit-strategy-on-research/)
- [ ] CARE Principles (https://www.gida-global.org/care)
- [ ] TK Labels (https://localcontexts.org/labels/traditional-knowledge-labels/)
- [ ] USAI (https://ofifc.org/wp-content/uploads/2020/03/USAI-Research-Framework-Second-Edition.pdf)
- [ ] Other, please specify _____
- [ ] I didn't know about these resources, but they may have been useful
- [ ] ⊗ Not applicable

End of Block: Demographics / General RDM Questions

Start of Block: Data Curation Training / Consultation

Data Curation Training / Consultation In this section, you will be asked about your current practices and opinions on data curation (i.e,. organizing, formatting, and describing data), and on sharing your process of creating, organizing, and maintaining data sets so they can be accessed and used by people looking for information.

Does your research team utilize shared practices/protocols for curating (i.e., organizing, formatting, and describing) research data?

- ○ Yes
- ○ No
- ○ Unsure

Have you used any of the following resources, tools, or software to aid in curating your research data? Select all that apply.

- ☐ curation templates (e.g., metadata templates, read me templates, codebook/data dictionary templates)
- ☐ curation guidelines, checklists, workflows, protocols
- ☐ one-on-one consultation support
- ☐ training opportunities (e.g., workshops, presentations)
- ☐ infrastructure (e.g., storage options, data repositories)
- ☐ tools (e.g., cleaning software, scripts, etc)
- ☐ ⊗ not applicable

Data Curation Training / Consultation

Display This Question:

If Have you used any of the following resources, tools, or software to aid in curating your research... = curation templates (e.g., metadata templates, read me templates, codebook/data dictionary templates)

Or Have you used any of the following resources, tools, or software to aid in curating your research... = curation guidelines, checklists, workflows, protocols

Have you used any of the data curation templates or guidance documents offered by the library? Select all that apply.

- ☐ dataset metadata template
- ☐ read me template
- ☐ codebook template
- ☐ variable level template
- ☐ data deposit guide
- ☐ data submission guide
- ☐ data licensing guidance
- ☒ I wasn't aware that there were resources available

What types of practices do you employ when curating (i.e,. organizing, formatting, and describing) your research data? Select all that apply.

- [ ] organize and prepare data files including documenting relationships between files, file formats, file names, file contents, etc.
- [ ] document data-level information such as embedding metadata and/or file property information into the files (e.g., jpegs, videos), tagging/annotation, describing variable level information (e.g., coding explanations, variable units, instrument settings), etc.
- [ ] document descriptive information about the dataset (who, what, where, why, and how)
- [ ] gather scripts/codes and ensure they run without errors (if applicable)
- [ ] define terms of access/reuse
- [ ] anonymize data to ensure it is free of personally identifying/confidential information (if necessary)

End of Block: Data Curation Training / Consultation

Start of Block: Data Sharing

Data Sharing In this section, you will be asked about your current practices and opinions on sharing your research data.

How do you currently share your research data? Select all that apply.

- [ ] Share by personal request only
- [ ] Share online with restricted access
- [ ] Upload online to an institutional or personal website
- [ ] Upload online to an institutional data repository, such as Borealis (Dataverse)
- [ ] Upload online to an institutional repository, such as Atrium
- [ ] Include as part of supplementary material files to a journal publisher
- [ ] Deposit in a general or discipline-specific repository, such as Artstor, Cambridge Structural Database, Cancer Imaging Archive, CWRC, Dryad, Figshare, GenBank, GitHub, HathiTrust, Institutional Repository, PeptideAtlas, Protein Data Bank, tDAR. Please specify. _____
- [ ] If you plan to use another data repository other than the ones listed above, please specify. _____
- [ ] ⊗ Not currently sharing

Which of the following restrictions or embargoes impact your ability to share your data with others? Select all that apply.

- [ ] I need to publish the results of my data analysis before I can share them
- [ ] Sharing my data may jeopardize Intellectual Property rights
- [ ] I plan to file for a patent
- [ ] My data cannot be shared because of commercial concerns
- [ ] I have a contractual obligation with a third party
- [ ] My data are subject to privacy, confidentiality, or ethics restrictions (e.g., survey data with personal information, PHI)
- [ ] My data are a matter of public safety or of a sensitive nature
- [ ] I am unsure if I am allowed to share my data
- [ ] Other, please specify _____
- [ ] ⊗ There are no restrictions or embargoes on sharing my data with other parties

If your research data are not affected by any restrictions or embargoes with whom would you be willing to share them? Select all that apply.

- [ ] My immediate collaborators
- [ ] Researchers in my department/institute/centre
- [ ] Researchers at University of Guelph
- [ ] Researchers in my field
- [ ] Researchers outside my field
- [ ] Provide an opportunity to give data back to community (if Indigenous)
- [ ] Any one, including the general public
- [ ] ⊗ No one

For which reasons, if any, would you not be willing to share your research data and associated methods/tools/algorithms? Select all that apply.

- ☐ The data files are incomplete or not finished
- ☐ I still wish to derive value from the data
- ☐ I do not have the technical RDM skills or knowledge to share my data
- ☐ I do not hold the rights to share the data
- ☐ Funding body does not require sharing the data
- ☐ I believe the data should not be shared
- ☐ I did not know I could share the data
- ☐ Insufficient time
- ☐ Lack of standards to make the data usable by others
- ☐ Lack of funding to create shareable data
- ☐ No place to put the data
- ☐ The data are not useful to others
- ☐ Legal or/and privacy restrictions or/and embargoes in place
- ☐ I'm concerned my data could be used without proper citation or acknowledgement
- ☐ Other, please specify _____
- ☐ ⊗ I am willing to share them

What benefits do you see in sharing your research data? Select all that apply.

- [ ] Data availability provides safeguards against misconduct, data fabrication and falsification
- [ ] Data sharing and/or replication studies help in the training of next generation researchers
- [ ] Data sharing enables my data to be cited and increases my research impact
- [ ] Data sharing encourages collaborative scholarship
- [ ] Data sharing encourages interdisciplinary research
- [ ] Data sharing moves my field of research forward
- [ ] Data sharing reduces redundant data collection
- [ ] Data sharing supports open access to knowledge
- [ ] Re-analysis of data helps verify results
- [ ] Well-maintained data helps retain data integrity
- [ ] Other, please specify _____
- [ ] ⊗ I see no benefits to sharing my data

Are you aware of any discipline-specific research data repositories related to your field?

- ○ No
- ○ Yes, please specify _____

End of Block: Data Sharing

Start of Block: Data Management Plan (DMP) Training/Consultation

Data Management Plan (DMP) Training/Consultation In this section, you will be asked about your current practices and opinions on creating and following a data management plan (DMP) which is a formal document that outlines how data are to be handled both during a research project and after the project is completed.

Have you successfully completed a data management plan (DMP) for any of your research projects?

- ○ Yes
- ○ No

Data Management Plan (DMP) Training/Consultation

Display This Question:

If Have you successfully completed a data management plan (DMP) for any of your research projects? = Yes

Please indicate what supports you have used to assist you with creating a DMP. Select all that apply.

- ☐ Workshop or webinar by U of G librarian
- ☐ One-to-one consultation by U of G librarian
- ☐ Workshop material by U of G librarian
- ☐ Examples of DMPs from other research projects in my field
- ☐ Other, please specify _____
- ☐ ⊗ I did not use any supports

Display This Question:

If Have you successfully completed a data management plan (DMP) for any of your research projects? = No

If you have yet to complete a DMP, what supports do you feel would be beneficial to creating one? Select all that apply.

- ☐ Workshop or webinar by U of G librarian
- ☐ One-to-one consultation by U of G librarian
- ☐ Workshop material by U of G librarian
- ☐ Examples of DMPs from other research projects in my field
- ☐ Other, please specify _____
- ☐ ⊗ Not aware of any supports

What benefits do you see in developing a DMP? Select all that apply. If you see no benefits, choose 'I see no benefits to sharing my data'.

- ☐ **Saves time:** Planning for data management needs ahead of time.
- ☐ **Increases research efficiency:** Documenting data throughout its life cycle ensures that in the future you and others will be able to understand and use your data.
- ☐ **Facilitates new discoveries:** Enables other researchers to use your data leading to new and anticipated discoveries and prevents duplication of efforts.
- ☐ **Meets grant requirements:** Many funding agencies now require researchers deposit data which they collect as part of research project in an archive.
- ☐ **Increases research impact:** by maximizing the visibility of the data and promoting transparency in research
- ☐ **Ensures compliance:** to meet the requirements of the institution or funding agency
- ☐ **Improves accessibility:** ensuring that the quality and integrity of the data is maintained during and beyond the life cycle of the project
- ☐ **Safeguards research data:** by establishing appropriate storage, back-up and management
- ☐ ⊗ **I see no benefits to creating a DMP**

End of Block: Data Management Plan (DMP) Training/Consultation

☐ document descriptive information about the dataset (who, what, where, why, and how)

☐ gather scripts/codes and ensure they run without errors (if applicable)

☐ define terms of access/reuse

☐ anonymize data to ensure it is free of personally identifying/confidential information (if necessary)

End of Block: Data Curation Training / Consultation

Start of Block: Data Sharing

Data Sharing In this section, you will be asked about your current practices and opinions on sharing your research data.

How do you currently share your research data? Select all that apply.

☐ Share by personal request only

☐ Share online with restricted access

☐ Upload online to an institutional or personal website

☐ Upload online to an institutional data repository, such as Borealis (Dataverse)

☐ Upload online to an institutional repository, such as Atrium

☐ Include as part of supplementary material files to a journal publisher

☐ Deposit in a general or discipline-specific repository, such as Artstor, Cambridge Structural Database, Cancer Imaging Archive, CWRC, Dryad, Figshare, GenBank, GitHub,

HathiTrust, Institutional Repository, PeptideAtlas, Protein Data Bank, tDAR. Please specify. _____

☐ If you plan to use another data repository other than the ones listed above, please specify. _____

☐ ⊗ Not currently sharing

Which of the following restrictions or embargoes impact your ability to share your data with others? Select all that apply.

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---

If your research data are not affected by any restrictions or embargoes with whom would you be willing to share them? Select all that apply.

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- [ ] Researchers in my field
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- [ ] Provide an opportunity to give data back to community (if Indigenous)
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For which reasons, if any, would you not be willing to share your research data and associated methods/tools/algorithms? Select all that apply.

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Are you aware of any discipline-specific research data repositories related to your field?

- ○ No
- ○ Yes, please specify _____

End of Block: Data Sharing

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Data Management Plan (DMP) Training/Consultation

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- ☐ Other, please specify _____
- ☐ ⊗ I did not use any supports

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- ☐ One-to-one consultation by U of G librarian
- ☐ Workshop material by U of G librarian
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- ☐ **Safeguards research data:** by establishing appropriate storage, back-up and management
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End of Block: Data Management Plan (DMP) Training/Consultation