Good Science Needs Good Data

An Introduction to Research Data Management

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IS THERE A REPRODUCIBILITY CRISIS?

HAVE YOU FAILED TO REPRODUCE AN EXPERIMENT?

Most scientists have experienced failure to reproduce results.

RISE OF THE RETRACTIONS

In the past decade, the number of retraction notices has shot up 10-fold (**top**), even as the literature has expanded by only 44%. It is likely that only about half of all retractions are for researcher misconduct (**middle**). Higher-impact journals have logged more retraction notices over the past decade, but much of the increase during 2006–10 came from lower-impact journals (**bottom**).

“So, did an Excel coding error destroy the economies of the Western world?”

[The Excel Depression](#). *New York Times*, 2013

“PhD student offering \$5,000 reward after car thief steals all his research”

[CTV News](#), 2017

Research Data Management Plan

A **Plan** with four key principles:

- Findability
- Accessibility
- Interoperability
- Reusability

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- **Findability**
- **Accessibility**
- **Interoperability**
- **Reusability**

The FAIR Data Principles

What's in a RDM Plan?

What's in a RDM Plan?

✓ **Format**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ **Instructions**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ Instructions
- ✓ **Storage**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ Instructions
- ✓ Storage

✓ **Metadata**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ Instructions
- ✓ Storage
- ✓ Metadata
- ✓ **Sharing**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ Instructions
- ✓ Storage
- ✓ Metadata
- ✓ Sharing
- ✓ **Responsibility**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ Instructions
- ✓ Storage
- ✓ Metadata
- ✓ Sharing
- ✓ Responsibility
- ✓ **Publication**

What's in a RDM Plan?

- ✓ Format
- ✓ Privacy/Security
- ✓ Instructions
- ✓ Storage
- ✓ Metadata
- ✓ Sharing
- ✓ Responsibility
- ✓ Publication

Data Management Plan Assistant Tool

More Reasons (Less Scary Ones):

More Reasons (Less Scary Ones):

★ **Increased Usage**

More Reasons (Less Scary Ones):

★ Increased Usage

★ **Recognition**

More Reasons (Less Scary Ones):

- ★ Increased Usage
- ★ Recognition
- ★ **Collaboration**

More Reasons (Less Scary Ones):

- ★ Increased Usage
- ★ Recognition
- ★ Collaboration
- ★ **Often Required**

More Reasons (Less Scary Ones):

- ★ Increased Usage
- ★ Recognition
- ★ Collaboration
- ★ Often Required
- ★ **Better Science**

RDM is Hard

RDM is Hard
Science is Hard

RDM is Hard
Science is Hard

But....

You have resources

YOUR LIBRARY

Scholars Portal **Dataverse**

It gets easier

It's important!

“A Nobel Laureate has retracted a 2016 paper in Nature Chemistry [...], after discovering the main conclusions were not correct.”

“Definitely embarrassing:” Nobel Laureate retracts non-reproducible paper in Nature journal. *Retraction Watch*, December 2017

Research Data Curation Program

Researcher

Contact the Library and Learn More!

Questions?

Works Cited

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