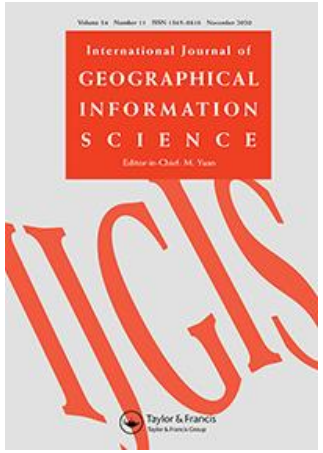
IMPLEMENTING OPEN + FAIR DATA POLICIES

EXPERIENCES OF CaGIS AND IJGIS

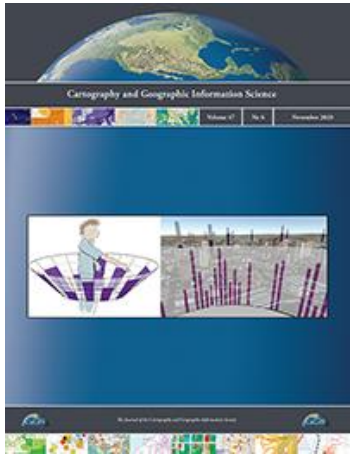
AUTOCARTO 2020

Introduction to CaGIS and IJGIS Journals

- *International Journal of Geographical Information Science* (IJGIS)
- Established in 1987
- Current Editor-in-Chief, May Yuan
- Former Editor-in-Chief: Brian Lees
- Founding Editors: J.T. Coppock, Eric Anderson
- 2019 Impact Factor: 3.733



- *Cartography and Geographic Information Science* (CaGIS)
- Official journal of the Cartography and Geographic Information Society
- Established in 1974
- Current Editor-in-Chief: Nick Chrisman
- Incoming Editor-in-Chief (2021): Eric Delmelle
- 2019 Impact Factor: 2.429



What is Data Sharing?

- Research data are “the information (whether observed, collected or generated) needed for independent verification of research results.”
- Research data varies by subject area and may include raw data or manipulated/processed data or a sub-set of the data
- Data come in all different shapes and sizes: videos, transcripts, code, algorithms, spreadsheets, questionnaires, etc.
- Data sharing is the practice of making the underlying data on which research conclusions have been based available for others to use
- Best practice in data sharing is often defined using the acronym FAIR:
  - Findable – useful, searchable metadata to aid discovery
  - Accessible – ready availability of the data, including any authorisation requirements
  - Interoperable – the ability to integrate the data with other sources or applications
  - Reusable – freedom and capability to replicate and iterate on the original data

https://www.go-fair.org/fair-principles/

Why Share Your Data?

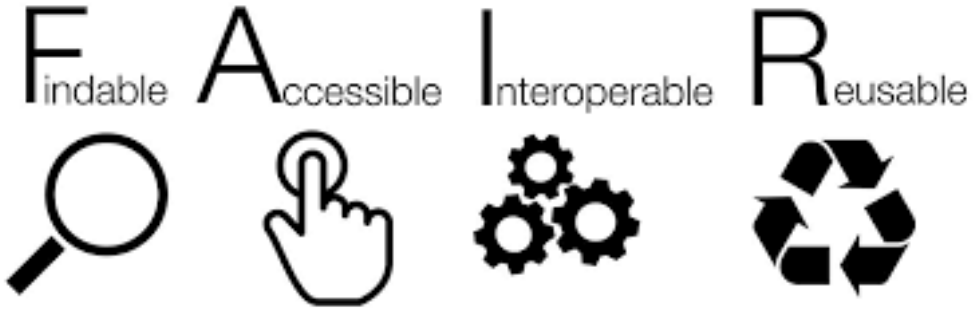
- Sharing data publicly improves the robustness of the research process, supporting validation, research transparency, reproducibility and replicability of results. This can, in turn, advance discovery and knowledge
- Sharing data can lead to re-use and discovery, with greater opportunities for carrying out meta-analyses and the extraction of new knowledge
- Depositing data in a repository that mints a permanent identifier, such as a DOI, allows authors and others to cite the data set, allowing researchers to get appropriate credit for their work.
- Data deposition supports the long-term preservation of data
- Wider public availability of research data supports the translation of research into practice
- EU Cost Benefit Analysis – cost of *not* having FAIR data estimated at €10.2 billion/yr

Some funders now make data-sharing mandatory

(see the Sherpa-Juliet tool: http://v2.sherpa.ac.uk/juliet/)

Taylor & Francis Data-Sharing Policies

- First implemented in 2018, with uptake across >1,600 journals within the first 12 months
- Our policies were informed by FAIR data principles and the TOP Guidelines
- As a publisher across the Humanities, Science and Technology, and Medicine, we needed a range of policies to cover the breadth of attitudes to data sharing across different research areas
- Tiered set of five policies, with increasing levels of prescription for authors as the levels increase (policies are summarised on the next slide)
- Journal editors and society partners can select the policy they feel is most appropriate for their community



Taylor & Francis Data-Sharing Policies

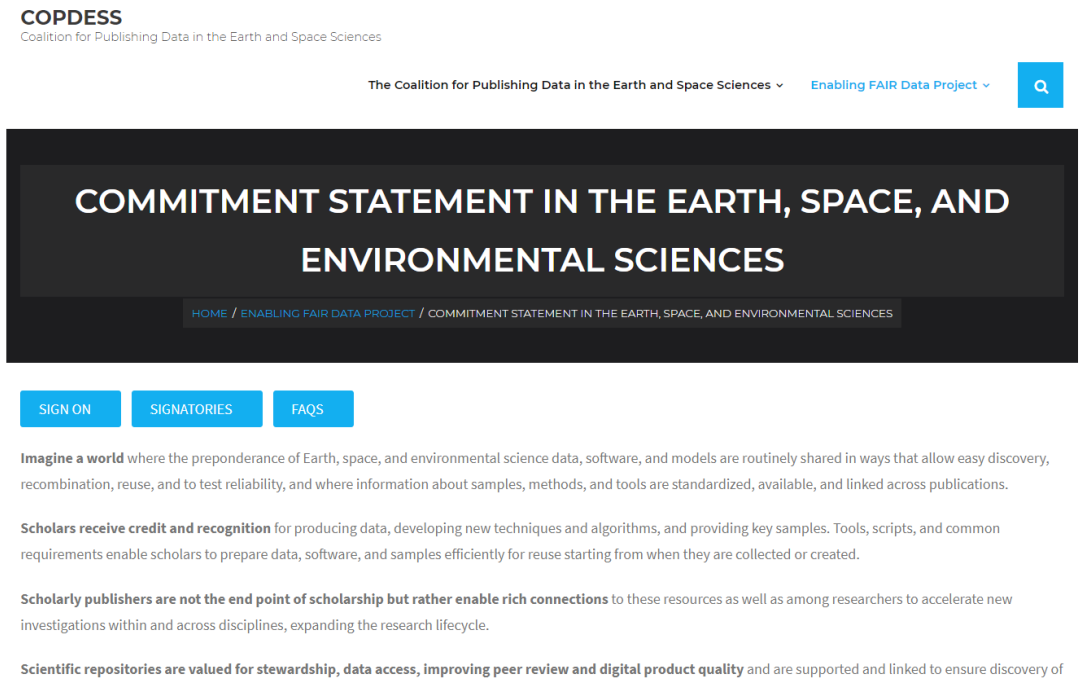
Data sharing policies

	Basic	Share upon reasonable request	Publicly available	Open data	Open and fully FAIR
Level of data sharing	Authors are encouraged to share or make open the data associated with the paper, where this does not violate the protection of human subjects or other valid privacy concerns.	Authors publishing with the journal agree to make their data available upon reasonable request. It's up to the author to determine whether a request is reasonable.	Authors make their data freely available to the public, but under a license that limits re-use.	Authors must make their data freely available to the public, under a license allowing re-use by any third party for any lawful purpose. Data shall be findable and fully accessible.	Authors must make their data freely available to the public, under a license allowing re-use by any third party for any lawful purpose. Additionally, data shall meet with FAIR standards as established in the relevant subject area.
Data availability statement	Highly encouraged	Mandatory	Mandatory	Mandatory	Mandatory
Persistent identifier for data	Highly encouraged	Highly encouraged	Mandatory	Mandatory	Mandatory
Data citation	Highly encouraged	Highly encouraged	Mandatory	Mandatory	Mandatory
License applied to data set	Author's choice	Author's choice	Author's choice	CC0, CCBY or equivalent	CCBY, CC0 or equivalent

https://authorservices.taylorandfrancis.com/data-sharing-policies/

COPDESS Enabling FAIR Data Project

- Coalition for Publishing Data in the Earth and Space Sciences (COPDESS) developed the "Commitment to Enabling FAIR Data in the Earth, Space, and Environmental Sciences"
- Taylor & Francis signed this commitment statement in March 2019
- As part of this commitment, we launched a pilot in November 2019 in collaboration with our editors and society partners to implement open & FAIR data-sharing policy on seven journals



IJGIS and CaGIS – Why Participate?

How important is open data (and open research more widely) in your subject area?

- "*Sharing data and codes is very important to assure validity and advances in GIScience research*" – May Yuan, IJGIS

Why did you choose to participate in the pilot?

- "*I believe that this is a very important step for advances in GIScience*" – May Yuan, IJGIS
- "*it seemed time to sign up for something with teeth*" – Nick Chrisman, CaGIS

- For Taylor & Francis, this was an opportunity to increase the transparency of the research that we publish, to support the ambitions of COPDESS, and to support authors in having the greatest impact with their work

What Does the Policy Involve?

- Authors must make their data freely available
- Authors must share their data with a license that allows re-use by any third party for any lawful purpose
- Data should meet with FAIR standards
- Data should be deposited in a FAIR-aligned repository prior to submission
- Data citation should be included in the submission
- For journals that use double-blind peer review, a private sharing link must be included to maintain anonymity of the data

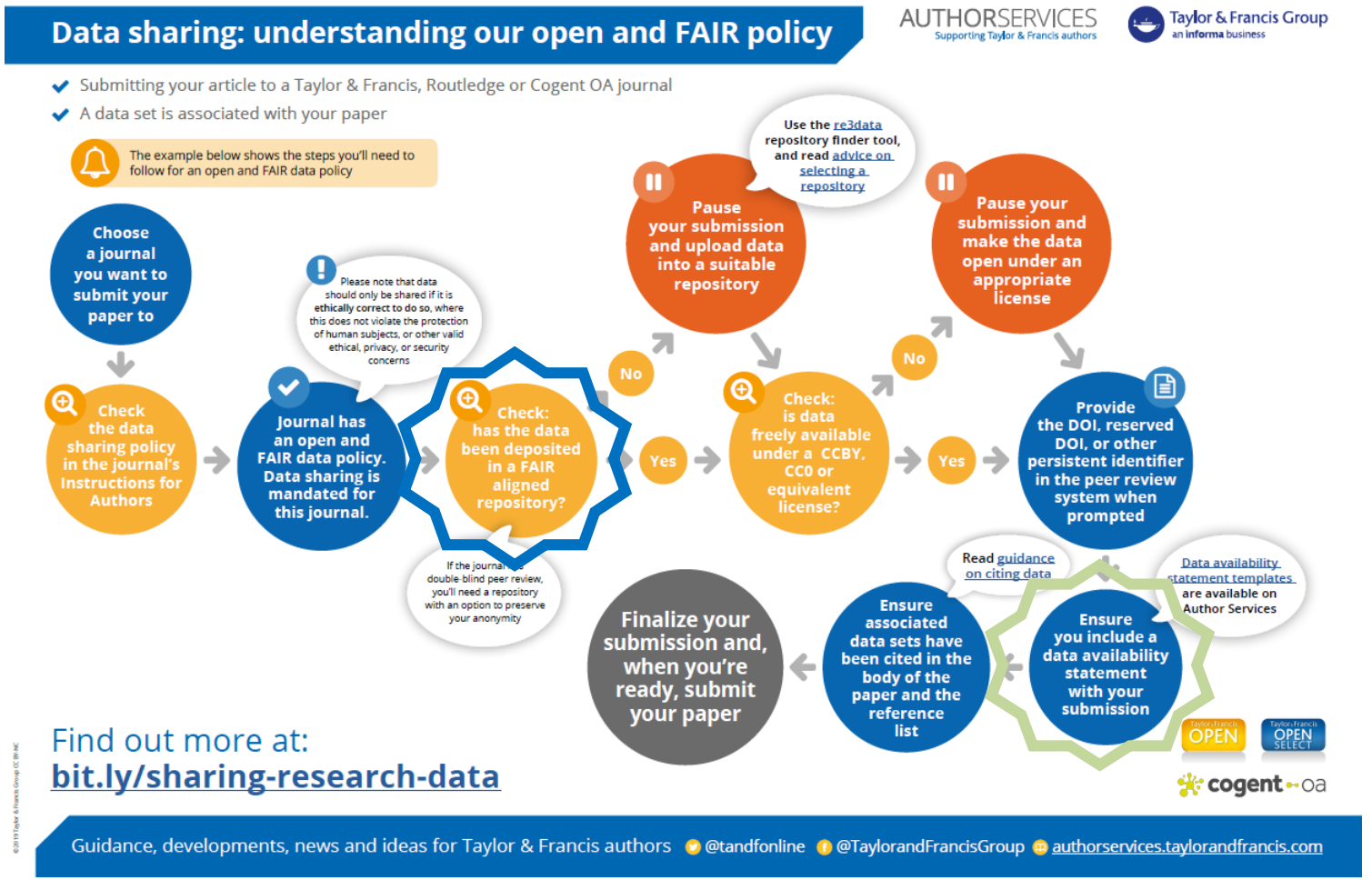
For CaGIS and IJGIS, a **Data and Codes Availability Statement** should be included with all submissions, which clarifies where the data and codes have been shared and link to the data

Choosing the Right Repository

- A data repository is a storage space for researchers to deposit data sets and code associated with their research
- Speak to your institutional librarian, funder, or colleagues at your institution for advice on choosing a repository that is relevant to your discipline
- You can also use FAIRsharing.org and re3data.org to search for a suitable repository – both provide a list of certified data repositories
- We encourage authors to select a data repository that issues a persistent identifier, preferably a Digital Object Identifier (DOI), and has an established preservation plan to ensure the data are preserved in perpetuity
- For journals that use double-blind peer review, you will need to deposit your data in a repository that preserves anonymity
- Both CaGIS and IJGIS recommend Figshare or Dryad as suitable repositories
  - many authors choose Zenodo, which offers direct archiving of code stored on GitHub

https://authorservices.taylorandfrancis.com/data-sharing-policies/repositories/

Open & FAIR Data-Sharing Workflow



https://authorservices.taylorandfrancis.com/data-sharing-policies/open-and-fair/

Instructions for Authors

Data and Codes Availability Statement

Please provide information on and share data and codes used in the research. Please ANONYMIZE your data and codes and deposit them in a cloud-based repository, Figshare or Dryad. To meet our double-blinded review, you must include a PRIVATE SHARING LINK (generated when you set up the data and codes at figshare or dryad sites) in your Data and Codes Availability Statement (see below).

Please note that the private sharing link at Figshare or Dryad will expire after 12 months. If a revision submitted after this time, you will need to update the private sharing link. If some data cannot be shared, please provide simulated or mocked data to show how the codes work. Instructions for how to use the data and codes to reproduce figures and tables in the manuscript will facilitate reviewers and therefore may expedite peer reviews.

Our goal is to assure that the data and codes are sufficient to support the reproducibility and replicability of the research. Please add a section entitled "Data and Codes Availability Statement" after your Conclusion section. This is required for all IJGIS submissions and cannot be satisfied by statements such as “available upon reasonable request”. You should use the following template:

The data and codes that support the findings of this study are available with the identifier(s) at the private link (give the PRIVATE SHARING LINK, such as https://figshare.com/s/61d0851a0d08b8cb2b74). If you cannot share some data, please indicate and explain here specifically what data cannot be shared. For example, XXX data cannot be made publicly available due to XXXX (provide the reasons, such as protect research participant privacy and consent or other reasons). Simulated (or mocked) data are shared at the link to demonstrate how the codes work.

Once your manuscript has been provisionally accepted, you should provide a permanent link with DOI and update the data and codes availability statement. You may also add authors' credits to the data and codes.

Results - Analysis

- No trend of a decrease in submissions across the pilot journals since implementing the policy
  - Implementing an Open & FAIR data-sharing policy doesn't appear to prevent/put-off authors from submitting their work
- Overall acceptance rate has increased slightly since the start of the pilot
  - Implementing the policy may encourage greater care by authors pre-submission
- Small increase in average times to first and final decisions
  - Whilst there is consistent extra work required of Editors, peer-review times haven't slowed notably
- Very small number of manuscripts withdrawn, less than versus the same period in 2019
  - Implementing the policy has led to fewer withdrawn manuscripts post-submission

Overall, implementing an Open & FAIR data policy has not negatively impacted submissions or peer-review times, and may lead to a higher quality of submitted papers

Results - Feedback

What feedback have you had from authors/reviewers/the wider community?

- "*In the beginning it too an extra round of feedback to make authors comply. They were looking around on the massive T&F web site to find work-arounds and ways to weasel out of restriction. T&F had a lot of conflicting policy guidance. We had to sharpen the stick and corral authors into a clear pathway*" – Nick Chrisman, CaGIS
- "*Reviewers appreciated the opportunities to check data and codes*" – May Yuan, IJGIS
- "*Discussions at conferences were very positive*" – May Yuan, IJGIS

Do you think it has been worth it: personally?

- "*Maybe. It keeps the journal on cutting edge. My workload is infinite anyway*" – Nick Chrisman, CaGIS
- "*absolutely*" – May Yuan, IJGIS

Next Steps

- Taylor & Francis will continue to transition our Earth & Environmental Science journals onto more-open data-sharing policies in 2021
- IJGIS will support the embedding of Code Ocean capsules within published articles from early 2021
- Code Ocean integration will also provide additional options for depositing and citing data and code
- "*Code Ocean allows reviewers to run codes directly on the site without download the codes and data. They also allow the codes and data to run online to reproduce graphs and maps with the paper when published. This seems ideal, but the procedures to set up Code Ocean capsules are much more cumbersome than FigShare, Dryad, and GitHub. I hope that Code Ocean can improve over time to simplify the submission process, or other similar sites will be available to support sharing data and codes with capabilities of online execution*" – May Yuan, IJGIS

https://authorservices.taylorandfrancis.com/using-code-within-your-research/

Questions or comments, contact:

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