NII RCOS
Research Center for Open Science and Data Platform

Research Traceability via PID and Japan Open Science Monitor Beta Version

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JST-CHORUS Session
"How PIDs Can Change Research"

Open Science Monitoring (OSM)

UNESCO Open Science Recommendation: “Member States should monitor policies and mechanisms related to open science using a combination of quantitative and qualitative methods.”

Kazushi Yonekawa. E2585 – UNESCO “Recommendation on Open Science.” Current Awareness E. No. 433, 2022.
UNESCO Recommendation on Open Science. UNESCO, 2021.

Open Science Monitoring (OSM): A process for observing and evaluating activities related to the principles and practices of open science

- Monitor progress on open science at various levels (e.g., national, institutional).
  - Example: What percentage of papers by researchers at my university are open access?
- OSM contributes to the following:
  - **Understanding the current situation and formulating appropriate strategies:** By objectively analyzing “where the challenges lie and what is working,” effective strategies can be formulated.
  - **Designing effective incentives:** It provides a basis for designing incentives (motivation) for researchers to practice open science.

Open Science Monitoring contributes to the further advancement of open science

Overview of NII's OSM Initiatives

For Research Institutions

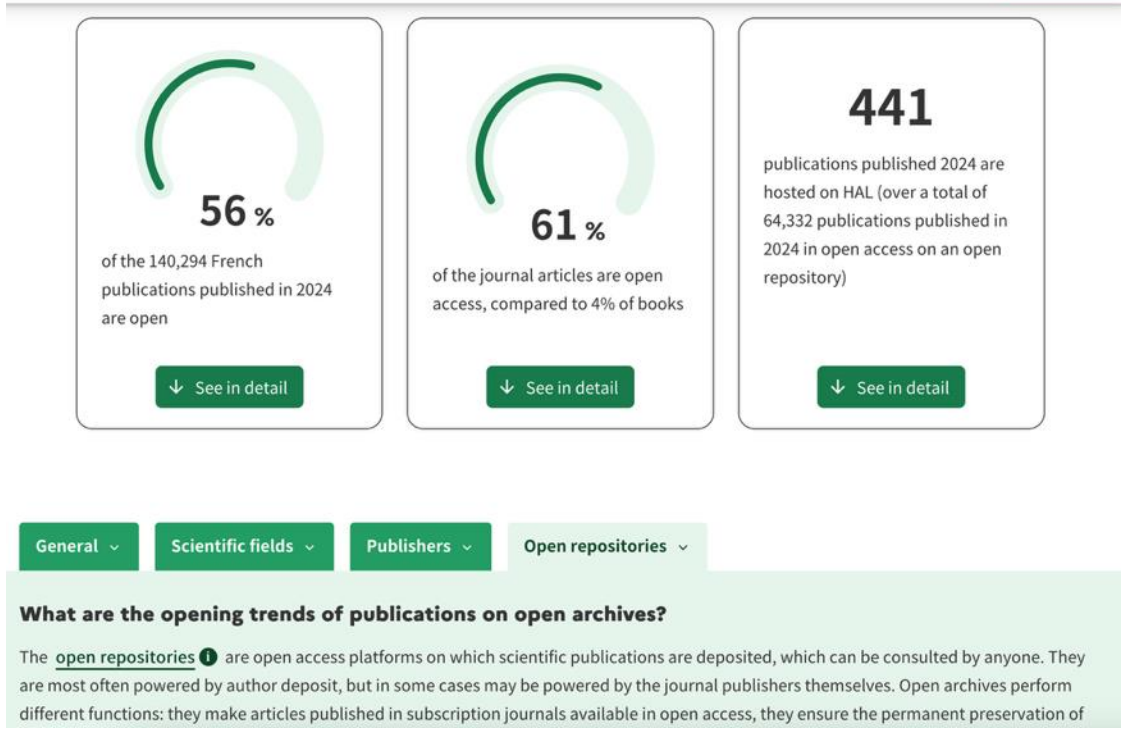
CiNii Research Dashboard for Institutions

Based on the CiNii Research Knowledge Graph, which comprehensively covers Japanese academic papers and other materials, **visualizes open science initiatives at research institutions**

For Government and Other Organizations

Japan Open Science Monitor

Implementing OA metrics in line with the French Open Science Monitor, a leading OSM initiative, **providing metrics comparable to those of other countries**



French Open Science Monitor Overview

Using reliable, open, and curated data,
a tool that measures the evolution of open science in France using reliable, open, and controlled data

the tool that measures the evolution of open science in France using reliable, open, and controlled data

■ Development Objectives

- Strategic strengthening and coordination of policies to promote open science
- Promoting understanding of research outcomes in France

■ Provided Metrics

To ensure transparency and reproducibility (→ Realizing reliable OSM), calculations will generally follow the principle of "based on open data and open source"

- Publications
- Research Data
- Software and Code
- Clinical Trials

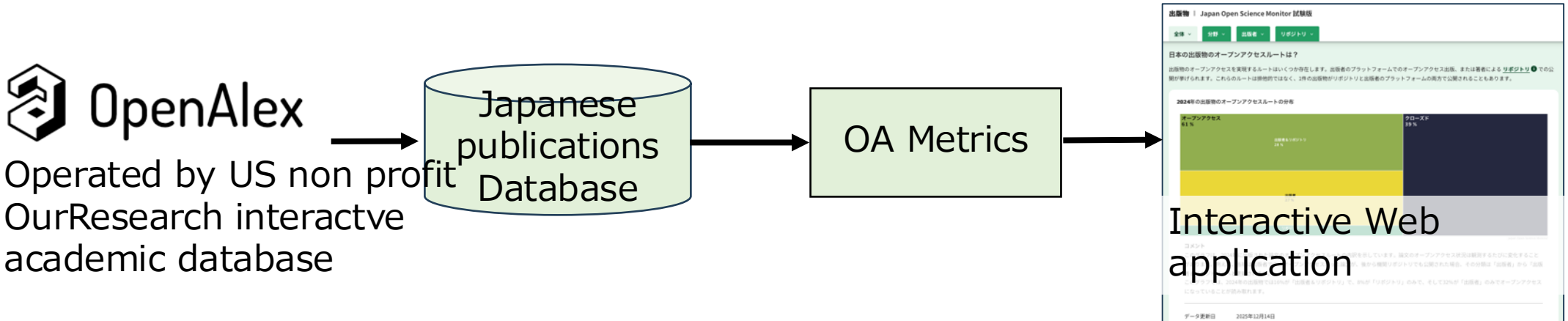
Internationally recognized as a leading example of open science monitoring

Development of Japan Open Science Monitor

[Purpose]
To implement a Japanese Open Science Monitor based on the French Open Science Monitor model,

- enable the monitoring of OA status according to global standards and facilitate comparative analysis with other countries
- Identify differences between the OSM and the CiNii Research Knowledge Graph, and develop **the OSM by leveraging the strengths of both**

[Development Overview]
As described below, we have implemented **the** French Open Science Monitor's **metrics regarding open access to publications**



Japan Open Science Monitor Beta

https://osm.nii.ac.jp/

OA measured by Japan Open Science Monitor

- The current beta version of the Japan Open Science Monitor provides metrics on open access in Japanese publications.
- Basically, the metrics are calculated using the following formula.

Open Access proportion =

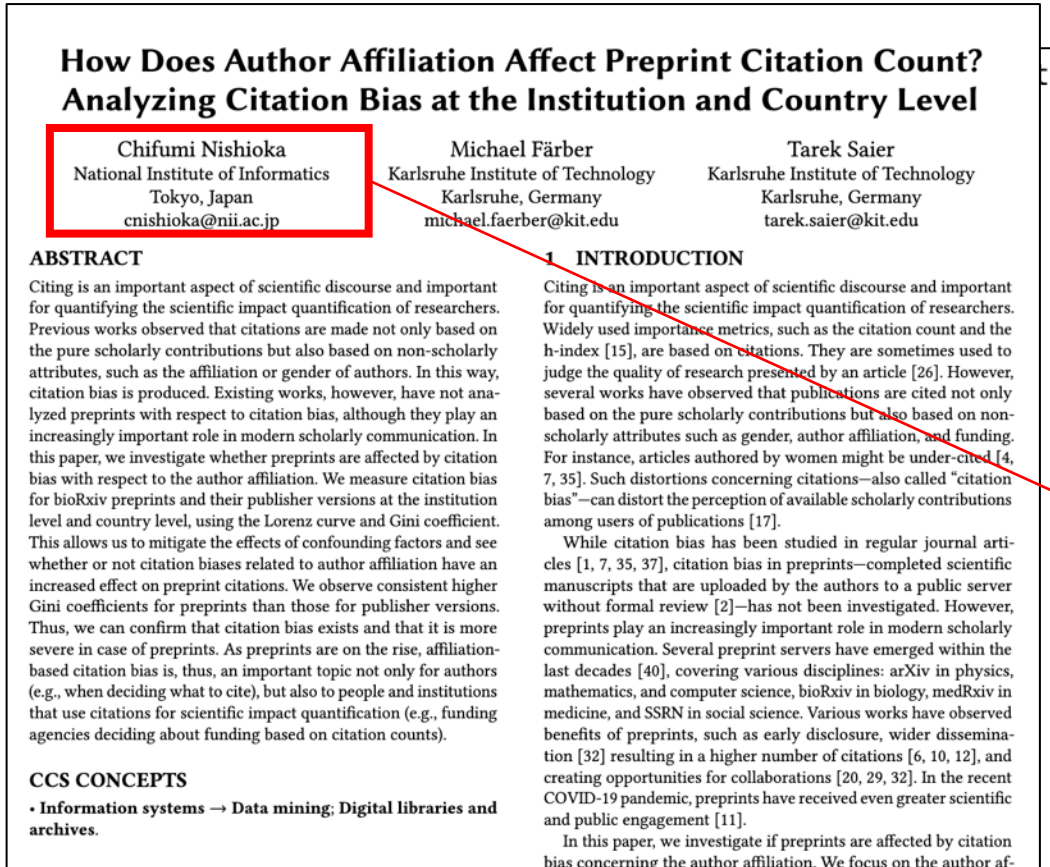
$$\frac{\text{Number of Japanese open access publications}}{\text{Number of Japanese publications}}$$

Number of Japanese open access publications
→ Determination of the open access route for publications

Number of Japanese publications
→ Identification of the institution and country of the publication

Identification of Japanese Publications

- The Japan Open Science Monitor identifies Japanese publications by referencing author affiliation information contained in OpenAlex metadata.
- OpenAlex assigns ROR identifiers to each institution as institutional identifiers.



How Does Author Affiliation Affect Preprint Citation Count? Analyzing Citation Bias at the Institution and Country Level

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ABSTRACT

Citing is an important aspect of scientific discourse and important for quantifying the scientific impact quantification of researchers. Previous works observed that citations are made not only based on the pure scholarly contributions but also based on non-scholarly attributes, such as the affiliation or gender of authors. In this way, citation bias is produced. Existing works, however, have not analyzed preprints with respect to citation bias, although they play an increasingly important role in modern scholarly communication. In this paper, we investigate whether preprints are affected by citation bias with respect to the author affiliation. We measure citation bias for bioRxiv preprints and their publisher versions at the institution level and country level, using the Lorenz curve and Gini coefficient. This allows us to mitigate the effects of confounding factors and see whether or not citation biases related to author affiliation have an increased effect on preprint citations. We observe consistent higher Gini coefficients for preprints than those for publisher versions. Thus, we can confirm that citation bias exists and that it is more severe in case of preprints. As preprints are on the rise, affiliation-based citation bias is, thus, an important topic not only for authors (e.g., when deciding what to cite), but also to people and institutions that use citations for scientific impact quantification (e.g., funding agencies deciding about funding based on citation counts).

CCS CONCEPTS

• **Information systems** → **Data mining**; **Digital libraries and archives**.

1 INTRODUCTION

Citing is an important aspect of scientific discourse and important for quantifying the scientific impact quantification of researchers. Widely used importance metrics, such as the citation count and the h-index [15], are based on citations. They are sometimes used to judge the quality of research presented by an article [26]. However, several works have observed that publications are cited not only based on the pure scholarly contributions but also based on non-scholarly attributes such as gender, author affiliation, and funding. For instance, articles authored by women might be under-cited [4, 7, 35]. Such distortions concerning citations—also called "citation bias"—can distort the perception of available scholarly contributions among users of publications [17].

While citation bias has been studied in regular journal articles [1, 7, 35, 37], citation bias in preprints—completed scientific manuscripts that are uploaded by the authors to a public server without formal review [2]—has not been investigated. However, preprints play an increasingly important role in modern scholarly communication. Several preprint servers have emerged within the last decades [40], covering various disciplines: arXiv in physics, mathematics, and computer science, bioRxiv in biology, medRxiv in medicine, and SSRN in social science. Various works have observed benefits of preprints, such as early disclosure, wider dissemination [32] resulting in a higher number of citations [6, 10, 12], and creating opportunities for collaborations [20, 29, 32]. In the recent COVID-19 pandemic, preprints have received even greater scientific and public engagement [11].

In this paper, we investigate if preprints are affected by citation bias concerning the author affiliation. We focus on the author af-

OpenAlex


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https://api.openalex.org/works/
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ROR

https://ror.org/04ksd4g47

National Institute of Informatics

ORGANIZATION TYPES
Facility, Funder

OTHER NAMES
Labels
国立情報学研究所 (ja)
Aliases

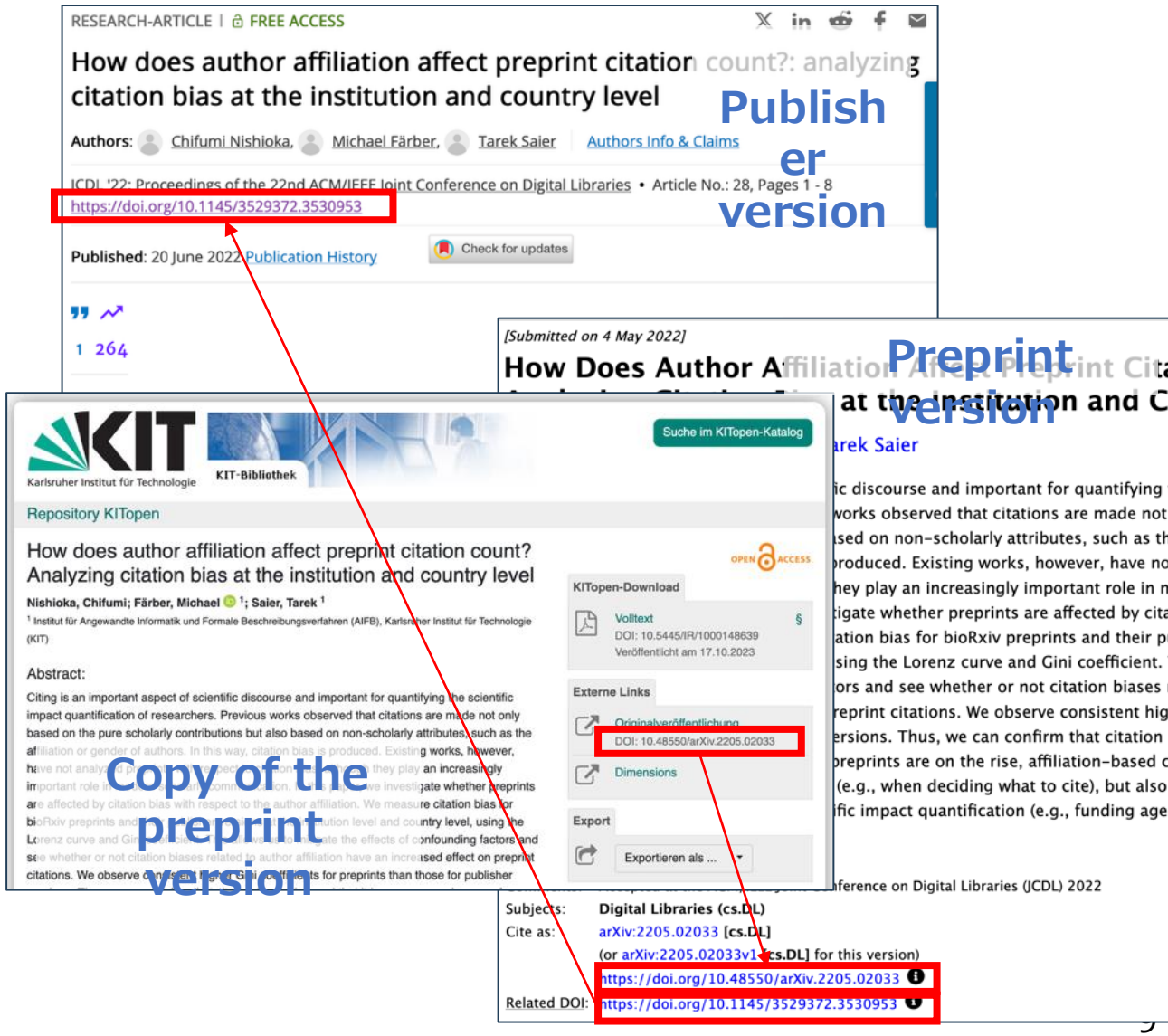
LOCATIONS
Tokyo (GeoNames I
Japan

WEBSITE
https://www.nii.ac.jp

OTHER IDENTIFIE

Determining Open Access Status of Publications

- The Japan Open Science Monitor references the open access information contained in OpenAlex metadata.
- OpenAlex assigns open access information to each publication by referencing sources such as the DOAJ (Directory of Open Access Journals) and licenses (e.g., CC BY).
- In particular, when assigning information regarding open access in repositories, it references metadata harvested from each repository.



Conclusion

- OSM contributes to the further advancement of open science through appropriate strategic planning and effective incentive design
- The National Institute of Informatics has released a beta version of the Japan Open Science Monitor
  - Developed based on the pioneering French Open Science Monitor
  - Currently provides open access metrics for Japanese publications
- PIDs play a major role in calculating these metrics
  - Identification of Japanese publications ← ROR (Research Organization Identifier)
  - Determining open access in repositories ← Linking records via DOI
- Assigning PIDs is particularly important for Japanese-language papers
  - Institutional identifiers in Japanese are difficult to resolve (e.g., while “National Institute of Informatics” can be identified, “国立情報学研究所”

By making **the most of PIDs**, we aim to build a framework that **ensures sustainability and diversity OSM** framework