

Advancing science with Dataverse:
Publication, discovery, citation,
and exploration of research data



HARVARD
Dataverse

Philip Durbin
@philipdurbin



What is Dataverse?



research data sharing enthusiasts: scientists, researchers, curators, librarians, etc.

52 Installations



Available languages:

- English (US), latest develop branch maintained by IQSS Harvard
- French (Canada), latest available 4.17 maintained by Bibliothèques Université de Montréal
- French (France), 4.9.4 maintained by Sciences Po
- German (Austria), 4.9.4 maintained by AUSSDA
- Slovenian, 4.9.4 maintained by ADP, Social Science Data Archive
- Swedish, 4.9.4 maintained by SND, Swedish National Data Service
- Ukrainian, 4.9.4 maintained by The Center for Content Analysis
- Spanish, 4.11 maintained by El Consorcio Madroño
- Italian 4.9.4 maintained by Centro Interdipartimentale UniData
- Hungarian, 4.9.4 maintained by TARKI

IQSS / dataverse

Watch

64

★ Star

491

🔗 Fork

266

<> Code

🔔 Issues 897

🔗 Pull requests 20

📁 Projects 0

🛡️ Security

📊 Insights

Open source research data repository software <http://dataverse.org>

🕒 16,094 commits

🔗 236 branches

📦 0 packages

📦 43 releases

👤 107 contributors

📄 View license

● Java 80.0% ● HTML 11.3% ● JavaScript 3.3% ● Shell 1.5% ● Python 1.0% ● XSLT 0.7% ● Other 2.2%

What is Dataverse for?



Arvind P. Ravikumar

"All my work is built on the premise that climate change is the single biggest existential threat facing humanity."

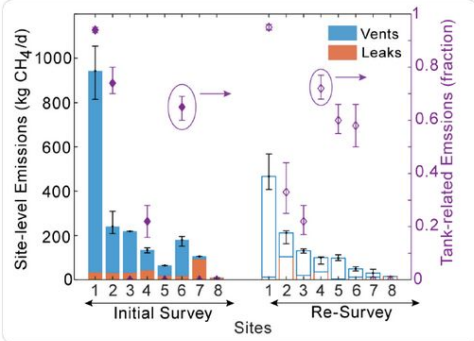
arindravikumar.com

Arvind P. Ravikumar @arvindpawan1 · Jan 14
 Important context:
 Methane emissions consists of leaks (unintentional, fixable) and vents (intentional, not fixable). Leak detection policies only target leaks.
 But, some vents can be fixed because they vent far more than what they were designed for. These anomalous vents. 3/
 1 1 3

Arvind P. Ravikumar @arvindpawan1
 Follow

What LDAR policies do is that they force companies to fix these anomalous vents (esp. on tanks). This is critical because vents are a far bigger problem than leaks.

So, 44% ↓ in emissions is really 22% ↓ in leaks and 47% ↓ in vents.

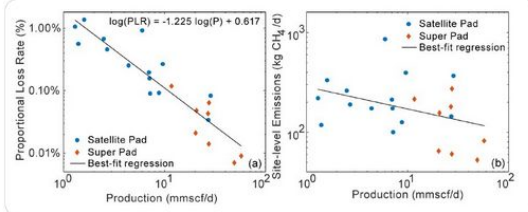
Policy analysis miss this. 4/


12:42 PM - 14 Jan 2020
 2 Likes

Arvind P. Ravikumar @arvindpawan1
 Follow

Finally, low-production sites emit an order of magnitude more methane on a proportional basis than high-production sites.

Industry has argued for exemptions for low-producing wells because of low methane emissions. Our data clearly shows that's not true. /End



12:42 PM - 14 Jan 2020
 1 Retweet 8 Likes

Arvind P. Ravikumar @arvindpawan1 · Jan 14
 Also, shout out to brilliant colleagues and co-authors across two countries: @StanfordEarth, @UBC, and @UCalgary! Collaborations across international borders can be challenging, but this project was really fun!
 1 1 4

Arvind P. Ravikumar @arvindpawan1 · Jan 15
 For those who are interested in the primary data, here's a link to the data repository. This is my first time using the dataverse and I really like the option of having a DOI just for the datasets. dataverse.harvard.edu/dataset.xhtml?doi=10.7927/H731-1000
 2

<https://twitter.com/arvindpawan1/status/1217185235298934785>



Arvind P. Ravikumar

@arvindpawan1

Asst Prof @HarrisburgU studying sustainable energy development and climate policy around the world. Editor @elementascience, Former @Stanford, @Princeton grad.

Philadelphia, PA

arvindravikumar.com

Joined September 2014



Arvind P. Ravikumar

@arvindpawan1

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Question for #AcademicTwitter.

If you collect a lot of primary data that you want to make publicly available along with the paper, what would you do?

I've always taken the SI route but #Reviewer2 is insisting on a separate DOI.

33% SI to paper

61% Data repository w/ DOI

6% Other (please comment)

51 votes • Final results

4:44 AM - 10 Jan 2020

1 Retweet 1 Like



(SI stands for "supplementary information")

technologies [36]. In the case of upstream production facilities, this suggests a potential role for cheap fixed sensors, fence-line truck-based monitoring, or aerial surveys using planes and satellites [37].

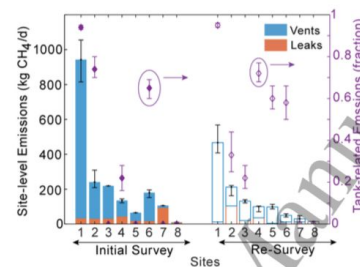


Figure 4: Site-level analysis of temporal changes in methane emissions. Site-level emissions broken down into leaks (red) and vents (blue) during the initial and final survey for the 8 sites shown in Figure 3. Leaks and vents reduced by 22% and 47% respectively in the re-survey compared to the initial survey. The right y-axis shows the fraction of emissions at each site that are related to tanks. The error bars correspond to 95% confidence intervals around bootstrapped estimates of tank-related emissions.

Leaks only comprise 15% of the overall methane emissions across 36 facilities because tank-related emissions, as the largest single contributor, are classified as vents. By contrast, vented emissions were reduced by 47% during the re-survey, despite near-zero repair after the initial survey – only two emission points classified as vents were fixed by the operator. It is possible that the operator could have improved oversight of tank related emissions based on the findings from the initial survey and reduced the frequency of occurrence of abnormal process conditions such as open thief hatches – this possibility cannot be verified experimentally. Outside of any direct intervention by the operator to reduce emissions, there are other potential causes for the reduction in tank-related emissions. One, tank-related emissions are often intermittent and could

<https://twitter.com/arvindpawan1/status/1215621920080699392>

<https://doi.org/10.1088/1748-9326/ab6ae1>



Replication Data for: "Repeated Leak Detection and Repair Surveys Reduce Methane Emissions Over Scale of Years"

Version 1.0

Ravikumar, Arvind, 2020, "Replication Data for: "Repeated Leak Detection and Repair Surveys Reduce Methane Emissions Over Scale of Years", <https://doi.org/10.7910/DVN/T2ZFQN>, Harvard Dataverse, V1

Cite Dataset ▾

[Learn about Data Citation Standards.](#)

Dataset Metrics

3 Downloads

Description

This dataset provides all the raw data collected as part of the field study associated with the paper: "Repeated Leak Detection and Repair Surveys Reduce Methane Emissions Over Scale of Years". The data provided here can be used to replicate all results presented in the manuscript. (2020-01-10)

Subject

Earth and Environmental Sciences

Files

Metadata

Terms

Versions



1 File

[Ravikumar_etal_LDAR_SI_vFinal.xlsx](#)

MS Excel Spreadsheet - 404.3 KB - Jan 10, 2020 - 3 Downloads

MD5: 187d42de47b61585fae6f715191956e6

Data

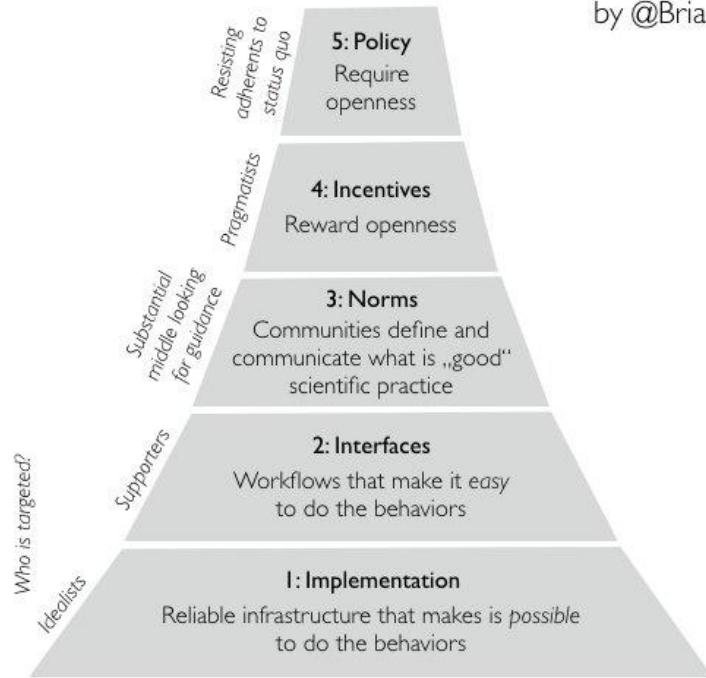
Download

Ravikumar, Arvind, 2020, "Replication Data for: "Repeated Leak Detection and Repair Surveys Reduce Methane Emissions Over Scale of Years", <https://doi.org/10.7910/DVN/T2ZFQN>, Harvard Dataverse, V1

Cultural change

How to achieve a cultural change towards open science

Based on a [tweet storm](#)
by @BrianNosek



nature > nature materials > editorials > article



nature materials

Editorial | Published: 18 December 2019

Data take centre stage

Nature Materials **19**, 1(2020) | [Cite this article](#)

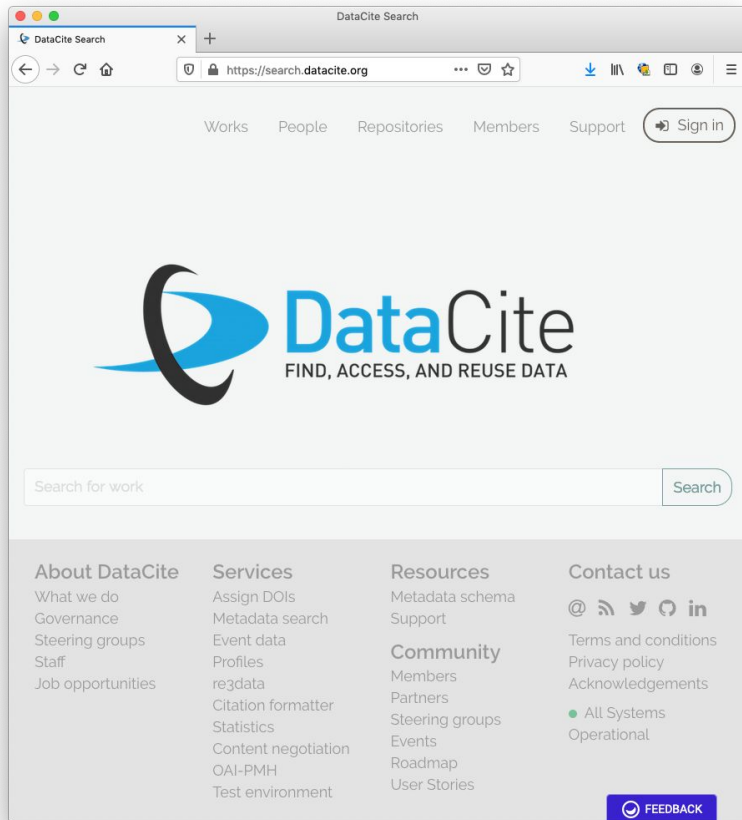
864 Accesses | **41** Altmetric | [Metrics](#)

We are updating our editorial policies to further encourage authors to make their data publicly accessible. Publishing Extended Data figures and source data online will also ensure that data are given a more prominent role.

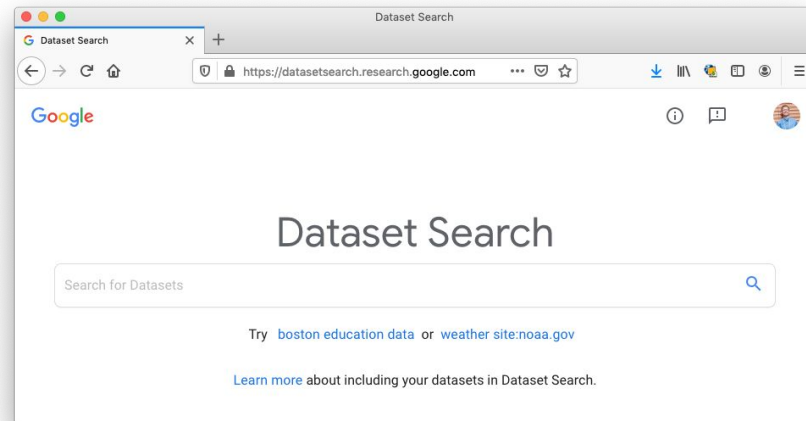
<https://www.nature.com/articles/s41563-019-0574-2>

<https://twitter.com/BrianNosek/status/973506782063677440>

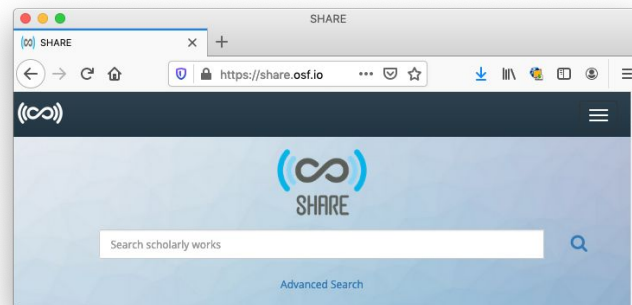
Findable



<https://search.datacite.org>



<https://datasetsearch.research.google.com>



<https://share.osf.io>

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Replication Data for: Quantification and determinants of the amount of respiratory syncytial virus (RSV) shed using real time PCR data from a longitudinal household study.

Patrick K. Munywoki & David J. Nokes
Dataset published 2016 via Harvard Dataverse

The RSV infection data arise from an intensively followed cohort of 47 households with 493 occupants in rural coastal Kenya. The details of the study have been described elsewhere (13,17,18). In summary, throughout an RSV season spanning 26 weeks (December 2009-June 2010), nasopharyngeal swabs (NPS) were collected by trained field assistants every 3-4 days, irrespective of symptoms, from 47 RSV naive infants and their household members. Each field worker was assigned to sample specific households...

2 citations

No usage information was reported.

Cite <https://doi.org/10.7910/dvn/motejh>

2 Citations

2 citations reported since publication in 2016.

2 Citations 16 Relations

- According to DataCite the item on this page **references** the following item:
[Metadata not found]
<http://doi.org/10.12688/wellcomeopenres.10284.2>
- According to DataCite the item on this page **references** the following item:
[Metadata not found]
<http://doi.org/10.12688/wellcomeopenres.10284.1>

Repository
Harvard IQSS Dataverse

Member
The Global Dataverse Community Consortium (GDCC)

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FEEDBACK

Dataset Search

Google

Monthly mean atmospheric D14CO₂ at Jungfraujoch and Schauinsland from 1986 to 2016

1 dataset found

Monthly mean atmospheric D14CO₂ at Jungfraujoch and Schauinsland from 1986...
heidata.uni-heidelberg.de
search.datacite.org
+1 more
Updated Apr 5, 2017

Explore at heidata Explore at search.datacite.org Explore at www.dz-rs.de

13 scholarly articles cite this dataset (View in Google Scholar)

Unique Identifier
<https://doi.org/10.11588/data/10100>

Dataset updated Apr 5, 2017

Dataset provided by
heidata

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License information was derived automatically

Time period covered
Jul 1986 - Nov 2016

Area covered
Switzerland, Germany, Jungfraujoch, 46°33'N, 7°59'E, 3450 m a.s.l., Schauinsland, 47°55'N, 7°54'E, 1205m a.s.l.

Description
14C02 observations at Jungfraujoch high altitude research station in the Swiss Alps (3450m a.s.l.) and at Schauinsland observatory (1205 m a.s.l.) in the German Black Forest are conducted to monitor the background 14C02 level over Europe and define the reference for regional estimates of fossil fuel CO₂. The record is also used for post-bomb dating of organic material (e.g. forensic studies).

<https://datasetsearch.research.google.com>



<https://search.datacite.org>

Accessible

Open Source at Harvard - Open Source at Harvard

dataverse.harvard.edu/api/dataset: X dataverse.harvard.edu/api/dataset: X

https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/TJCLKP

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Dataverse

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Open Source at Harvard (Harvard University)

Harvard Dataverse > Open Source at Harvard > Open Source at Harvard

Contact Share

Open Source at Harvard
Version 3.0

Durbin, Philip, 2017, "Open Source at Harvard", <https://doi.org/10.7910/DVN/TJCLKP>, Harvard Dataverse, V3, UNF:6:2MMoV8KKO8R7sb27Q5GXIA== [fileUNF]

Cite Dataset Learn about Data Citation Standards.

Description The tabular file contains information on known Harvard repositories on GitHub, such as the number of stars, programming language, day last updated, number of open issues, size, number of forks, repository URL, create date, and description. Each repository has a corresponding JSON file that was retrieved using the GitHub API with code and a list of repositories available from <https://github.com/IQSS/open-source-at-harvard>.

Subject Social Sciences

Files Metadata Terms Versions

Export Metadata

Dublin Core
DDI
DataCite
DDI HTML Codebook
JSON
OAI_ORE
OpenAIRE
Schema.org JSON-LD

Citation Metadata

Dataset Persistent ID doi:10.7910/DVN/TJCLKP

Publication Date 2017-07-06

Title Open Source at Harvard

Author Durbin, Philip (Harvard University) - ORCID: 0000-0002-9528-9470

Contact Use email button above to contact.
Durbin, Philip (Harvard University)

Description The tabular file contains information on known Harvard repositories on GitHub, such as the number of stars, programming language, day last updated, number of open issues, size, number of forks, repository URL, create date, and description. Each repository has a corresponding JSON file that was retrieved using the GitHub API with code and a list of repositories available from <https://github.com/IQSS/open-source-at-harvard>.

Feedback

<https://doi.org/10.7910/DVN/TJCLKP>

Mozilla Firefox

Open Source at Harvard - Open Source at Harvard

dataverse.harvard.edu/api/dataset: X dataverse.harvard.edu/api/dataset: X

https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/TJCLKP

This XML file does not appear to have any style information associated with it. The document tree is shown below.

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  <identifier>https://doi.org/10.7910/DVN/TJCLKP</identifier>
  <creator>Durbin, Philip</creator>
  <publisher>Harvard Dataverse</publisher>
  <issued>2017-07-06</issued>
  <modified>2019-02-26T03:13Z</modified>
  <description>
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  <contributor>Durbin, Philip</contributor>
  <dateSubmitted>2017-07-06</dateSubmitted>
  <license>CC0</license>
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</dataset>
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JSON Raw Data Headers

Save Copy Collapse All Expand All Filter JSON

```
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}
```

Interoperable

- Getting Data In
 - Dropbox
 - Open Science Framework (OSF)
 - RSpace
 - Open Journal Systems (OJS)
- Embedding Data on Websites
 - OpenScholar
- Analysis and Computation
 - Data Explorer
 - TwoRavens/Zelig
 - WorldMap
 - Compute Button
 - Whole Tale
 - Binder
- Discoverability
 - OAI-PMH (Harvesting)
 - SHARE
- Research Data Preservation
 - Archivematica
 - DuraCloud/Chronopolis

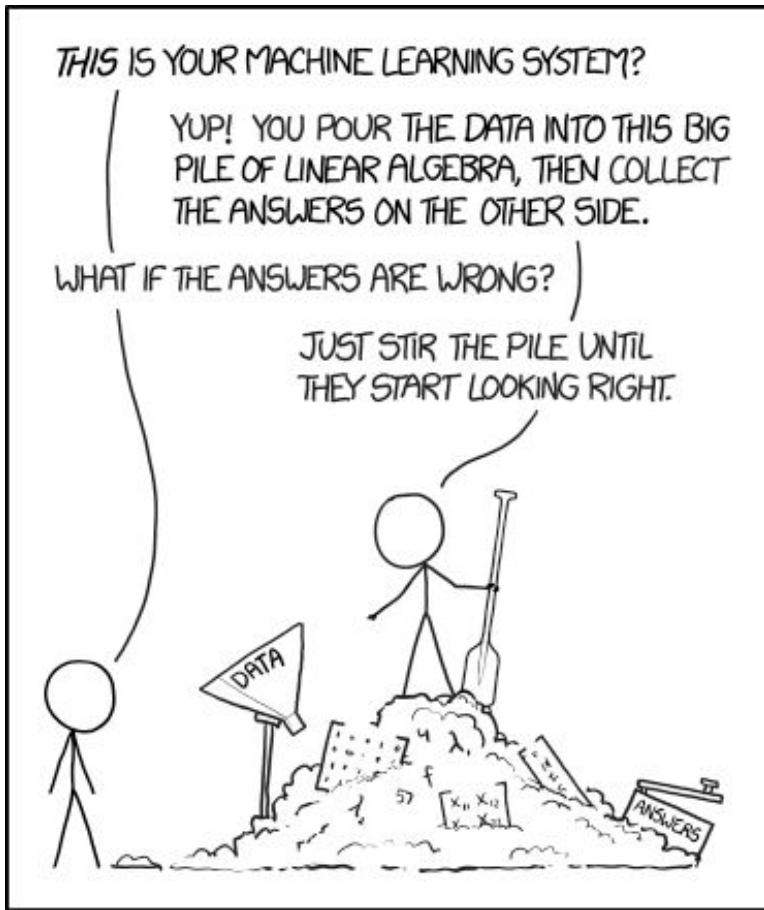


Open Science Framework

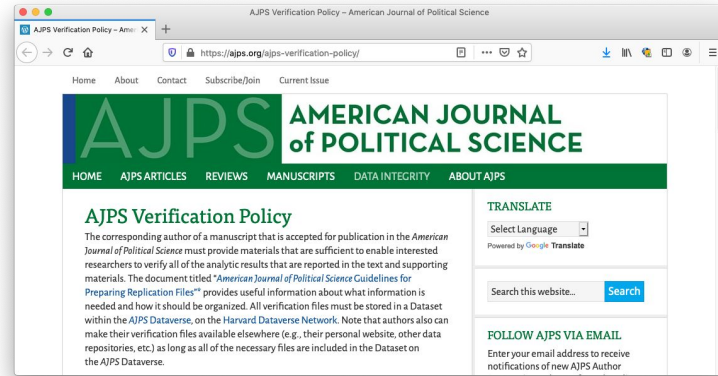


<http://guides.dataverse.org/en/4.19/admin/integrations.html>

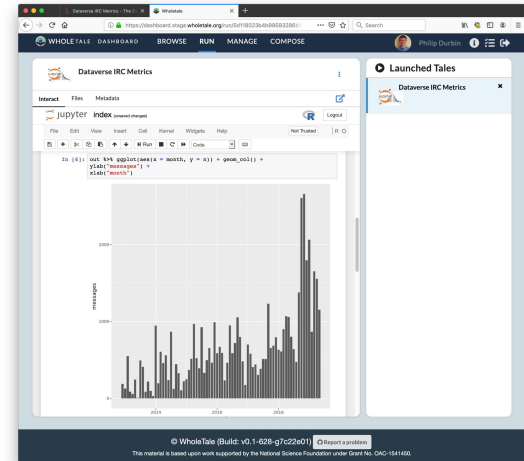
Reusable

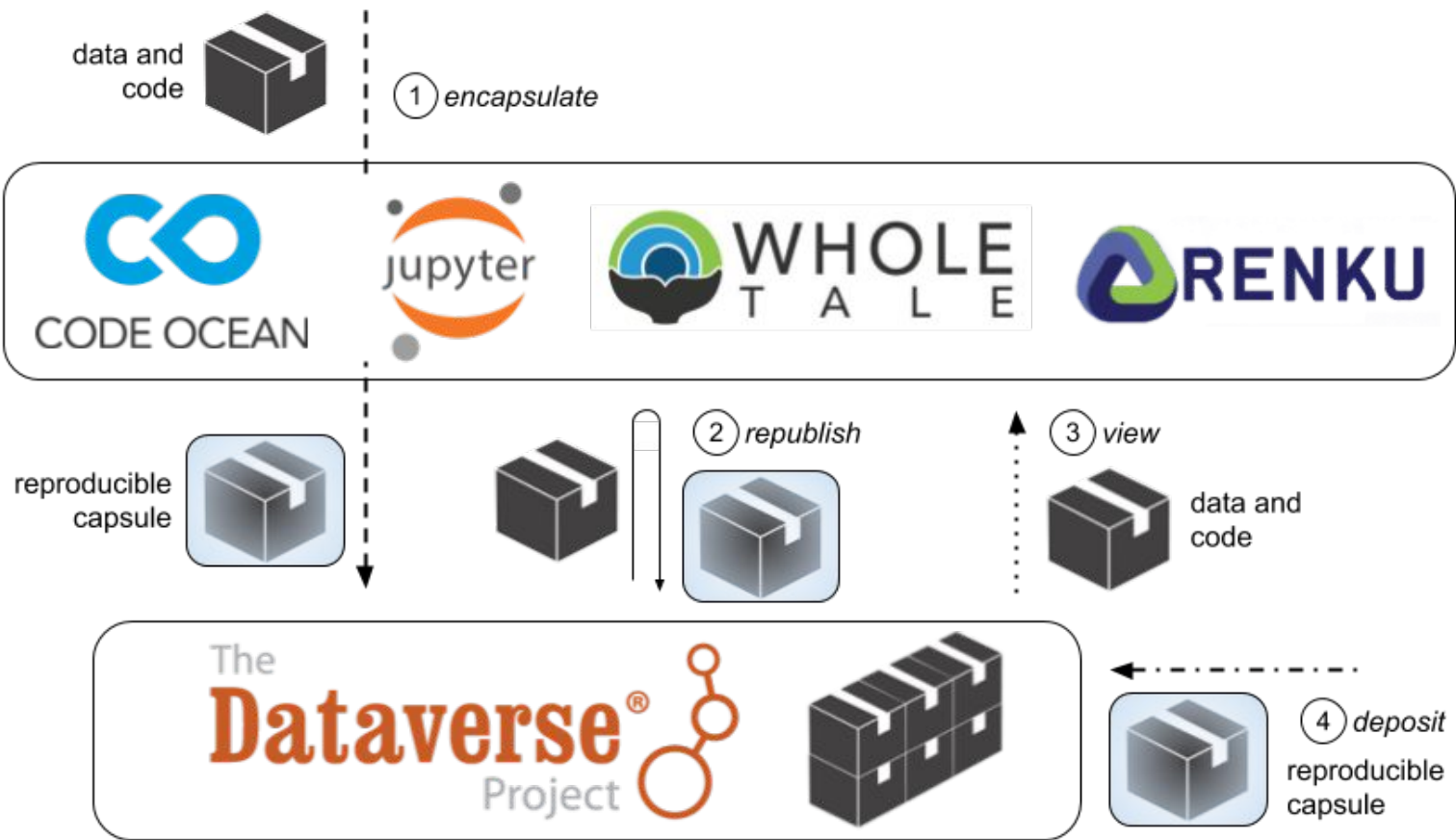


<https://xkcd.com/1838/>



<https://ajps.org/ajps-verification-policy/>





FAIR Data Principles

- Findable
- Accessible
- Interoperable
- Reusable



Mercè Crosas @mercecrosas · Jan 23

The slides from my talk on the Implementation of FAIR data principles in Dataverse and going beyond FAIR, at the European Dataverse Workshop @UiTromso @dataverseorg #FAIRdata #dataverse2020



FAIR principles and beyond: Implementation in Dat...

Keynote for the European Dataverse Workshop 2020 at

...

scholar.harvard.edu



1



22



41

<https://twitter.com/mercecrosas/status/1220344995628175360>

www.nature.com/scientificdata

SCIENTIFIC DATA

OPEN
SUBJECT CATEGORIES
► Research data
► Publication
characteristics

Comment: The FAIR Guiding Principles for scientific data management and stewardship

Mark D. Wilkinson et al.^a

There is an urgent need to improve the infrastructure supporting the reuse of scholarly data. A diverse set of stakeholders—representing academia, industry, funding agencies, and scholarly publishers—have come together to design and jointly endorse a concise and measurable set of principles that we refer to as the FAIR Data Principles. The intent is that these may act as a guideline for those wishing to enhance the reusability of their data holdings. Distinct from peer initiatives that focus on the human scholar, the FAIR Principles put specific emphasis on enhancing the ability of machines to automatically find and use the data, in addition to supporting its reuse by individuals. This Comment is the first formal publication of the FAIR Principles, and includes the rationale behind them, and some exemplar implementations in the community.

Supporting discovery through good data management

Good data management is not a goal in itself, but rather is the key conduit leading to knowledge discovery and innovation, and to subsequent data and knowledge integration and reuse by the community after the data publication process. Unfortunately, the existing digital ecosystem surrounding scholarly data publication prevents us from extracting maximum benefit from our research investments (e.g., ref. 1). Partially in response to this, science funders, publishers and governmental agencies are beginning to require data management and stewardship plans for data generated in publicly funded experiments. Beyond proper collection, annotation, and archival, data stewardship includes the notion of “long-term care” of valuable digital assets, with the goal that they should be discovered and re-used for downstream investigations, either alone, or in combination with newly generated data. The outcomes from good data management and stewardship, therefore, are high quality digital publications that facilitate and simplify this ongoing process of discovery, evaluation, and reuse in downstream studies. What constitutes “good data management” is, however, largely undefined, and is generally left as a decision for the data or repository owner. Therefore, bringing some clarity around the goals and desiderata of good data management and stewardship, and defining simple guidelines to inform those who publish and/or preserve scholarly data, would be of great utility.

This article describes four foundational principles—Findability, Accessibility, Interoperability, and Reusability—that serve to guide data producers and publishers as they navigate around these obstacles, thereby helping to maximize the added-value gained by contemporary, formal scholarly digital publishing. Importantly, it is our intent that the principles apply not only to “data” in the conventional sense, but also to the algorithms, tools, and workflows that feed to that data. All scholarly digital research objects—from data to analytical pipelines—benefit from application of these principles, since all components of the research process must be available to ensure transparency, reproducibility, and reusability.

There are numerous and diverse stakeholders who stand to benefit from overcoming these obstacles: researchers wanting to share, get credit, and reuse each other’s data and interpretations; professional data publishers offering their services; software and tool-builders providing data analysis and processing services such as reusable workflows; funding agencies (private and public) increasingly

Correspondence and requests for materials should be addressed to B.M. (email: barend.mong@tdi.nl).

^aA full list of authors and their affiliations appears at the end of the paper.

SCIENTIFIC DATA | 3:160018 | DOI:10.1038/sdata.2016.18

<https://dx.doi.org/10.1038/sdata.2016.18>

Bonus content

SLOPI

<https://github.com/good-labs/slopi-communication>

Searchable Linkable Open Public Indexed (SLOPI) Communication
or
Why open source projects should avoid Slack

<http://blog.greptilian.com/2020/01/25/slopi-communication/>



Ana Trisovic

@atrisovic

Follow

An absolute gem of a presentation by [@philipdurbin](#) with crazy (great) ideas and a demo of [@wholetale](#)'s integration with [@dataverseorg](#) at [#Dataverse2019](#) [#reproducibility](#) in action



12:16 PM - 25 Jun 2019

The Open Source Software Health Index Project

Fourth Quarter, 2019 update

October 11, 2019

It's been a year since we began our project to develop a framework for evaluating the health of open source software used in academic research settings by measuring different aspects or factors of OSS projects, which will help answer questions such as how easy it is for people to contribute to OSS projects and how easy it is to use and deploy the software. After initial research into software evaluation frameworks and a number of meetings and workshops with experts, we have chosen the 20 projects that we will use to evaluate our framework.

All of the projects listed below are used in academic libraries and research labs. The OSS experts we have been collaborating with this past year also contribute to many of these projects, which will make it easier to get feedback about the quality and feasibility of the factors and continue improving the framework.

The logo for CHA OSS, where the 'O' is a circular icon composed of four colored segments: pink, teal, light blue, and purple.

<https://chaoss.community>



<https://github.com/chaoss/augur>

- | | | |
|-------------------|-------------------------|------------------------|
| • Archi | • DSpace | • Open Journal Systems |
| • Archivematica | • Fedora Commons | • Parsl |
| • Bioconductor | • JabRef | • R Markdown |
| • Blacklight | • Jupyter notebook | • Scikit-learn |
| • CORAL | • LOCKSS Lots of Copies | • Stencila |
| • Dataverse | • Keep Stuff Safe | • Zotero |
| • Districtbuilder | • Mirador | |
| | • Omeka | |

Next steps

Our next steps include finalizing the factors in the framework and identifying potential methods for gathering data from these projects for each factor. In some cases, information about the projects can be mined from their GitHub repositories, and we've been working closely with the [CHA OSS Project team](#), whose [Augur software suite](#) can collect and visualize GitHub data.

<https://projects.iq.harvard.edu/osshealthindex/blog/fourthquarterupdate>

<http://blog.greptilian.com/2020/01/26/open-source-health-project/>

Thank you!

My website: <http://greptilian.com>

My blog: <http://blog.greptilian.com>

[@pdurbin](#) on GitHub.

[@philipdurbin](#) on Twitter

philip_durbin@harvard.edu

My institute at Harvard: <https://www.iq.harvard.edu>

For a quick conversation: <https://chat.dataverse.org>



The
Dataverse
Project 
Created at
 **IQSS** at Harvard University