Progress on open data publishing in the social sciences

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Research Data Management Team
UK Data Service

Tartu DataCite Conference
23 October 2014
Overview

• Digital data publishing in the social sciences

• The case of the UK Data Service

• Sharing data ethically

• Spectrum of access for data

• Our citation approach
University of Essex

The Archive
The UK Data Archive

• Based at the University of Essex, since 1967

• 47 years of selecting, ingesting, curating and providing access to social science data

• Data and data support services for higher and further education for research, teaching and learning

• Attained the highest information security standard, ISO 27001

• Concordat with our National Statistical Institute (ONS)
Links with other data archives worldwide

- Qualitative data
- Data archives
- Open data
- Secure datalabs
- Question banks

European data archives

North American data archives

Other worldwide data archives

Data access policy
Open access – a great time for archives!

- Open access and transparency agendas seeking digital curation and preservation knowledge
- Move by data owners considering open licensing
- Huge progress in opening up government data (gov.data)
- Lack of trust in published academic findings – demands for verification
- ….but risks surrounding privacy concerns mean ‘open data’ may be less useful for research
International funder data policies

- **OECD** Principles and Guidelines for Access to Research Data from Public Funding

- UK funder models
  - Data management plans and sharing recommendations
  - Data sharing mandates and dedicated data centres or institutions taking responsibility

- European Research Council/Horizon 2020
  - Pilot on open access to research data
  - Data management guidelines for Horizon 2020 (policies)
  - Communication & recommendation on access to / preservation of scientific information (publications, data)

- USA data management plans, e.g. NSF and NIH
Journal / Publisher Data Policies

- Many science journals have data policies relating to data sharing
  - “PLOS ONE will not consider a study if the conclusions depend solely on the analysis of proprietary data” … “the paper must include an analysis of public data that validates the conclusions so others can reproduce the analysis.”
  - BioMed Central open data statement

- Data underpinning publication accessible
  - upon request from author
  - as supplement with publication
  - in public or mandated repository (Elsevier uses PANGAEA)

- Citation via unique DOIs
- JORD project: survey of journal policies
Progress in the social sciences (UK)

- Good on funder data policy
- Good on data centres (funders)
- Fair on institutional repositories (funding)
- Poor on journal policy
- Exceptions: economic journals – verification
  Psychology journals – fraud cases
ESRC research data policy

*Research data should be openly available to the maximum extent possible through long-term preservation and high quality data management.*  
(ESRC Research Data Policy, 2010)

- ESRC grant applicants planning to create data during their research include a [data management plan](#).
- ESRC award holders offer their research data to UK Data Service within three months of the end of their grant.

*Researchers who collect the data initially should be aware that ESRC expects that others will also use it, so consent should be obtained on this basis and the original researcher must take into account the long-term use and preservation of data.*  
(ESRC Framework for Research Ethics, 2012)
Discipline specific data centres

- Curate and provide access to discipline-specific data:
  - UK Data Service
  - Environmental Information Data Centre
  - Visual Arts Data Service
  - Endangered Language Archive

- UK Data Service publishing pathways:
  - main collection - actively curated reserved for high impact data, primarily from government departments
  - ReShare - self deposit option for most research data offered
Registry of research data

What's in Research Data Australia

Collections (99008)
Research datasets or collections of research materials.

Parties (25701)
Researchers or research organisations that create or maintain research datasets or collections.

Activities (40731)
Projects or programs that create research datasets or collections.

Services (187)

Spotlight on research data

CATAMI:
Collaborative and Annotation Tools for Analysis of Marine Imagery and Video

In recent years, ecologists and biologists have increasingly relied on remote video and image-based methods to examine and monitor marine habitats, particularly those beyond easy diving depth. These data streams are currently being collected by the user community at sites around Australia using modern image and video based tools including Baited Remote Underwater Video Systems (BRUVS), Autonomous Underwater Vehicle (AUV), Remotely Operated Vehicle (ROV) and Underwater Towed Video (UTV) systems. Transforming raw visual data into quantitative information useful for science and policy decisions requires substantial effort by human experts. The University of Sydney has led a collaborative project to develop common labelling standards, and to transform and collate existing datasets that support marine research across Australia. The result is CATAMI: an online data management and image annotation system for marine ecologists.

Access the CATAMI service through Research Data Australia >>>

• UK project underway to establish national registry from institutions and data centres
Data journals

- New phenomenon for social sciences
- Publish a detailed journal style article describing the data and its origins
- Recommends or provides a place of deposit
  e.g. Nature Scientific Data ([http://www.nature.com/scientificdata/](http://www.nature.com/scientificdata/))

Submit to *Scientific Data* in three simple steps:

- **DESCRIBE**
  Write a detailed description of your dataset. We have templates to help you and a detailed guide to authors.

- **DEPOSIT**
  See our list of recommended repositories. We will help you find the right place for your data.

- **SUBMIT**
  Submit online and get the credit you deserve for your data!
UK Data Service

• put together a collection of the most valuable data and enhance these over time
• preserve data in the long term for future research purposes
• make the data and documentation available for reuse
• provide data management advice for data creators
• provide support for users of the service
• information about how data are used
• easy access through website
Our data portfolio

Over 6,000 datasets in the collection
230 new datasets added each year

- Official agencies - mainly central government
- International statistical time series
- Individual academic’ research grants
- Market research agencies
- Public records/historical sources
- Access to international data via links with other data archives worldwide
## Types of data in our portfolio

<table>
<thead>
<tr>
<th>UK Surveys</th>
<th>Longitudinal</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large-scale government funded surveys</td>
<td>Major UK surveys following individuals over time</td>
<td>Multi-nation aggregate databanks and survey data</td>
</tr>
<tr>
<td>Census</td>
<td>Business</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Census data 1971 to 2011</td>
<td>Microdata and administrative data</td>
<td>Range of multi-media data sources</td>
</tr>
</tbody>
</table>
Data access at the UK Data Service

- Web access to data (various formats) and metadata
- Data freely available for use. Commercial use charges
- Data available under 3 access levels:
  - OPEN
  - SAFEGUARDED – End User License
  - CONTROLLED – approved researcher /secure environment
- Some data also available via online data browsing
Open data collections and licenses

**Census** - Open Government Licence
- 2011 and 2001 Census aggregate statistics

**Survey data** - Open Government Licence
- Various surveys and teaching datasets

**Qualitative datasets** – Creative Commons 4.0 BY (NC)
- Life story interviews, essays, WWII reports

**Aggregate global indicators** – bespoke open data license
- World Bank Millennium Development goals
Safeguarded data

- Register with us using UK Federation
- Agree to an End User Licence (EUL)
  - Appropriate data usage
  - Full citation of data
  - informing us of re-use
- Select data from the Discover data catalogue using ‘Download/Order’ button
- Specify a project for which the data are to be used
- Download data to local machine in preferred format
Ethical arguments for sharing data

- Store and protect data securely
- Not burden over-researched, vulnerable groups
- Make best use of hard-to-obtain data (e.g., elites, socially excluded)
- Extend voices of participants
- Provide greater research transparency
- Enable fullest ethical use of rich data

In each, ethical duties to participants, peers and public may be present
Data Protection Act and research

- Exceptions for personal data collected as part of research:
  - can be retained indefinitely (if needed)
  - can be used for other purposes in some circumstances
  - people should still be informed

The Data Protection Act is not intended to, and does not, inhibit ethical research
Sharing confidential research data

Consider:

• obtaining informed consent for data sharing
• protecting identities not collecting personal data or anonymisation
• restricting / regulating access where needed

Consider jointly and in dialogue with participants

Plan early in research
Do participants consent to share data?

- Timescapes
  - data on personal relationships
  - 95%+ consent rate

- Foot and mouth disease in North Cumbria
  - sensitive community information
  - UK Data Archive consultation; pilot with 4 participants
  - 40/54 interviews; 42/54 diaries; audio restricted

- Finnish research on consent
  - re-contact project: life stores, gender, etc.
  - 165/169 (98%) agreed
  - bereaved relatives wanted others to benefit from their contribution
Why anonymise research data?

• Ethical reasons
  • protect people’s identity (sensitive, illegal, confidential)
  • disguise research location

• Legal reasons
  • not disclose personal data (DPA)

• Commercial reasons
Identity disclosure

Direct identifiers
- e.g. name, address, postcode, telephone number, voice, picture
- often NOT essential research information (admin)

Indirect identifiers
- possible disclosure in combination with other information
- e.g. occupation, geography, unique or exceptional values (outliers) or characteristics
Anonymising quantitative data

• remove direct identifiers
  e.g. names, address, institution, photo

• reduce the precision/detail of a variable through aggregation
  e.g. birth year vs. date of birth, occupational categories, area rather than village

• restrict upper lower ranges of a variable to hide outliers
  e.g. income, age

• combining variables
  e.g. creating non-disclosive rural/urban variable from place variables
Anonymising qualitative data

- Plan or apply editing at time of transcription except: longitudinal studies - anonymise when data collection complete (linkages)

- Avoid over-anonymising - removing/aggregating information in text can distort data or make it misleading

- Avoid blanking out; use pseudonyms or replacements. Identify replacements, e.g. with [brackets]

- Consistency within research team and throughout project

- Keep anonymisation log of all replacements, aggregations or removals made – keep separate from anonymised data files
# Online instant data browsing

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nesstar</td>
<td>Social surveys</td>
</tr>
<tr>
<td>UKDS.stat</td>
<td>Aggregate global indicators</td>
</tr>
<tr>
<td></td>
<td>(some restrictions to HE/FE)</td>
</tr>
<tr>
<td>InFUSE</td>
<td>Aggregate census data</td>
</tr>
<tr>
<td>QualiBank</td>
<td>Qualitative data</td>
</tr>
<tr>
<td><strong>APIs are coming soon!</strong></td>
<td></td>
</tr>
</tbody>
</table>
Dataset: British Social Attitudes Survey, 2009

Variable IncomGap: R say that the gap between those

LITERAL QUESTION
Thinking of income levels generally in Britain today, would you say that the gap between

<table>
<thead>
<tr>
<th>Values</th>
<th>Categories</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>too large</td>
<td>1797</td>
<td>79.3%</td>
</tr>
<tr>
<td>2</td>
<td>about right</td>
<td>360</td>
<td>15.9%</td>
</tr>
<tr>
<td>3</td>
<td>too small</td>
<td>51</td>
<td>2.2%</td>
</tr>
<tr>
<td>8</td>
<td>Don't know</td>
<td>58</td>
<td>2.6%</td>
</tr>
<tr>
<td>9</td>
<td>Refusal</td>
<td>1</td>
<td>0.0%</td>
</tr>
<tr>
<td>-7</td>
<td>off route due to corrupt sample file</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>-2</td>
<td>Skip, version C</td>
<td>1148</td>
<td></td>
</tr>
</tbody>
</table>

SUMMARY STATISTICS
Valid cases          2267
Missing cases        1154
This variable is numeric

UNIVERSE
VERSIONS A AND B: ASK ALL
Nesstar: GHS - Age started smoking
Nesstar: GHS - time series


- Tenure: Categories
- Survey year (financial year from 1988 onwards): Categories
- Type: Column percentage

- Owns outright
- Buying with a mortgage
- Private Rented
- Social Rented

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Nesstar: mapping OLS 2013
UK Data Service ReShare

http://reshare.ukdataservice.ac.uk/

A platform through which to get research data published

Primarily data produced by UK social science researchers, but also other social science research data of interest
Easy to publish and upload data

Edit collection: Data Collection #851515

To deposit a data collection, you must accept the ReShare Terms and Conditions.

- I confirm that I am the owner of the copyright and associated intellectual property rights in the whole Data Collection or am otherwise lawfully entitled to grant this licence on behalf of each and every owner;
- I grant a non-exclusive, royalty-free licence to the UK Data Archive (a department of the University of Essex and not a separate legal entity) of Wivenhoe Park, Colchester, CO4 3SQ (the “University”) to hold, make copies of, and disseminate copies of the Data collection, in accordance with the access conditions I will specify when uploading data files: open data accessible to users without registration; or safeguarded data accessible to users registered with the data services provided by the UK Data Archive.

I agree to the ReShare data deposit terms and conditions

Save for later | Cancel | Next >
Citing data

- Citation a fundamental part of research and academia
- We have recommended a human readable citation for many years
- Certain attributes of data need to be identified, e.g. versions
- Granularity of citation is important
- Duplication of data sources being cited can be problematic. Which version?
Our persistent identifiers approach

• Our data collections are not digital objects

• Need to capture changes made to data
  • Versioning data in a commonly understood manner
  • Needed rule-based definition of a ‘significant’ change

• Integrate processes with digital preservation activities & work flows

• In 2011 we assigned 6000+ Datacite DOIs for our collections

• Use APA citation style for data
Understanding Society: Waves 1-2, 2009-2011

SN: 6614
Title: Understanding Society: Waves 1-2, 2009-2011
Alternative title: United Kingdom Household Longitudinal Study; UKHLS
Persistent identifier: 10.5255/UKDA-SN-6614-4
Series: Understanding Society: Waves 1-, 2008-
Depositor: University of Essex. Institute for Social and Economic Research
Principal investigator(s): University of Essex. Institute for Social and Economic Research
Data collector(s): NatCen Social Research
Northern Ireland Statistics and Research Agency. Central Survey Unit
Sponsor(s): Economic and Social Research Council
Department for Work and Pensions
Department for Education
Department for Transport
Department for Culture, Media and Sport
Recording significant change

• Approx. **15% UKDA data collections** are altered within first year after first publication

• We distinguish between **major and minor** changes to a data collection = high impact vs. low impact

• DOI allocated to a **metadata** instance of a data collection
  • DOIs resolve to jump page with version history pointing to all external instances
  • New DOI = High Impact change, with explicit logging

• Provided access only to most up-to-date version of data
Major changes – high impact

- New variable added
- New labels/value codes added
- Weighting variables reconstructed
- Wrong data supplied (e.g., March not April)
- Mis-coded data (e.g., Don’t know/Refused confused)
- Change in format (file migration)
- Significant changes in documentation
- Change in access conditions
A new Digital Object Identifier (DOI) is assigned to the data collection each time there is a major change to data, documentation or metadata. The new DOI will resolve to an updated version of this page containing a log of changes to this data collection since the allocation of its first DOI. The DOI system supports resource discovery and simplifies citation for users of data collections. Data producers benefit directly through increased visibility of their work.

10.5255/UKDA-SN-6614-4

**Citation:**

**Change log:**
7 January 2013: For the fourth edition (January 2013) finalised data and documentation from Wave 2 were deposited, along with updated data and documentation for Wave 1. See documentation for full details of revisions and updates.

Minor changes
22 August 2013: Minor changes to catalogue record

10.5255/UKDA-SN-6614-3

**Citation:**

**Change log:**
20 February 2012: For the third edition (February 2012) data and materials for the first year of Wave 2 were added to the study.

10.5255/UKDA-SN-6614-2

**Citation:**

**Change log:**
Raising awareness in the social sciences

- ESRC funding for short-term project on citation
- Advocacy for best practice in citing research data

Audiences
- Professional organisations
- Publishers and journal editors
- Researchers

Key activities
- Data citation principles for social sciences
- Personal communications
- Events with BL DataCite, JISC and wider PI community
- Outreach through Doctoral Training Centres
Demonstrating impact with citation

- Hoping for use of our data DOIs!
- Starting to search for use of our DOIs – Google
- Gather data citation statistics from Thomson Reuters Data Citation Index
- Work with BL Datacite and ODIN to gain connectivity between identifiers & outputs – early adopters of ORCID
Dynamic data citation

• Citing parts (fragments) of data collections
  • single files
  • subsets of quantitative data
  • extracts of textual data

• QualiBank system enables extract level citation
  • Citation has rich highly structured XML metadata
  • GUIDs to identify subsets citation database
  • Human reference references the ‘mother’ DOI
Interview with Mr. Hennessey

SN: 2000
Title: Family Life and Work Experience Before 1918, 1870-1973
Sex: Male
Age group: 65-74
Socioeconomic status: Lower supervisory/technical
Region: North West

FULL INTERVIEW TEXT

Interviewer: Can you tell me where your father came from originally?
Subject: I can't, no. From Manchester, I expect. Although he tells me about ... well, me father, he tells me about me grandfather having a little barrel of brandy sent from France.

Interviewer: As if he might have come from France?
Subject: Yes. Hennessey's brandy.

Interviewer: You didn't belong to the Hennessey brandy family?
Subject: I think he did. I think it is. But he said he couldn't pay the duty on it and they had to send it back. That's all I know about it, I mean to say, it might be hearsay, and I don't know.

Interviewer: You don't know where your mother came from?
Subject: No, I haven't the faintest like that.
I: Can you tell me where your father came from originally?

R: I can't, no. From Manchester, I expect. Although he tells me about ... well, me father, he tells me about me grandfather having a little barrel of brandy sent from France.

I: As if he might have come from France?

R: Yes. Hennessey's brandy.

I: You didn't belong to the Hennessey brandy family?

R: I think he did. I think it is. But he said he couldn't pay the duty on it and they had to send it back. That's all I know about it. I mean to say, it might be hearsay, and I don't know.
APA citation format

Citation

A unique citation reference has been generated based on your selection.


Select the text above

You can copy and paste this citation as required in your outputs. This citation includes a URL which will link directly back to this page, where the cited text will be highlighted.

Show preview of citation URL in action
More data - big data investments

- ESRC Big Data Network
  - Administrative and business
  - Third sector and local government
  - Social media

- Working with new data producers, some commercial sector
- Will need new data access environments
- New discussions about privacy and digital footprints

Image source: digitalfamilysummit.com
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Contact

UK Data Service
University of Essex
ukdataservice.ac.uk/help/get-in-touch.aspx