Open Science 1.0: Why?

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MCUAAAR AnC Mini-Session
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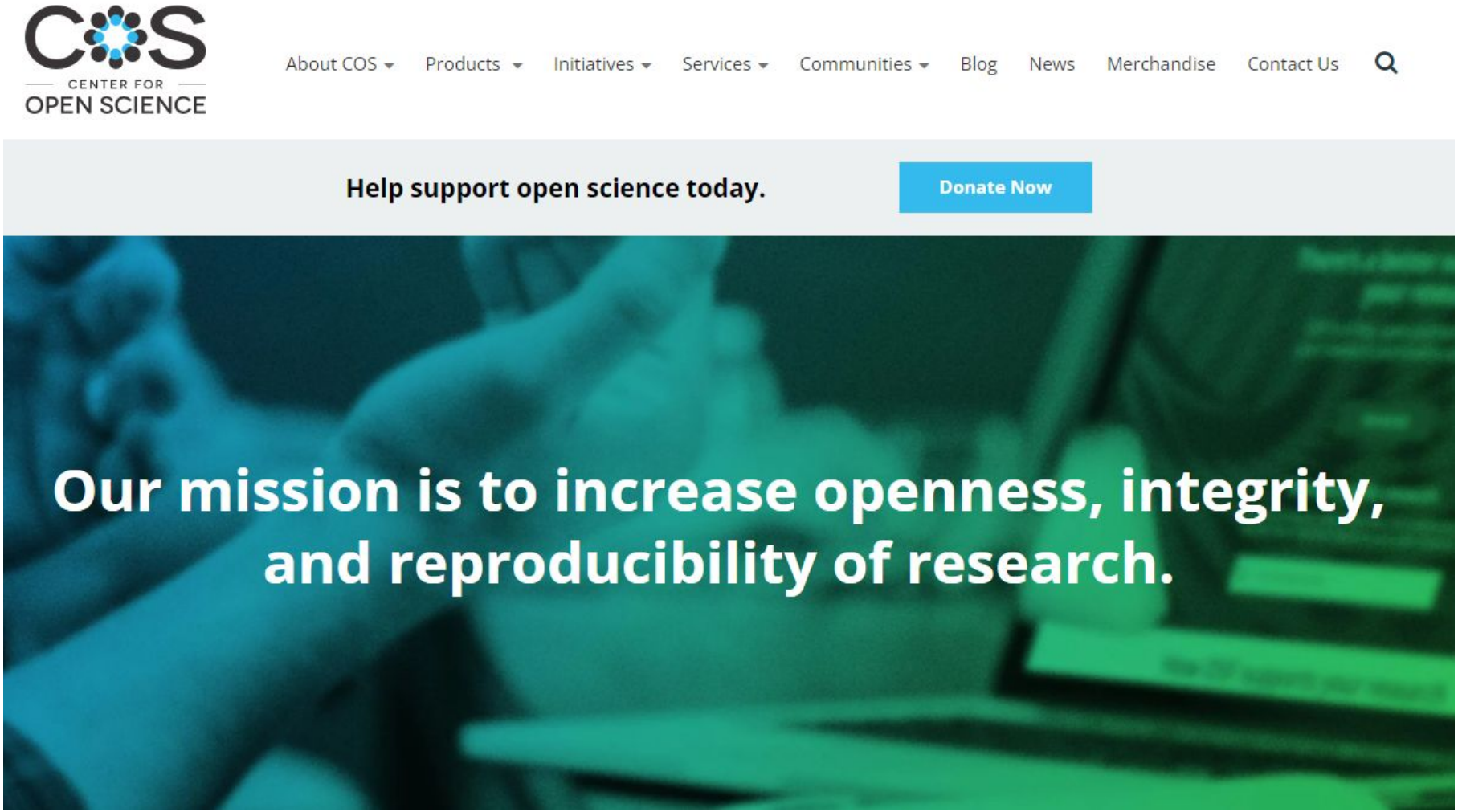
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Our mission is to increase openness, integrity, and reproducibility of research.

What are the goals of the Open Science Framework?

- To foster transparency and integrity in research and promote reproducibility through sharing of code, methods, protocols, etc.
- To promote collaboration and sharing of resources among researchers, scientists, stakeholders, etc.
- To increase efficiency in the knowledge generation and sharing process
- To help the public engage with the research *process*

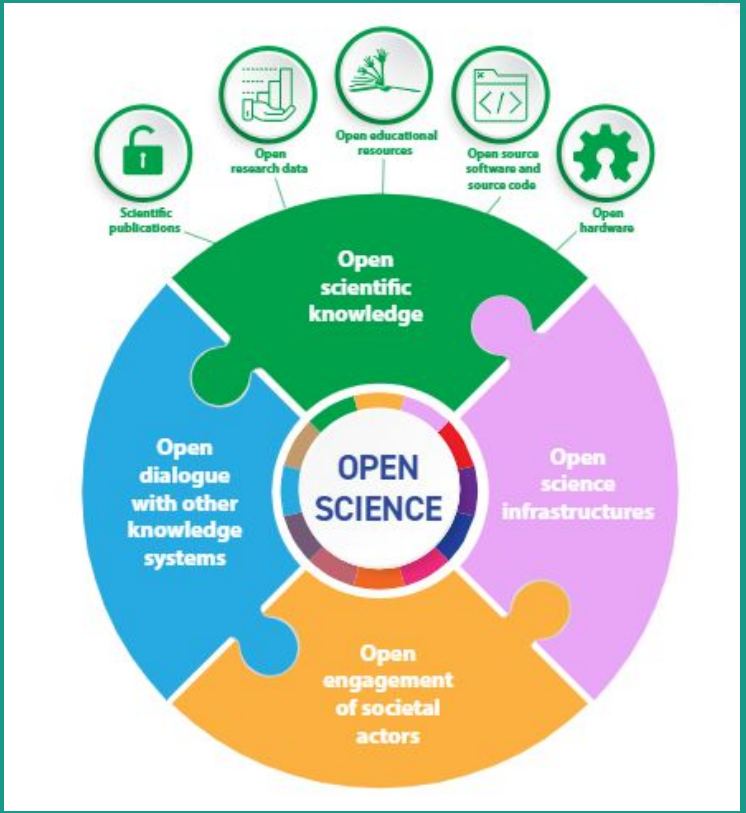
Other goals of the Open Science framework

- To dismantle the monetization (and therefore restriction) of scientific knowledge through journal paywalls
- To reject the quantification of a researcher's contribution to the field via journal impact factors and citations (h-index, etc.) and instead have institutions evaluate the quality of the work itself
- Gets work out faster via pre-prints
- To give credit to the work of archiving non-peer-review(able) products of the research enterprise, such as user's guides, data collection manuals, statistical code, etc.
- To provide the general public with access to the "raw materials" of scientific claims, not just media reports of them
- Support the local development and sharing of scientific resources with LMICs

Why do open science?

- Funders require you to make your data available
- Journals are increasingly requiring it
- Makes your work more widely discoverable
- Supports your mission as a scholar get your knowledge into the hands of people beyond the academy

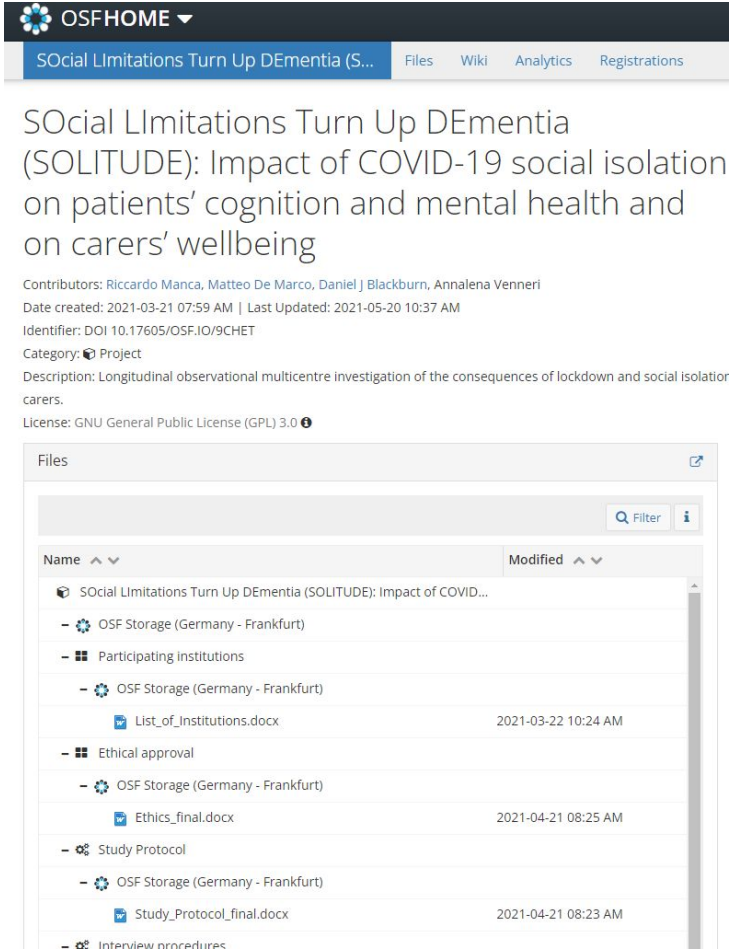
From a Nov. 2021 report by the United Nations Educational, Scientific and Cultural Organization (UNESCO)



Example of an Open Science project

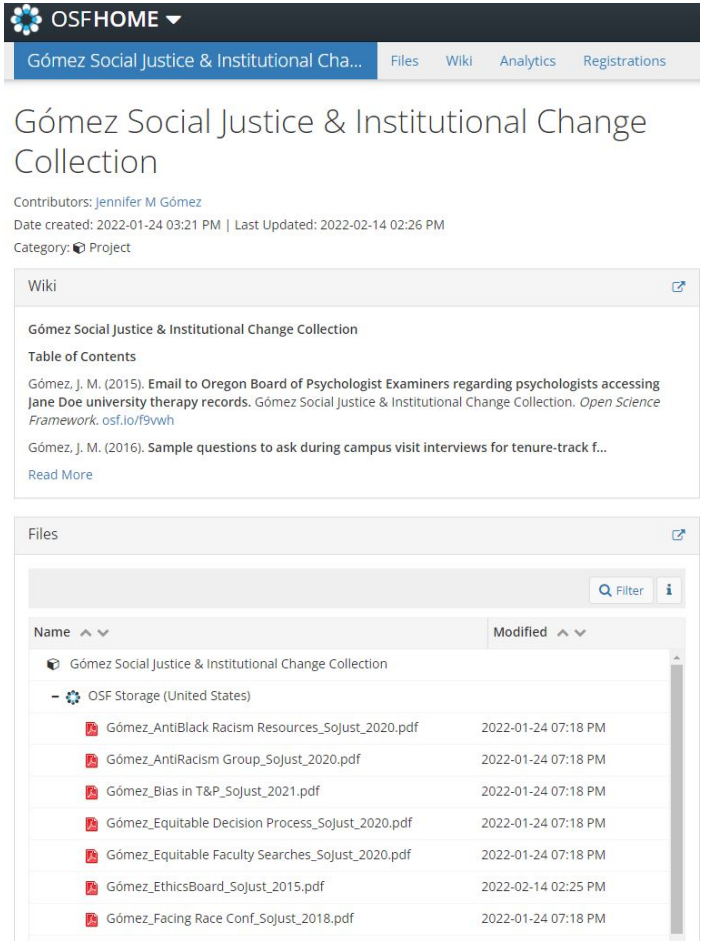
- Provides documents for 1) participating institutions, 2) ethical approval, 3) study protocol, and 4) interview procedures

Citation: Manca, R., De Marco, M., Blackburn, D. J., & Venneri, A. (2021, May 20). SOcial LImitations Turn Up DEmentia (SOLITUDE): Impact of COVID-19 social isolation on patients' cognition and mental health and on carers' wellbeing. https://doi.org/10.17605/OSF.IO/9CHET



Example of an Open Science project

- Provides resources for professional development, workforce issues, academic activities, especially for under-represented minorities in the academy



Related initiatives

- Retraction Watch
- GitHub
- RStudio
- Data depositories: NIH and OpenICPSR
- The Turing Way (includes starting pack for GitHub)
- OpenMichigan
- SOCR
- MedRxiv (pronounced “med-R-kive”) pre-print server

Sounds great, but I'm good.

(Why doesn't everyone do Open Science?)

Arguments against doing Open Science

- “Open” doesn’t necessarily mean accessible to all.
- Open Science is built on a Western mindset of research and has only begun to address the ways that data, science and data science contribute to inequities
- If you are active in updating materials, proving, code, etc. you risk becoming a “helpdesk” for people who would like to use it - which may not be the best use of your time.
- You might get “scooped.”
- **Doing Open Science takes time and currently few institutions (universities) recognize those efforts (in annual reviews or in P&T evaluations)**
    - **And those that do, it does not “count” as much as papers & grants**

Example of what is asked for by my department for annual reviews

ONE PAGE SUMMARY (no more than 1 page – follow outline provided, include all points and and write "not applicable" for any bullet with nothing to report – this summary is meant to be a "snapshot" of personal statement)

Name, degree
Title and time in rank

Scholarship (in last year)

- Peer reviewed journal publications: # (# senior author, # first author, # second author)
- # invited editorials or reviews (# first author)
- Other publications: # (# senior author, # first author, # second author)
- Select scientific journals where research has been published (impact factor)
- Scientific presentations at national and international meetings: # (# posters/presentations by epidemiology students or other trainees)
- NIH funding: # R01s as PI, # R01s as Co-I, # other NIH grants as PI or Co-I
- Other grant funding:
- Pending NIH funding (include score and percentile if available):
- Pending other grant funding:
- Leadership and other relevant scholarly activities

Teaching (in last year)

- List each course taught including name, class size, Q1 and Q2 scores, indicate whether this was first time you offered the course, if the course is required, or is a service course
- Dissertation chair (or co-chair) for # doctoral students, member on # dissertation committees
- Highlight any external funding acquired by doctoral students
- Mentored # masters students, # capstone projects, supervised # internships
- Mentoring # post-doctoral fellows
- Mentoring of undergraduates
- Highlight other relevant training opportunities you have provided
- Peer reviewed journal publications by trainees: # first authored papers by students/trainees

Service (in last year)

- Departmental committee work
- SPH and University committees or other service
- Significant external service activities
- Grant review activities, include agency, and if review was in person or via mail
- Peer review activities for journals, note if serve in an editorial role

Challenging issues: Research subjects protections and informed consent

- HIPAA data: can still provide this in a public setting via a limited dataset.
- What do you tell your research participants about who will have access to their data?
    - **Empirical data and suggestions for researchers->**

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RESEARCH ARTICLE

Impact of Open Data Policies on Consent to Participate in Human Subjects Research: Discrepancies between Participant Action and Reported Concerns

Jorden A. Cummings, Jessica M. Zagrodney, T. Eugene Day

Published: May 20, 2015 • https://doi.org/10.1371/journal.pone.0125208

Article | Authors | Metrics | Comments | Media Coverage

Correction
Abstract
Introduction
Methods
Results
Discussion
Acknowledgments
Author Contributions
References

Reader Comments

Correction

25 Jun 2015: Cummings JA, Zagrodney JM, Day TE (2015) Correction: Impact of Open Data Policies on Consent to Participate in Human Subjects Research: Discrepancies between Participant Action and Reported Concerns. PLOS ONE 10(6): e0131852. https://doi.org/10.1371/journal.pone.0131852 | View correction

Abstract

Research outlets are increasingly adopting open data policies as a requisite for publication, including studies with human subjects data. We investigated whether open data policies influence participants' rate of consent by randomly assigning participants to view consent forms with and without discussion of open data policies. No participants declined to participate, regardless of condition, nor did rates of drop-out vs. completion vary between conditions. Furthermore, no significant change in potential consent rates was reported when participants were openly asked about the influence of open data policies on their likelihood of consent. However, follow-up analyses indicated possible poor attention to consent forms, consistent with previous research. Moreover, thematic analysis of participants' considerations of open data policy indicated multiple considerations such as concerns regarding confidentiality, anonymity, data security, and study sensitivity. The impact of open data policies on participation raises complex issues at the intersection of ethics and scientific innovation. We conclude by encouraging researchers to consider participants as stakeholders in open data policy and by providing recommendations for open data policies in human subjects research.

Next Scientist seminar: Open Science 2.0

- **How** to get started with Open Science - platforms, uses, etc.