

A guide to preparing a data management plan for the ESRC



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Introduction:

Applicants who intend to manage and create data as part of their award must include a Data Management Plan in their application.

Guidance and support:

The Research Data Manager can provide 1-1 advice/support on writing a data management plan. Data management plans should, where possible, be submitted at least 5 working days before the grant submission deadline. Draft plans can be sent directly to the Research Data Manager: Catharine Bailey: catharine.bailey@brunel.ac.uk or researchdata@brunel.ac.uk or created using DMPonline¹

DMPonline allows you to generate and complete an ESRC Data Management Plan template online. The template includes detailed prompts and guidance to help you complete each section of the plan. Even if you do not draft your plan using the tool, the guidance it includes is worth reading as a checklist of points to cover in your plan. Plans can be saved, shared with co-applicants or with the Research Data Manager, for comment, and exported for incorporation into the grant application.

General guidance on data management planning is available on the University's Research Data Management website². The UK Data service also provides guidance³ on writing an ESRC DMP and the criteria by which reviewers should assess a DMP⁴.

¹ <https://dmponline.dcc.ac.uk/>

² <https://www.brunel.ac.uk/life/library/ORR/Research-Data-Management>

³ <https://ukdataservice.ac.uk/learning-hub/research-data-management/plan-to-share/esrc-data-management-plan-and-policy/>

⁴ <https://esrc.ukri.org/files/about-us/policies-and-standards/data-management-plan-guidance-for-per-reviewers/>

What is required?

A maximum of three sides of A4 (using a minimum font size of 11) is allowed for the plan. The plan should use the headings specified by ESRC, as follows.

Assessment of existing data

ESRC guidance: If you will be creating new data as part of your project, explain why existing data sources cannot be re-used. If you envisage purchasing or re-using existing data sources please explain whether issues such as copyright and IPR have been addressed to ensure that the data can be shared, i.e., explain how you plan to deal with permissions to share any data derived from data which you do not own.

Data sources that can be consulted are:

- <https://beta.ukdataservice.ac.uk/datacatalogue> with over 7,000 collections of key economic, social and historical data spanning many disciplines and themes
- <https://gtr.ukri.org/> of past and present research awards and their outputs

Additional guidance: ESRC reviewers will be looking for evidence that you have considered and evaluated secondary sources of data before considering primary research. Clearly identify data sources you propose to use. It may be helpful to include relevant URLs or DOIs. You should indicate that you have investigated issues such as IPR, and that you are confident you can use the data in the way you propose and will be able to share any derived data. The data sources you intend to use may be provided under licence or with terms of use, which may affect whether and how they or any data derived from them can be used and distributed. If you cannot find any terms of use or are unsure about what you will be permitted to do with the data, contact the provider to discuss what you propose to do. If you will need to secure permission to use the data, and this is likely to incur costs, you should indicate that you have planned for this, and include the costs in your budget.

Examples:

- *ONS Opinions Survey, Census Religion Module, 2009 (<http://doi.org/10.5255/UKDA-SN-8078-1>) held in the UK Data Service. Data are accessible via the Secure Lab only. Access requirements: ONS Accredited Researcher status (including the requirement to attend and pass the Safe User of Research data Environments (SURE) training course); submission of a project proposal; and completion of a Secure Access User Agreement signed by the University. Copies of data cannot be made, and any data outputs must be approved for release by the UKDS.*
- *Landsat 8 longitudinal satellite data covering the Antarctic region, available from US Geological Survey EROS (<https://landsat.usgs.gov/>). Data are public domain and can be freely used, reproduced and distributed. Citation is requested.*

Information on new data

ESRC guidance: Provide a brief description of new data which you envisage creating. This information should include how the data will be collected, i.e. proposed approach and the format (e.g. Open Document Format, tab-delimited format, MS Excel etc.) in which the data will be collected, analysed and stored, as well as an indication of how they will be documented.

For example, cover:

- data volume
- data type
- data quality, formats, standards documentation and metadata
- methodologies for data collection and/or processing
- source and trustworthiness of third-party data

Using standardised and interchangeable data formats ensures the long-term usability of data. Clear and detailed data descriptions and annotation, together with user-friendly accompanying documentation on methods and contextual information, makes data easy to understand and interpret and therefore shareable and with long-lasting usability. See UKDS guidance for recommended data formats.⁵

Additional guidance: Outline the types of data that are expected to be produced from the project e.g. quantitative, qualitative, survey data, experimental measurements, models, images, audio-visual data, samples etc. Include the raw data arising directly from the research, the reduced data derived from it, and published data. If possible, try to estimate the volume of data in MB/GB/TB.

Examples:

- *I will collect 30 one-hour interviews with farmers to find out about their use of and attitudes to pesticides. These will be stored as MP3 recordings of about 60MB per recording and transcribed into Microsoft Word (.docx) for analysis and preservation.*
- *EEG measurements will be taken from 15 subjects over the course of approximately 2 hours per subject. Data will be collected from the instrument as ASCII text files imported into MATLAB for analysis and exported as .csv files for preservation. Total volume of data is expected to be ~15-20 GB.*

Quality assurance of data

ESRC guidance: Quality control of data is an integral part of a research process. In support to the information about the planned research described in a Case for Support, briefly describe the procedures for quality assurance that will be carried out on the data collected. Quality control and assurance should be considered at the time of data collection, data entry, digitisation or data checking, to ensure accuracy and consistency of data.

Procedures might include:

⁵ <https://ukdataservice.ac.uk/learning-hub/research-data-management/format-your-data/recommended-formats/>

- documenting the calibration of instruments
- the collection of duplicate samples
- data entry methods
- data entry validation techniques
- methods of transcription

Additional guidance: Explain how the consistency and quality of data collection will be controlled and documented. This may include processes such as calibration, repeat samples or measurements, standardised data capture or recording, data entry validation, peer review of data or representation with controlled vocabularies.

Examples:

- *I will develop and pilot an interview schedule, so that interviews follow a standard format. Recordings will be transcribed following guidelines specifying the transcription format, tags to be used and anonymisation rules.*
- *We will create templates for data collection to ensure consistency. Spreadsheets will have variables clearly labelled, including units of measurement. We will include a separate worksheet with instructions on data entry with guidance on permitted values for given variables (including missing value codes).*
- *The PI will ensure the RA is trained in methods of data collection to ensure consistency. The PI and RA will meet regularly to cross check input, analysis and interpretation.*

Back-up and security of data

ESRC guidance: Describe the data back-up procedures that you will adopt to ensure the data and metadata are securely stored during the lifetime of the project. You may need to discuss your institution's policy on back-ups. If your data is sensitive (e.g., detailed personal data) in any way you should discuss appropriate security measures which you will be taking. Methods of version control (i.e., making sure that if the information in one file is altered, the related information in other files is also adopted, as well as keeping a track on a number of versions and their locations), should also be stated.

Additional guidance: Indicate here what the primary storage for data will be. Where possible, data collected/held at the University should be stored using your Brunel University London network drive or your University OneDrive account, which will provide data security, replication in separate data centres, automated backup, and file recovery.

For storage of small volumes of data and personal/sensitive data, you can use your personal H drive which provides you with 500MB of space, but additional space is available on request.

Your University OneDrive account allows you to store and share up to 1 TB of data. It is cloud based and allows for data sharing.

If you are working away from campus or in the field, data should be stored securely and backed up using password protected/encrypted local devices such as a laptop or external hard drive⁶. In the absence of an internet connection, data should be transferred at the earliest opportunity to your primary storage location.

For group access with space requirements that go beyond those satisfied by the normal H: and OneDrive spaces, Staff may use the University's Research Data Space. The maximum storage is in the order of several TB. Contact: Peter.Polkinghorne@brunel.ac.uk

Examples:

- *Audio recordings of semi structured interviews will be captured and stored on secure portable devices (if in person) and transferred at the earliest opportunity to Brunel's networked drive storage or one drive, which is password protected and backed up daily.*
- *Data collected in the field will be stored on password protected mobile devices. The 3-2-1 rule for backup will be implemented to ensure data are not lost. Backups will be made daily to an external hard drive and where possible, uploaded to the University's One Drive secure cloud storage. To facilitate collaboration between partners, data can be shared securely within a 'project' space on <https://brunel.figshare.com>. Storing the outputs on this platform will also serve as an extra backup.*
- *Participants' consent forms and completed questionnaires will be stored in a locked filing cabinet in my office. Questionnaire data will be entered into the study database, to be stored in my personal drive on the University network.*

Expected difficulties in data sharing

ESRC guidance: If you expect any obstacles to sharing your newly generated data please explain their causes and possible measures you are going to apply to overcome those. If you consider that there will be ethical issues which may cause difficulties in data sharing please explain your strategies for dealing with these issues in the relevant section in Je-S form, e.g., where possible discussing archiving with interviewees, anonymising data. Please refer to the requirements of ESRC Framework for Research Ethics.⁷

The ESRC supports the position that most data - even sensitive and confidential data - can be curated and shared ethically and legally provided researchers pay attention right from the planning stages of research to the following aspects:

- when gaining informed consent, include consent for data sharing
- where needed, protect participants' identities by anonymising data; and
- address access restrictions to data in the data management and sharing plan, before commencing research.

⁶ <https://www.brunel.ac.uk/about/administration/governance-and-university-committees/cyber-security/Information-Asset-Management/backing-up-your-data>

⁷ <http://www.esrc.ac.uk/funding/guidance-for-applicants/research-ethics/>

Additional guidance: Investigators carrying out research involving human participants should request consent to preserve and share the data. You should use your information sheet and consent form to do this. Do not just ask for permission to use the data in your study or make unnecessary promises to delete it at the end. Consider how you will protect the identity of participants, e.g., via anonymisation or using managed access procedures. Ethical issues may affect how you store and transfer data, who can see/use it and how long it is kept. You should demonstrate that you are aware of this and have planned accordingly. See the UKDS for guidance on consent to sharing⁸ and sample consent forms including data sharing consent request formulae that could be adapted for this purpose. See also Brunel's Code of Research Ethics.⁹

Indicate whether external users will be bound by data sharing agreements, licenses or end-user agreements. If so, set out the terms and key responsibilities to be followed. Note how access will be controlled, for example by the use of specialist services.

Examples:

- *We do not foresee any delays in data sharing following publication of the main research findings.*
- *Patients will be made aware of our data sharing procedures at the time of consent.*
- *In principle, the PI does not envisage any requirements to delay or restrict data sharing. However, given the multi- institutional/international nature of the project, we will seek advice from Brunel University's Research Office regarding the drawing up of a data sharing agreement.*

Consent, anonymisation and strategies to enable further re-use of data

ESRC guidance: Make explicit mention of the planned procedures to handle consent for data sharing for data obtained from human participants, and/or how to anonymise data, to make sure that data can be made available and accessible for future scientific research.

Additional guidance: Including the correct information in consent forms is crucial for the potential sharing of data. Obtaining permission to publish data from human research participants is essential even if data are to be anonymised before publication. This is because some risk of de-identification may remain, even after anonymisation and participants should be made aware that others outside of the research project may be able to view these data. Use your DMP to explain any anonymisation procedures that will take place prior to data being archived or published. The UKDS provides guidance on anonymisation¹⁰. The University has guidance on using personal data in research.¹¹

⁸ <https://ukdataservice.ac.uk/learning-hub/research-data-management/ethical-issues/consent-for-data-sharing/>

⁹ <https://www.brunel.ac.uk/research/Research-Integrity/Documents/PDF/Code-of-Research-Ethics-Version-9.pdf>

¹⁰ <https://ukdataservice.ac.uk/learning-hub/research-data-management/anonymisation/anonymising-quantitative-data/>

¹¹ <https://www.brunel.ac.uk/about/documents/pdf/persdatares.pdf>

Examples:

- *Researchers will code whether the person sitting in each seat is Black (coded B), Asian (Coded A) or White (coded W) and whether they are female (coded F) or male (coded M). No other information will be coded.*
- *If any personal data are collected from interviews, these will be managed in accordance with requirements of the DPA 2018 and UK GDPR 2021, ethics approval and the University's cyber security and data protection policy and guidelines. Informed consent will be obtained for publishing and archiving anonymized data at the time of collection. The University's Ethics Committee will assess and advise to ensure the research is conducted in line with the ethical and legal requirements both in the UK and where personal data (if any) are collected overseas.*

Copyright/Intellectual Property Right

ESRC guidance: Please state who will own the copyright and IPR of any new data that you will generate. For further information please refer to a relevant part of the ESRC Research Data Policy¹².

Additional guidance: In the absence of any contract stating otherwise, ownership of data created by employees of the University in the course of their employment will be vested in the University. It is standard in collaborations for each institution to own IPR in the data it has created. Where data are jointly created, IPR will be shared. If you plan to work collaboratively with an external partner(s), copyright and IPR should be clarified in a consortium agreement. Copyright advice can be sought from The Open Research and Rights team¹³ and guidance and support on IPR from RSDO.¹⁴ Where secondary sources will be used, you should indicate that existing IPR in these sources have been investigated and either they will not inhibit use of the data for the purposes of the project or there are plans in place to secure necessary permissions to use data and enable any derived outputs to be shared.

Examples:

- *Consent will be sought to transfer copyright in materials such as spoken words in an interview, photographs or other works created by the participants to Brunel University London, to allow for those materials (subject to legal and ethical considerations) to be published/reused under an open license. Each researcher will also retain copyright over their own fieldnotes and interview data.*
- *All data and outputs produced from this research will remain the property of Brunel University London and the responsibility of the PI.*

¹² <http://www.esrc.ac.uk/funding/guidance-for-grant-holders/research-data-policy>

¹³ <https://www.brunel.ac.uk/life/library/Copyright>

¹⁴ <https://www.brunel.ac.uk/business/Research-and-development/Research-Support-and-Development-Office>

Responsibilities

ESRC guidance: Please indicate who within your research team will be responsible for data management, metadata production, dealing with quality issues and the final delivery of data for sharing or archiving. Please provide this information within the Staff Duties section in the Je-S form and where appropriate in the Justification of Resources. If several people will be responsible state their roles and responsibilities in the relevant section of the Je-S form. For collaborative projects you should explain the coordination of data management responsibilities across partners in your Data Management Plan.

Additional guidance: Several supporting services are available to Staff at Brunel to help you manage your research data and if you plan to use them, they should be mentioned in your DMP. The Open Research and Rights Team¹⁵ can provide guidance on managing data throughout the research lifecycle and on archiving and publishing data underpinning publications in a repository, including the University's own data repository <https://brunel.figshare.com>. The University's Research Support and Development Office (RSDO) can provide advice on support on IP.¹⁶ The University's Research Ethics Committee can provide advice on Ethics/consent¹⁷. The University's Cyber Security group provide guidance on data security and information management.¹⁸ The University's Data Protection Officer can provide guidance on data protection. Contact: data-protection@brunel.ac.uk.

Examples:

- *The PI will have overall responsibility for implementation of the data management plan.*
- *The PI will have overall responsibility for data management, and the Co-Is and the PDRAs will take day-to-day responsibility for the data they collect in the field.*
- *The PDRA will be responsible for preparing datasets (metadata production and documentation) for archiving and those underpinning publications.*
- *Advice will be sought from the University's Open Research and Rights team at the point of archiving and publishing our research data.*

Preparation of data for sharing and archiving

ESRC guidance: Outline your plans for preparing and documenting data for sharing and archiving. Identify any additional plans for data sharing. ESRC requires grant-holders to formally deposit all data created or repurposed during the lifetime of the grant with a responsible data repository within three months of the end of the grant. Data may be submitted to either the UK Data Service or 'an appropriate responsible digital repository such as an institutional repository' (Research Data Policy, p. 8). If you choose to use a non-ESRC data repository, it is the grant holder's responsibility to ensure a persistent identifier (such as a DOI) is provided for the data and to inform the UKDS of the

¹⁵ <https://www.brunel.ac.uk/life/library/ORR/Contact-us>

¹⁶ <https://www.brunel.ac.uk/business/Research-and-development/Research-Support-and-Development-Office>

¹⁷ <https://www.brunel.ac.uk/about/administration/governance-and-university-committees/research-ethics-committee>

¹⁸ <https://www.brunel.ac.uk/about/administration/governance-and-university-committees/cyber-security>

published location. A project metadata record should also be created in the UKDS' ReShare repository to maximise discoverability of the data.

Additional guidance: Brunel Academic staff may use the University's data repository <https://brunel.figshare.com> to archive and publish data underpinning a publication and data deemed to be of long-term value. Data will be preserved for a minimum of 10 years. The ESRC will allow an embargo period of data (generally no longer than 12 months from the end of the grant) to allow for grant holders to publish their research findings. If you plan to use this embargo, you should state this in your DMP. It is important to provide information on how your data will be documented throughout the project and the metadata that will be provided upon deposit with the UKDS or another repository. Documentation could be kept in a database or spreadsheet or a simple read-me file. If you are using data analysis software such as a qualitative analysis package, you will also have the option of adding within the software itself in the form of notes, memos, nodes or classifications. If you are creating code, state how these will be annotated. You should also outline in your DMP how you plan to organise your data e.g., that you will implement folder, file naming and version control conventions.

Examples:

- *Data management practices throughout the data lifecycle will be strongly guided by the FAIR¹⁹ principles. Datasets will be prepared according to ESRC²⁰ and Brunel²¹. Subject to ethical and legal datasets and associated documentation, underpinning publications will be archived and published alongside the article and will be licensed to ensure maximum opportunities for discovery and reuse. Data will be archived within 3 months of the end of the grant and for a minimum of 10 years and published in the University's data repository <https://brunel.figshare.com> and/or <https://reshare.ukdataservice.ac.uk/> in standard and open formats. DOIs will ensure the data can be cited and tracked. Detailed metadata will ensure data are discoverable by a wide range of audiences/research fields.*
- *Articles will contain a data availability statement which includes the DOI and details of how the data can be accessed. Where data cannot be made available due to ethical or legal reasons, a metadata record will be created with details of access control.*
- *A folder and file naming convention will be established at the outset and appropriate supporting documentation will be created to ensure outputs (data) can be understood and reused.*

This guide is adapted from resources written by the University of Bristol Research Data Service, Sheffield University Research Data Management Service and Reading Research Data Management Service.



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¹⁹ <https://www.force11.org/group/fairgroup/fairprinciples>

²⁰ <https://esrc.ukri.org/files/about-us/policies-and-standards/esrc-research-data-policy/>

²¹ <https://students.brunel.ac.uk/documents/Policies/2019-20/Brunel-University-Research-Data-Management-Policy.pdf>