

## Background and context for

# Collaborative Research Action Data Management Plans

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## Why the Belmont Forum requires Data Management Plans

The Belmont Forum wishes to promote open, transparent and robust global change research by encouraging more open sharing of research data, leading to wider data analysis, more data re-use, and the combination of datasets from multiple sources. The Belmont Forum believes that an increased emphasis on the open sharing of research data has the potential to stimulate new approaches to the collection, analysis, validation and management of data, and to the transparency of the research process. However, the Belmont Forum also recognizes that not all research data can be shared openly, and that there will be legitimate reasons to constrain access, for example the risks to the privacy of individuals must always be considered where data arise from, or are derived from, personally identifiable data.

The Belmont Forum considers that the production and implementation of project specific data management plans is an essential requirement to enable the sharing of research data. Research data includes:

- digital information created directly from research activities such as experiments, analysis, surveys, measurements, instrumentation and observations;
- data resulting from automated or manual data reduction and analysis including the inputs and outputs of simulations and models.

Project-specific data management plans should be in accordance with relevant standards and community best practice, and which may vary by subject and disciplinary area. Research data should normally be open by default, unless there are legitimate reasons to constrain access, and the data must be made available with minimum time delay, including being discoverable through catalogues and search engines. Data with acknowledged long-term value should be preserved, protected from loss and remain accessible and usable for future research in sustainable and trustworthy repositories.

To enable research data to be discoverable and effectively re-used by others, including those outside the discipline of origin, sufficient metadata should be recorded and made openly available to enable other researchers to understand the research and re-use potential of the data.

Published results should always include information on how to access the supporting data and other research materials. Researchers should ensure that metadata created to support research datasets retained for the long-term is sufficient to allow other researchers a reasonable understanding of those datasets and thereby minimise unintentional misuse, misinterpretation or confusion.

## Data Management Plan Requirements

A Data Management Plan (DMP) describes the data management life cycle for the data to be collected, processed and/or generated by a Belmont Forum-funded research project. As part of making research data findable, accessible, interoperable and re-usable (FAIR), a DMP should include information on:

- the types of data, samples, physical collections, software, curriculum materials, and other materials to be collected, processed and/or generated in the course of the project;
- the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
- the handling of research data during and after the end of the project;
- policies for broad access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
- policies and provisions for re-use, re-distribution, and the production of derivatives; and
- plans for archiving data, samples, and other research products, and for preservation of access to them via an institutionally-supported repository.
- The full costs of implementing the data management plan should be included in the proposed project budget.