

ReSearch Data Management

The what and the when...

FOSTER

Re-usable Data

Dark Data

Data hidden to other potential users and therefore likely to be underutilized and lost.

- Poorly described
- Too awkward to use
- Problems with consent and anonymization
- Problems with ownership

Other fish in the sea



Research Data Management

The what and the when...



Discovering Open Practices for Early Career Researchers
4 September 2014

Laurence Horton
Data Librarian, The London School of Economics and Political Science
L.Horton@lse.ac.uk



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at and the which...

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Re-usable Data

When do you do Research Data Management?

You are always doing Research Data Management...



What is Research Data Management?
It's about looking after your data

practices, policies, and procedures to...

prevent
misuse
loss
of data
t.

What's wrong with research?



Dark Data

Data hidden to other potential users and therefore likely to be underutilized and lost.

- Poorly described
- Vulnerable storage
- Problems with consent and anonymisation
- Problems with ownership



Thank you

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What is Research Data Management?

It's about looking after your data
(the stuff you analyze)

practices, policies, and procedures to...

Management

your data
(the stuff you analyze)

It's about looking after your data

(the stuff you analyze)

practices, policies, and procedures to...

protect
describe
validate
allow you to use it or others to re-use

It.

Data is knowledge awaiting discovery.

**Raise the level of accessible, re-usable,
citable data.**

Research Data Management (RDM) Planning:
emphasizing the importance of RDM as an organizational tool in research, and not just another funder requirement.

Research Ethics
Tension between protecting research participants and data use (or re-use)

Anonymisation
Strategies to avoid compromising data quality

Consent
Informed consent: what is it, when to obtain it, how to ensure data re-use

Documentation and metadata
Telling the story of data. Making it discoverable and comprehensible to others (but also your future self)

Storage and Back-up
Protecting data from accidental or malicious loss or damage

Licenses
Conditions under which data can be used or re-used. Intellectual Property Rights - copyright, licenses, and user agreements

Archiving
Agreements for offering research data to an institutional repository are essential. It is a matter of making a decision on archiving and where to store data early in the project. Choices of archives. What to copy from them, and what they expect from you.

Data is knowledge and
Raise the level of accessible data.

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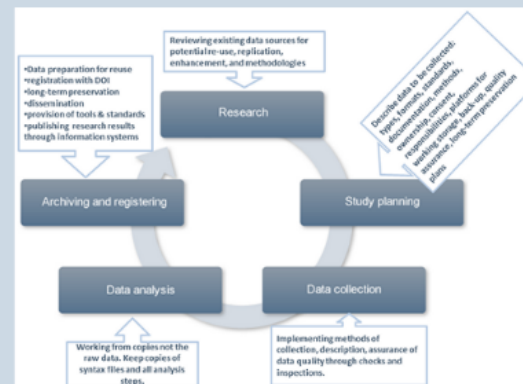
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Choice of an archive. What to expect from them, and what they expect from you.

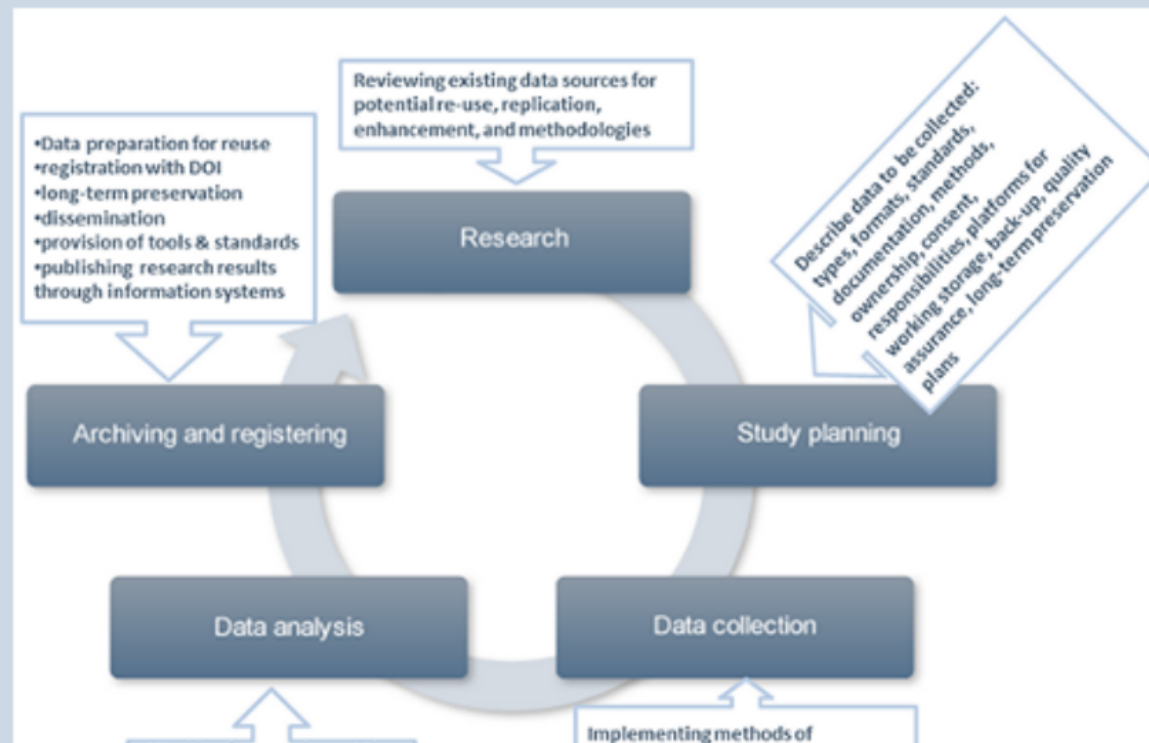
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You are always doing Research Data Management...



How do Research Data Management

You are always doing Research Data Management...



In fact...

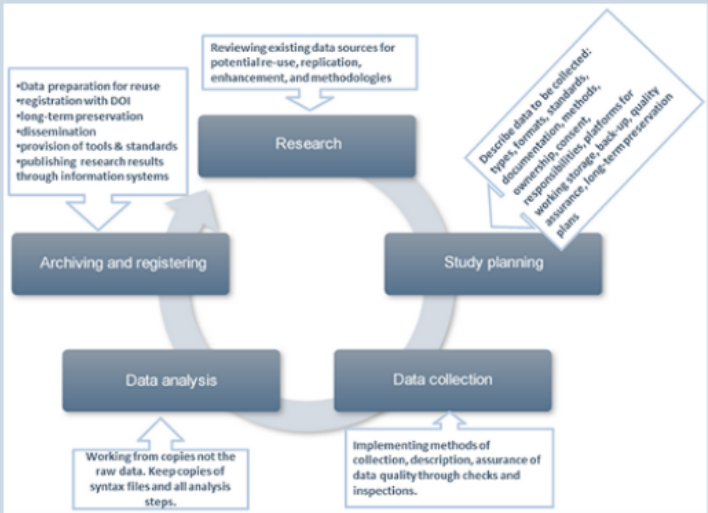
**You are probably doing Research Data
Management...**

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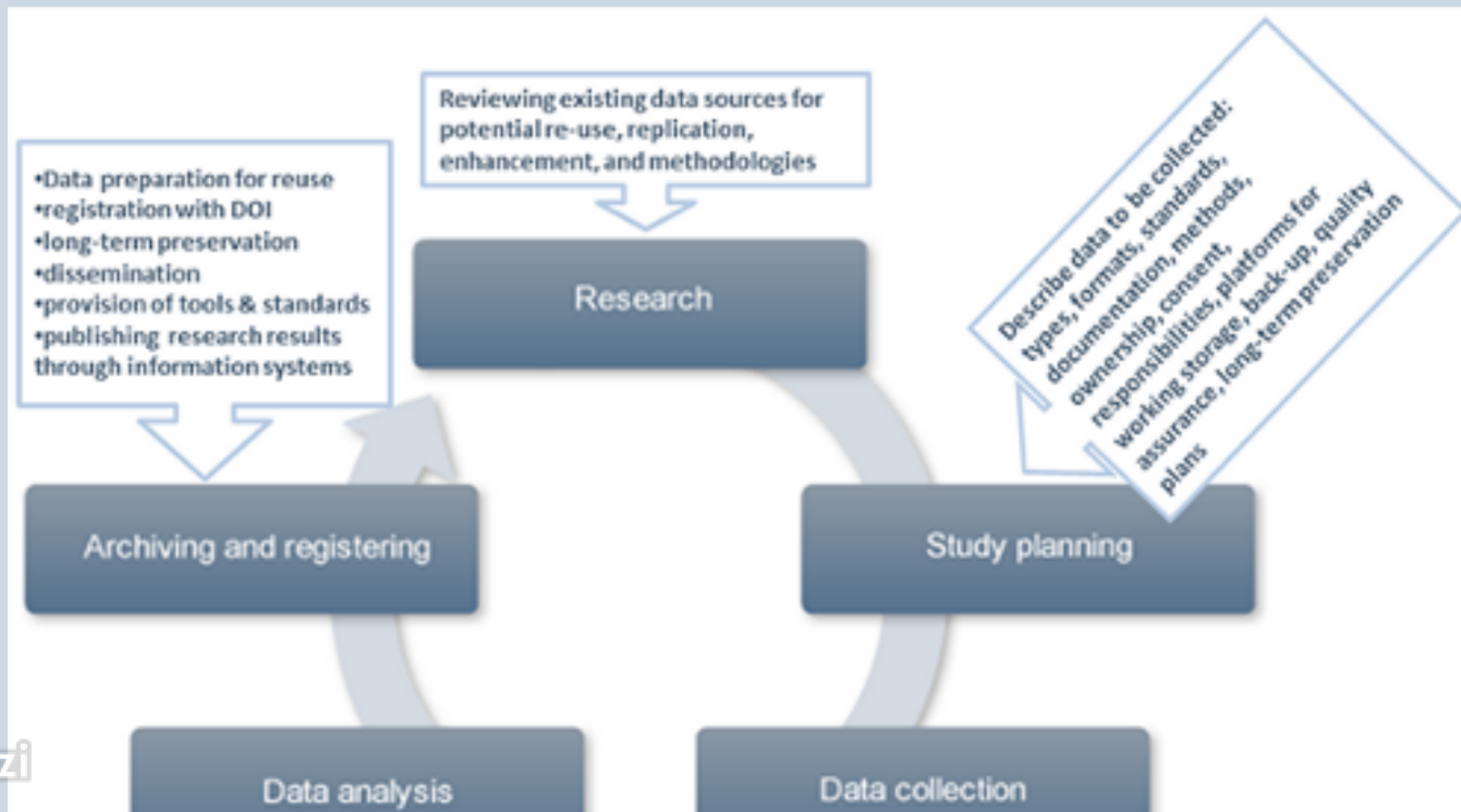
Without realizing it is Research
Data Management.

When do you do Research Data Management?

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re always doing Research Data Management





You are always doing Research



what's driving data re-use?

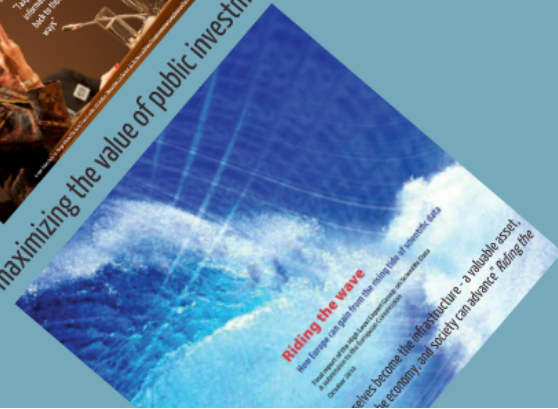
Good science

replication, reliability

Good politics 



Data as an asset: maximizing the value of public investment in research



Good science

replicat

replication, re

Replication, Replication

Gary King,¹ Harvard University

Political science is a community enterprise; the community of empirical political scientists needs access to the body of data necessary to replicate existing studies to understand, evaluate, and especially build on this work. Unfortunately, the norms we have in place now do not encourage, or in some cases even permit, this aim. Following are suggestions that would facilitate replication and are easy to implement—by teachers, students, dissertation writers, graduate programs, authors, reviewers, funding agencies, and journal and book editors.

Problems in Empirical Political Science

As virtually every good methodology text explains, *the only way to understand and evaluate an empirical analysis fully is to know the exact process by which the data were generated and the analysis produced*. Without adequate documentation, scholars often have trouble replicating their own results months later. Since sufficient information is usually lacking in political science, trying to replicate the results of others, even with their help, is often impossible.

For quantitative and qualitative analyses alike, we need the answers to questions such as these:

How were the respondents selected? Who did the interviewing? What was the question order? How did you decide which informants to interview or villages to visit? How long did you spend in each community? Did you speak to people in their language or through an interpreter? Which version of the ICPSR file did you extract information from? How knowledgeable were the coders? How frequently did the coders agree? Exactly what codes were originally generated and what were all the recodes performed? Precisely which measure of unemployment was used? What were the exact rules used for conducting the content analysis? When did the time series begin and end? What countries were included in your study and how were they chosen? What statistical procedures were used? What method of numerical optimization did you choose? Which computer program was used? How did you fill in or delete missing data?

Producing a comprehensive list of such questions for every author to address, or deciding ex ante which questions will prove consequential, is virtually impossible. For this reason, quantitative analysts in most disciplines have almost uniformly adopted the same method of ascertaining whether enough information exists in a published work. The *replication*

standard holds that sufficient information exists with which to understand, evaluate, and build upon a prior work if a third party could replicate the results without any additional information from the author. The replication standard does not actually require anyone to replicate the results of an article or book. It only requires sufficient information to be provided—in the article or book or in some other publicly accessible form—so that the results could in principle be replicated. Since many believe that research standards should be applied equally to quantitative and qualitative analyses (King, Keohane, and Verba 1994), the replication standard is also appropriate for qualitative research, although the rich complexity of the data often make it more difficult.²

The process of reducing real-world phenomena to published work involves two phases: the representation of the real world by essentially descriptive quantitative and qualitative data, and the analysis of these data. Both phases are important components of the replication standard. Future scholars, with only your publication and other information you provide, ought to be able to start from the real world and arrive at the same substantive conclusions. In many types of research this is not possible, but it should always be at-

to replicate existing studies to understand, evaluate, and especially build on this work. Unfortunately, the norms we have in place now do not encourage, or in some cases even permit, this aim. Following are suggestions that would facilitate replication and are easy to implement—by teachers, students, dissertation writers, graduate programs, authors, reviewers, funding agencies, and journal and book editors.

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reliability



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Published online 1 November 2011 | *Nature* **479**, 15 (2011) | doi:10.1038/479015a

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NEWS BUSINESS

18 April 2013 Last updated at 10:44



Doubt cast on research supporting austerity

Doubts have been cast on research that has been crucial in supporting governments' austerity programmes.

Two Harvard economists found in 2010 that a country's output falls substantially as soon as its total public debt passes 90% of its annual output or gross domestic product (GDP).

But two other economists say they have found errors in the work which means the relationship "evaporates entirely".

The original researchers admitted mistakes but say their message stands.

Carmen Reinhart and Kenneth Rogoff, the economists behind the original research, said in a statement: "It is sobering that such an error slipped into one of our papers despite our best efforts to be consistently careful," but they added that the "central message" of their research was still valid.



The new research suggests that austerity measures may not have been necessary

Professor Robert Pollin: The relationship evaporates entirely

The new study by Robert Pollin, Michael Ash and Thomas Herndon from University of Massachusetts, which was made public this week, found coding errors in spreadsheets used in the 2010 study, which they said meant that growth did not fall as fast as was claimed when debt passed 90% of a country's gross domestic product (GDP).

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The new research suggests that austerity measures may not have been necessary



Data Availability



PLOS journals require authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception¹.

When submitting a manuscript online, authors must provide a *Data Availability Statement* describing compliance with PLOS's policy. If the article is accepted for publication, the data availability statement will be published as part of the final article.

Refusal to share data and related metadata and methods in accordance with this policy will be grounds for rejection. PLOS journal editors encourage researchers to contact them if they encounter difficulties in obtaining data from articles published in PLOS journals. If restrictions on access to data come to light after publication, we reserve the right to post a correction, to contact the authors' institutions and funders, or in extreme cases to retract the publication.

Methods acceptable to PLOS journals with respect to data sharing are listed below, accompanied by guidance for authors as to what must be indicated in their data availability statement and how to follow [best practices in reporting](#). If authors did not collect data themselves but used another source, this source must be credited as appropriate. Authors who have questions or difficulties with the policy, or readers who have difficulty accessing data, are encouraged to contact the relevant journal office or data@plos.org.

Acceptable data-sharing methods:

Data deposition (strongly recommended). All data and related metadata underlying the findings reported in a submitted manuscript should be deposited in an appropriate public repository², unless already provided as part of the submitted article. Repositories may be either subject-specific (where these exist) and accept specific types of structured data, or generalist repositories that accept multiple data types, such as [Dryad](#). Guidance on acceptable repositories is included below². The *Data Availability Statement* must specify that data are deposited publicly and list the name(s) of repositories along with digital object identifiers or accession numbers for the relevant datasets. In some cases authors may not be able to obtain DOIs or accession numbers until the manuscript is accepted; in these cases, the authors must provide these numbers at acceptance. In all other cases, these numbers must be provided at submission.

Data in Supporting Information files. For smaller datasets and certain data types, authors may upload data as [Supporting Information files](#) accompanying the manuscript. (See also [additional information](#) regarding appropriate use of Supporting Information files.) Authors should take care to maximize the accessibility and reusability of the data by selecting a file format from which data can be efficiently extracted (for example, spreadsheets are preferable to PDF when providing tabulated data).

If data deposition or provision in Supporting Information is not ethical or legal (e.g., underlying data pose privacy or legal concerns, or include human participants³), the following two methods may be acceptable alternatives, subject to case-by-case evaluation:

Data made available to all interested researchers upon request. The *Data Availability Statement* must specify "Data available on request" and identify the group to which requests should be submitted (e.g., a named data access committee or named ethics committee). The reasons for restrictions on public data deposition must also be specified. Note that it is not acceptable for the authors to be the sole named individuals responsible for ensuring data access.

Data available from third party. In the case of a primary dataset that was not originally generated by the authors of the submitted manuscript, appropriate data sharing may require that interested researchers obtain third-party data independently from the named original source. In this case, the *Data Availability Statement* must state the source of the data with full citation and, if the dataset cannot be provided, indicate "Data available from (named source)." The reasons for restrictions on public data deposition must also be specified.

Unacceptable data access restrictions:

PLOS journals will not consider manuscripts for which the following factors influence ability to share data:

- Authors will not share data because of personal interests, such as patents or potential future publications.
- The conclusions depend solely on the analysis of proprietary data (e.g., data owned by commercial interests, or copyrighted data). If proprietary data

Social Science Journals that have a research data policy

American Economic Journal-Macroeconomics, Journal of Marketing, Archives of General Psychiatry, American Journal of Psychiatry, American Psychologist, American Journal of Public Health, Annual Review of Clinical Psychology, Annual Review of Environment and Resources, Annual Review of Psychology, Annual Review of Public Health, Annual Review of Sociology, Autism Research, Cognitive Psychology, Developmental Science, Emotion, Global Environmental Change-Human and Policy Dimensions, Psychotherapy and Psychosomatics, American Journal of Geriatric Psychiatry, Health Psychology, International Journal of Management Reviews, Journal of Abnormal Psychology, Journal of Applied Psychology, Journal of Child Psychology and Psychiatry, Epidemiology, Psychosomatic Medicine, Journal of Consulting and Clinical Psychology, Journal of Cognitive Neuroscience, Journals of Gerontology Series A-Biological Sciences and Medical Sciences, Journal of Experimental Psychology-General, Journal of Financial Economics, Journal of Fluency Disorders, Journal of Human Evolution, Journal of Informetrics, Quarterly Journal of Economics, Journal of Operations Management, Journal of Personality and Social Psychology, Social Cognitive and Affective Neuroscience, Journal of The American Academy of Child and Adolescent Psychiatry, Clinical Psychology Review, Journal of Psychiatric Research, Learning and Instruction, Neuropsychologia, Journal of Clinical Psychiatry, Neuropsychology, Health Affairs, Structural Equation Modeling-A Multidisciplinary Journal, British Journal of Psychiatry, Psychological Bulletin, Psychological Review, Personality and Social Psychology Review, Progress In Human Geography, Psychological Science, Annals of Behavioral Medicine, Schizophrenia Research, Neuropsychology Review, Trends In Cognitive Sciences, Studies In East European Thought, Asia Europe Journal, Asia Pacific Journal of Social Work and Development.

Source: JORD (2011) "Social Science Journals that have a research data policy" <http://jordproject.wordpress.com/project-data/social-science-journals-that-have-a-research-data-policy/>



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Data as an asset: maximizing the value of public investment in research

examining established
research questions
data quality
research data

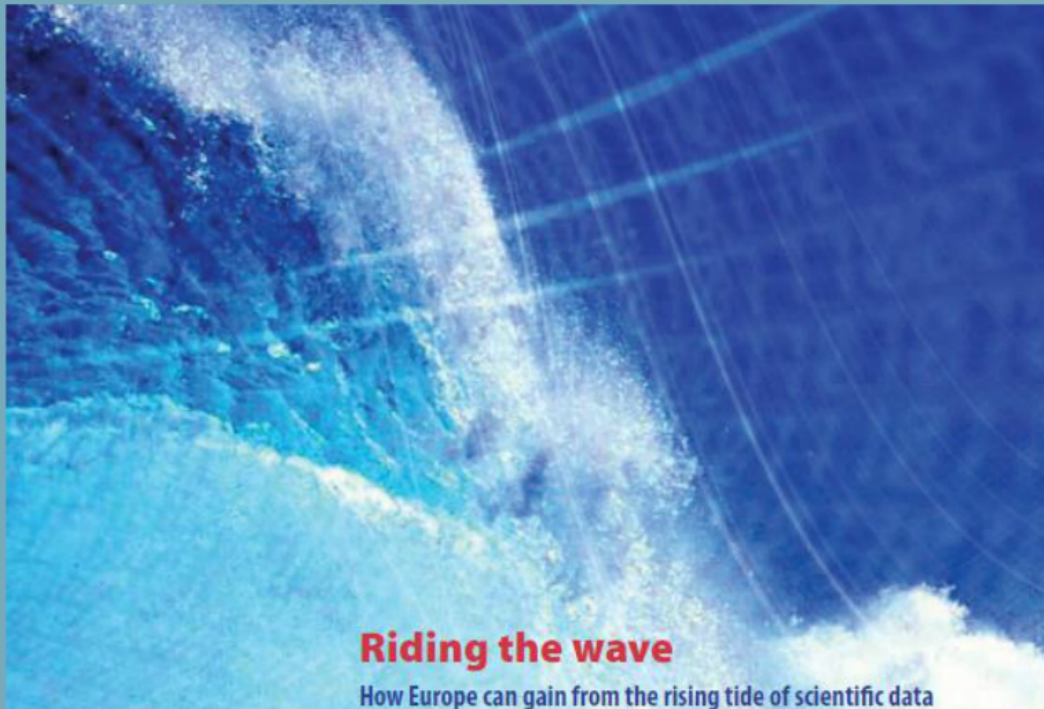




Good

Data as an asset: maximizing the value of public investment in research

for...
re-examining established
research questions
improving data quality
enhancing existing research data
forming theory





**Neelie Kroes,
European Commissioner for Digital Agenda**

"Your data is worth more
if you give it away"

"Taxpayers have already paid for this
information. The least we can do is give it
back to those that want to use it in new
ways"

Image: Sebastiaan ter Burga <https://flic.kr/p/75poi7> under Attribution-ShareAlike 2.0 Generic (CC BY-SA 2.0) <https://creativecommons.org/licenses/by-sa/2.0/>

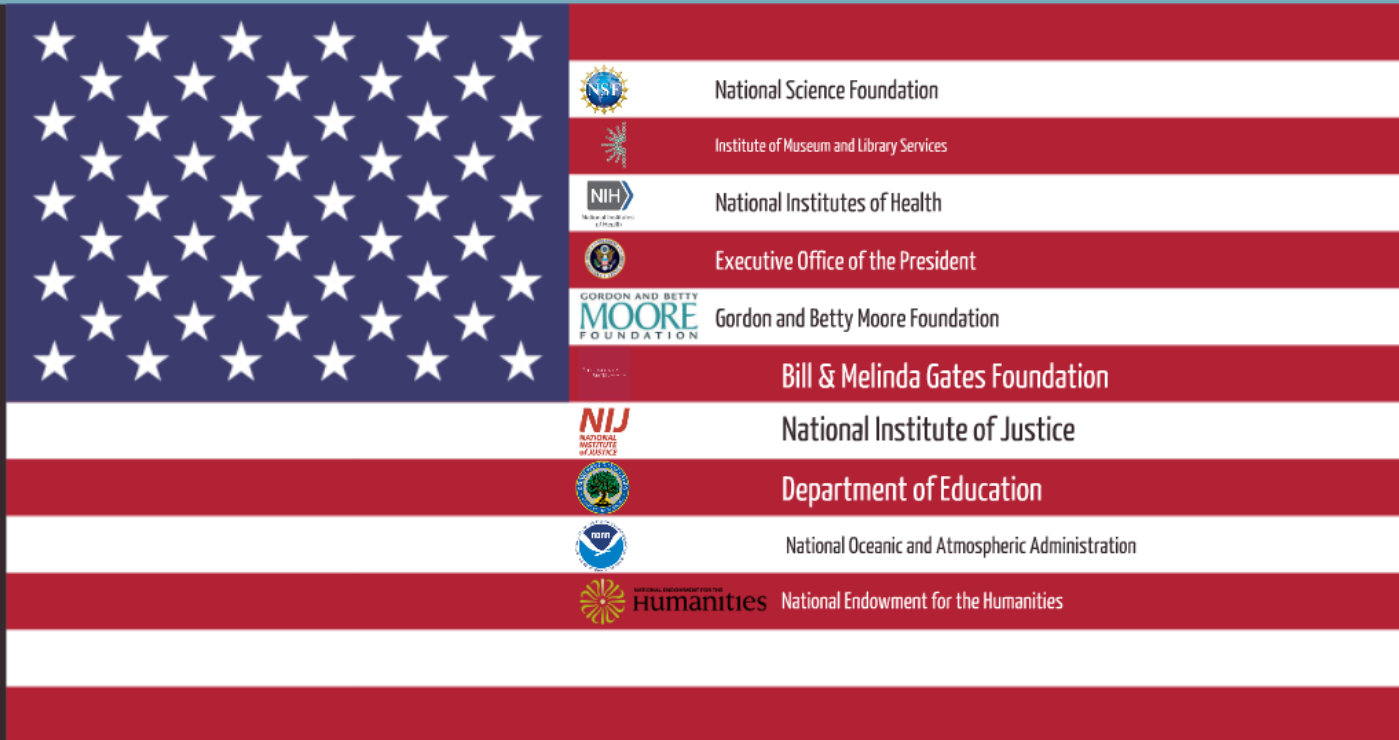
set: maximizing the value of public investment in res

Good politics



Investment in research





National Science Foundation



Institute of Museum and Library Services



National Institutes of Health



Executive Office of the President



Gordon and Betty Moore Foundation



Bill & Melinda Gates Foundation



National Institute of Justice



Department of Education



National Oceanic and Atmospheric Administration



National Endowment for the Humanities



wellcome trust

Department for International Development

CANCER RESEARCH UK

RESEARCH COUNCILS UK

UK academic research funder data policies

● Full Coverage ● Partial Coverage ○ No Coverage [View All](#)

Research Funders	Policy Coverage		Policy stipulations				Support Provided				
	Published outputs	Date	Time limits	Date plan	Answer/ sharing	Long-term curation	Monitoring	Guidance	Repository	Data centre	Costs
AHRC	●	●	●	●	●	○	○	●	○	○	○
BBSRC	●	●	●	●	●	●	●	●	●	○	●
CRUK	●	●	●	●	●	●	●	○	●	○	○
EPSRC	●	●	●	○	●	●	●	○	○	○	○
ESRC	●	●	●	●	●	●	●	○	○	○	○
MRC	●	●	●	●	●	●	○	○	●	○	○
NERC	●	●	●	●	●	●	●	●	●	○	○
STFC	●	●	●	●	●	●	●	○	○	○	○
Wellcome Trust	●	●	●	●	●	●	●	●	●	○	○

BBSRC **EPSRC** **NERC** **AHRC**

Medical Research Council
Science & Technology
Economic & Social Research Council
Arts & Humanities Research Council



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- Skills
- Public Engagement
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Home / Research / RCUK Common Principles on Data Policy

RCUK Common Principles on Data Policy

Making research data available to users is a core part of the Research Councils' remit and is undertaken in a variety of ways. We are committed to transparency and to a coherent approach across the research base. These RCUK common principles on data policy provide an overarching framework for individual Research Council policies on data policy.

Principles

- Publicly funded research data are a public good, produced in the public interest, which should be made openly available with as few restrictions as possible in a timely and responsible manner that does not harm intellectual property.
- Institutional and project specific data management policies and plans should be in accordance with relevant standards and community best practice. Data with acknowledged long-term value should be preserved and remain accessible and usable for future research.
- To enable research data to be discoverable and effectively re-used by others, 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.
- RCUK recognises that there are legal, ethical and commercial constraints on release of research data. To ensure that the research process is not damaged by inappropriate release of data, research organisation policies and practices should ensure that these are considered at all stages in the research process.

EPSRC

Pioneering research and skills



Arts & Humanities Research Council



MRC

Medical Research Council

Science & Technology Facilities Council

PREZC · C
ECONOMIC

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- In order to recognise the intellectual contributions of researchers who generate, preserve and share key research datasets, all users of research data should acknowledge the sources of their data and abide by the terms and conditions under which they are accessed.
- It is appropriate to use public funds to support the management and sharing of publicly-funded research data. To maximise the research benefit which can be gained from limited budgets, the mechanisms for these activities should be both efficient and cost-effective in the use of public funds.





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Pioneering research and skills



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Medical Research Council



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ECONOMIC & SOCIAL RESEARCH COUNCIL



Prezi

wellcome trust



Department
for International
Development



CANCER
RESEARCH
UK



RESEARCH



Prezi

UK academic reSearch funder data policies

● Full Coverage ● Partial Coverage ○ No Coverage Source: BIT

Research Funders	Policy Coverage		Policy Stipulations					Support Provided			
	Published outputs	Data	Time limits	Data plan	Access/sharing	Long-term curation	Monitoring	Guidance	Repository	Data centre	Costs
AHRC	●	●	●	●	●	○	○	●	○	●	●
BBSRC	●	●	●	●	●	●	●	●	●	●	●
CRUK	●	●	●	●	●	●	●	●	○	○	○
EPSRC	●	●	●	●	●	●	●	●	○	○	○
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STFC	●	●	●	●	●	●	●	●	●	●	●
Wellcome Trust	●	●	●	●	●	●	●	●	●	●	●



RESEARCH COUNCILS UK

ROUK Common Principles on Data Policy

RESEARCH COUNCILS UK

EPSRC

NERC



Arts & Humanities Research Council

UK academic research funder data policies

● Full Coverage
 ◐ Partial Coverage
 ○ No Coverage
 Source: DCC

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EPSRC	●	●	●	◐	●	●	●	◐	○	○	●
ESRC	●	●	●	●	●	●	●	●	●	●	◐
MRC	●	●	●	●	●	●	○	◐	●	○	◐
NERC	●	●	●	●	●	●	●	●	●	●	◐
STFC	●	●	●	●	●	●	●	◐	●	◐	◐
Wellcome Trust	●	●	●	●	●	●	●	●	●	◐	●



MRC
Medical Research Council

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Making research committed to transparency and overarching framework

Principles

- Publicly funded research should be made available to the public where possible.
- Institutional practice. Data should be made available to the public where possible.
- To enable research to be available to the public where possible.
- RCUK recognises that the research process is not always linear and that it is appropriate to consider the benefits of research which are not immediately apparent.
- To ensure that research is published in a timely and accessible manner.
- In order to maximise the benefits of research to the public, it is appropriate to consider the benefits of research which are not immediately apparent.
- It is appropriate to consider the benefits of research which are not immediately apparent.

reliability



Data as an asset: maximizing the

Data re-use

for...
re-examining established
research questions
improving data quality
enhancing existing research data
refining theory

re-uu



purpose
plicate
mix

Data

Use

for...

- re-examining established research questions
- improving data quality
- enhancing existing research data
- refining theory



Thank you