DATA LIFE CYCLE & DATA MANAGEMENT PLANNING

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LOOKING AFTER AND MANAGING YOUR RESEARCH DATA (GOING DIGITAL AND ESRC ATN EVENTS)
UK DATA ARCHIVE, COLCHESTER, 24-25 APRIL 2013
BENEFITS OF MANAGING AND SHARING YOUR DATA

DATA CREATED FROM RESEARCH ARE VALUABLE RESOURCES THAT CAN BE USED AND RE-USED FOR FUTURE SCIENTIFIC AND EDUCATIONAL PURPOSES. SHARING DATA FACILITATES NEW SCIENTIFIC INQUIRY, AVOIDS DUPLICATE DATA COLLECTION AND PROVIDES RICH REAL-LIFE RESOURCES FOR EDUCATION AND TRAINING.
THE LIFE OF DATA

A dataset has a longer lifespan than the research project that creates it

Data can be used and re-used for future research, if:

• shared
• managed well
• properly preserved
• made available
GOOD MANAGEMENT OF DATA

- good research
- high quality data
- data can be understood and used now and in future
- data can be shared and re-used
- needs to be planned
- needs to be specific for purpose
BENEFITS OF DATA SHARING

Public
• production of high quality research with social value

Funders
• make optimal use of publicly funded research
• avoid duplication of data collection

Scholarly community
• maximise transparency where appropriate
• quality improvement from verification, replication and trustworthiness
• valuable resources for teaching, e.g. methodology
• promote innovation – unintended, new uses of data

Research participants
• allow maximum use of their contributed data / information
• minimise data collection on the hard-to-reach (e.g. ill, elites)
RESEARCH FUNDER DATA POLICIES

Research Councils UK Common Principles on Data Policy (May 2011)

• Publicly funded research data are a public good, produced in the public interest, that should be made openly available with as few restrictions as possible in a timely and responsible manner that does not harm intellectual property.

• in accordance with relevant standards and community best practice

• metadata to make research data discoverable

• legal, ethical, commercial constraints on release of research data

• recognition for collecting & analysing data; limited privileged use

• acknowledge sources of data, intellectual contributions, terms & conditions

• use public funds to support the management and sharing of publicly-funded research data
DATA LIFECYCLE & DATA MANAGEMENT PLANNING

A DATA MANAGEMENT AND SHARING PLAN HELPS RESEARCHERS CONSIDER: WHEN RESEARCH IS BEING DESIGNED AND PLANNED, HOW DATA WILL BE MANAGED DURING THE RESEARCH PROCESS AND SHARED AFTERWARDS WITH THE WIDER RESEARCH COMMUNITY

AREAS OF COVERAGE

• Data management planning tasks and the research lifecycle
• Data management checklist
• Roles and responsibilities
• Costing data management
WHY DATA MANAGEMENT PLANNING

- Research funders require planning for data management and data sharing, e.g. UK Research Councils
  - which data created during research
  - which policies apply (legal, institutional, …)
  - which data standards
  - how document data
  - ownership, copyright, IPR
  - data storage, backup, security
  - how share, preserve, incl. access
  - roles & responsibilities
  - costing resources needed

DCC: [UK research funders' DMSP expectations](#)
WHY DATA MANAGEMENT PLANNING

Research benefits

• think what to do with research data, how collect, how look after
• keep track of research data (e.g. staff leaving)
• identify support, resources, services needed
• plan storage, short & long-term
• plan security, ethical aspects
• be prepared for data requests (FoI, funder)
<table>
<thead>
<tr>
<th>Funder</th>
<th>Plan required?</th>
<th>Required at application</th>
<th>Data topics in DMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Humanities Research Council (AHRC)</td>
<td>Yes</td>
<td>Technical plan</td>
<td>Standards, preservation, continued access and use</td>
</tr>
<tr>
<td>Biotechnology and Biological Sciences Research Council (BBSRC)</td>
<td>Yes</td>
<td>Data management and sharing plan</td>
<td>Type, format, standards, sharing methods, restrictions, sharing timeframe</td>
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<tr>
<td>Cancer Research UK (CRUK)</td>
<td>Yes</td>
<td>Data sharing plan</td>
<td>Volume, format, standards, metadata, documentation, sharing method, timescale, preservation, restrictions</td>
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<tr>
<td>Department for International Development (DFID)</td>
<td>Yes</td>
<td>Access and data management plan</td>
<td>Repositories, limits, timescale, responsibilities, resources, access strategy</td>
</tr>
<tr>
<td>Engineering and Physical Sciences Research Council (EPSRC)</td>
<td>No</td>
<td>Policy framework at institutional level (from 2015)</td>
<td></td>
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<tr>
<td>Economic and Social Research Council (ESRC)</td>
<td>Yes</td>
<td>Data management plan</td>
<td>Volume, type, quality, archiving plans, difficulties sharing, consent sharing, IPR, responsibilities</td>
</tr>
<tr>
<td>Medical Research Council (MRC)</td>
<td>Yes</td>
<td>Data management plan</td>
<td>Collection methods, documentation, standards, preservation, curation, security, confidentiality, sharing and access, timescale, responsibilities</td>
</tr>
<tr>
<td>Natural Environment Research Council (NERC)</td>
<td>Yes</td>
<td>Outline data management plan</td>
<td>Data management procedures, created data</td>
</tr>
<tr>
<td>Science and Technology Facilities Council (STFC)</td>
<td>Yes</td>
<td>Data management plan</td>
<td>Type, preservation, metadata, value, sharing, timescale, resources needed</td>
</tr>
<tr>
<td>Wellcome Trust</td>
<td>Yes</td>
<td>Data management and sharing plan</td>
<td>What data, when share, where share, how access, limits, how preserve, what resources</td>
</tr>
</tbody>
</table>
HOW

• Funder template for DMP
  • ESRC DMP requirements in data policy and DMP guidance
  • MRC DMP guidance and template
  • AHRC technical plan requirements

• DCC’s DMPonline tool

• UK Data Archive data management checklist
PLAN YOUR DATA MANAGEMENT

• plan data management early

• assign roles and responsibilities

• design data management according to needs and purpose of research

• implement and review data management throughout research
ROLES & RESPONSIBILITIES

Assign, not presume roles or responsibilities for data management

Who?

- project director: design and oversee research
- research staff: design research; collect, process, analyse data; decide where data will be held, who will have access
- laboratory or technical staff: generate metadata / documentation
- database designer
- external contractors: data collection, data entry, transcribing, processing or analysis
- support staff: manage / administer research and research funding; ethical review; assess IPR
- institutional IT services: data storage, security, back-up services
- external data centres or archives: facilitate data sharing
COSTING

- Identify resources needed to make research data shareable beyond primary research team - above planned standard research procedures and practices
- Resources = people, equipment, infrastructure, tools to manage, document, organise, store and provide access to data
- Early planning can reduce costs

See our data management costing tool

<table>
<thead>
<tr>
<th>ADDITIONAL ACTIVITY</th>
<th>COMMENTS AND SUGGESTIONS</th>
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| CONSENT FOR DATA SHARING  
Do you need to ask participants for their consent for data to be shared?  
Essential for qualitative interviews; possibly less so in quantitative surveys where data can be more easily anonymised. | • when consent for data sharing is considered as part of standard consent procedures – very low or no additional cost  
• when participants need to be re-contacted or re-visited after research to obtain retro-active consent for data sharing – could be high cost  
• does this require preparation of information sheets, consent forms or extra time for consent discussions/staff training? |
| DIGITISATION  
Do analogue or paper-based research data need to be digitised to increase their potential for sharing? | • is additional equipment or software needed for conversion?  
• if simply image scanning text - may be low cost  
• if Optical Character Recognition required then checking for accuracy needed - may be high cost |
DATA MANAGEMENT CHECKLIST

- points to relevant to consider when planning appropriate data management for research
- select what is relevant for your research

- Are you using standardised and consistent procedures to collect, process, check, validate and verify data?
- Are your structured data self-explanatory in terms of variable names, codes and abbreviations used?
- Which descriptions and contextual documentation can explain what your data mean, how they were collected and the methods used to create them?
- How will you label and organise data, records and files?
- Will you apply consistency in how data are catalogued, transcribed and organised, e.g. standard templates or input forms?
- Which data formats will you use? Do formats and software enable sharing and long-term validity of data, such as non-proprietary software and software based on open standards?
- When converting data across formats, do you check that no data or internal metadata have been lost or changed?
- Are your digital and non-digital data, and any copies, held in a safe and secure location?
- Do you need to securely store personal or sensitive data?
- If data are collected with mobile devices, how will you transfer and store the data?

www.data-archive.ac.uk/create-manage/planning-for-sharing/data-management-checklist
PLANNING FOR RESEARCH ORGANISATIONS

Organisations can provide framework of guidelines, tools and best practices to facilitate data management planning

- data management resource library
- data inventory for all projects
- assign data management responsibilities
- standardised forms, e.g. consent, ethical review
- transcription standards, incl. confidentiality agreement for transcribers
- file sharing and storage procedures
- security policy for storage, transmission of data
- data retention / destruction policy
- data copyright / ownership statement
- standard data format recommendations
- version control and file naming guidelines
DATA LIFE CYCLE

Creating data
- design research
- plan data management (formats, storage etc)
- plan consent for sharing
- locate existing data
- collect data (experiment, observe, measure, simulate)
- capture and create metadata
DATA LIFE CYCLE

Processing data
- enter data, digitise, transcribe, translate
- check, validate, clean data
- anonymise data where necessary
- describe data
- manage and store data
DATA LIFE CYCLE

Analysing data
- interpret data
- derive data
- produce research outputs
- author publications
- prepare data for preservation
DATA LIFE CYCLE

**Preserving data**
- migrate data to best format
- migrate data to suitable medium
- back-up and store data
- create metadata and documentation
- archive data
DATA LIFE CYCLE

- CREATING DATA
- PROCESSING DATA
- ANALYSING DATA
- PRESERVING DATA
- RE-USING DATA
- GIVING ACCESS TO DATA

Giving access to data:
- distribute data
- share data
- control access
- establish copyright
- promote data
DATA LIFE CYCLE

- Creating data
- Processing data
- Analysing data
- Preserving data
- Giving access to data
- Re-using data

Re-using data:
- follow-up research
- new research
- undertake research reviews
- scrutinise findings
- teach and learn
EXAMPLE: HEALTH AND SOCIAL CONSEQUENCES OF THE FOOT AND MOUTH DISEASE EPIDEMIC IN NORTH CUMBRIA, 2001-2003 (SN5407)

- Data re-used in study: ‘Assessment of Knowledge Sources in Animal Disease Control’
- Research design
  - Consent for participation & primary data use
  - Participants keep diaries
  - Interviews recorded
- Interviews transcribed
  - Diaries transcribed (MS Word)
- Data archiving discussed with participants.
  - Consent to archive transcripts and recordings obtained
- Transcripts and recordings archived at UKDA (RTF, MP3)
  - Catalogue record created
  - User guide created
- Transcripts and user guide available from UKDA

UK DATA ARCHIVE
EXAMPLE: WESSEX ARCHAEOLOGY METRIC PROJECT

- Metric animal bone data from archaeological sites in England
- Measurements & analyses of bone fragments
- Data deposited with Archaeology Data Service
- Data entered in MS Excel & MS Access database
- Database preserved as Oracle database and as CSV data by ADS, with additional context information
- Data and info available for download from ADS
the UK Data Archive has over forty years experience in selecting, ingesting, curating and providing access to social science data.

we have huge experience of supporting researchers and data creators of social science data and related disciplines.

we do data sharing for the ESRC Data Policy (since 1995) and the Rural Economy and Land Use programme (2004-2012).

our best practice approaches to making data shareable are based on:
  • challenges faced by researchers to share data
  • handling research data – quantitative and qualitative

highly skilled staff comprising researchers, technical and information specialists.

www.data-archive.ac.uk
OUR MANAGING AND SHARING DATA RESOURCES

Managing and sharing best practice guidance
• our website
• published guide
• Sage handbook (forthcoming Nov 2013)
• training programme
www.data-archive.ac.uk/create-manage
www.data-archive.ac.uk/media/2894/managingsharing.pdf

Training resources:
• presentations
• exercises and discussions / answers
www.data-archive.ac.uk/create-manage/training-resources
SCENARIO

Producing urban asylum

• exploring experiences of the UK asylum dispersal system in different cities
• considering the impact of shifting policy regimes on asylum experiences
• methods:
  • archival research looking at policy documents and media coverage
  • ethnographic work carrying out observations of asylum activist groups and campaigns
  • 120 interviews with a range of asylum sector actors and asylum seekers themselves
• data:
  • interview recordings and interview transcripts (external transcriber)
  • observations – written notebook and transcribed
  • policy documents – transcribed
  • newspaper coverage – transcribed
  • online discussion thread ‘stories of asylum’

Prepare a data management plan
Where intervene in data lifecycle?
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