Overview

- What is research data?
- Why is research data management important?
- Data Management Planning
- Resources and tools
- Help
What is Research Data?

Research data can be anything that may be needed to validate the results of research.

Research data is a valid form of research output and is increasingly being recognised as a valuable asset which should be managed and, when appropriate, shared.

Some journals now require that data be made available to support research conclusions and the sharing of data or the provision of a data management plan may be required as a condition of research funding.
What is Research Data?

Research data may include:
- statistical data and analyses,
- measurements,
- questionnaires,
- interview transcripts,
- fieldwork notes,
- images,
- sound/video recordings, and
- artefacts.

The data could be physical or digital; it may be original, transcribed or anonymised.
Why is Research Data Management important?

Good data management allows you to:

• Comply with the University's Responsible Conduct of Research Policy
• Work more efficiently
• Achieve greater exposure for your research through publication, citation and collaboration
• Improve grant funding opportunities
• Protect your data from misuse or loss
• Enable future researchers to build upon your work
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The FAIR principles were developed to address one of the challenges of data-intensive science by making data Findable, Accessible, Interoperable and Reusable.

The principles emphasise machine-actionability because humans increasingly rely on computational support to deal with data as a result of the increase in volume, complexity, and creation speed of data.
Findable

The first step in (re)using data is to find them. Metadata and data should be easy to find for both humans and computers.

F1. (Meta)data are assigned a globally unique and persistent identifier

F2. Data are described with rich metadata (defined by R1 below)

F3. Metadata clearly and explicitly include the identifier of the data they describe

F4. (Meta)data are registered or indexed in a searchable resource
Once the user finds the required data, she/he needs to know how can they be accessed, possibly including authentication and authorisation.

A1. (Meta)data are retrievable by their identifier using a standardised communications protocol

A1.1 The protocol is open, free, and universally implementable

A1.2 The protocol allows for an authentication and authorisation procedure, where necessary

A2. Metadata are accessible, even when the data are no longer available
Interoperable

The data usually need to be integrated with other data. In addition, the data needs to interoperate with applications or workflows for analysis, storage, and processing.

I1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.

I2. (Meta)data use vocabularies that follow FAIR principles

I3. (Meta)data include qualified references to other (meta)data
Reusable

Metadata and data should be well-described so that they can be replicated and/or combined in different settings.

R1. Meta(data) are richly described with a plurality of accurate and relevant attributes

R1.1. (Meta)data are released with a clear and accessible data usage license

R1.2. (Meta)data are associated with detailed provenance

R1.3. (Meta)data meet domain-relevant community standards
Data Management Planning

Have a plan before you start – it can evolve with the research, but it’s hard to retrofit good planning.

Consider the following points:
• Data Collection
• Documentation and Metadata
• Ethics and Legal Compliance
• Storage and Backup
• Selection and Preservation
• Data Sharing
• Responsibilities and Resources
Data Collection

• What data will you collect or create?
• How will the data be collected or created?
• What programs and file formats will you use?
• Is there existing data that you want to use?
Documentation and Metadata

• How will you describe your data?
• What metadata will you keep?
• What format or standard will you follow?
• Will other people be able to understand the data later?
Ethics and Legal Compliance

- How will you manage any ethical issues?
- How will you manage copyright and Intellectual Property Rights (IP/IPR) issues?
- Who will own the data?
- How will you manage collaboration?
- Are there retention rules?
Storage and Backup

• Where will your data be stored? Who will pay for and manage the hardware?

• How will you name, sort and manage the data files? How will you manage transfers and synchronization?

• How will you back up your data?

• How will you manage access and security?
Selection and Preservation

- Which data are of long-term value and should be retained, shared, and/or preserved?
- What is the long-term preservation plan for the dataset?
- What data will you destroy? When? How?
Data Sharing

- How will you share the data?
- Are any restrictions on data sharing required by the type of data, the funder, your co-authors or your institution?
- When sharing the data, what licence will you make it available under?
Responsibilities and Resources

• Who will be responsible for data management?
• What resources will you require to deliver your plan?
• What will the plan cost? Possible costs include hardware, software, data curation time, metadata creation, archiving, etc.
Resources & Tools

Australian Research Data Commons (ARDC) and Australian National Data Service
https://www.ands.org.au/guides

Research Data Australia
https://researchdata.ands.org.au/
Resources & Tools

Research Data Management Guide
https://libguides.murdoch.edu.au/RDM
Help: Ask Our Librarians

Ask our Librarians

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- Referencing sources in assignments
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