Guidelines for the Faculty of Health Sciences, SDU

Implementation of the Open Science Policy

Table of contents

Purpose of this document

This document addresses topics and questions to be considered in the process of implementing the Open Science Policy of University of Southern Denmark at the Faculty of Health Sciences. The practical implementation may vary at the departmental level.

The guideline is based on experiences from the work in the University of Southern Denmark Research Data Management Forum and similar policies, procedures and guidelines from other universities.

Open Science Policy document and GDPR

All recommendations in the Open Science Policy should be handled within the framework of the GDPR, the URIS recommendations[1] and the Danish supplementary legislation, with specific attention to the issue of identifiability of individuals.

University of Southern Denmark Open Science Policy

Open science includes transparent methods and public access to results, including publications, data, codebooks related to the data sets, and syntaxes in statistics programs (e.g. SPSS syntaxes, STATA do-files, R code) for data management as well as statistical analyses.

Purposes

- Help researchers to increase their scientific impact by making publications open and data publicly available.
- Help researchers to find and use existing infrastructures, resources and tools in the most efficient way and leading them to the right support for data management.
- Ensure that all research data are managed in line with requirements from funding agencies and journals, and compliant with the Danish Code of Conduct for Research Integrity, current legislation and ethical protocols.
- To ensure that primary materials and research data are available to support research findings and to contribute to other research projects, where possible.
- To enable Open Science by making data **F**indable, **A**ccessible, **I**nteroperable (accessible and usable across disciplines and methods) and **R**eusable (FAIR, see: https://www.force11.org/group/fairgroup/fairprinciples and https://www.nature.com/articles/sdata201618).
- To encourage involvement of the community beyond the research to greater research contributions and understanding, including utilizing the potential of Citizen Science
- To promote visibility of research from the University of Southern Denmark.

[1] https://ufm.dk/publikationer/2022/filer/uris-retningslinjer.pdf

General principles

Research data should be:

- Acknowledged as valuable output of research that should be made openly available and reusable, where possible.
- Covered by a data management plan when commencing a new research project.
- Stored securely and appropriately.
- Findable, Accessible, Interoperable and Reusable (FAIR).
- Retained for a minimum of five years after publication of the research.
- If applicable, archived in Rigsarkivet, otherwise deleted or anonymized.
- Managed in line with ethical protocols, including confidentiality.
- Managed in compliance with legal requirements for privacy and data protection.

Scope

These guidelines apply to scientific staff at the faculty and affiliated researchers who publish their research under the SDU affiliation

Research Assessment

SDU supports the general recommendation of the San Francisco Declaration on Research Assessment (DORA), and has signed the (CoARA) Agreement on Reforming Research Assessment, thus not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of research articles, to assess a researcher's contribution, or in hiring/promotion. For the purpose of research assessment, the faculty considers the value and impact of all research outputs (including datasets and software) in addition to research publications, and considers qualitative indicators of research impact, such as communication outreach or influence on policy and practice.

Citizen Science

The faculty encourages the uptake of Open Science practices (beyond Open Access to publications and data) such as the use of participatory design methods, or the involvement in Citizen Science[2] projects whenever this is sensible or feasible. Typical activities include data collection, data analysis, information access and delivery.

Citizen science has a strong potential for enhancing the potential of societal impact, by engaging citizens actively in sustainable development, as well as by contributing to research and innovation. When citizens are involved in research there is the possibility of influencing research agendas, contributing to policy dialogues, and achieving significant positive social outcomes. This can be attributed to the enhanced topical knowledge that citizens have, as well as the fact that they are already members of social networks and communities. Cole et al. (2024) describe Citizen Science as the dominant component in Open Science in relation

[2] Read more information at Citizen Science Knowledge Center, https://sdunet.dk/da/research/citizenscience

to societal impact.

At the Faculty of Health Sciences, we have a close collaboration with SDU Citizen Science Knowledge Centre where we together with US-colleges have developed a framework for joint deliberation and Citizen Science with a focus on societal impact. Organizationally, general knowledge of citizen science is anchored within Southern Denmark Research Support (Syddansk Forskerstøtte), which has a strong local and international citizen science network, is well-versed in citizen science methods, and supports the inclusion of citizen science in research projects where relevant.

A citizen science project should be anchored with a PI employed at SDU, and it is the responsibility of the PI that the Citizen Science project complies with GDPR and other relevant legislation. Notably, the involvement of citizens in handling of personal data increases the risk of confidentiality being compromised, and this challenge must be addressed before embarking on the research.

Communication and implementation of the procedures

These guidelines are communicated to all scientific employees as part of their introduction to data safety policies at the faculty. However, a department can also choose to delegate this to the heads of the research groups.

In addition, implementation of the guidelines can be discussed at research group and/or institute meetings.

What is research data?

Research data refer to material, data, records, files, and other evidence underpinning the research projects' findings, or other outcomes, including (the list is not exhaustive):

- Experimental and observational data.
- Results of clinical investigations and RCT's
- Questions and responses to questionnaires, tests, surveys and interviews.
- Biological material and records of such material.
- Audio and video recordings.
- Transcriptions of interviews and other audio recordings.
- Data, regardless of form of storage (paper, electronically) or storage media.

Research data is described by example categories. Staff and students are encouraged to propose a single, logical definition of research data for use with the Open Science Policy, based on their knowledge of their fields of research.

Data exempt from the Open Science Policy

- Administrative data.
- Data from third parties, data repositories and administrative registers with conditions limiting reuse, publication and dissemination.
- Publicly available data.
- Studies included in systematic reviews and meta-analyses. The exemption does not apply to documentation of searches, selection of studies for review and analyses in tables, figures and similar supplementary material routinely published online with reviews.

FAIR research data handling

All research (meta) data as defined in the National strategy for data management based on the FAIR principles[3] should follow the FAIR[4] guiding principles.

Research data such as data sets, codes, empirical analyses, experimental and observational data, transcriptions of interviews and other audio/video recordings, responses to questionnaires/surveys, collections of images etc. must be prepared in as FAIR a way as possible, where FAIR is defined as findable, accessible, interoperable and reusable according to the FAIR principles[5].

The faculty is committed to practicing and promoting data handling in a FAIR manner and therefore supports the Sorbonne Declaration on Research Data Rights.

3 DeiC (2021): National strategy for data management based on the FAIR principles, https://doi.org/10.48715/ea59-tp35
4 Wilkinson, Mark et al., 2016, 'The FAIR Guiding Principles for scientific data management and stewardship, doi:10.1038/sdata.2016.18
5 FAIR guiding principles for research data. See https://www.force11.org/group/fairgroup/fairprinciples and https://www.nature.com/articles/sdata201618

Data Management Planning

When commencing a new research project

- Projects covered by the Open Science Policy **must have** a data management plan[6].
- The data management plan must be written at the beginning of the project.
- The data management plan must be updated when necessary.
- The data management plan is stored along with other documentation of the project.

Responsibilities and scope

- The person responsible for the project is responsible for writing and updating the data management plan.
- PhD and master's thesis supervisors are responsible for supervising the student's writing and updating the data management plan.
- Literature searches for studies, public databases, available data and funding, and similar exploratory data searches and collections, in preparation for a research project or proposal, **do not require a data management plan**. At this stage, protection of confidentiality, untested ideas, possibility of access to data and funding, hypothesized results and possible patents is important for innovation, creativity and output of the research process.

What should be covered in the data management plan?

- For data management plans required from funding agencies, the respective funding agency's template should be used. See: https://dmp.deic.dk/.
- Otherwise, any general template could be used. IST and SIF (NIPH) have created templates that are available at dmponline.deic.dk. Read more at https://sdunet.dk/da/research/research-data-management-support/data-management-plan.
- Description of the data to be collected in the project is required, using guidelines from the Danish National Archives (Rigsarkivet).
- Estimation of the value of the data for long-term preservation or reuse, using the researcher's or student's best judgment and knowledge of the data and subject area. This general requirement is of specific relevance for the decision of the Danish National Archives as to whether the data can be archived under the proposed ministerial order of mandatory data reporting. See (in Danish): https://hoeringspor- talen.dk/Hearing/Details/60866.

Guidelines and support for writing data management plans are available at: https://deic.dk/da/deic-dmp

[6] Courses are offered by SUND PhD-school

How to preserve the data after the project has ended (particularly relevant for PhDs)

- Document the data, using guidelines from the Danish National Archives (Rigsarkivet).
- According to the permission from Research and Innovation Organisation (RIO) at SDU, personal and sensitive data should either be archived in the Danish National Archives (Rigsarkivet) or permanently deleted or anonymised when the permission expires. Anonymised[7] data is "data rendered anonymous in such a way that the data subject is not or no longer identifiable." This emphasizes that anonymised data must be stripped of any identifiable information, so it is impossible to derive information on individuals, even by the person or organisation that is responsible for the anonymisation. To remove CPR-number or name is not sufficient for anonymization. Nobody should be able to recognize anybody.
- Data should be offered to the Danish National Archives (Rigsarkivet) with the least restrictive conditions for access possible.
- Guidelines of the Danish National Archives (Rigsarkivet) for documenting, reporting and archiving research data are available in Danish: https://www.rigsarkivet.dk/aflever-data/for-dig-der-skaber-forskningsdata/anmeld-forskningsdata/

[7] As defined in the GDPR

Documentation

Minimum requirements

- Data underlying a publication should be stored in a folder with documentation that allows graphs to be reproduced and model results to be recalculated for at least five years from the day of publication[8].
- Make sure there are backups of your work in a safe place where storage complies with the General Data Protection Regulation (GDPR) and Danish legislation.
- SDU requires research (meta)data needed to validate the results presented in scientific publications to be deposited in a trusted and open repository, either field-specific or a general purpose one like Zenodo (https://sdunet.dk/en/research/research-data-management-support/databases-and-repositories-for-research-data#datarepositories). Data should be in open file formats, be provided with persistent identifiers, rich metadata and descriptions, proper documentation, a licence, and must be linked with publications wherever possible. In case the data cannot be published due to ethical, legal or confidentiality reasons, then only the metadata should be published Open Access along with the contact details and ORCID of the Principal Investigator

Minimum requirements for documentation of published data

- Documented according to guidelines from the Danish National Archives (Rigsarkivet). See: https://www.rigsarkivet.dk/aflever-data/for-dig-der-skaber-forskningsdata/anmeld-forskningsdata/
- Documentation is to be included in published data sets.

The faculty encourages staff to develop additional recommendations for documentation of published data, based on experience with the implementation of the Open Science Policy.

Best practices

- Use of predefined file structures.
- Use of file versioning systems.
- Sample labelling and tracking.
- Discipline-specific metadata standards.
- File naming, dating and versioning according to best available methods and practices. The university library can advise on this, contact Research Data Management Support at rdm-support@bib.sdu.dk. See also: https://guides.library.stanford.edu/data-best-practices
- Use of lab notebooks, preferably electronic, for experimental data.

The faculty encourages staff to develop additional recommendations for best practices, based on experience with the implementation of the open science policy.

[8] According to the Danish Code of Conduct for research integrity

Data storage options for active projects

See the Faculty's General Data Protection Regulation (GDPR) guidelines. Research Data Management support (rdm-support@bib.sdu.dk) and IT-support can also advise on options.

Long-term preservation/archiving

All data should be stored for a minimum of five years after publication of the research. Beyond this minimum requirement, several types of research data should be preserved for long-term access and reuse, including (the list is not exhaustive):

- If it would be unethical to subject humans or animals to unnecessary repetition of experiments, trials, observations or other research activities.
- If it would be unethical or indefensible to waste research funds and human resources, that could be put to better use (i.e. prevention and cure of disease) on unnecessary repetition of experiments, clinical trials and observational research.
- Data and materials that are impossible or hard to reproduce.
- Data and materials that are costly to produce, in terms of funding, time or human resources.
- Data and materials that can be reused in new projects serve as benchmarks, as reference or are of public interest.
- Data and materials underlying publications.

Without a legal basis and permission from RIO to preserve datasets covered by GDPR after a period of five years, data must be anonymised or stored at the National Archives for long-term preservation.

Archiving as an alternative to deletion

Valuable data and materials should be preserved by archiving in the Danish National Archives (Rigsarkivet). Preserving your data and materials in this archive fulfils legal requirements of deletion when a data processing permission expires.

Documentation of archived data is required, using guidelines from the Danish National Archives (Rigsarkivet) (in Danish). See: https://www.rigsarkivet.dk/aflever-data/

When someone leaves a department at the faculty

Rules for maintaining access to data when someone leaves:

- When a person leaves the department, as a routine part of the termination procedure, the person must confirm that the data the person is responsible for is taken care of in one of the following ways, if a project using this data is either discontinued or to be continued at the department:
    - **If the project is discontinued:** Archived in the Danish National Archives (Rigsarkivet) or deleted.
    - **If the project is to be continued at the department:** Transferred to a person at the department, who will be responsible for the data once it has been transferred, after the necessary permissions have been obtained.

Publication of research data

Research data should be **F**indable, **A**ccessible, **I**nteroperable and **R**eusable (FAIR). The University of Southern Denmark encourages that research data are made freely accessible, respecting ethical regulations, legal and contractual obligations, data protection legislation, and intellectual property rights.

Data underpinning publications should be made openly accessible in appropriate data repositories, respecting any legal, ethical or commercial limitations.

Please note that by and large, all data handled at the Faculty of Health Sciences is sensitive and not anonymized, thus data will never be freely available in the raw form but as metadata.

If data cannot be made openly available, at least the metadata should be published. Access to anonymized (see footnote 6 p. 6) original data can be given upon request.

Examples of arguments for why research data should be made publicly available

- Required by funders or publishers (e.g. Horizon Europe).
- An obligation towards collaborators.
- To expose the research of the departments and the individual researcher and to increase the impact.
- To enable new research and collaborations.
- For public interest.
- For secondary data analysis in other projects.
- For use in teaching and student projects.
- To heighten credibility and accountability of research at the department.
- To improve transparency and reproducibility.
- To prevent or detect research fraud, biased and selective analyses and publication.
- To make replication of statistical and psychometric analyses possible, as required by many journals and publishers[9].

Examples of where to publish research data

- Danish National Archives/Danish Data Archive (Rigsarkivet/Dansk Data Arkiv): https://www.rigsarkivet.dk/arkivalieronline/
- Data Journals (e.g. https://openpsychologydata.metajnl.com/)
- A data repository (see e.g., https://www.re3data.org/)
- The university library offers guidance and links to a directory of academic open access repositories: https://sdunet.dk/en/research/research-data-management-support

[9] - https://www.thelancet.com/pb-assets/Lancet/authors/tl-info-for-authors-1690986041530.pdf
- https://authors.bmj.com/policies/data-sharing/

Recommendations on how to publish research data

- All datasets should receive a permanent identifier, e.g. DOI (in Danish): https://www.deic.dk/da/news/2017-12-20/DataCite.[10]
- All datasets should receive a license for reuse, e.g. Creative Commons: https://creativecommons.org/licenses/?lang=da.[11]
- All data should include all necessary documentation and metadata.
- Use open and long-lived file formats such as .csv alongside R, SPSS, STATA, SAS or other files for statistical or data management software.

[10] It is therefore important to choose a repository which gives your datasets a DOI or equivalent. Contact RDM-support@bib.sdu.dk for assistance.
[11] Data repositories should also be able to offer a variety of licenses to place on your data. Contact RDM-support@bib.sdu.dk for assistance.

Open Access to publications and registering with ORCID

SDU PURE must be used to record all research publications. To support the national goal of having open and free access to all publications, researchers are encouraged to obtain open access (OA) from their publication outlet of choice.

SDU strongly recommends that all researchers register with Open Researcher and Contributor ID (ORCID) via PURE, create a public ORCID profile as well as claim and update their Scopus ID and Researcher ID and connect them to PURE. The University Library of Southern Denmark has created a guideline on how to ensure that registrations are correct.

Information about open access publishing: https://sdunet.dk/en/research/open-access.

Type of Open Access recommended

- All members of staff are encouraged to publish all their articles as *Green Open Access* if permitted by the journal. The green way to Open Access includes articles published in traditional subscription journals – that are not Open Access – but allow a version of the article ("final author version approved"), after publication, to be placed in an Open Access institutional repository, which at SDU is PURE. This is also referred to as 'self-archiving', which is done by the author.[12]
- **Provided that funding is procured externally**, publishing in *Full* or *Gold Open Access* publications is recommended, as readers have access to these publications immediately and without restrictions (i.e., no subscriptions, no fees, etc.). This type of publication is typically funded via 'article processing charges' paid by the author.
- **Provided that funding is procured externally**, there is a variant of *Gold Open Access* called *Hybrid Open Access*, where the authors publish in traditional subscription journals but offer *Gold Open Access* to articles by paying the 'article processing charges. This option is **not recommended** by the faculty.

Funding of Open Access publications

- It is generally **not possible** for the departments at the faculty to provide funding for publishing Open Access.
- Researchers from SDU can publish open access free of charge or with a discount in a number of journals. See https://sdunet.dk/en/research/open-access/publiceringsaftaler
- Open Access publications can be funded via external grants, provided that this was applied for in the budget and is supported by the funding agency.

Where can we publish with open access?

- See: Directory of Open Access Journals (www.doaj.org).

[12] Contact puresupport@bib.sdu.dk for further support

This guideline is based on the initial work of the Department of Psychology in collaboration with RDM-support in 2018. This adapted version has been developed in collaboration with all the departments at SUND, April 2025

SUND Open Science guidelines for implementation are revised every 2 years or when SDU's Open Science Policy is revised. Anne Kathrine Overgaard, Head of Research Support at SDU is responsible for updating the document.

The departments are each responsible for communicating the guidelines to their academic staff and affiliated researchers (see section "Communication and implementation of the procedures").

Contact information:

IST (Department of Public Health): ist-sekretariatet@health.sdu.dk

SIF (National Institute of Public Health): anam@sdu.dk

IRS (Department of Regional Health Research): irs-sekretariat@health.sdu.dk

KI (Department of Clinical Research): ki-sekretariat@health.sdu.dk

IMM (Department of Molecular Medicine): imm@health.sdu.dk

IOB (Department of Sports Science and Clinical Biomechanics): jhavelund@health.sdu.dk

RI (Department of Forensic Medicine): ri@sdu.dk