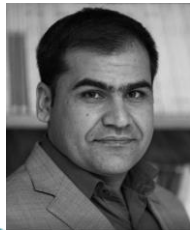# Neuroscience Researchers' Trust in Preprints: A Citation Analysis
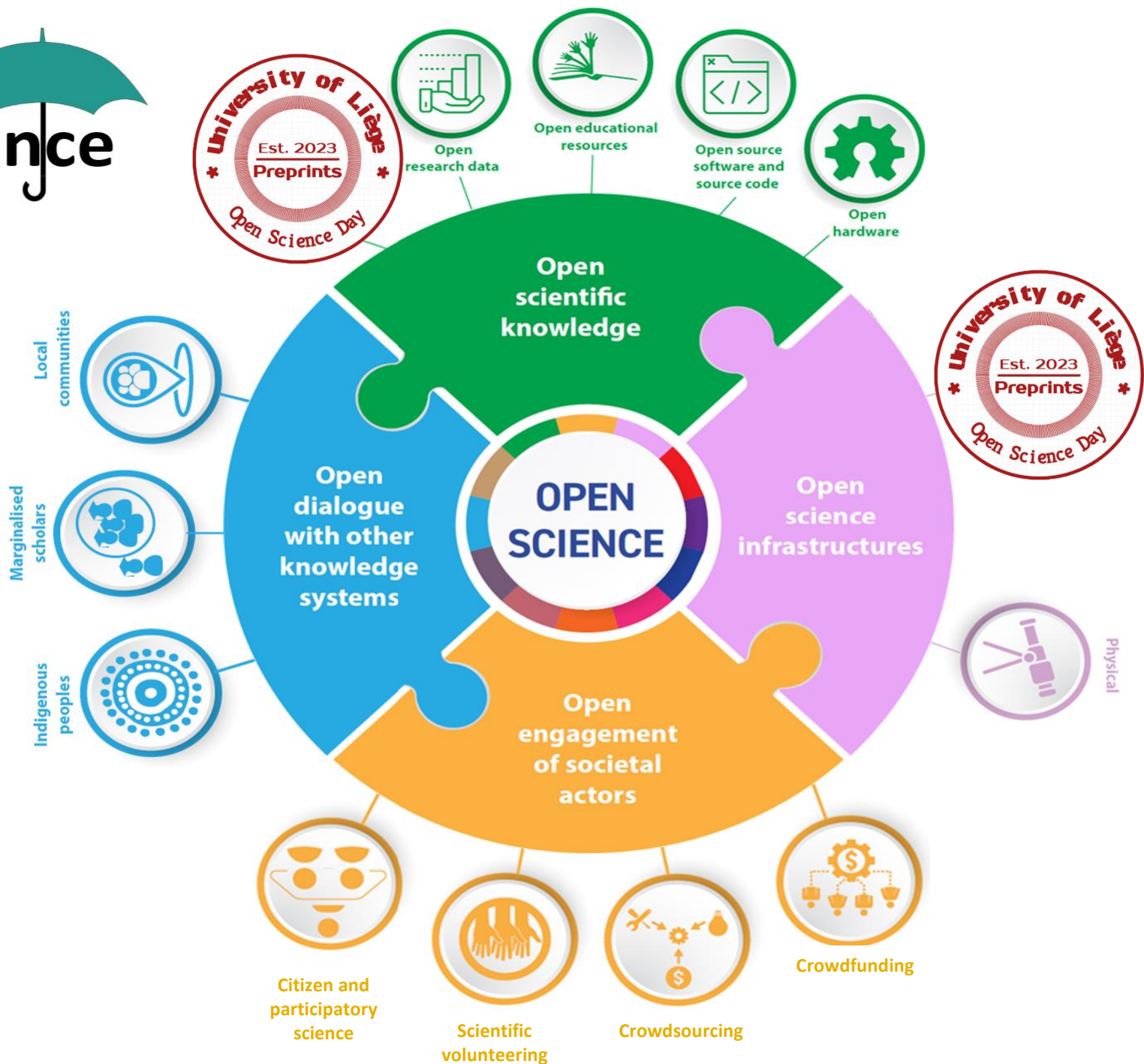
Behrooz Rasuli, **Fatemeh Seyfzadehdarabad**, Aurore Thibaut, Olivia Gosseries

ULiège Open Science Day

October 27th, 2023

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Open Science

OPEN SCIENCE

Open scientific knowledge
- Open research data
- Open educational resources
- Open source software and source code
- Open hardware

Open science infrastructures
- Physical

Open engagement of societal actors
- Citizen and participatory science
- Scientific volunteering
- Crowdsourcing
- Crowdfunding

Open dialogue with other knowledge systems
- Local communities
- Marginalised scholars
- Indigenous peoples

University of Liège
Est. 2023
Preprints
Open Science Day

Preprints

"A preprint is a **complete manuscript** shared **[free of charge]** with a public audience **without peer review**. Often, preprints are also submitted for peer review and publication in a traditional scholarly journal. Preprints accelerate scholarly communication and **public access**."

Open Science Foundation (https://help.osf.io/article/230-preprint-faqs)

Preprint Servers

Preprints: Pros & Cons

+

- ❏ Instant publication
- ❏ Higher readership & visibility
- ❏ Citable
- ❏ Open to (instant) feedback
- ❏ Free for both authors and readers
- ❏ Crediting innovative research
- ❏ Establishing priority of findings
- ❏ Publishing "unpublishable" writings/data
- ❏ Not favoring significant positive results
- ❏ No (LONG) author guidelines

-

- ❏ Lacking peer-review
- ❏ Potential dissemination of mis/disinformation
- ❏ Scooping ideas and copyright issues
- ❏ Trust issues
- ❏ Not recognized by academic promotion policies
- ❏ Contrary to double blind review
- ❏ Hard to distinguish low- from high-quality research
- ❏ Not accepted for publication by some journals & not citable in some others
- ❏ Limited formats
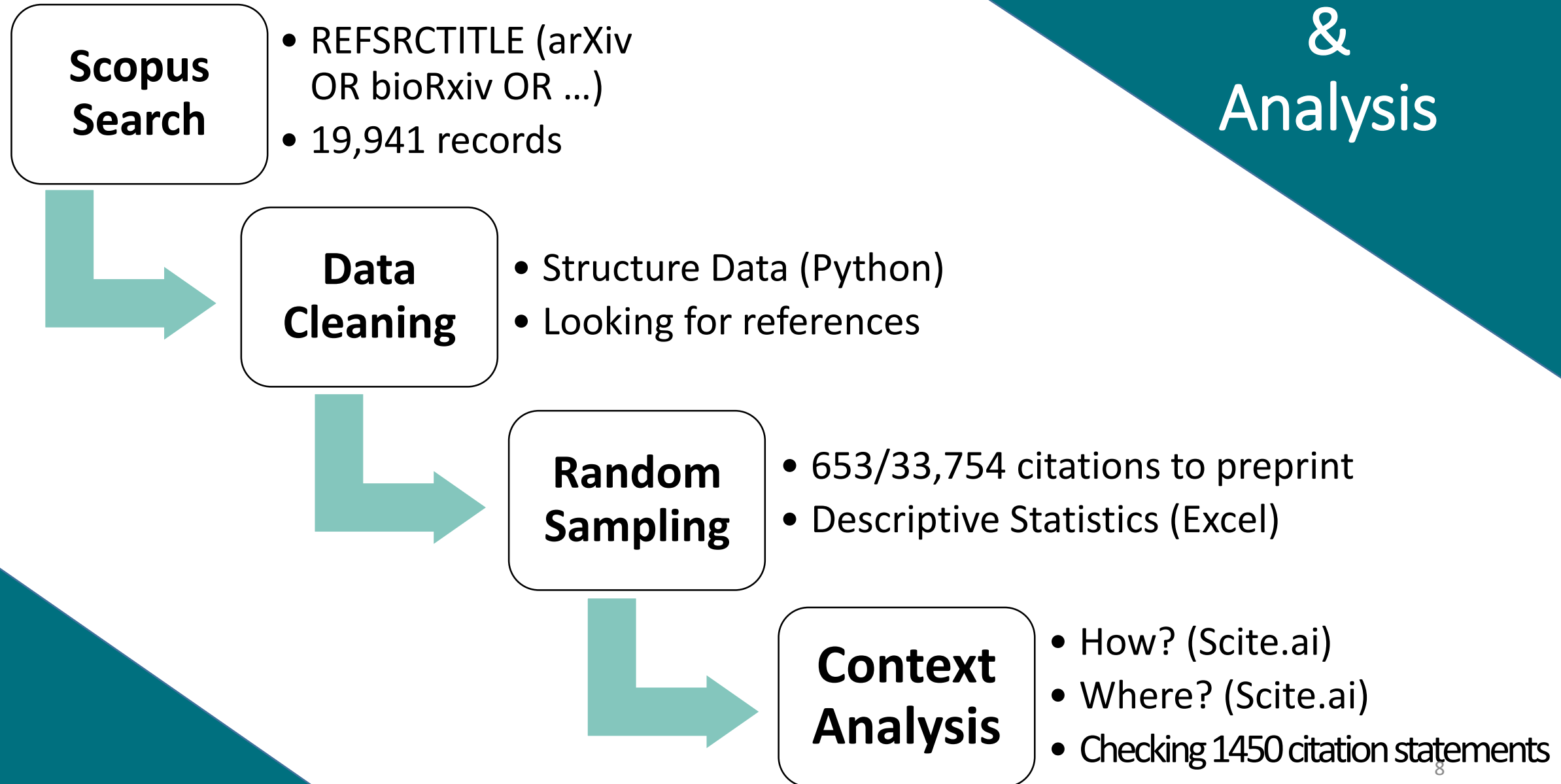- ❏ No withdrawal

Neuroscience

Research Questions

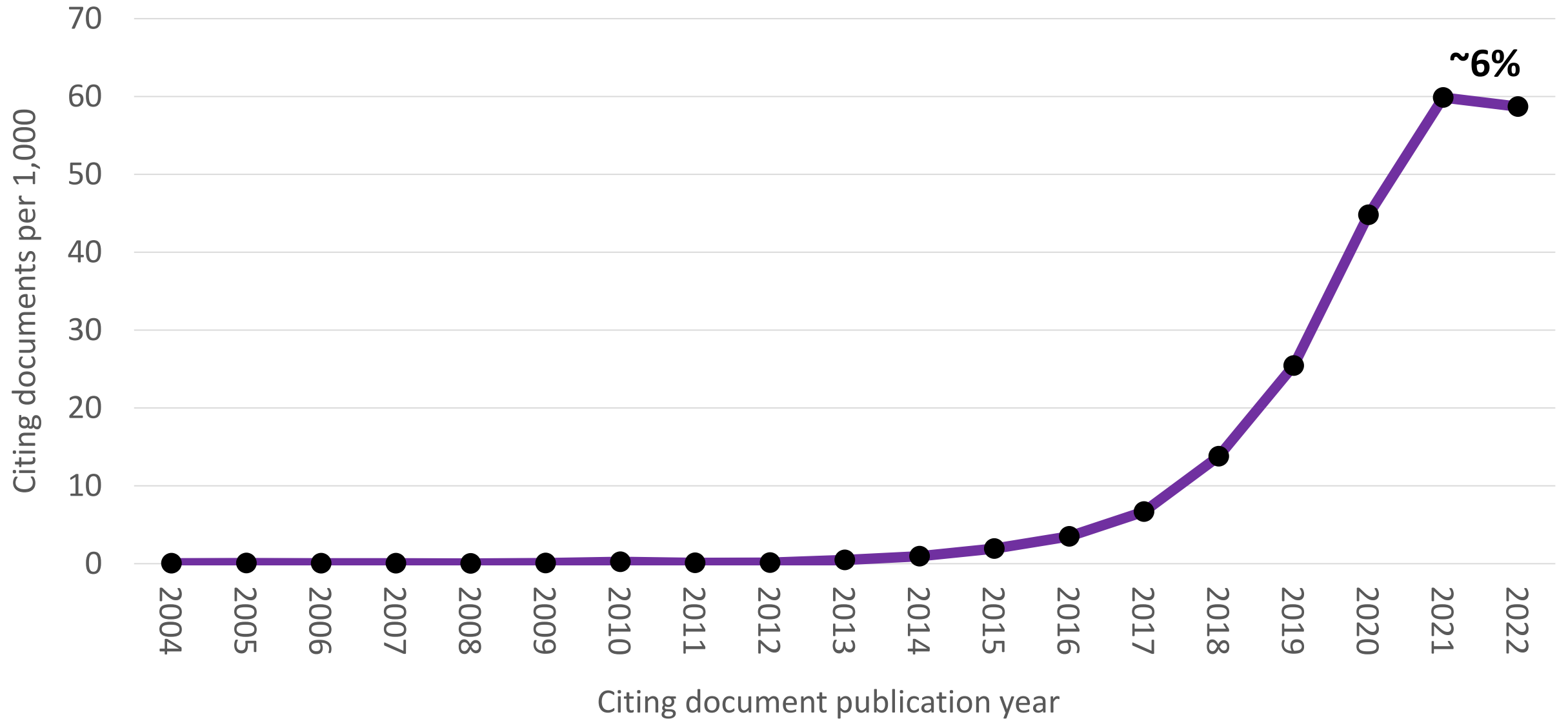How can **a broad overview of citations to preprints** be depicted, in terms of:
- **proportion, journals, & countries?**
- **preprint servers?**
- **publications?**

How are preprints cited (intent)?

In which sections are preprints more frequently cited (context)?

Methods

Scopus Search
- REFSRCTITLE (arXiv OR bioRxiv OR ...)
- 19,941 records

Data Cleaning
- Structure Data (Python)
- Looking for references

Random Sampling
- 653/33,754 citations to preprint
- Descriptive Statistics (Excel)

Context Analysis
- How? (Scite.ai)
- Where? (Scite.ai)
- Checking 1450 citation statements

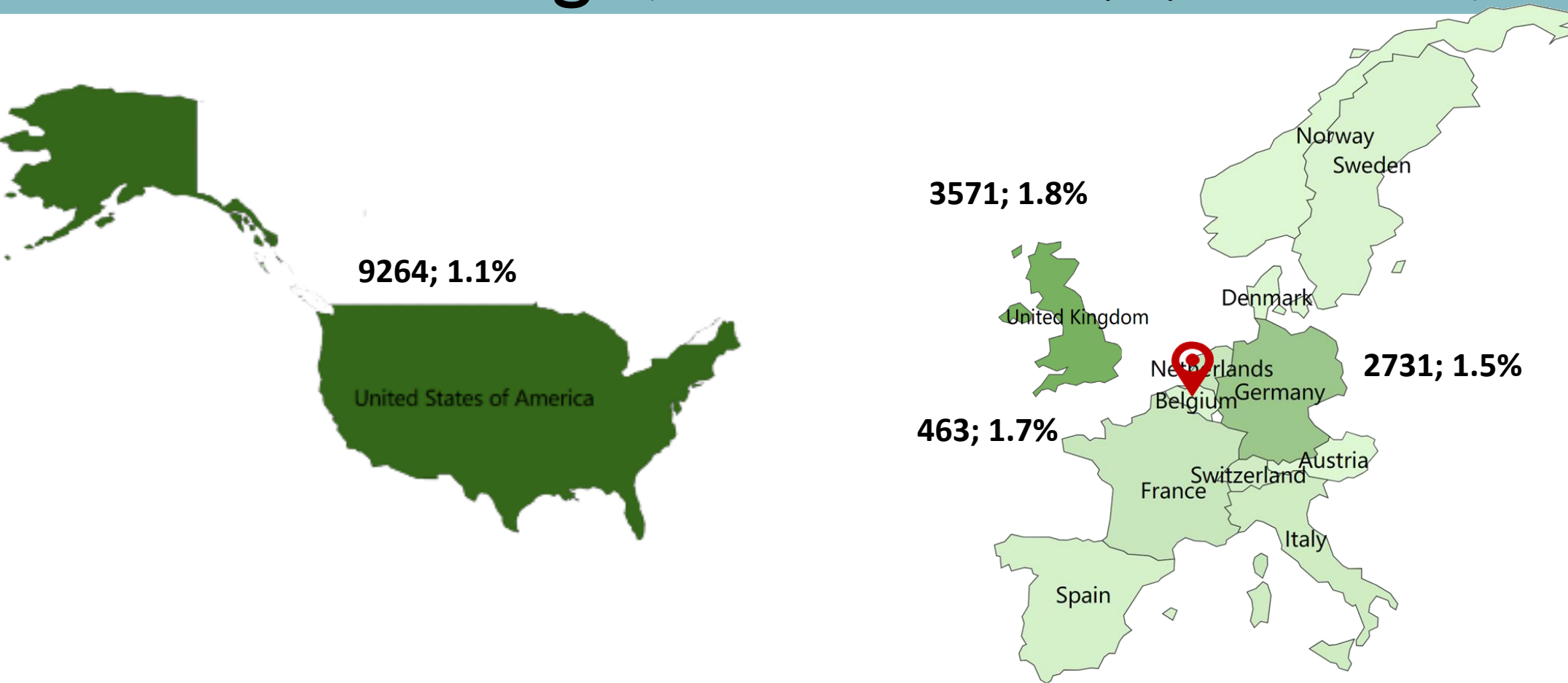# Findings (Overview of citations to preprints: Proportion)

Findings (Overview of citations to preprints: Journals)

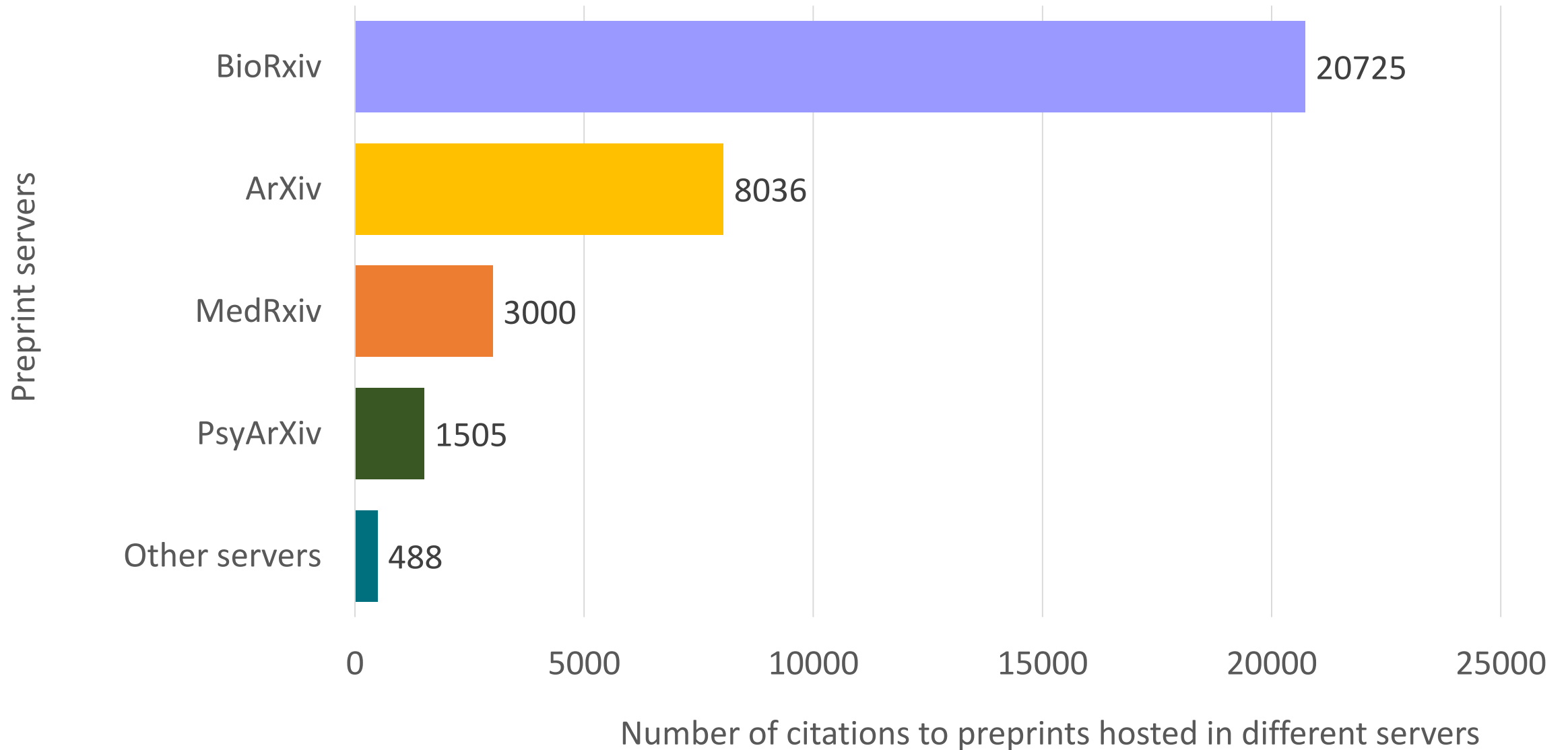| Journal	Number of publications citing preprints	Documents citing preprints per 1,000 Journal publications	CiteScore 2022
Elife	1815	129	12.3
PLOS Computational Biology			7.1
Frontiers In Neuroscience			6.8
Neuroimage			11.6
Peerj			5.1
Neuron			26.9
Current Biology	452	80	12.1
Frontiers In Human Neuroscience	375	46	4.4
Plos Biology	330	54	15.4
Frontiers In Neurology	280	23	4.8
Human Brain Mapping	262	46	9.1
Current Opinion In Neurobiology	260	67	11.7
Frontiers In Computational Neuroscience	254	152	4.8
Frontiers In Cellular Neuroscience	236	47	8.6
Brain Sciences	232	43	3.9
Neuroscience And Biobehavioral Reviews	229	41	13.4
Journal Of Visualized Experiments	216	18	2.3
Frontiers In Aging Neuroscience	211	39	5.2
Neural Processing Letters	202	87	5.4
Trends In Cognitive Sciences	195	67	30.4

"Under eLife's new model for publishing, all the papers that are considered for review are already published as preprints by the authors."
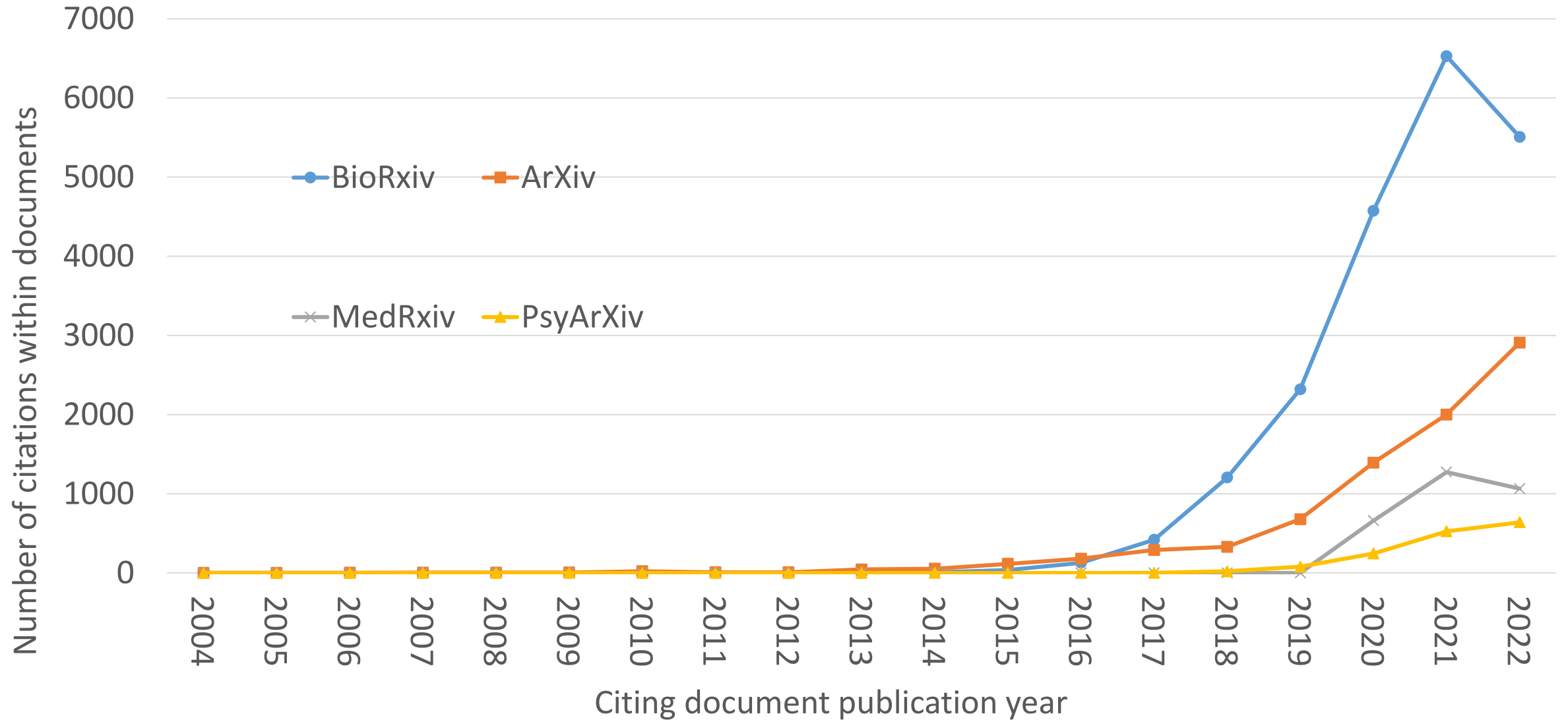
Findings (Overview of citations to preprints: Countries)

9264; 1.1%

3571; 1.8%

2731; 1.5%

463; 1.7%

Findings (Overview of citations to preprints: Servers)

Preprint servers	Number of citations to preprints hosted in different servers
BioRxiv	20725
ArXiv	8036
MedRxiv	3000
PsyArXiv	1505
Other servers	488

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Findings (Overview of citations to preprints: Preprint servers)

# Findings (Overview of citations to preprints: Publication types)
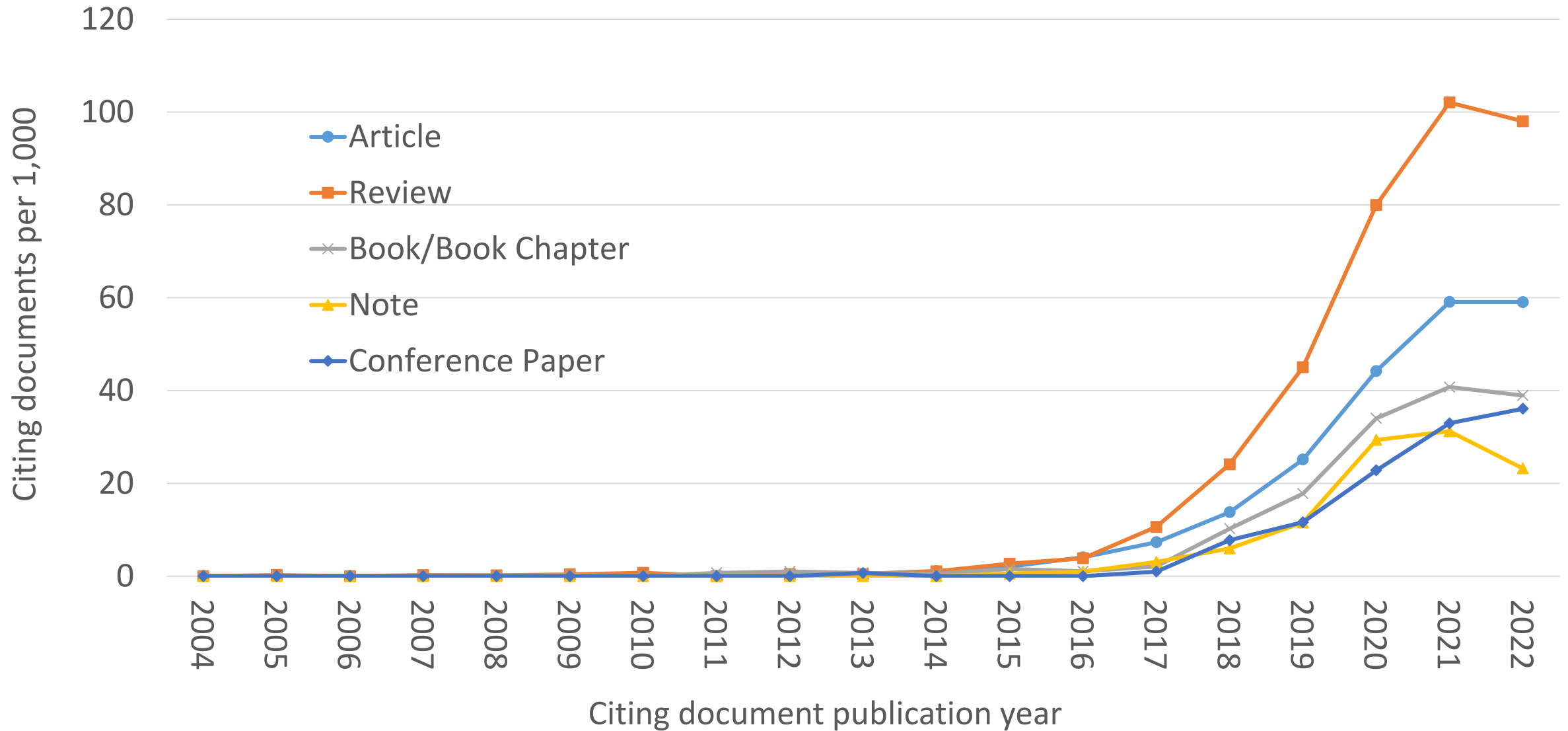
Findings (How are preprints cited (intent)?)

Supporting; 58; 7%

"However, our assessment of reliability from week 0 to week 2 did not substantially improve reliability (see supplementary information). This is **consistent with conclusions from** Elliott et al. (2019) who reported that the test–retest interval had little impact on reliability estimates."
Cited by: 10.1002/hbm.24883
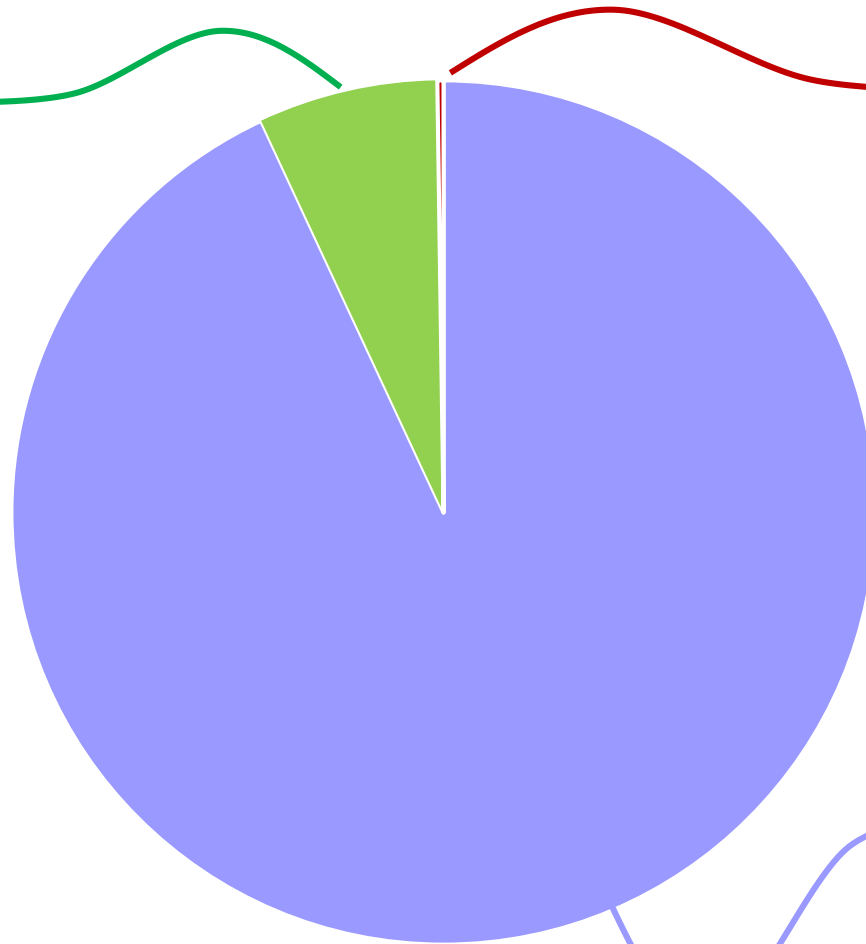
Contrasting; 2; 0%

"The correlation demonstrates that predicted flexibility by AF2 is related to the protein's dynamics inferred from the experimental structures. **In contrast with a recent preprint** (Saldaño et al., 2021), the predicted flexibility values failed to correlate with their pLDDT values, which reflect the confidence of the AF2 prediction of each residue's local environment (Mariani et al., 2013)."
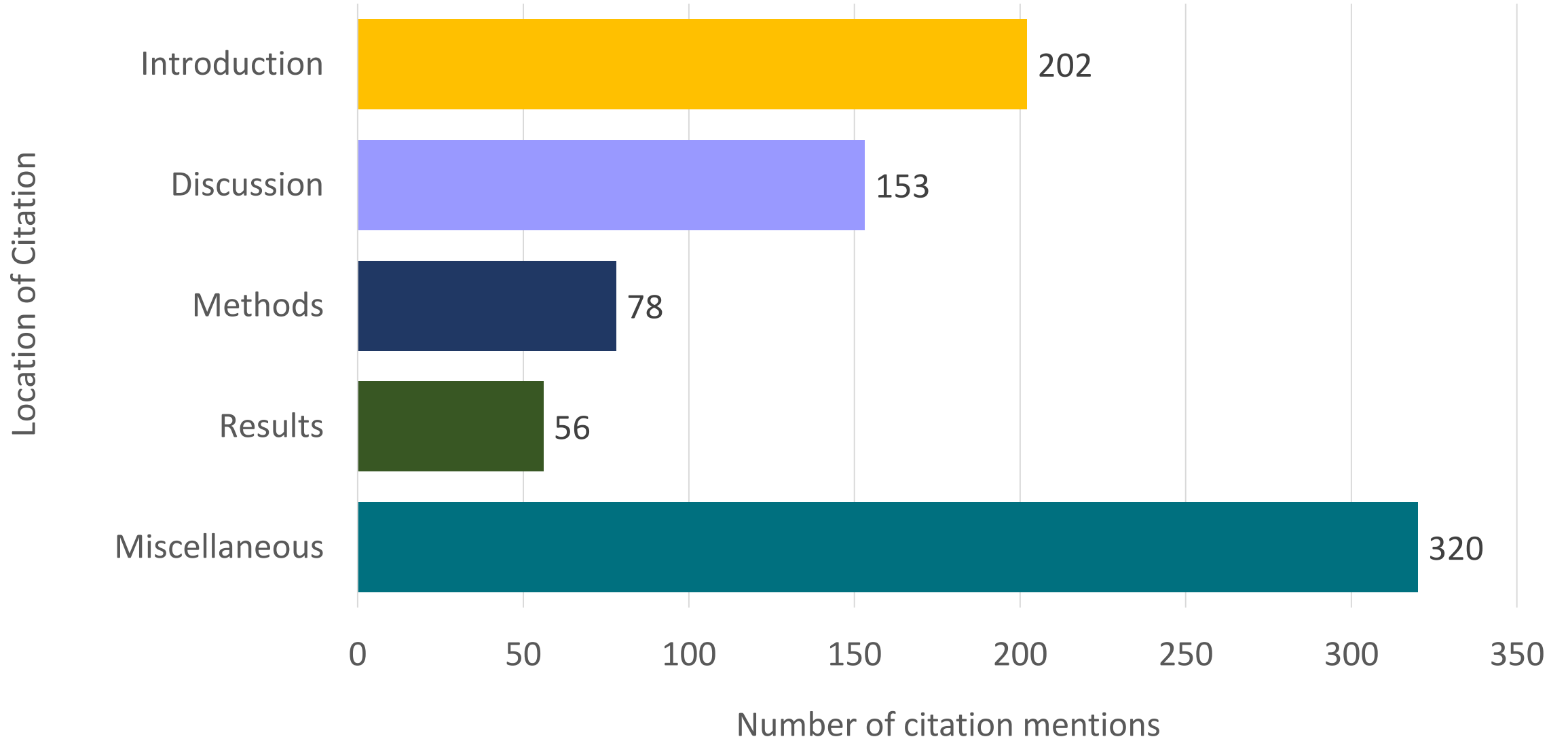**Cited by:** 10.7554/eLife.75751

Mentioning; 805; 93%

"The corresponding R scripts are also provided (https://doi.org/10.6084/m9.figshare.5140057.v3). To the best of our knowledge **two other methods have recently been proposed** in [11,12]."
Cited by: 10.1371/journal.pcbi.1006279

Findings (In which sections are preprints cited more frequently (context)?)

Chart: Number of citation mentions by Location of Citation

- Introduction: 202
- Discussion: 153
- Methods: 78
- Results: 56
- Miscellaneous: 320

X-axis: Number of citation mentions (0, 50, 100, 150, 200, 250, 300, 350)
Y-axis: Location of Citation

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Conclusions

Increasing preprints & preprint servers;

Popularity of preprints & growing awareness;

Open accessibility: increasing citations;
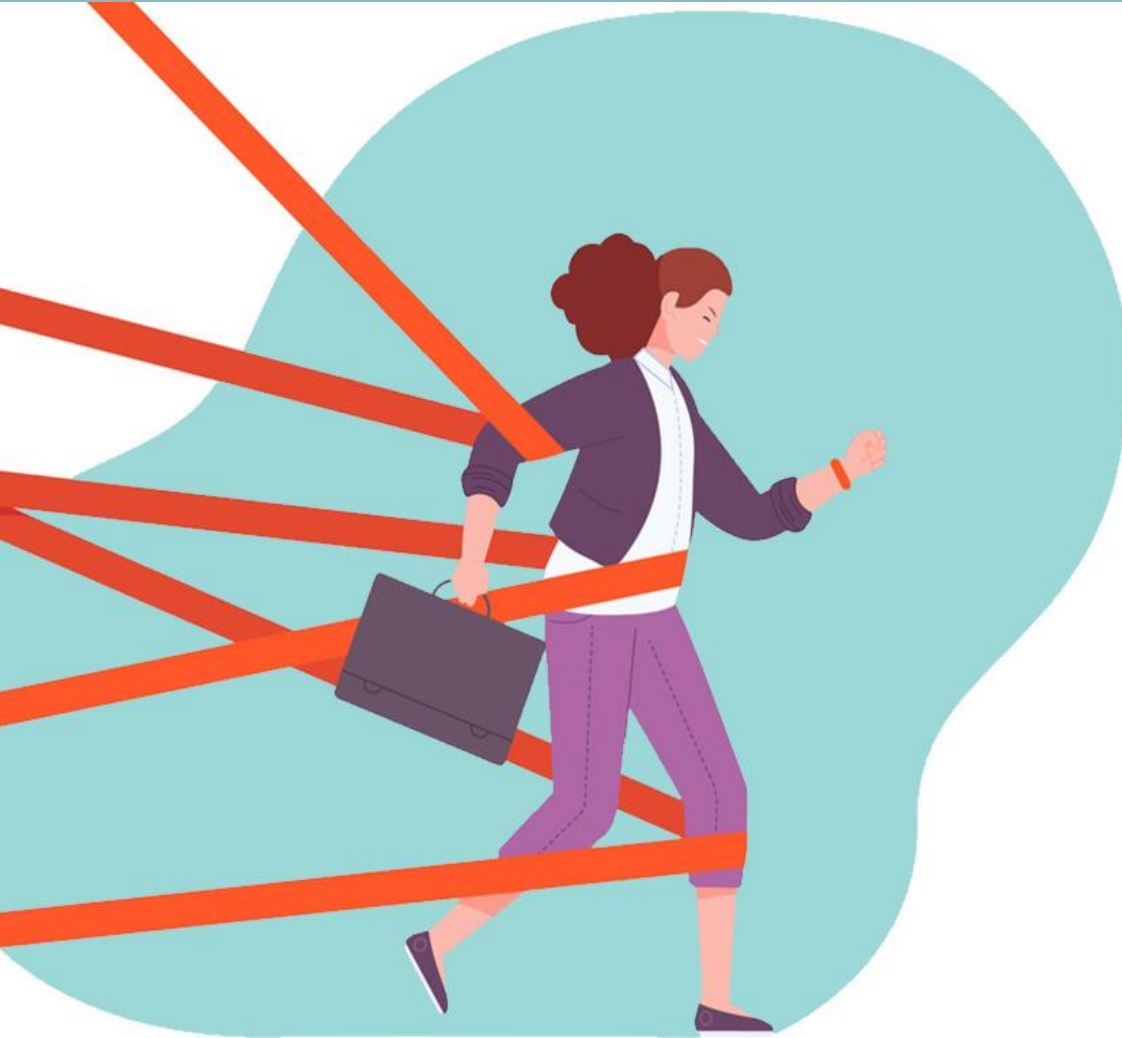
Up-to-date references & adoption of preprints;

The impact of preprint-related policies;

Neuroscience interdisciplinarity & use of different servers.

Limitations

Generalizable neither to other fields nor in time

Missing citations

Use of AI & its limitations!

Future Perspectives

Linguistic Content Analysis: ↑ precision

Purpose of publishing & citing preprints

Preprint vs. peer-reviewed

Comparing between fields

Post-COVID19 changes in preprints

Thank you. Any questions?

Fatemeh Seyfzadehdarabad

PhD Fellow in Medical Sciences
Coma Science Group, GIGA Consciousness
Centre du Cerveau2
University & University Hospital of Liège
F.seyfzadeh@uliege.be