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

The Dataverse® Project

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."

arvindravikumar.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/

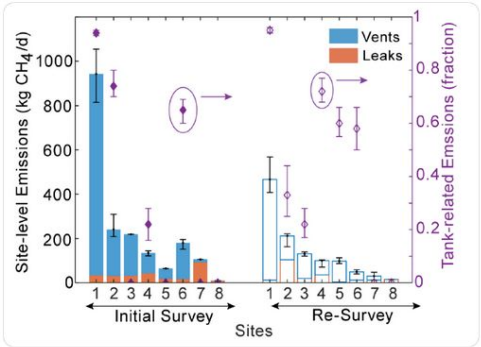
1 1 3

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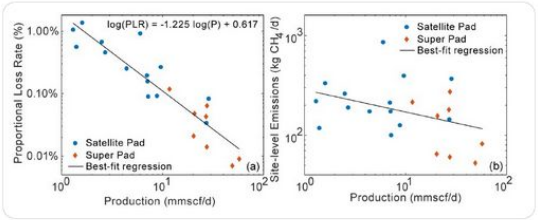
Finally, low-production sites emit an order of magnitude more methane on a proportional basis than high-production sites.

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

3 1 8

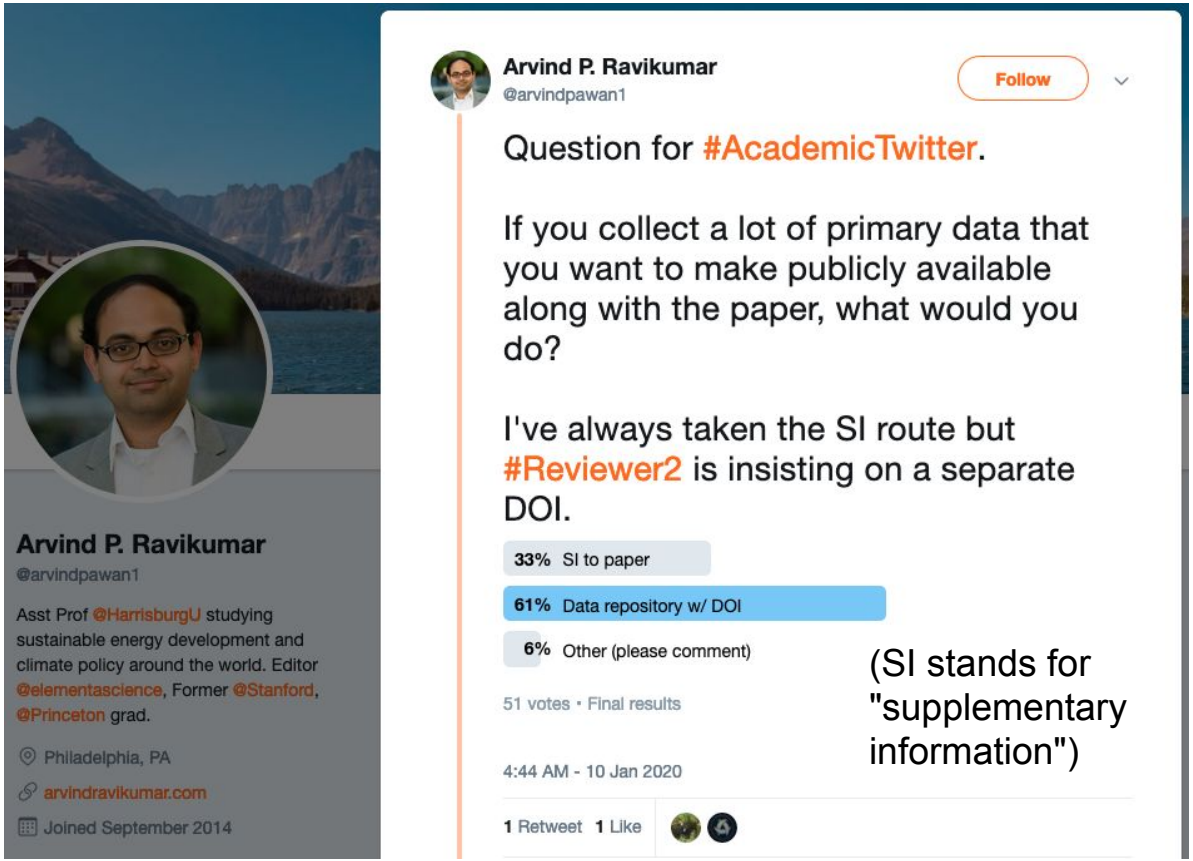
Arvind P. Ravikumar @arvindpawan1 · Jan 14
Also, shout out to brilliant colleagues and co-authors across two countries: @StanfordEarth, @UBC, and @UCalgary! Collaborations across international borders can be challenging, but this project was really fun!

1 4

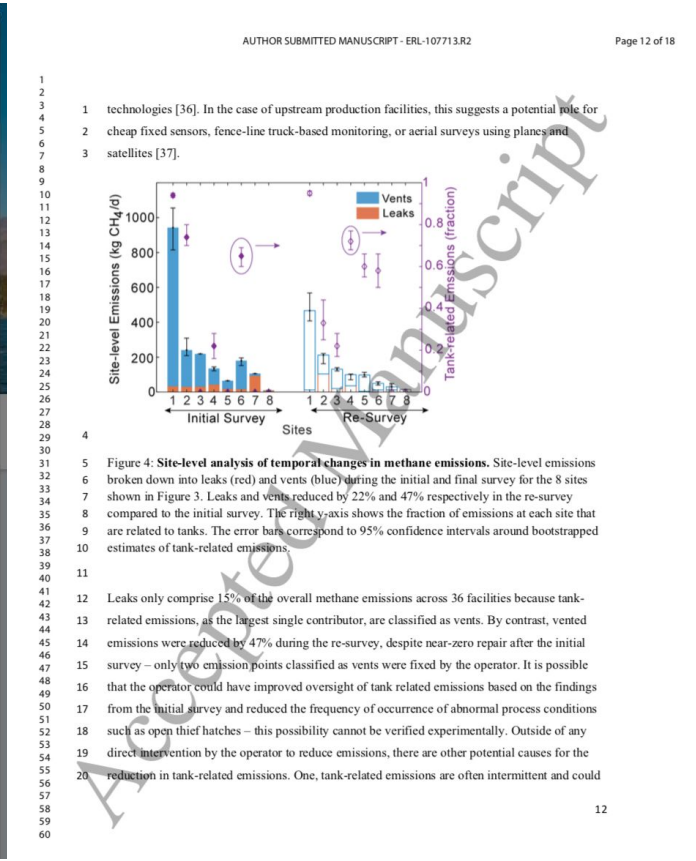
Arvind P. Ravikumar @arvindpawan1 · Jan 15
For those who are interested in the primary data, here's a link to the data repository. This is my first time using the dataverse and I really like the option of having a DOI just for the datasets. dataverse.harvard.edu/dataset.xhtml?...

2

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

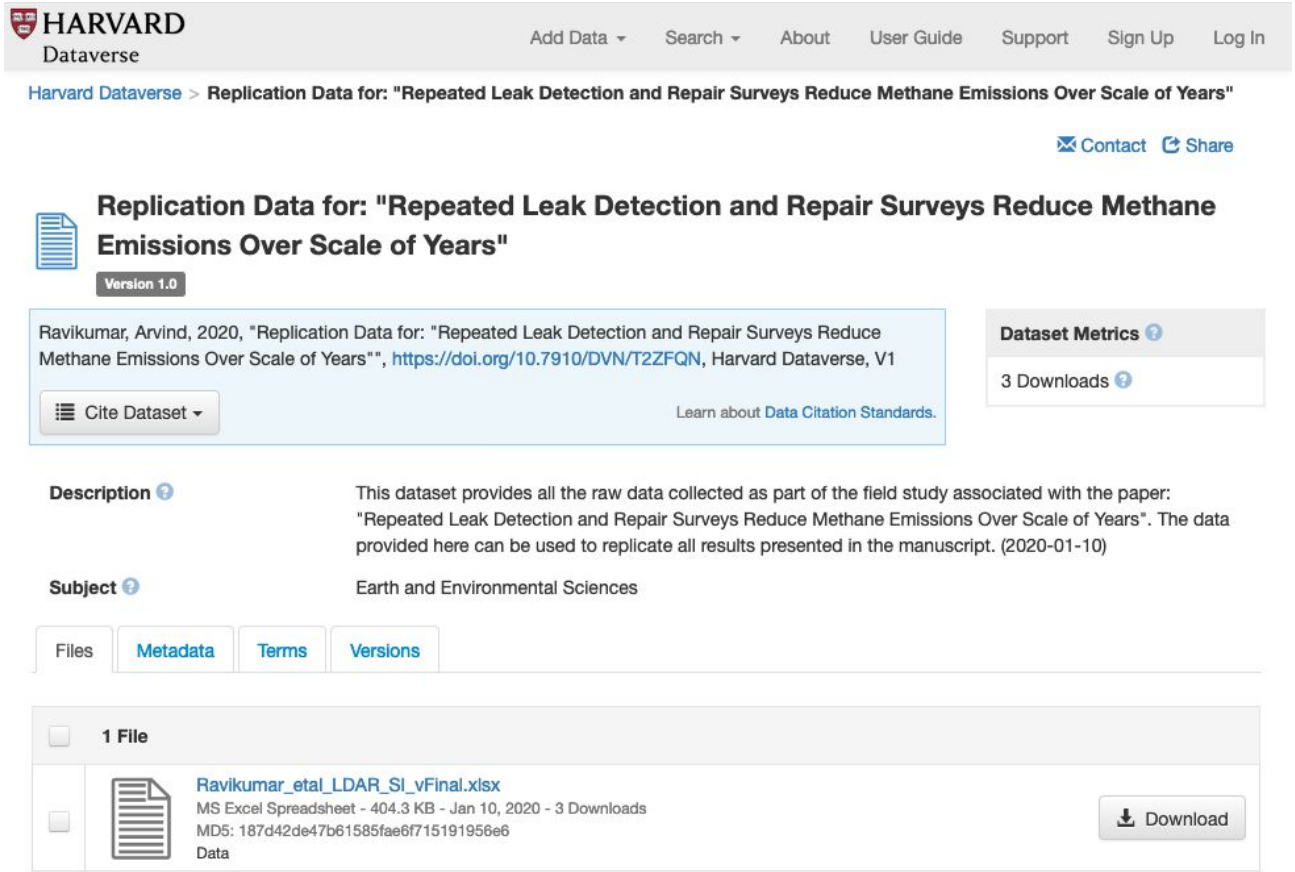


(SI stands for "supplementary information")



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

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

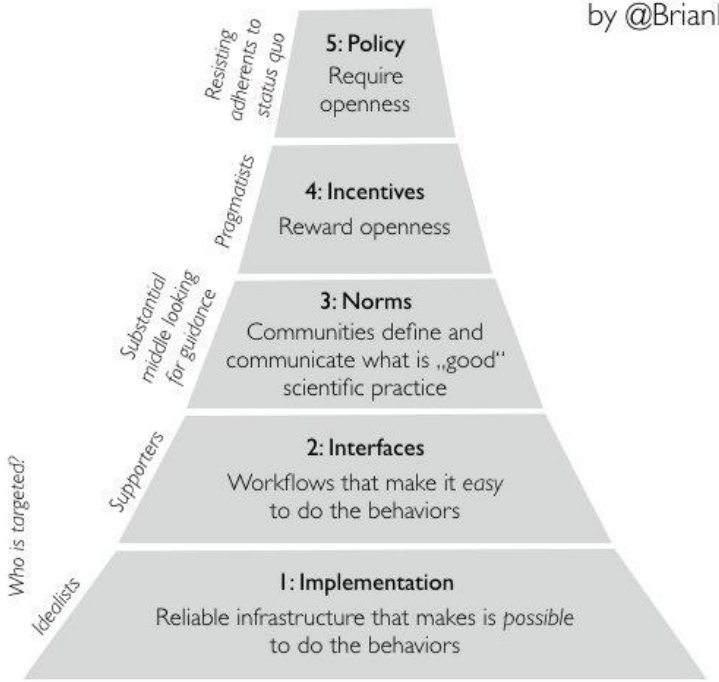


Ravikumar, Arvind, 2020, "Replication Data for: "Repeated Leak Detection and Repair Surveys Reduce Methane Emissions Over Scale of Years"", https://doi.org/10.7910/DVN/T2ZFQN, Harvard Dataverse, V1

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

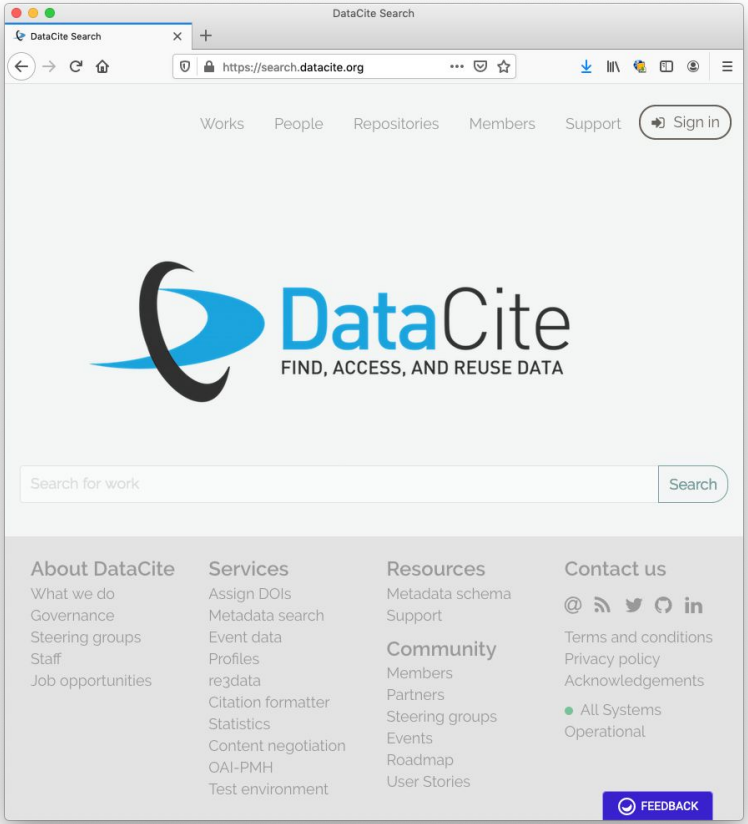
864 Accesses | **41** Altmetric | Metrics

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.

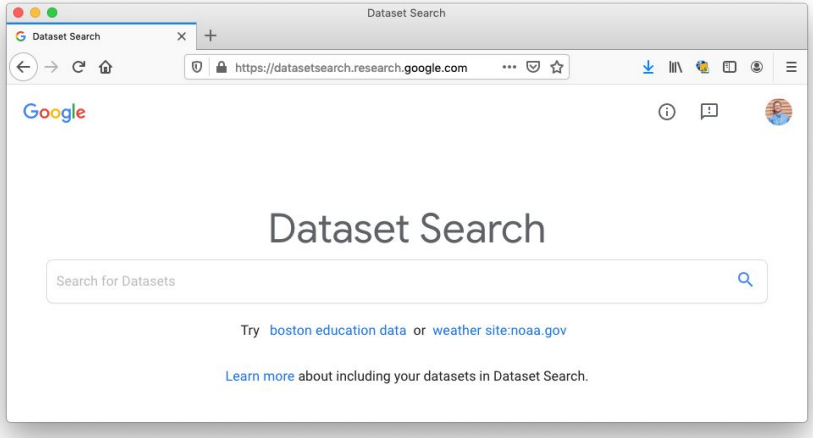
https://www.nature.com/articles/s41563-019-0574-2

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

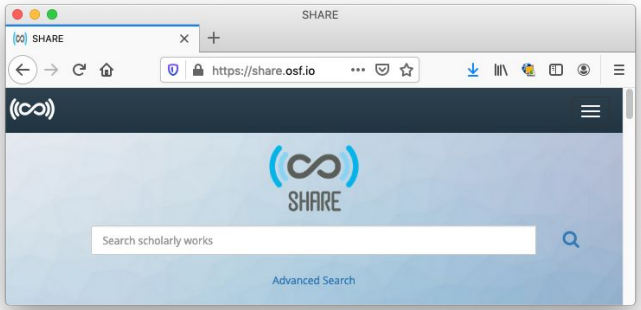
Findable



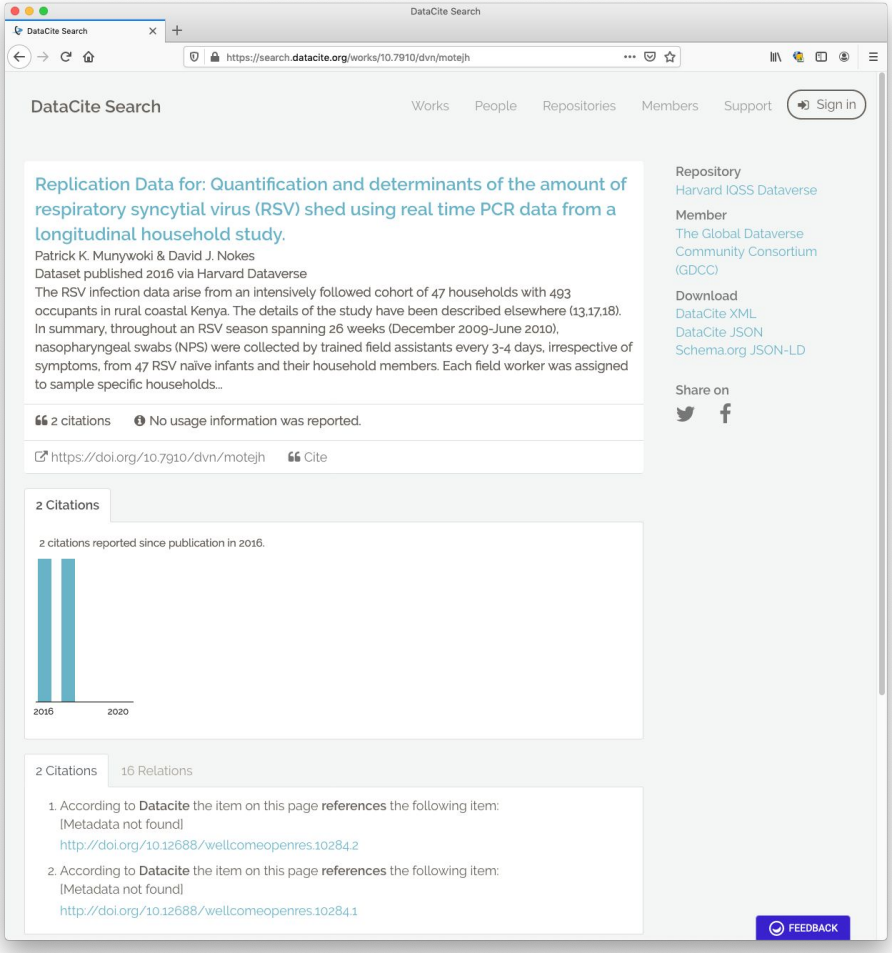
https://search.datacite.org

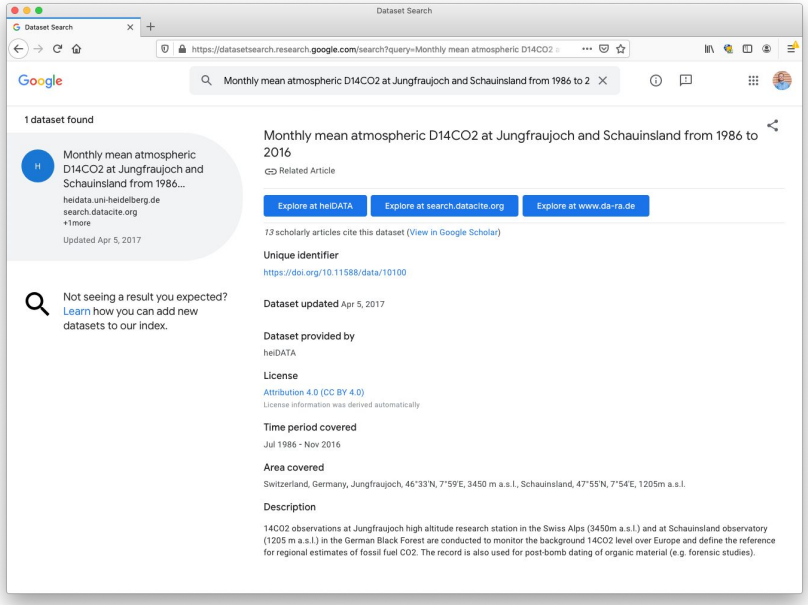


https://datasetsearch.research.google.com



https://share.osf.io



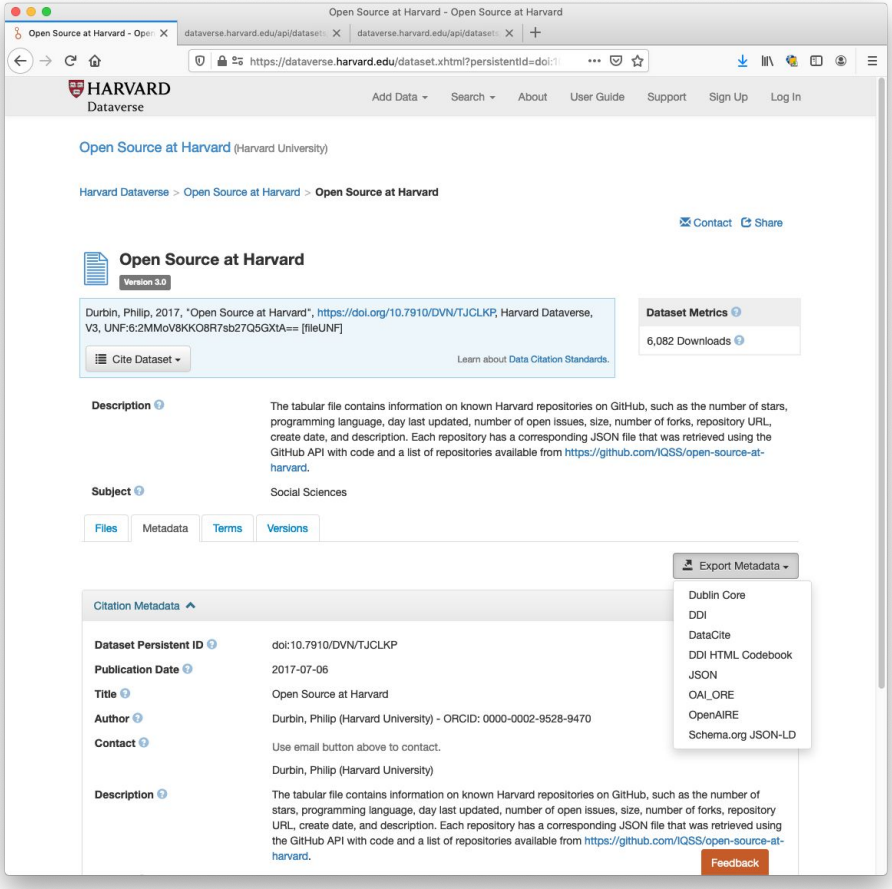


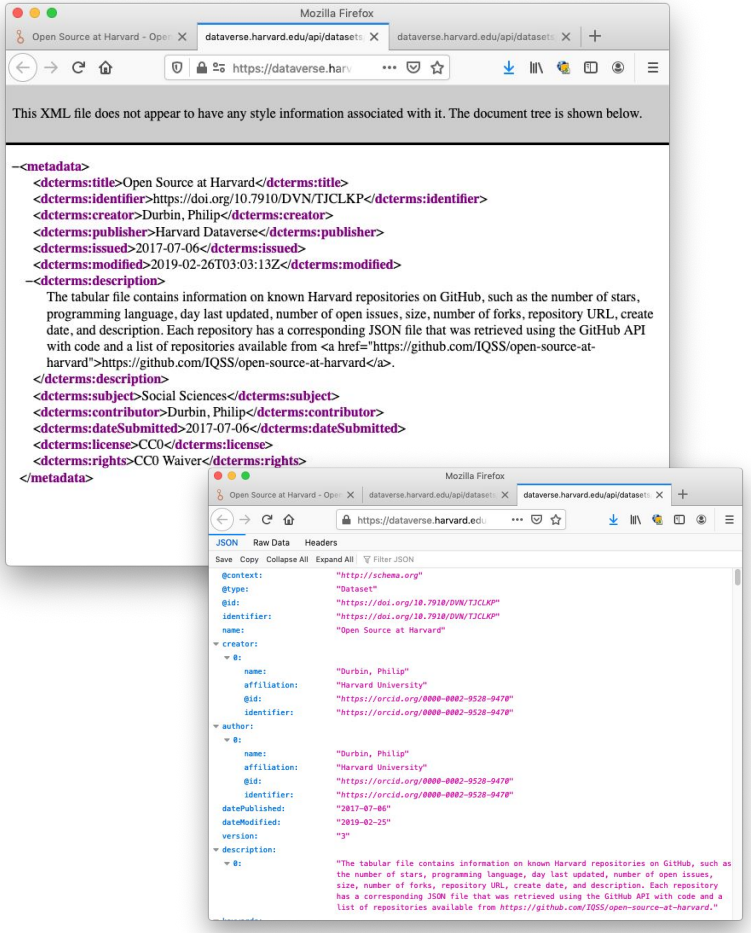
https://datasetsearch.research.google.com

DataCite
FIND, ACCESS, AND REUSE DATA

https://search.datacite.org

Accessible





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

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

Dropbox

Open Science Framework

OJS OPEN JOURNAL SYSTEMS

RSpace COMMUNITY

WHOLE TALE

binder

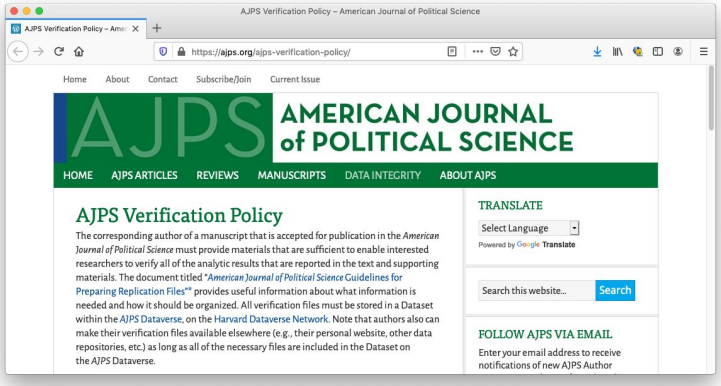
OpenScholar®

archivematica®

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

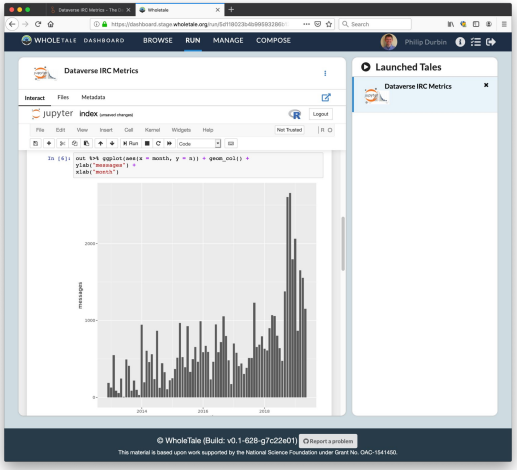
Reusable

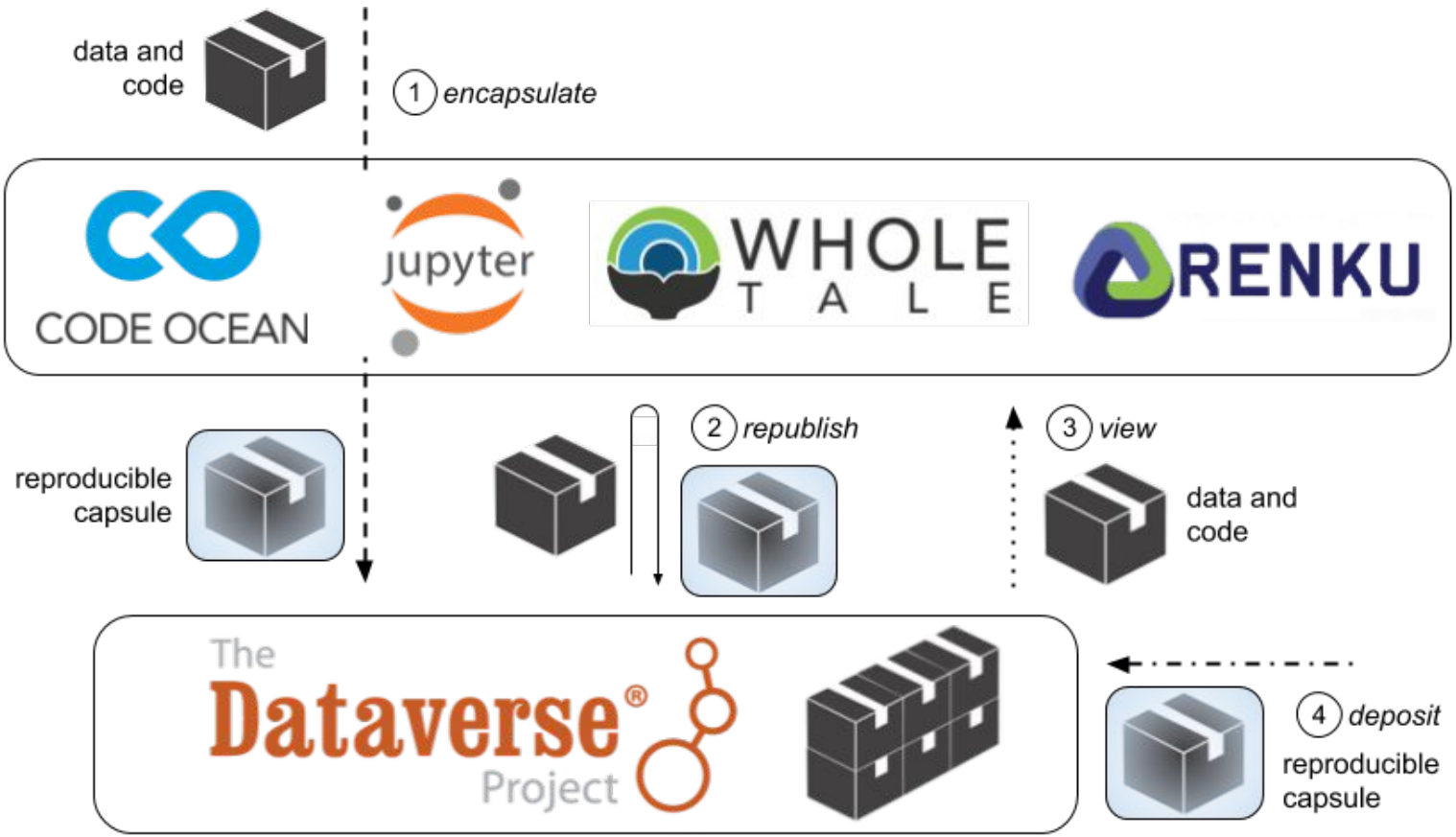
https://xkcd.com/1838/



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

jupyter





Trisovic, Crosas, et al, 2020, working paper

FAIR Data Principles

- Findable
- Accessible
- Interoperable
- Reusable

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


www.nature.com/scientificdata
SCIENTIFIC DATA
OPEN
SUBJECT CATEGORIES
» Research data
» Publication characteristics
Received: 10 December 2015
Accepted: 12 February 2016
Published: 15 March 2016

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

Mark D. Wilkinson *et al.*#

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 measureable 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 guideposts 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 led to that data. All scholarly digital research objects[2]—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.mons@dtls.nl).
#A full list of authors and their affiliations appears at the end of the paper.

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

Bonus content

SLOPI

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

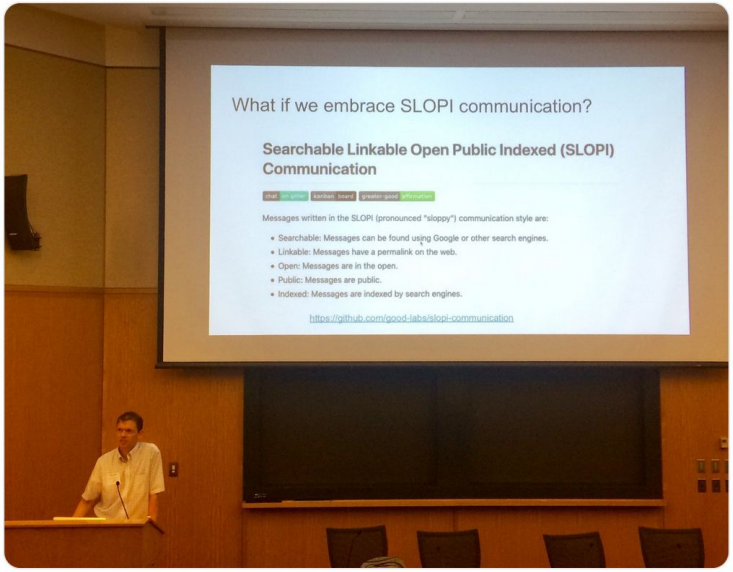
Searchable Linkable Open Public Indexed (SLOPI) Communication
or
Why open source projects should avoid Slack

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

https://chaoss.community

https://github.com/chaoss/augur

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 feasaibility of the factors and continue improving the framework.

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

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 CHAOSS 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