

Preprints Servers as a Hub for Early-Stage Research Outputs

What can preprint servers offer authors and readers?

By posting a preprint, authors have the potential to provide a single point of access to all of information relevant to the research project and explain how each part contributes. In other words, preprints can be a focal point for disparate early-stage research outcomes such as data, code, websites, and analysis plans. Linking these outputs can greatly increase transparency and reproducibility, benefiting the wider research community.

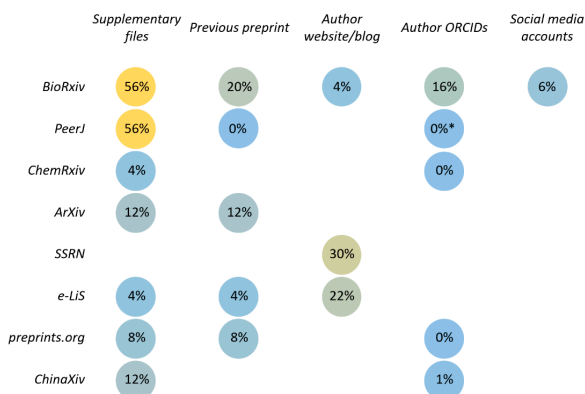
We investigated the current status of preprints servers to link other outputs (or report as supplementary data), in particular:

- Which options for linking and reporting are available in submission systems?
- What is displayed on preprint abstract pages?
- How often do users make use of available features?

Information sources

- Preprint submission systems were checked to see which linking and reporting options are available.
- Preprints (25 or 50 for selected servers) abstract pages were checked to see if authors make use of available options.
- Operators of preprint servers were surveyed about linking and reporting options, policies and future plans.

Submission systems and usage by authors



Results for selected preprint servers. Numbers are the % of papers or authors with the given option shown on the abstract page. No number: this option is not available. The submission site for ChinaXiv could not be checked. * indicates that information entered during submission is not displayed directly on the abstract page.

- Most older preprint servers (pre-2010) had fewer linking options.
- Relatively low use of options from authors was found.
- Supplementary data files in life sciences were an exception.
- No examples of externally linked data or software code were found for the preprints checked.
- Humanities and social science servers offer better options for linking to author-specific data, such as websites or social media accounts.

Survey responses

What is your overall impression of how often authors use the linking options?

	Data	Code	Previous version	Later version	Registered controlled trials	Pre-registered methods/analyses	Database accession IDs	ORCID	Project website/blog	Personal website/blog	Social media
MarXiv	0%	0%	0%	0%	0%	0%	0%	25-50%	10-25%	10-25%	10-25%
MindRxiv	<10%	<10%	10-25%	10-25%	<10%	<10%	<10%	<10%	<10%	<10%	<10%
PeerJ Preprints	<10%	<10%	<10%	10-25%	0%	0%	<10%	10-25%	<10%	10-25%	10-25%
preprints.org	<10%	<10%	<10%	<10%	<10%	<10%	<10%	10-25%	<10%	<10%	<10%
engRxiv	<10%	10-25%	0%	10-25%	0%	0%	0%	>50%	10-25%	25-50%	25-50%
LawArXiv	10-25%	<10%	10-25%	10-25%	n/a	n/a	n/a	>50%	<10%	<10%	n/a
OSF Preprints	25-50%	10-25%	10-25%	25-50%	<10%	<10%	0%	<10%	0%	0%	<10%
BITSS Preprints	>50%	>50%	>50%	10-25%	<10%	>50%	<10%	25-50%	25-50%	25-50%	25-50%
csarven.ca	>50%	>50%	>50%	>50%	n/a	n/a	>50%	n/a	>50%	>50%	>50%

- Most responses were from Open Science Framework (OSF) supported preprint servers which allow users to link preprints to an OSF project where any output can be recorded.
- One (csarven.ca) is a site used by one author for personal preprints.
- None have a written policy requiring availability of research data.
- The Berkeley Initiative for Transparency in the Social Sciences (BITSS), perhaps unsurprisingly, reports the highest values, along with csarven.ca.
- Not all categories were appropriate for all fields and there was a great deal of variation between disciplines.
- Only one response disclosed future plans to improve linking options.

Conclusions

- Linking and reporting is integrated to some extent in most preprint servers, however linking to external sources is less common. Zenodo is an exception; OSF project linking offer a unique paradigm.
- There is variation between disciplines due to the different kinds of early-stage outputs generated. Norms in the field may also be a factor.
- Open science is not a primary goal of most preprint servers. If preprints are to be a hub for early-stage reporting, preprint servers need to plan better linking and reporting options and encourage authors to make use of them.