ETH zürich

ETH Library

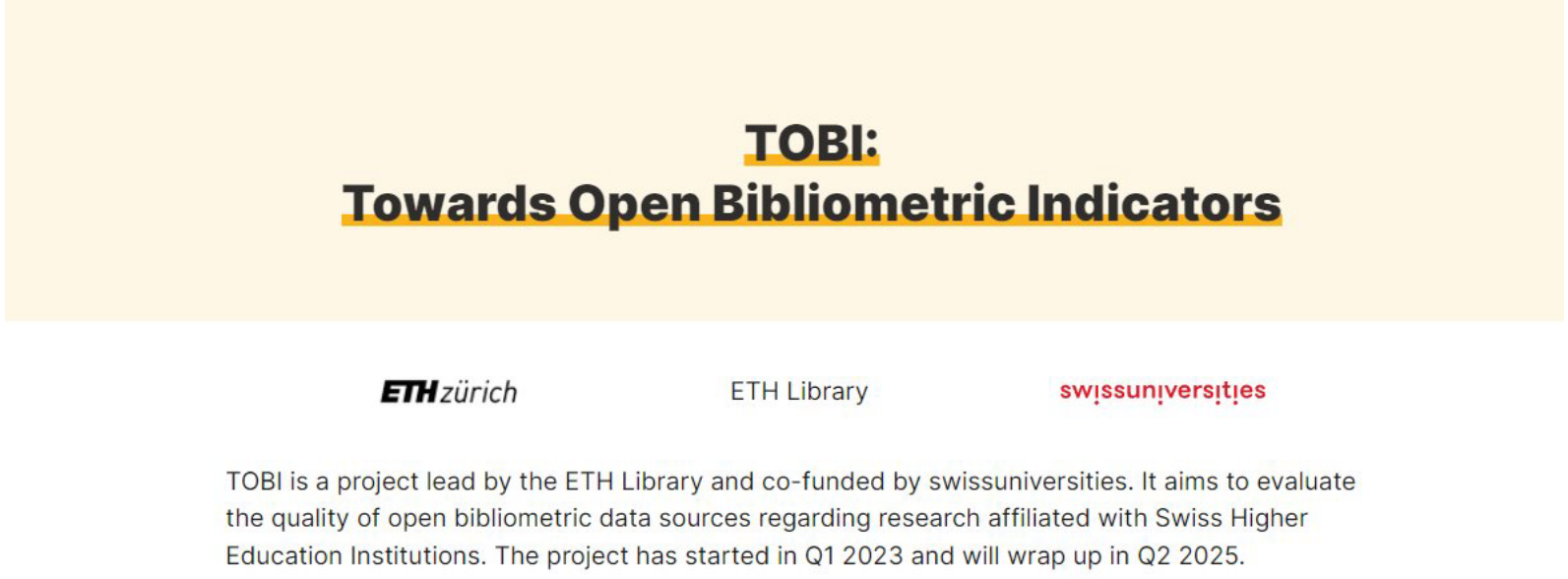
How to improve the metadata coverage and quality of open databases?

Simon Willemin
ETH Zurich, ETH Library
24 October 2024

International Open Access Week 2024 in Switzerland

Project TOBI (Towards Open Bibliometric Indicators)

Goal: Evaluating the quality of **open** scholarly metadata databases for **bibliometric purposes** regarding research affiliated with Higher Education Institutions (HEIs) in **Switzerland**



- Timeline: March 2023 – June 2025
- Co-funded by swissuniversities
- Project website: https://eth-library.github.io/tobi/

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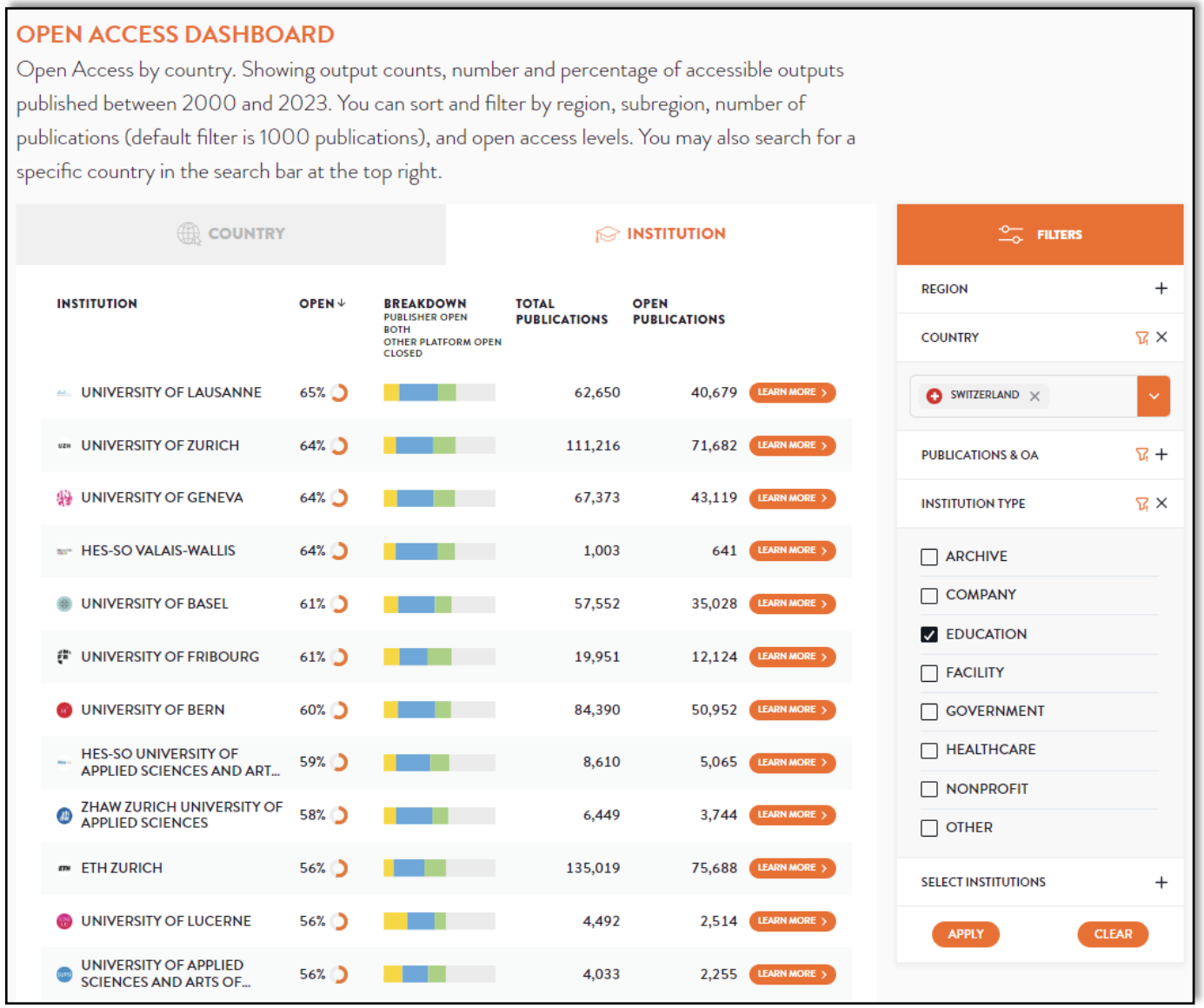
An Open Access dashboard: COKI

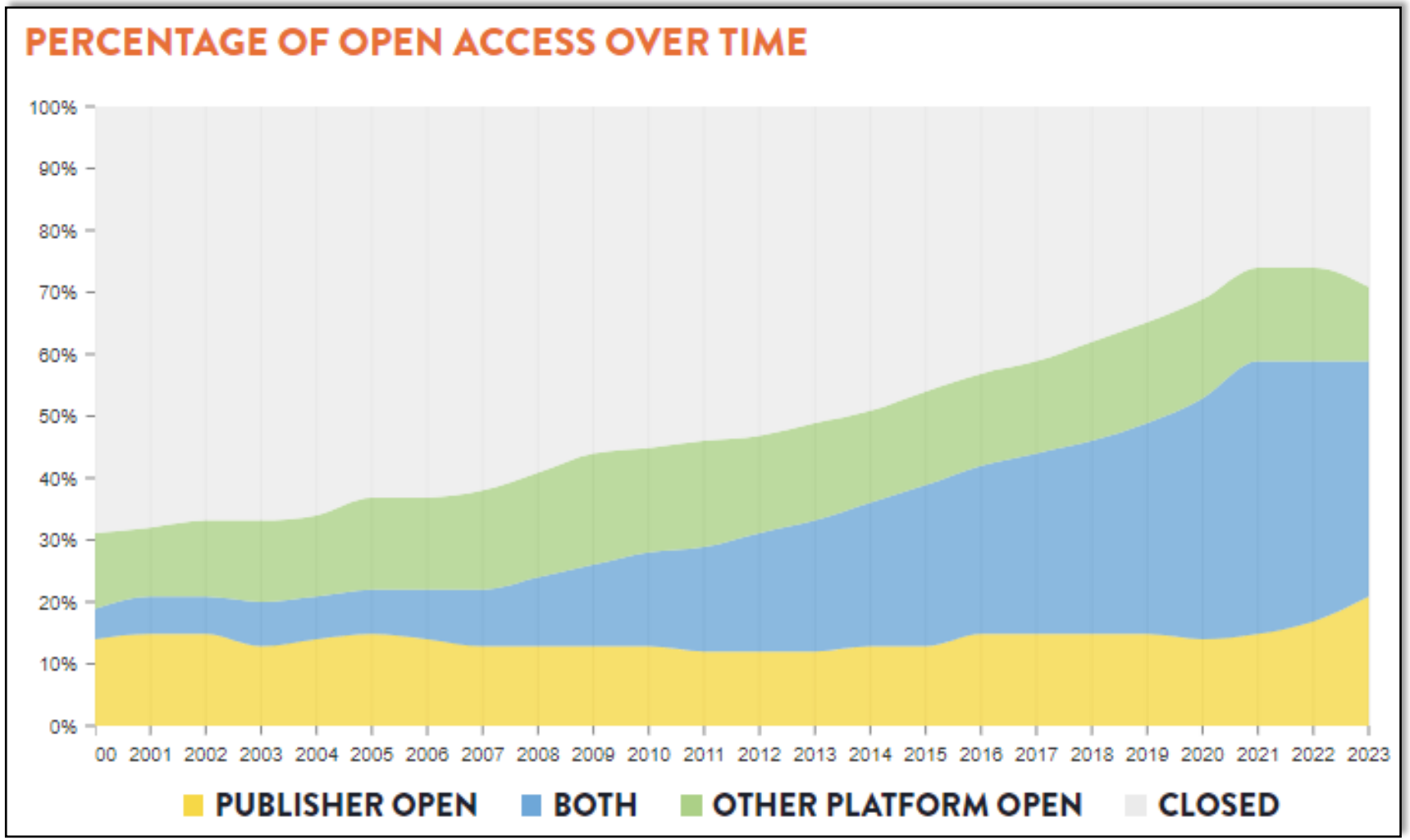
Open Access Dashboard: COKI



Country: Switzerland
Institution type: Education

Data update: 7 October 2024

Open Access Dashboard: COKI



Country: Switzerland

Data update: 7 October 2024

Open Access Dashboard: COKI

Locations for the green (and blue) part:

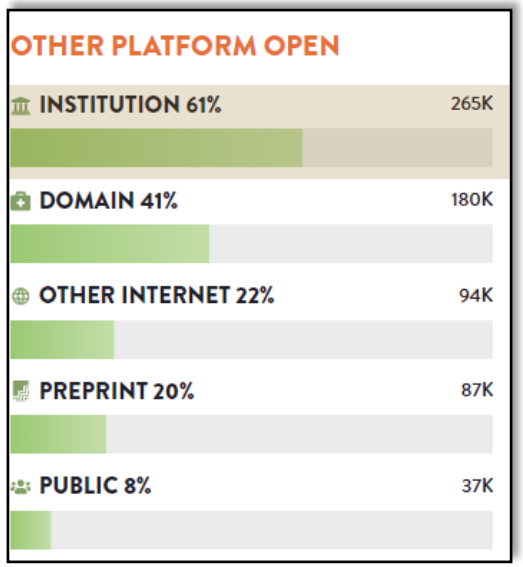
OTHER PLATFORM LOCATIONS

All | Platform Type

Name	Platform Type	Publications
PubMed Central	Domain	174K
Europe PMC	Domain	89K
arXiv	Preprint	59K
University of Zurich - Zurich Open Repository and Archive	Institution	45K
ETH Zurich - Repository for Publications and Research Data	Institution	35K
Ecole Polytechnique Fédérale de Lausanne - Infoscience	Institution	28K
Semantic Scholar	Public	28K
Université de Lausanne - SERVAL	Institution	19K
University of Geneva - Archive ouverte UNIGE	Institution	18K
DOI	Other Internet	17K

1 / 20

Country: Switzerland



Institutions play a significant role in making research outputs openly available

Data update: 7 October 2024

https://open.coki.ac/country/CHE

Open Access Dashboard: COKI

COKI is exclusively based on open data sources

DATASET	ROLE
Crossref Metadata	Citations, Paper Title, Journal Name
Crossref Funder Registry	Funder
Crossref Events	Social Media and Internet Events
OpenAlex	Affiliation, Subject
Unpaywall	Open Access Status
Research Organization Registry	Institution Identifiers
Open Citations	Additional citation information

Table 1. Datasets and their roles.

Crossref

OpenAlex

Unpaywall

ROR

OpenCitations

https://open.coki.ac/how/

“Community over commercialization”: Open and closed data sources

International Open Access Week 2024: Theme

Community over Commercialisation

https://www.openaccessweek.org/theme

Open and closed data

A look back 3 years ago (May 2021)

Sources for publication data

Since scholarly publications are analysed for various purposes, not just monitoring Open Access, there is a market for this kind of data. Currently, a small number of commercial providers dominate this market, most notably Clarivate Analytics (Web of Science)[9], Elsevier (Scopus)[10] and Digital Science (Dimensions).[11] However, other open data sources, such as Crossref,[12] CORE,[13] OpenAIRE,[14] or Microsoft Academic,[15] may become interesting alternatives.

Discontinued in December 2021

Transferred to a membership model in December 2022

Crossref

OpenAlex

OpenAIRE

Unpaywall

ROR

OpenCitations

Scopus (Elsevier)

Web of Science (Clarivate)

Dimensions (Digital Science)

- Philipp, T., Botz, G., Kita, J.-C., Sänger, A., Siegert, O. & Reumaux, M. (2021). Open Access Monitoring: Guidelines and Recommendations for Research Organisations and Funders. https://doi.org/10.5281/zenodo.4905554
- Knoth, P. (2023, September 4-8), Towards sustainable open infrastructure: The case of CORE. Session 2: Ownership of scholarly infrastructures. OAI13 The Geneva Workshop on Innovations in Scholarly Communication https://oai.events/oai13/
- Microsoft Academic (2021, June 4), Next Steps for Microsoft Academic – Expanding into New Horizons. Microsoft Academic Blog. https://www.microsoft.com/en-us/research/articles/microsoft-academic-to-expand-horizons-with-community-driven-approach/

Open data in the context of the Research Assessment reform (DORA)

DORA: San Francisco Declaration on Research Assessment

2013 MAY

DORA Declaration on Research Assessment

"For organizations that supply metrics
11. Be open and transparent by providing data and methods used to calculate all metrics.
12. Provide the data under a licence that allows unrestricted reuse, and provide computational access to data, where possible
13. Be clear that inappropriate manipul… metrics will not be tolerated; be explicit about what … propriate manipulation and what measure…
14. Account for the variation in a… research articles), and in differen… used, aggregated, or compared."

https://sfdora.org/read/

2024 APR

DORA, *Guidance on the responsible use of quantitative indicators in research assessment*

- "Be clear"
- "Be contextual"
- "Be transparent"
- "Be fair"
- "Be specific"

Footnote 2: "Ideally also, any indicator used should be based on open data and algorithms so that anyone being evaluated can verify how it is calculated but many commonly used "off the shelf" indicators still rely on closed data."

https://doi.org/10.5281/zenodo.10979643

More than 10 years after DORA's publication, the use of open data appears to be an ideal rather than the norm

Open data in the context of the Research Assessment reform (CoARA)

CoARA: **Co**alition for **A**dvancing **R**esearch **A**ssessment (2022)

Principles for overarching conditions (p. 3)

> "Ensure independence and transparency of the data, infrastructure and criteria necessary for research assessment and for determining research impacts; in particular by clear and transparent data collection, algorithms and indicators, by ensuring control and ownership by the research community over critical infrastructures and tools, and by allowing those assessed to have access to the data, analyses and criteria used."

Research Assessment reform and Open Science
- Possibly common values
- Different priorities

Annex 4: Practical tools and options to consider (p. 20)

"Diversify indicators (Open science badges; Publons, ORCID, open peer review; CRediT; Reporting guidelines e.g. EQUATOR Network) and metrics (Altmetrics, PlumX)"

→ Belongs to Clarivate since 2017, owner of Web of Science

→ Belongs to Digital Science, owner of Dimensions

→ Belongs to Elsevier since 2017, owner of Scopus

https://coara.eu/app/uploads/2022/09/2022_07_19_rra_agreement_final.pdf

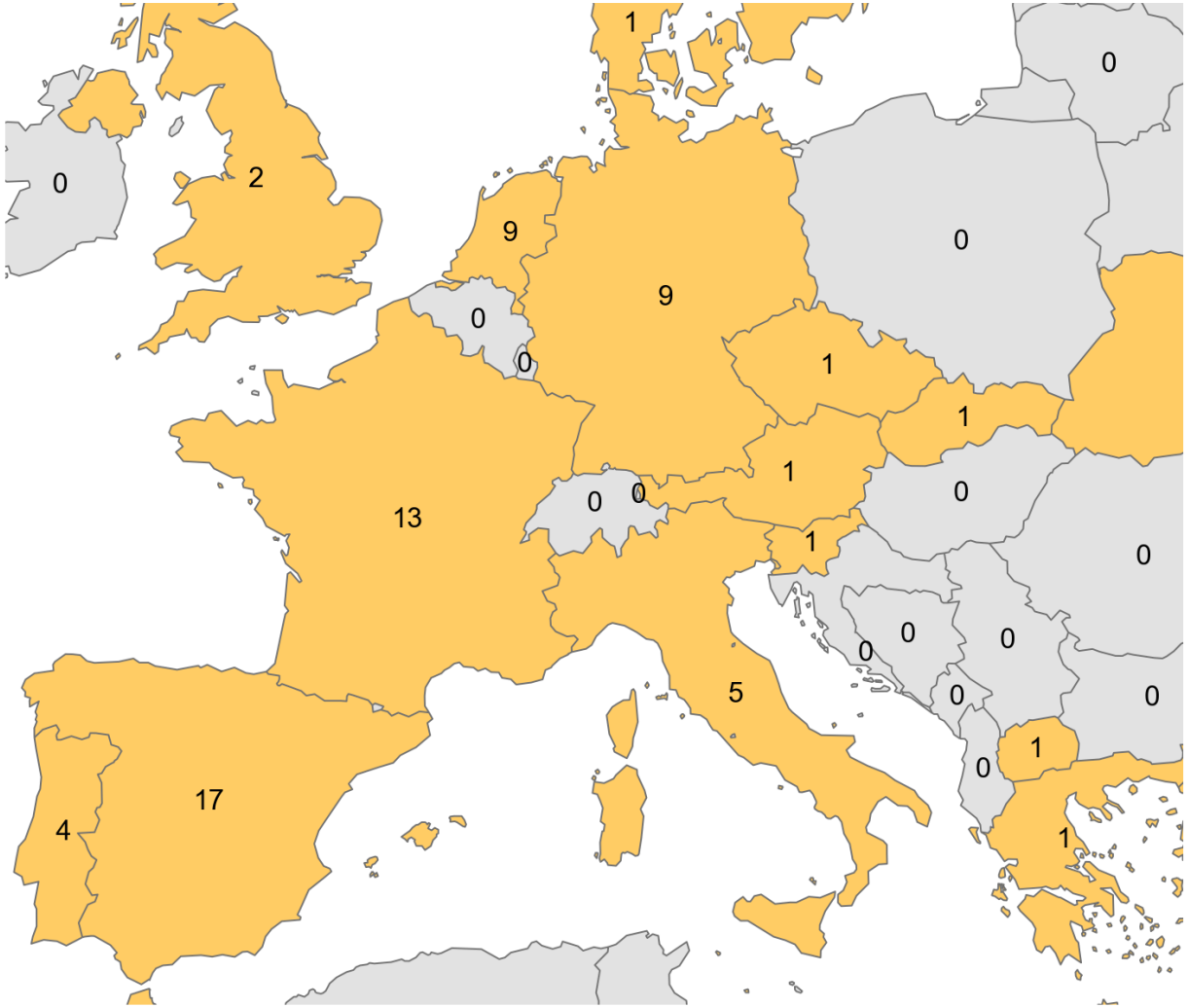
A recent milestone from the Open Science movement

The Barcelona Declaration on Open Research Information
(16 April 2024)

Barcelona Declaration on Open Research Information, https://barcelona-declaration.org/resources/

Collective actions to accelerate the transition

Number of signatories of the Barcelona Declaration by country
(international signatories not included)



- Countries with most signatories in Europe are:
  - Spain (17)
  - France (13)
  - Germany (9)
  - Netherlands (9)
  - Italy (5)
- Visibility of higher education institutions in the open scholarly data landscape may become a key factor to secure continuous funding opportunities, to foster partnerships and collaborations, and to attract talents
- As of 22 October 2024, no signatories in Switzerland (international signatories not included)
- However, in Switzerland, there is activity and awareness regarding the topic: many projects already have to do with open research information

Data source for the administrative boundaries: © EuroGeographics
Source for the number of signatories: https://barcelona-declaration.org/signatories/
Retrieval date: 22 October 2024
Chart: ETH Library

Examples of Open Science projects in Switzerland

Swiss National Open Access Strategy (2021-2024)

Examples of swissuniversities funded **projects** in the context of the Swiss National OA Strategy (currently) using **open** global scholarly metadata **databases** (OpenAlex, OpenAIRE…)

NOAM
- Swiss Open Access Monitor

https://oam.oamonitor.ch/notes?culture=en

Main data source for the journal monitor: OpenAlex (the journal monitor was based on Dimensions prior to January 24, 2024)

AURORA
- Automatic Research Output Retrieval and self-archiving notification service for Authors

https://www.zhaw.ch/de/forschung/forschungsdatenbank/projektdetail/projektid/7058/

TOBI
- Towards Open Bibliometric Indicators

https://eth-library.github.io/tobi/

Openness score
- OA Dashboard, API, badges, reports…

https://www.swissuniversities.ch/themen/open-science/programm-open-science/oa-projekte

Swiss National Open Access Strategy (2024 revision)

4.6 Pathway F: Monitor the OA transformation in terms of publications and costs

To strategically manage implementing the revised OA Strategy, it is necessary to monitor the OA landscape. These monitoring processes must assess not only publications, but also costs of the transformation at the institutional and national levels.

Key metadata for publications monitoring

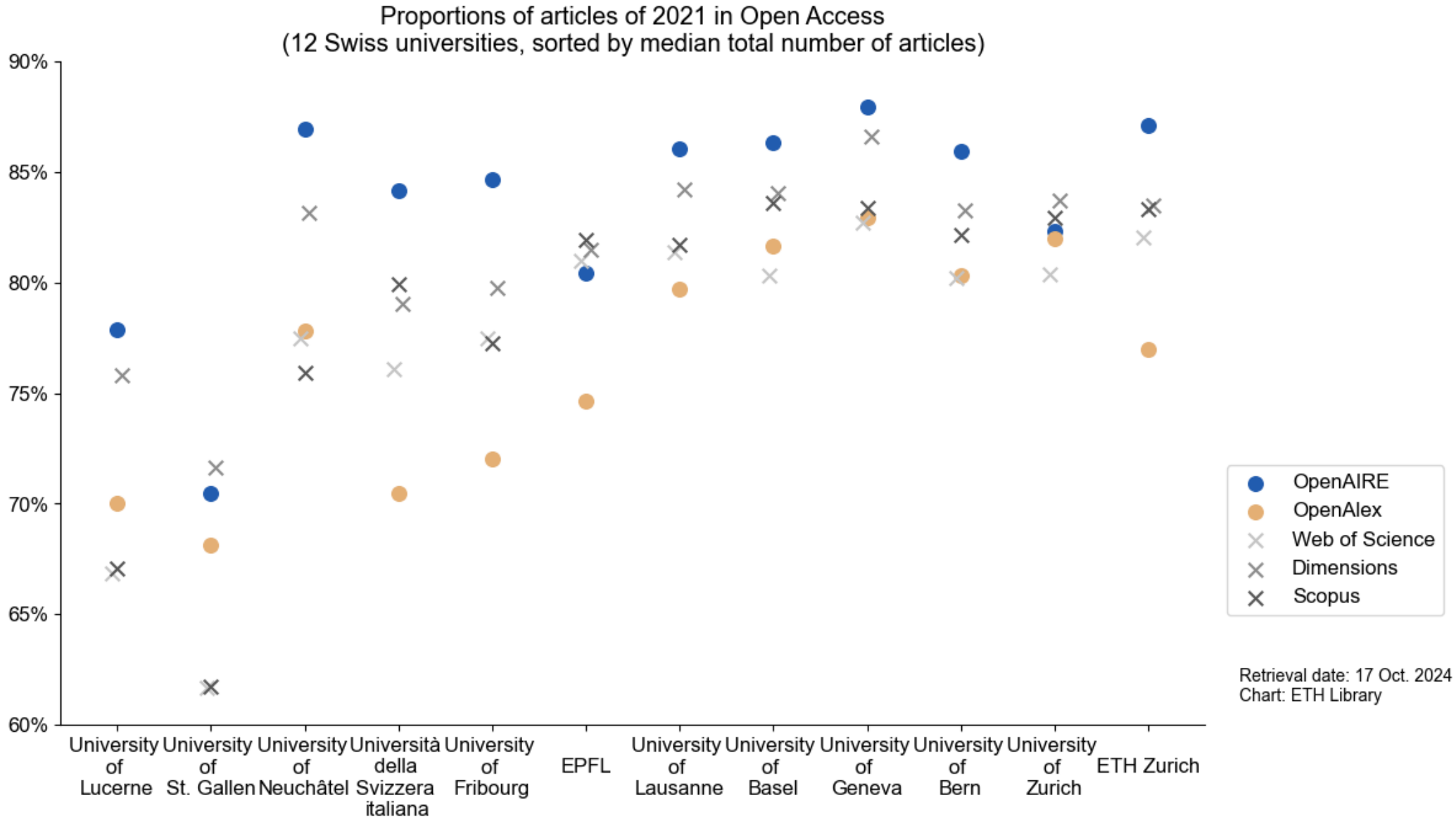
- Publication identifier (publication_id, doi, title…)
- Information on time (date, year…)
- Publication type (article, book, preprint…)
- Affiliation (country, institution_name, ror_id…)
- OA status (is_oa, oa_status)

Key data for costs monitoring

- Article Processing Charges (apc_paid…)
- Payer (institution, author, funder…)
- Further information on costs (contracts with publishers, transformative agreements…)

https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/Open_Access/Swiss-National-Open-Access-Strategy-2024-en.pdf

Open Access in Switzerland according to five data sources



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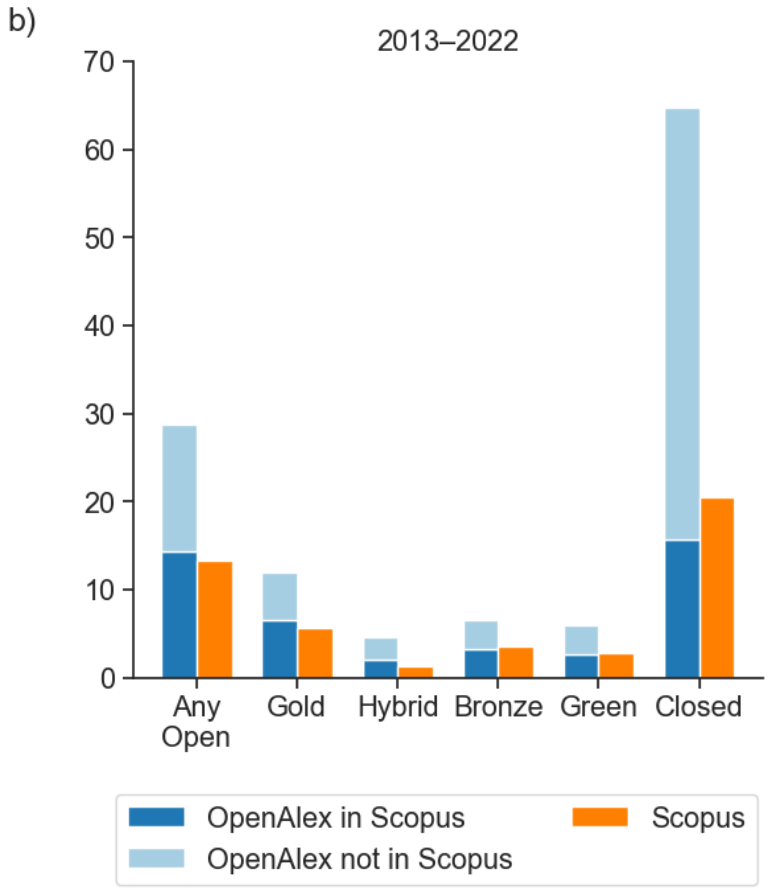
Findings about OpenAlex

OpenAlex (OA status)

Figure 4: Comparison of Number of Works by OA Status Between OpenAlex and Scopus.



Time frame: All years; 2013-2022
Retrieval date: October 2023

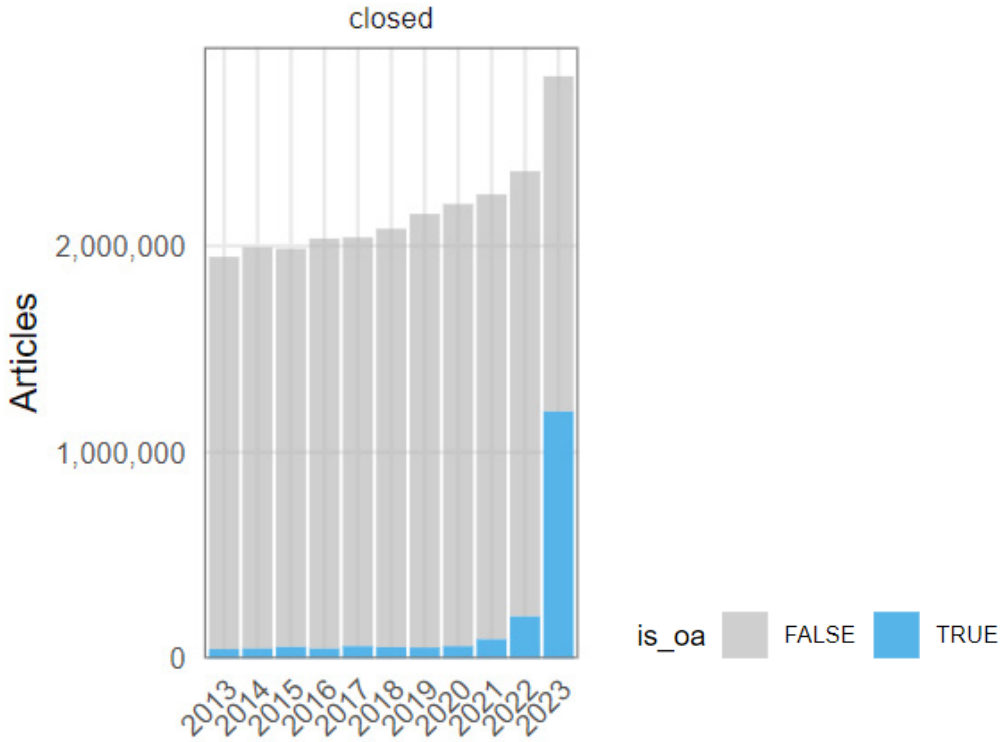
Alperin, J. P., Portenoy, J., Demes, K., Larivière, V., & Haustein, S. (2024) An analysis of the suitability of OpenAlex for bibliometric analysis, https://doi.org/10.48550/arXiv.2404.17663

OpenAlex (OA status)

Analysing and reclassifying open access information in OpenAlex

We investigated OpenAlex and found over four million records with incompatible metadata about open access works. To illustrate this issue, we applied Unpaywall's methodology to OpenAlex data. The comparative analysis revealed a shift, with over one million journal articles published in 2023 that were previously labelled as "closed" in OpenAlex, being reclassified as "gold", "hybrid", "green", or "bronze".

is_oa (false, true)
oa_status (closed, gold, hybrid, green, bronze)



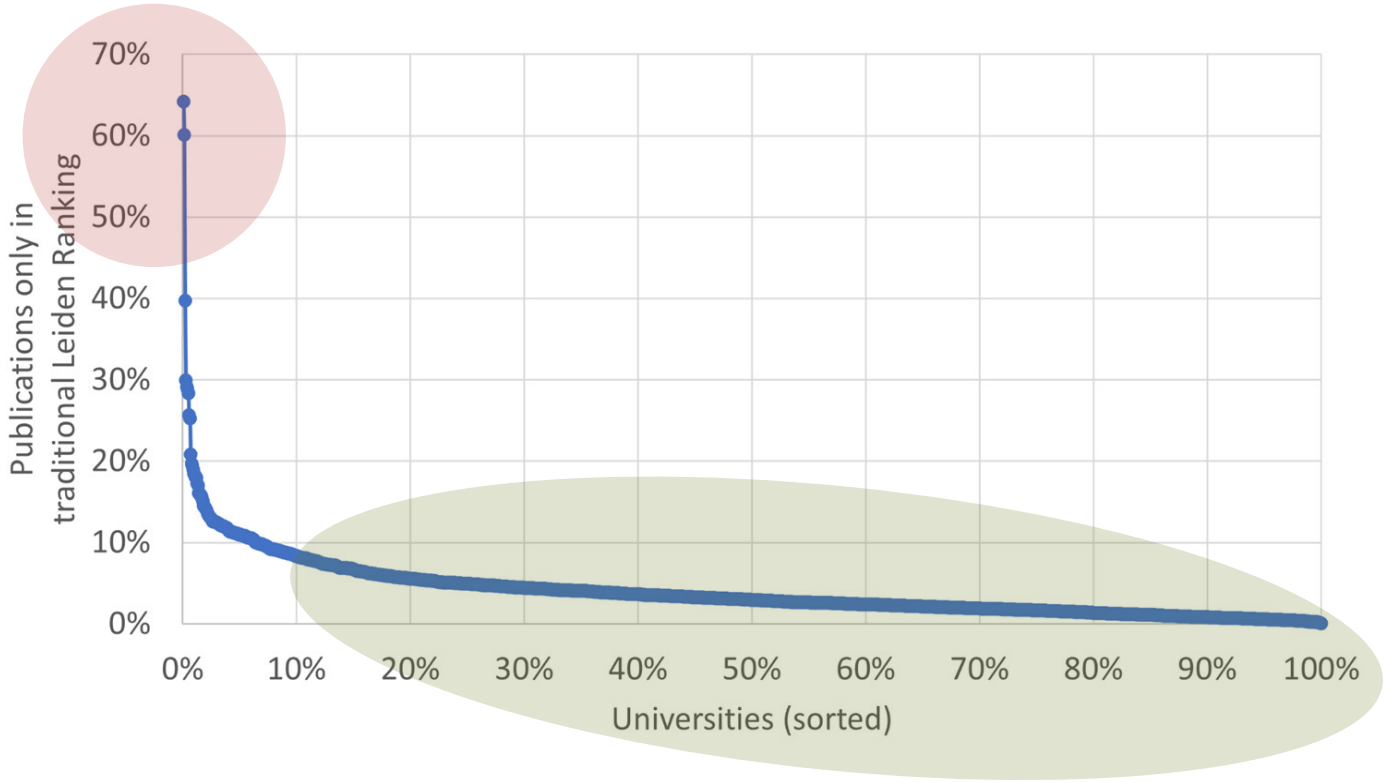
Timeframe: 2013-2023
Retrieval date: October 2023

Jahn, N., Haupka, N., & Hobert, A. (2023, Nov. 7). Scholarly Communication Analytics: Analysing and reclassifying open access information in OpenAlex. Retrieved from https://subugoe.github.io/scholcomm_analytics/posts/oalex_oa_status/

Comparison between the Leiden Rankings (traditional and Open Edition)

Quotes from Ludo Waltman:
“One key question that we were facing is: Is the [open] data sufficiently accurate? […] [H]ere we see the **discrepancies** between **Web of Science** and **OpenAlex**.”

“For some [universities], […] [there are] **huge discrepancies**, sometimes bigger than 50%, but these are **exceptions**.”



“[F]or **most** universities, the **discrepancies** are **very small**.”

Retrieval dates: unknown (before 30 January 2024)

Quotes transcribed from the Lecture of Ludo Waltman during the fourth Swiss Year of Scientometrics event (SYoS 4, 24 April 2024), 00:54:15-00:54:50, https://video.ethz.ch/etc/designs/mmp/video/player.html?id=f20fbe21-5ea8-4c04-b9c2-0d535bc01c51&time=54m15s
Waltman, L. (2024, June 14). Openness of research information - Democratizing the use of scientometrics. Zenodo. https://doi.org/10.5281/zenodo.11652015
See also: Van Eck, N. J., Visser, M., & Waltman, L. (2024, January 30). *Opening up the CWTS Leiden Ranking: Toward a decentralized and open model for data curation*. LeidenMadtrics. https://www.leidenmadtrics.nl/articles/opening-up-the-cwts-leiden-ranking-toward-a-decentralized-and-open-model-for-data-curation

Evolving landscape: OpenAlex release notes

Examples of recent release notes

- RELEASE 2024-07-30 […]
  - used data from Pubmed to **reclassify 4M works** from type "article" to one of: editorial, erratum, letter, preprint, review, retraction […]
  - delete 187,452 works: **deleted Zenodo records**. (merge into deleted id: W4285719527) […]

- RELEASE 2024-09-27
  - added ~14M affiliations to works
  - adjusted year retrieved from Crossref, using the earliest from issued, published, approved, created, deposited. This affects **~20M works**. […]

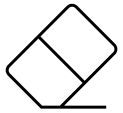
https://github.com/ourresearch/openalex-guts/blob/main/files-for-datadumps/standard-format/RELEASE_NOTES.txt

3 examples of data cleaning

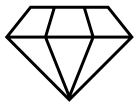
Icons for the 3 examples

Start with a chart representing the raw proportions of OA publications

Examine the raw data to find whole series of unexpected records

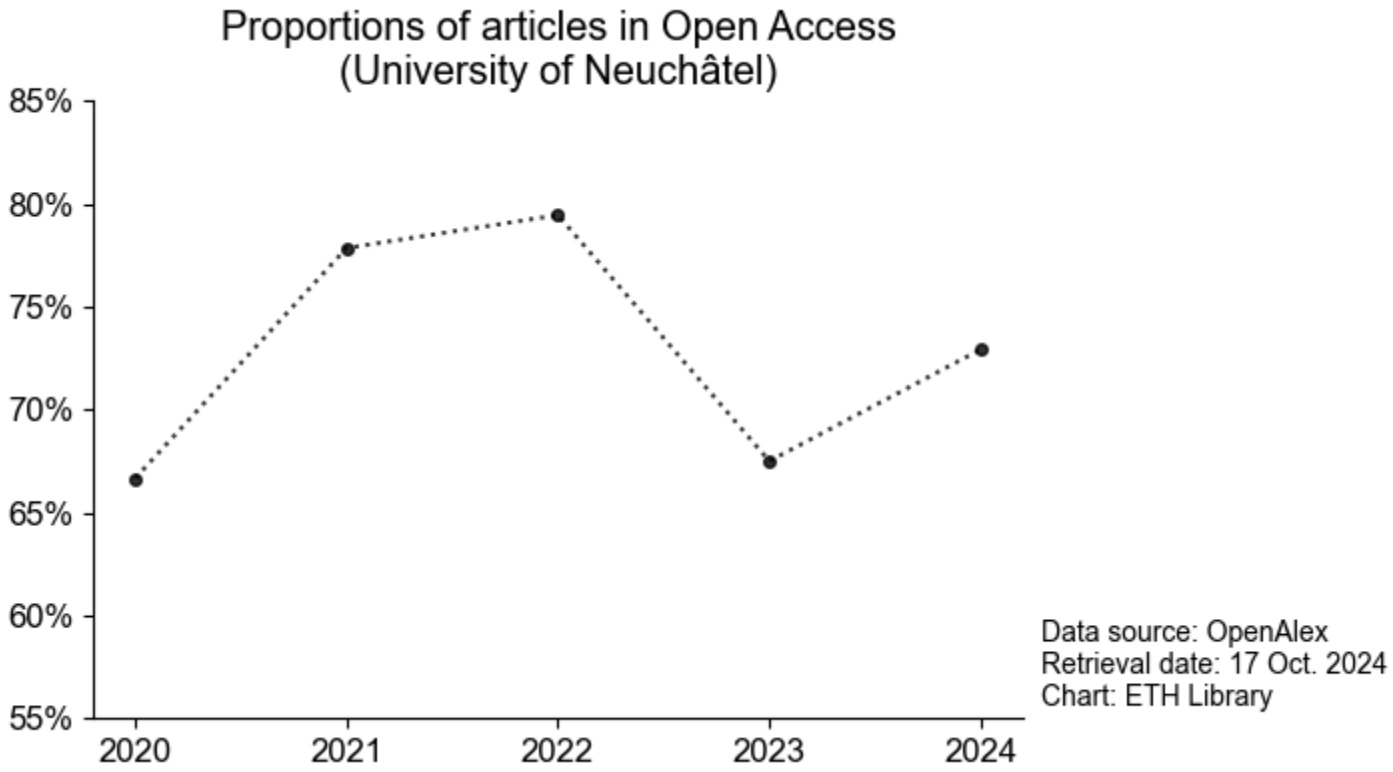


Eliminate series of records that might have introduced a bias in the analysis



Display the proportions of OA publications *before* and *after* having removed records

Example 1: Misattribution of publication type



Example 1: Misattribution of publication type

Most frequent titles (University of Neuchâtel, 2020-2024)

rank	title	type	id count	is_oa count
1	Data for EMSL Project 60184 from February 2023	article	74	0
2	Data for EMSL Project 60184 from October 2022	article	4	0
3	Zwitscher-Maschine. Journal on Paul Klee / Zeitschrift für internationale Klee-Studien No. 12 (Gesamtausgabe)	article	4	4
4	Primate phageomes are structured by superhost phylogeny and environment	article	3	3
5	A Framework for Untangling Transient Groundwater Mixing and Travel Times	article	2	1
6	Breaking antimicrobial resistance by disrupting extracytoplasmic protein folding	article	2	2
7	Does Educational Mismatch Affect Emigration Behaviour?	article	2	2
8	Finitely generated subgroups of branch groups and subdirect products of just infinite groups	article	2	2
9	Frontmatter	article	2	2
10	High-resolution kinetics of herbivore-induced plant volatile transfer reveal clocked response patterns in neighboring plants	article	2	2

“id count”: The number of unique work identifiers with the same title
“is_oa count”: The number of unique work identifiers in OA with the same title

Example 1: Misattribution of publication type

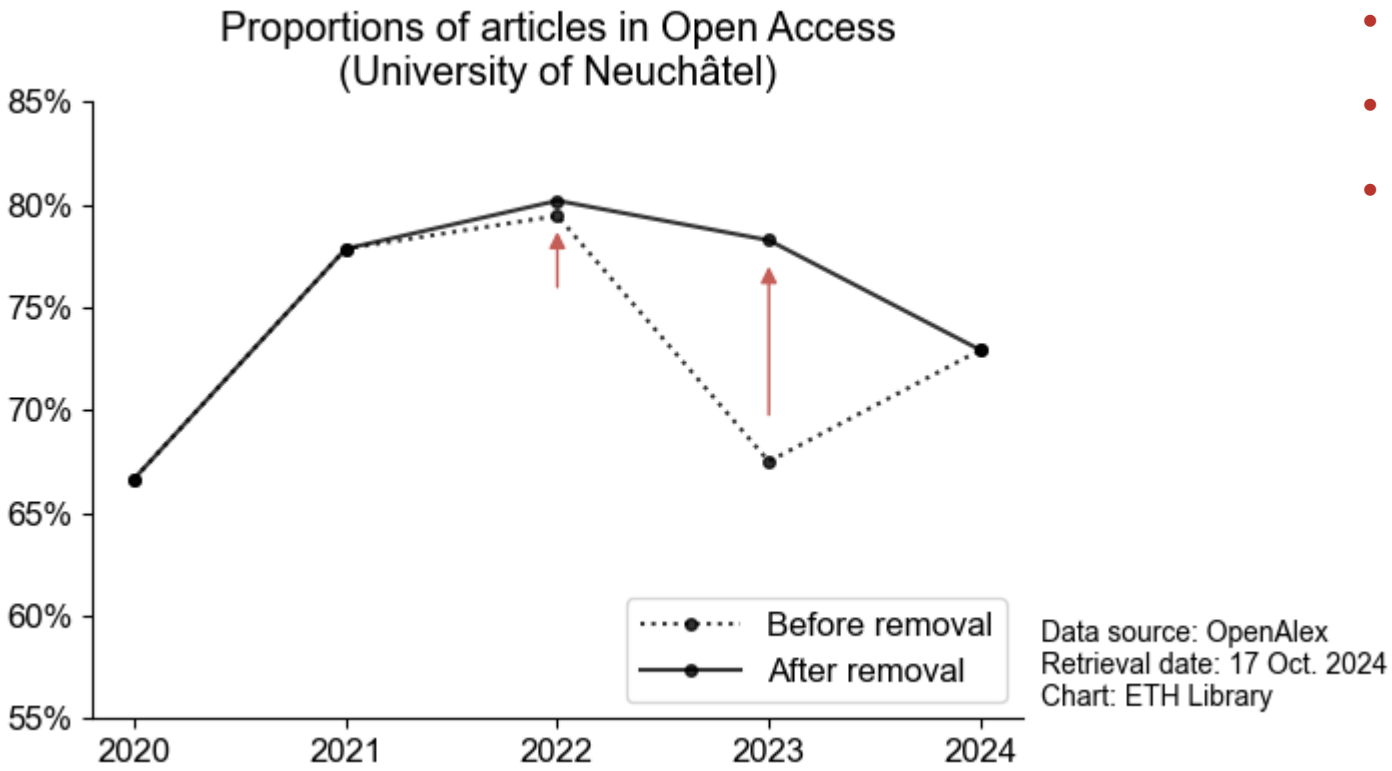
List of the titles of the works to remove

title	type	id count	is_oa count
Data for EMSL Project 60184 from September 2022	article	1	0
Data for EMSL Project 60184 from October 2022	article	4	0
Data for EMSL Project 60184 from January 2023	article	1	0
Data for EMSL Project 60184 from February 2023	article	74	0
Data for EMSL Project 60184 from April 2023	article	1	0
Data for EMSL Project 60184 from July 2023	article	1	0

Total: 82 works to remove

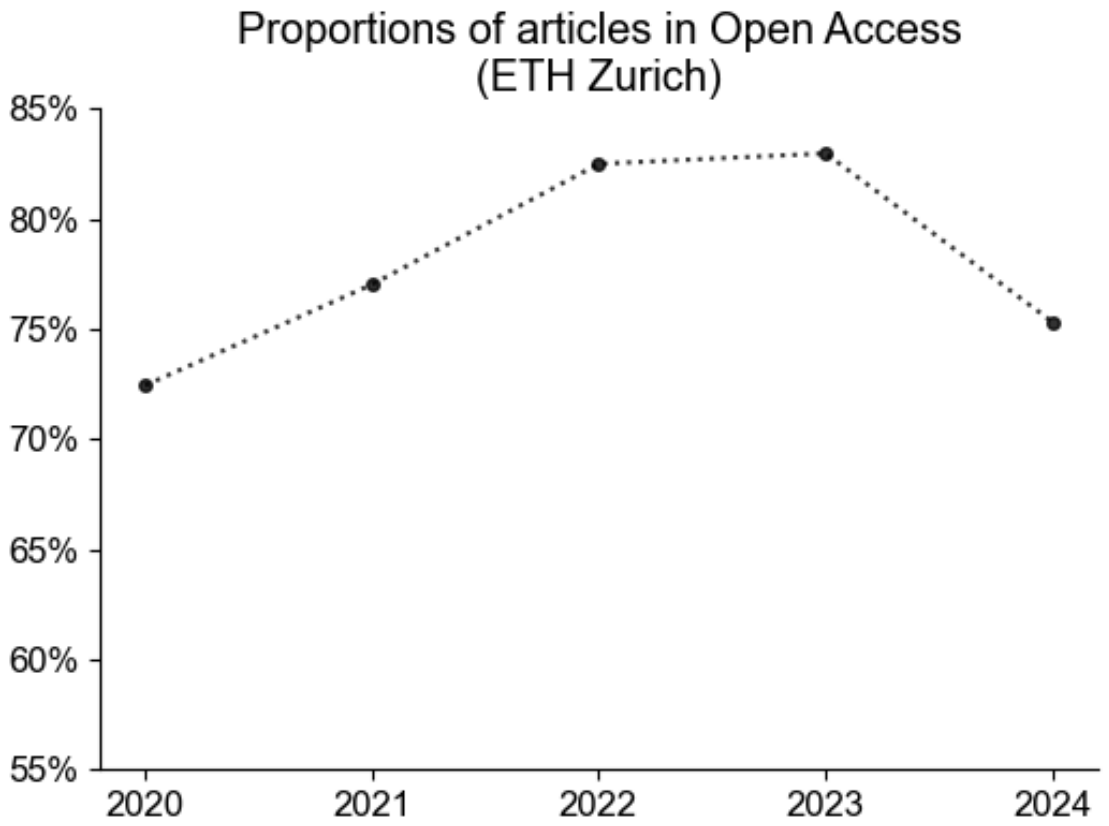
“id count”: The number of unique work identifiers with the same title
“is_oa count”: The number of unique work identifiers in OA with the same title

Example 1: Misattribution of publication type



- Before removal: 2’565 “articles”
- Removed “articles”: 82 “articles” (3.2%)
- After removal: 2’483 “articles”

Example 1 bis: Misattribution of publication type



Data source: OpenAlex
Retrieval date: 17 Oct. 2024
Chart: ETH Library

Example 1 bis: Misattribution of publication type

Most frequent titles (ETH Zurich, 2020-2024)

rank	title	type	id count	is_oa count
1	Data for EMSL Project 51536 from November 2021	article	146	0
2	Data for EMSL Project 51536 from September 2021	article	56	0
3	Contents list	article	10	10
4	Large Interferometer For Exoplanets (LIFE)	article	7	7
5	Data for EMSL Project 51536 from January 2022	article	6	0
6	Steering Committee	article	6	6
7	Table of Contents	article	6	6
8	High-Frequency Gaseous and Particulate Chemical Characterization using Extractive Electrospray Ionization Mass Spectrometry (Dual-Phase-EESI-TOF)	article	5	5
9	Balancing New Approaches and Harmonized Techniques in Nano- and Microplastics Research	article	4	3
10	Best Papers from 2022 published in the Environmental Science journals of the Royal Society of Chemistry	article	4	4

“id count”: The number of unique work identifiers with the same title
“is_oa count”: The number of unique work identifiers in OA with the same title

Example 1 bis: Misattribution of publication type

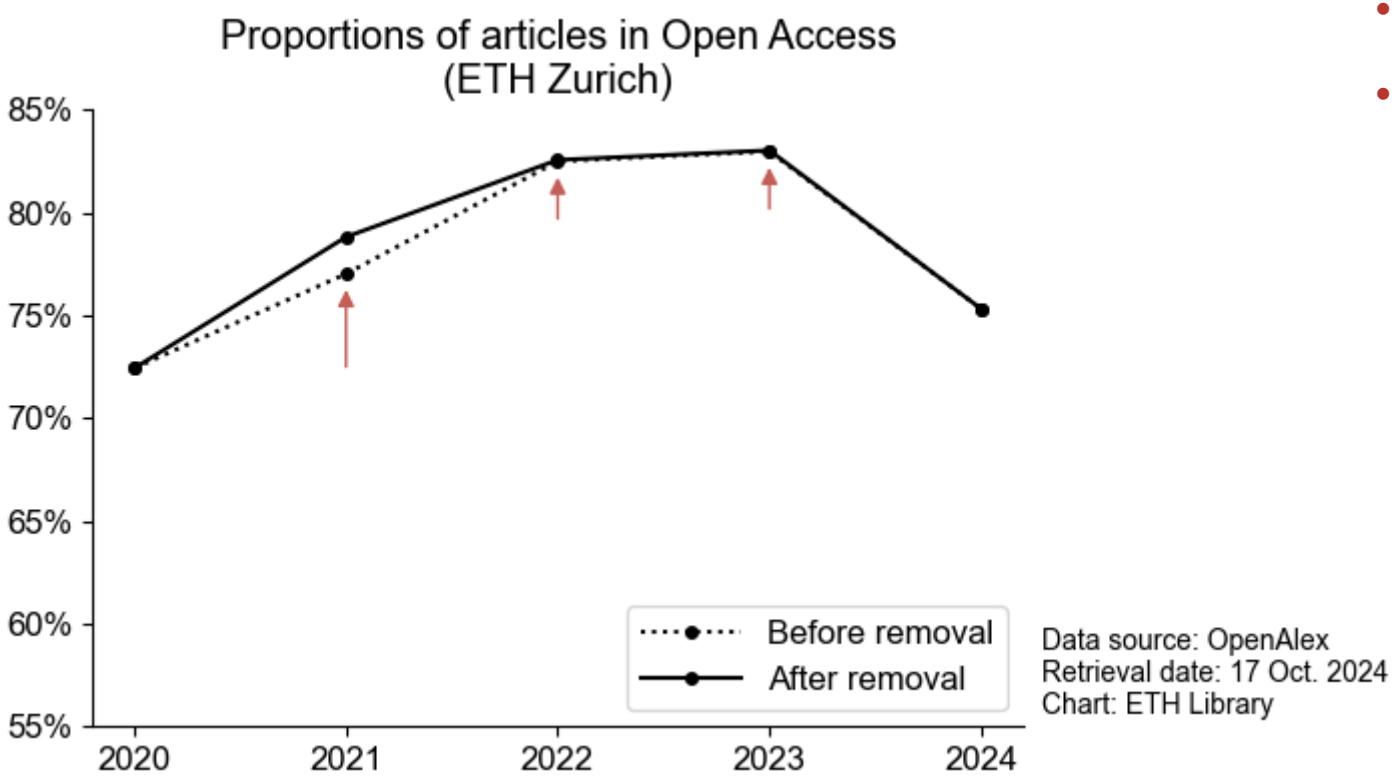
List of the titles of the works to remove

title	type	id count	is_oa
Data for EMSL Project 51536 from September 2021	article	56	0
Data for EMSL Project 51536 from November 2021	article	146	0
Data for EMSL Project 51536 from December 2021	article	2	0
Data for EMSL Project 51536 from January 2022	article	6	0
Data for EMSL Project 51536 from May 2023	article	4	0
Data for EMSL Project 51536 from July 2023	article	1	0

Total: 215 works to remove

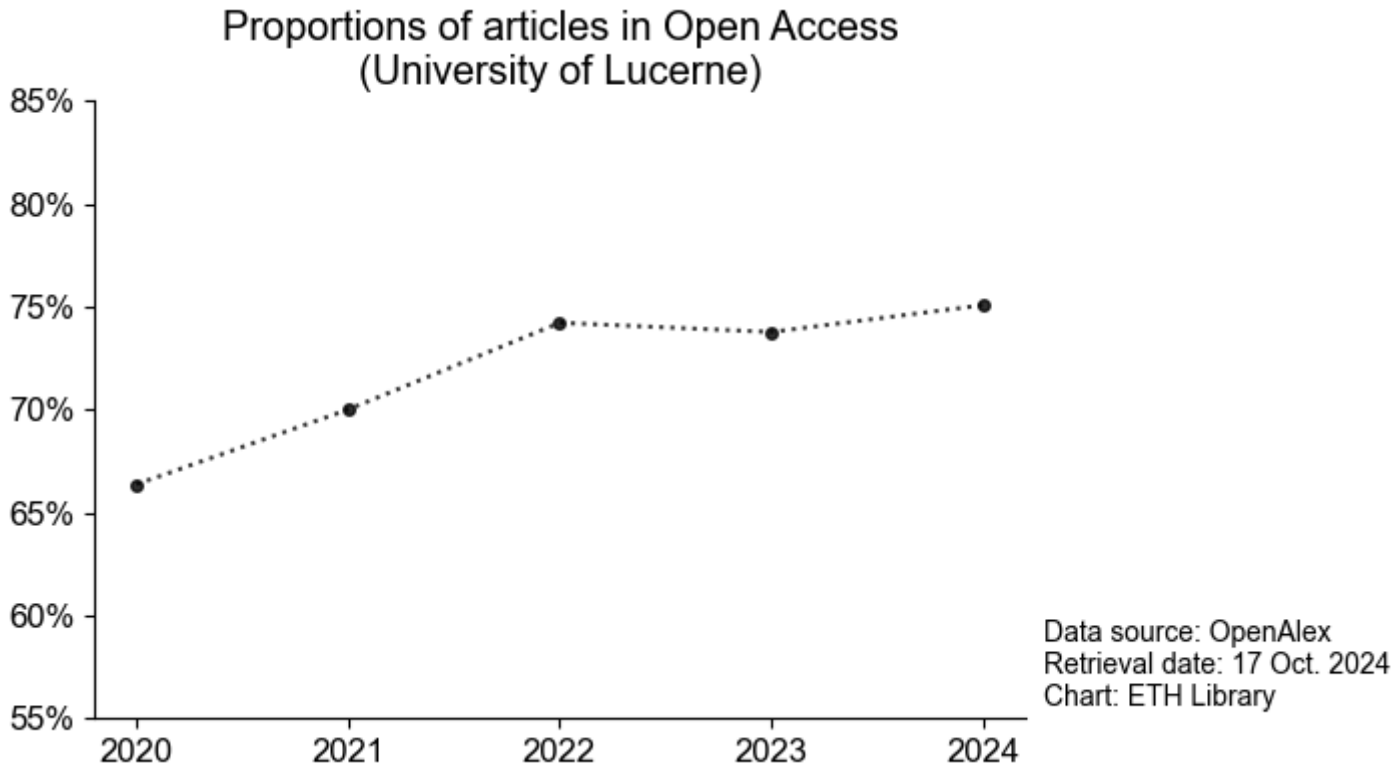
“id count”: The number of unique work identifiers with the same title
“is_oa count”: The number of unique work identifiers in OA with the same title

Example 1 bis: Misattribution of publication type



- Before removal: 37382 “articles”
- Removed “articles”: 215 “articles” (0.6%)
- After removal: 37167 “articles”

Example 2: Deduplicated articles



Example 2: Deduplicated articles

Publications with the same year and title (up to letter case and special characters), sorted by count

rank	reduced_title	year	id count	is_oa count
1	using exogenous organizational and regional hospital attributes to explain differences in casemix adjusted hospital costs	2023	4	4
2	the longitudinal impact of a chronic physical health condition on subjective wellbeing	2021	3	3
3	theorizing policy diffusion from a patchy set of mechanisms to a paradigmatic typology	2021	3	3
4	a debiased direct question approach to measuring consumers willingness to pay	2020	2	2
5	a raschbased comparison of the functional independence measure and spinal cord independence measure for outcome and quality in the rehabilitation of persons with spinal cord injury	2022	2	2
6	adaptation during spinal cord injury rehabilitation the role of appraisal and coping	2021	2	2
7	alcohol drinking and health in ageing a global scale analysis of older individual data through the harmonised dataset of athlos	2020	2	1
8	als helden der pandemie beklatscht dann im stich gelassen	2021	2	2
9	anatomical analysis of different helical plate designs for distal femoral fracture fixation	2022	2	0
10	anatomical analysis of different helical plate designs for proximal humeral shaft fracture fixation	2022	2	0
…	…	…	…	…
77	value of spectct in the assessment of necrotic bone fragments in patients with delayed bone healing or nonunion after traumatic fractures	2020	2	2
78	verschiebung planbarer eingriffe bei ressourcenknappheit	2021	2	2
79	what are the participants perspective and the systembased impact of a standardized interprofessional morbiditymortality conferences in a childrens hospital	2021	2	2
80	worries and anxiety in parents of adult survivors of childhood cancer a report from the swiss childhood cancer survivor studyparents	2023	2	2
81	zwischen ichgesellschaft und wirnation religionszugehorigkeit religiositat und der umgang mit religioser vielfalt in der schweiz	2022	2	2

“id count”: The number of unique work identifiers with the same reduced_title and year
“is_oa count”: The number of unique work identifiers in OA with the same reduced_title and year

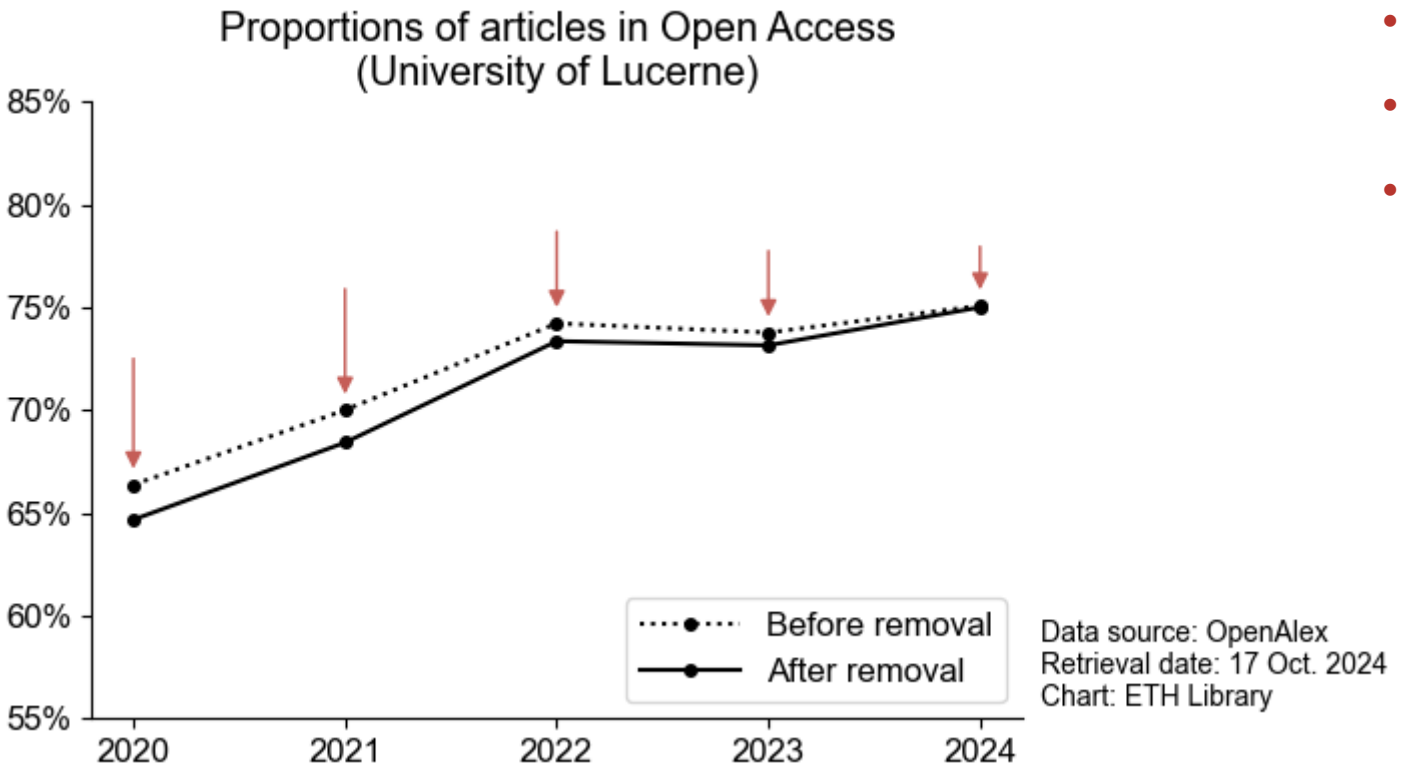
Example 2: Deduplicated articles

Removal action:

For each of the 81 reduced titles, keep only 1 article, in OA if possible

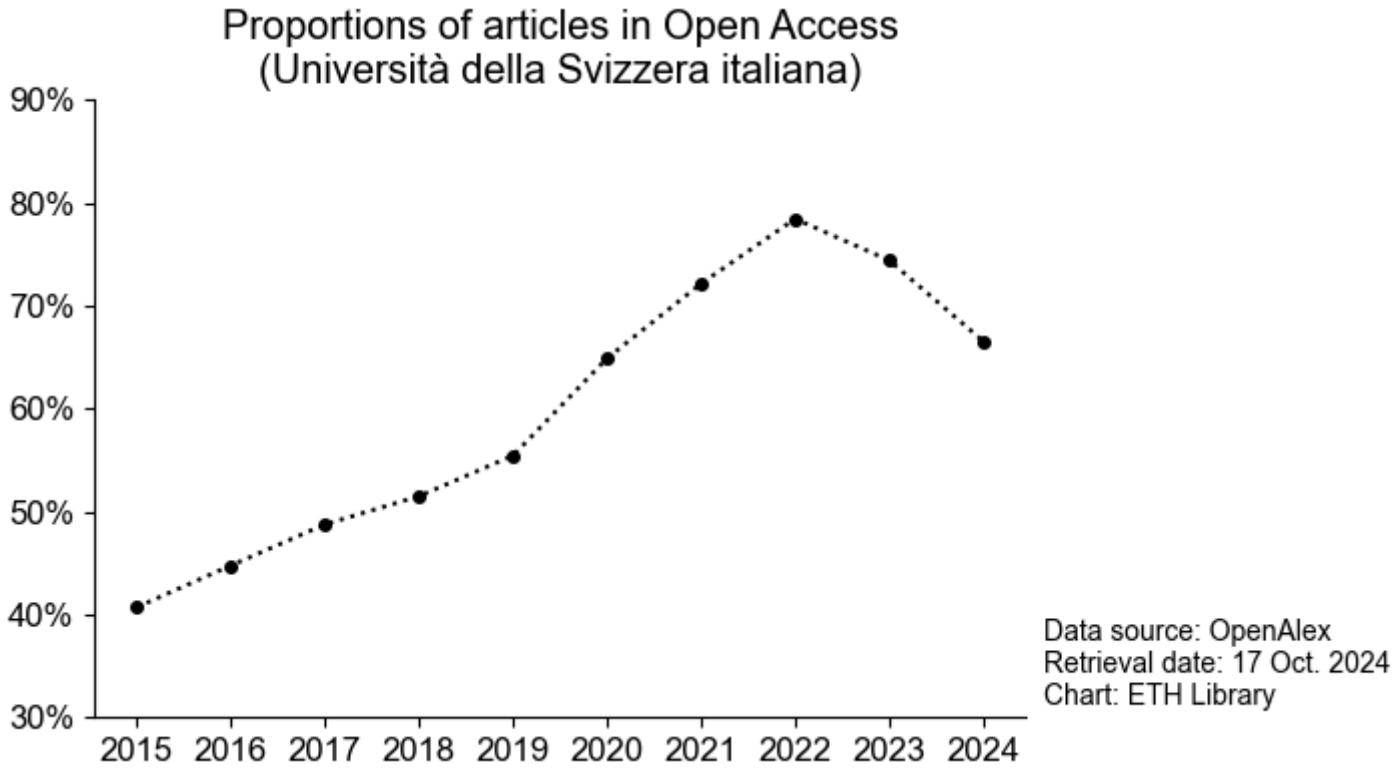
- Total articles with duplicates: 166
- Articles to remove: 85 articles

Example 2: Deduplicated articles



- Before removal: 1943 articles
- Removed articles: 85 articles (4.4%)
- After removal: 1858 articles

Example 3: Misattribution of affiliations



Example 3: Misattribution of affiliations

publication id	raw_affiliation	institution_name	manual check
W2538297977	[Università della Svizzera italiana, CH-6900 Lugano, Switzerland]	Università della Svizzera italiana	✓
W3207825108	[University of Lugano, Switzerland]	Università della Svizzera italiana	✓
W2202182017	[University of Italian Switzerland, Lugano, Switzerland]	Università della Svizzera italiana	✓
W2300442403	[Istituto Oncologico della Svizzera Italiana, Bellinzona, Switzerland]	Università della Svizzera italiana	×
W3092072399	[EOC, Istituto Imaging Svizzera Italiana – IIMSI, Viganello, Switzerland]	Università della Svizzera italiana	×
W3213432661	[Instituto Pediatrico della Svizzera Italiana, Bellinzona, Switzerland]	Università della Svizzera italiana	×
W2093507185	[5 Neurocentro Della Svizzera Italiana Lugano Switzerland]	Università della Svizzera italiana	×
W2094494529	[Supsi Scuola Universitaria per la Svizzera Italiana, Lugano, Switzerland]	Università della Svizzera italiana	×
W4200525926	[Scuola Universitaria Professionale Della Svizzera Italiana, Manno, Switzerland]	Università della Svizzera italiana	×
W2606609510	[Cardiac surgery department, L.U.de.S. University, Lugano, Switzerland]	Università della Svizzera italiana	×
W4313894708	[Ricerche Musicali nella Svizzera italiana, Lugano]	Università della Svizzera italiana	×
W2100379235	[Istituto di Musicologia dell'Università di Berna, Svizzera]	Università della Svizzera italiana	×
W2245153198	[Sezione di Italianistica, Università di Basilea, Svizzera]	Università della Svizzera italiana	×
W2780771244	[Storia Moderna, facoltà di Lettere, Università di Friborgo (Svizzera)]	Università della Svizzera italiana	×
W3183696393	[Università di Losanna (Svizzera)]	Università della Svizzera italiana	×
W2915424561	[Università di Zurigo, Switzerland]	Università della Svizzera italiana	×

Example 3: Misattribution of affiliations

publication id	raw_affiliation	institution_name	manual check
W2538297977	[Università della Svizzera italiana, CH-6900 Lugano, Switzerland]	Università della Svizzera italiana	✓
W3207825108	[University of Lugano, Switzerland]	Università della Svizzera italiana	✓
W2202182017	[University of Italian Switzerland, Lugano, Switzerland]	Università della Svizzera italiana	✓
W2300442403	[Istituto Oncologico della Svizzera Italiana, Bellinzona, Switzerland]	Università della Svizzera italiana	×
W3092072399	[EOC, Istituto Imaging Svizzera Italiana – IIMSI, Viganello, Switzerland]	Università della Svizzera italiana	×
W3213432661	[Instituto Pediatrico della Svizzera Italiana, Bellinzona, Switzerland]	Università della Svizzera italiana	×
W2093507185	[5 Neurocentro Della Svizzera Italiana Lugano Switzerland]	Università della Svizzera italiana	×
W2094494529	[Supsi Scuola Universitaria per la Svizzera Italiana, Lugano, Switzerland]	Università della Svizzera italiana	×
W4200525926	[Scuola Universitaria Professionale Della Svizzera Italiana, Manno, Switzerland]	Università della Svizzera italiana	×
W2606609510	[Cardiac surgery department, L.U.de.S. University, Lugano, Switzerland]	Università della Svizzera italiana	×
W4313894708	[Ricerche Musicali nella Svizzera italiana, Lugano]	Università della Svizzera italiana	×
W2100379235	[Istituto di Musicologia dell'Università di Berna, Svizzera]	Università della Svizzera italiana	×
W2245153198	[Sezione di Italianistica, Università di Basilea, Svizzera]	Università della Svizzera italiana	×
W2780771244	[Storia Moderna, facoltà di Lettere, Università di Friborgo (Svizzera)]	Università della Svizzera italiana	×
W3183696393	[Università di Losanna (Svizzera)]	Università della Svizzera italiana	×
W2915424561	[Università di Zurigo, Switzerland]	Università della Svizzera italiana	×

Example 3: Misattribution of affiliations

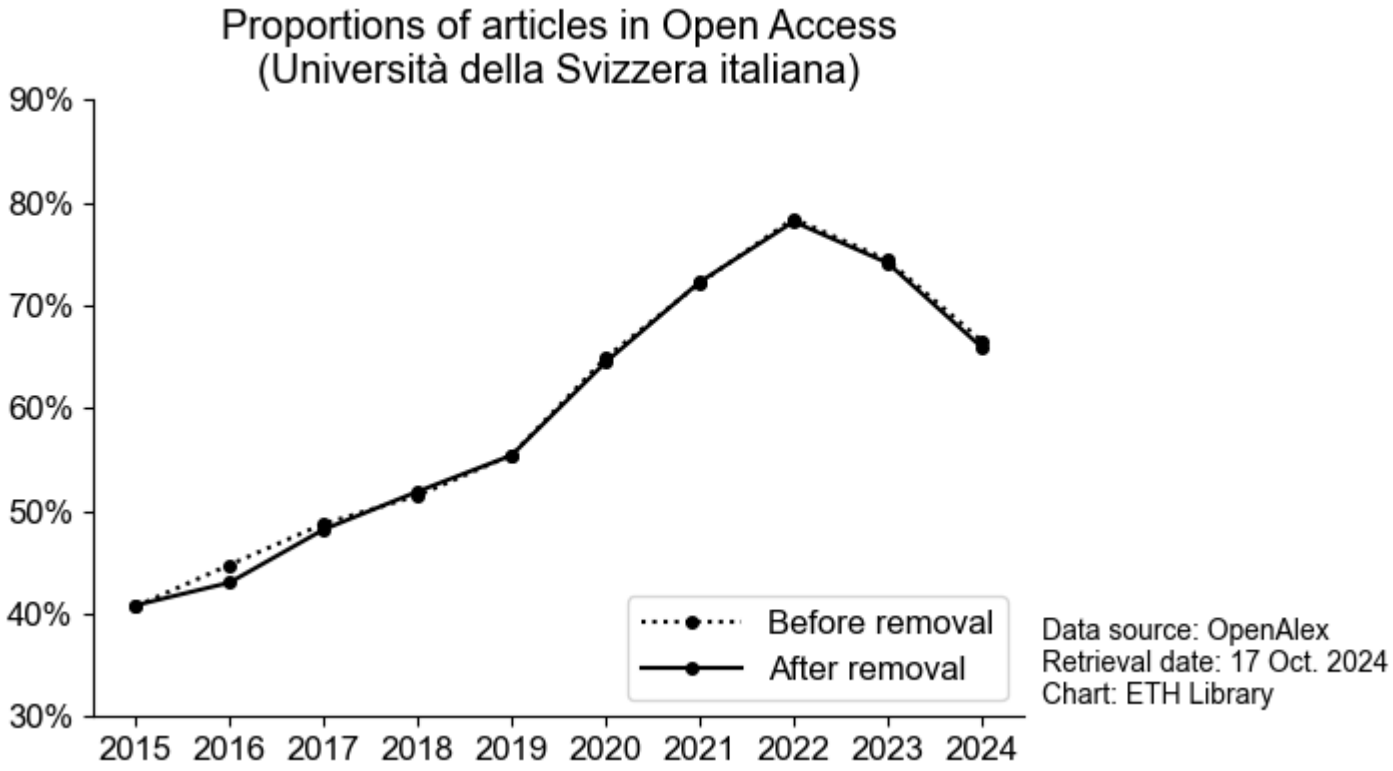
- Go through the “raw_affiliation” column and create a list with variant names of Università della Svizzera italiana (List USI) and a list with variant names of other institutions (List non-USI)
- Remove publication identifiers where at least one of the “raw_affiliation” contains a substring from the List non USI and where no “raw_affiliation” contains a substring from the List USI

List USI		
rank	**substring**	**id count**
1	Università della Svizzera	3982
2	Università della Svizzera italiana	2307
3	Università della Svizzera Italiana	1697
4	University of Lugano	541
5	USI Lugano	171
6	Universita della Svizzera italiana	143
7	Università Della Svizzera Italiana	129
8	University of Italian Switzerland	123
9	Universita della Svizzera Italiana	108
10	USI, Lugano	84
…	…	…
150	Universita??? della Svizzera italiana	1
151	Universita` della Svizzera Italiana	1
152	université de Lugano	1

List non USI		
rank	**substring**	**id count**
1	Istituto Oncologico della Svizzera Italiana	99
2	Scuola Universitaria Professionale della Svizzera Italiana	86
3	Scuola universitaria professionale della Svizzera italiana	78
4	Istituto di Imaging della Svizzera Italiana	16
5	Istituto Pediatrico della Svizzera Italiana	12
6	Scuola Universitaria Professionale della Svizzera italiana	12
7	Istituto Imaging della Svizzera Italiana	9
8	Zurigo, Svizzera	8
9	Istituto Oncologico Svizzera Italiana	6
10	Neurocentro della Svizzera Italiana	6
…	…	…
51	Cardiac surgery department, L.U.de.S. University	1
52	Attualità dalla Svizzera italiana	1
53	facoltà di Lettere, Università di Friborgo (Svizzera)	1

“id count”: The number of unique work identifiers where at least one affiliation contains the corresponding substring

Example 3: Misattribution of institution



- Before removal: 6026 articles
- Removed articles: 292 articles (4.8%)
- After removal: 5734 articles

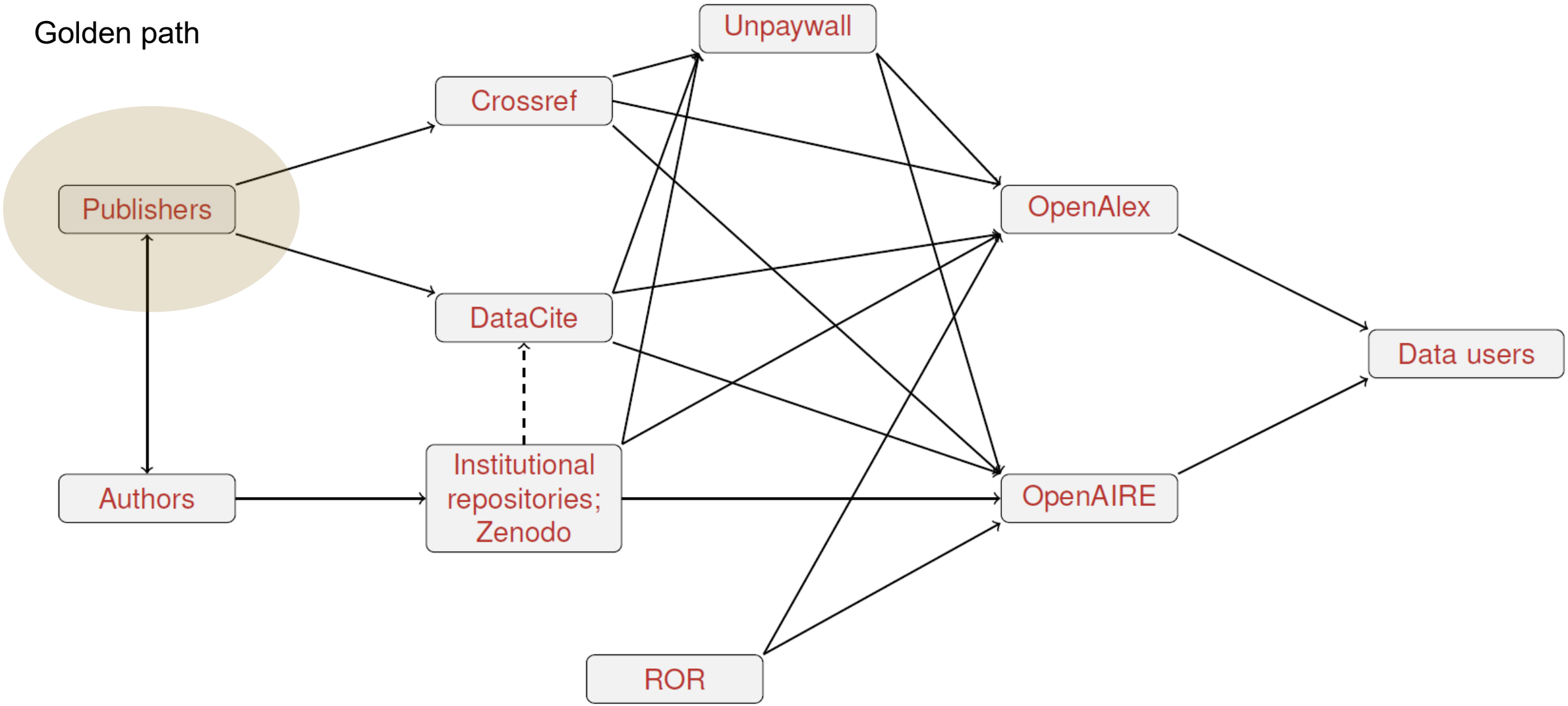
Table of contents

1. Open Access and open data sources
   - An Open Access dashboard: COKI
   - “Community over commercialization”: Open and closed data sources
   - Examples of Open Science projects in Switzerland based on open data sources
2. An open data source: OpenAlex
   - Findings about OpenAlex
   - Three examples of data cleaning
3. How to improve the publication metadata in open data sources?
   - Golden paths
   - Three examples of data curation
4. Future projects and events
5. Questions and discussion

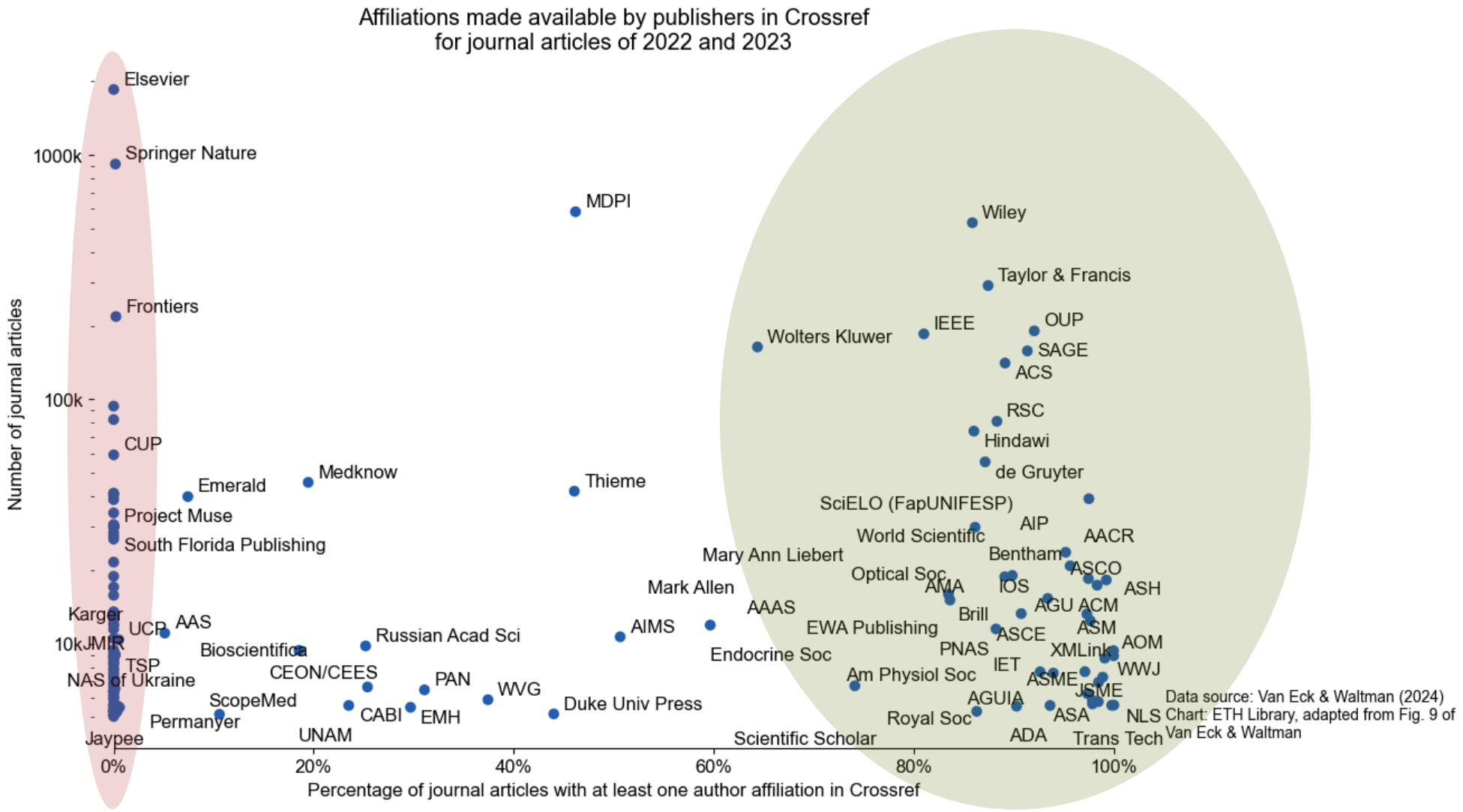
How to improve the metadata quality and coverage?

Improve metadata in a dynamic environment (simplified)

Golden path

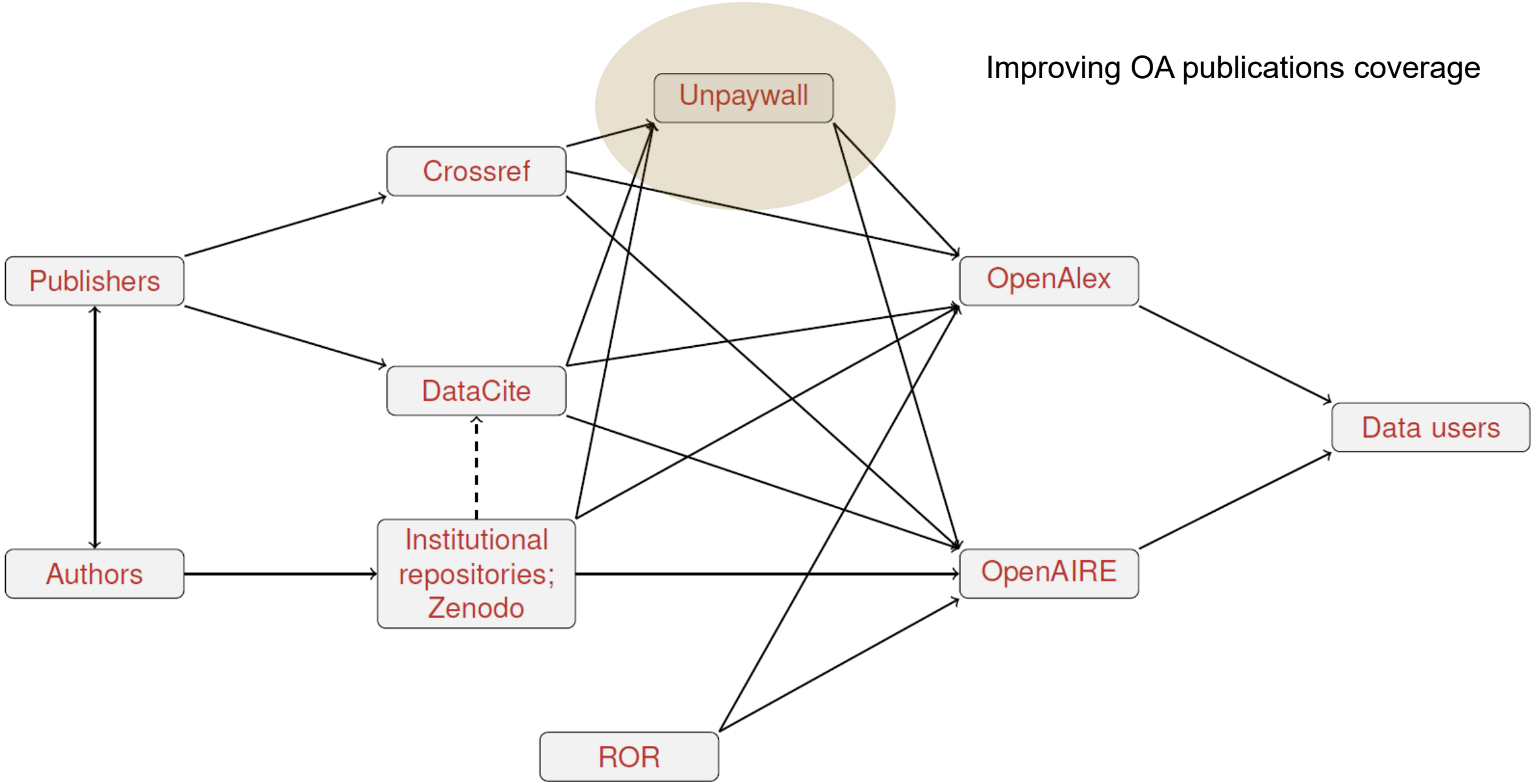


Publishers' support (metadata: affiliation)



Van Eck, N. J., & Waltman, L. (2022, July 7). Crossref as a source of open bibliographic metadata. https://doi.org/10.31222/osf.io/smxe5
Van Eck, N. J., & Waltman, L. (2024). Crossref metadata statistics [Data set]. Zenodo. https://doi.org/10.5281/zenodo.11030370

Improve metadata in a dynamic environment (simplified)



Dissemination of OA information from internal repository

Participating universities in the
Swiss Open Access Monitor (NOAM):

Institution name	Repository name	URL	Findable in Unpaywall sources (16 September 2024)
University of Basel (incl. Hospitals)	edoc	http://edoc.unibas.ch/	✓
University of Bern	BORIS	https://boris.unibe.ch	✓
University of Fribourg	FOLIA	https://folia.unifr.ch/	×
University of Geneva	Archive ouverte UNIGE	https://archive-ouverte.unige.ch/home	✓
University of Lausanne	Serval	https://serval.unil.ch	✓
Università della Svizzera italiana	SUSI	https://susi.usi.ch/	×
University of Lucerne	FIS/LORY	https://zenodo.org	(✓)
University of Neuchâtel	Libra	https://libra.unine.ch/	×
University of St.Gallen	Research Platform Alexandria	https://www.alexandria.unisg.ch/	✓
University of Zurich	ZORA	http://www.zora.uzh.ch/	✓
École Polytechnique Fédérale de Lausanne	Infoscience	https://infoscience.epfl.ch/?ln=en	✓
ETH Zurich	Research Collection	https://www.research-collection.ethz.ch/	✓

Possible reasons for the missing repositories:

- The repository does not satisfy the minimum requirements to be integrated in Unpaywall
- The repository satisfies the minimal requirements to be integrated in Unpaywall, but has not been added
- The homepage of the repository has been modified, but not updated in Unpaywall

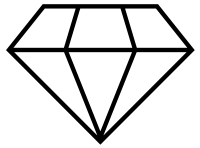
https://unpaywall.org/sources
https://oamonitor.ch/wiki/participating-institutions-repo-monitor/

Dissemination of OA information from internal repository

Institution name	Repository name	URL	Findable in Unpaywall sources (16 September 2024)	Findable in Unpaywall sources (22 October 2024)
University of Basel (incl. Hospitals)	edoc	http://edoc.unibas.ch/	✓	✓
University of Bern	BORIS	https://boris.unibe.ch	✓	✓
University of Fribourg	FOLIA	https://folia.unifr.ch/	×	✓
University of Geneva	Archive ouverte UNIGE	https://archive-ouverte.unige.ch/home	✓	✓
University of Lausanne	Serval	https://serval.unil.ch	✓	✓
Università della Svizzera italiana	SUSI	https://susi.usi.ch/	×	×
University of Lucerne	FIS/LORY	https://zenodo.org	(✓)	(✓)
University of Neuchâtel	Libra	https://libra.unine.ch/	×	×
University of St.Gallen	Research Platform Alexandria	https://www.alexandria.unisg.ch/	✓	✓
University of Zurich	ZORA	http://www.zora.uzh.ch/	✓	✓
École Polytechnique Fédérale de Lausanne	Infoscience	https://infoscience.epfl.ch/?ln=en	✓	✓
ETH Zurich	Research Collection	https://www.research-collection.ethz.ch	✓	✓

3 examples of data curation

Icons for the 3 cases



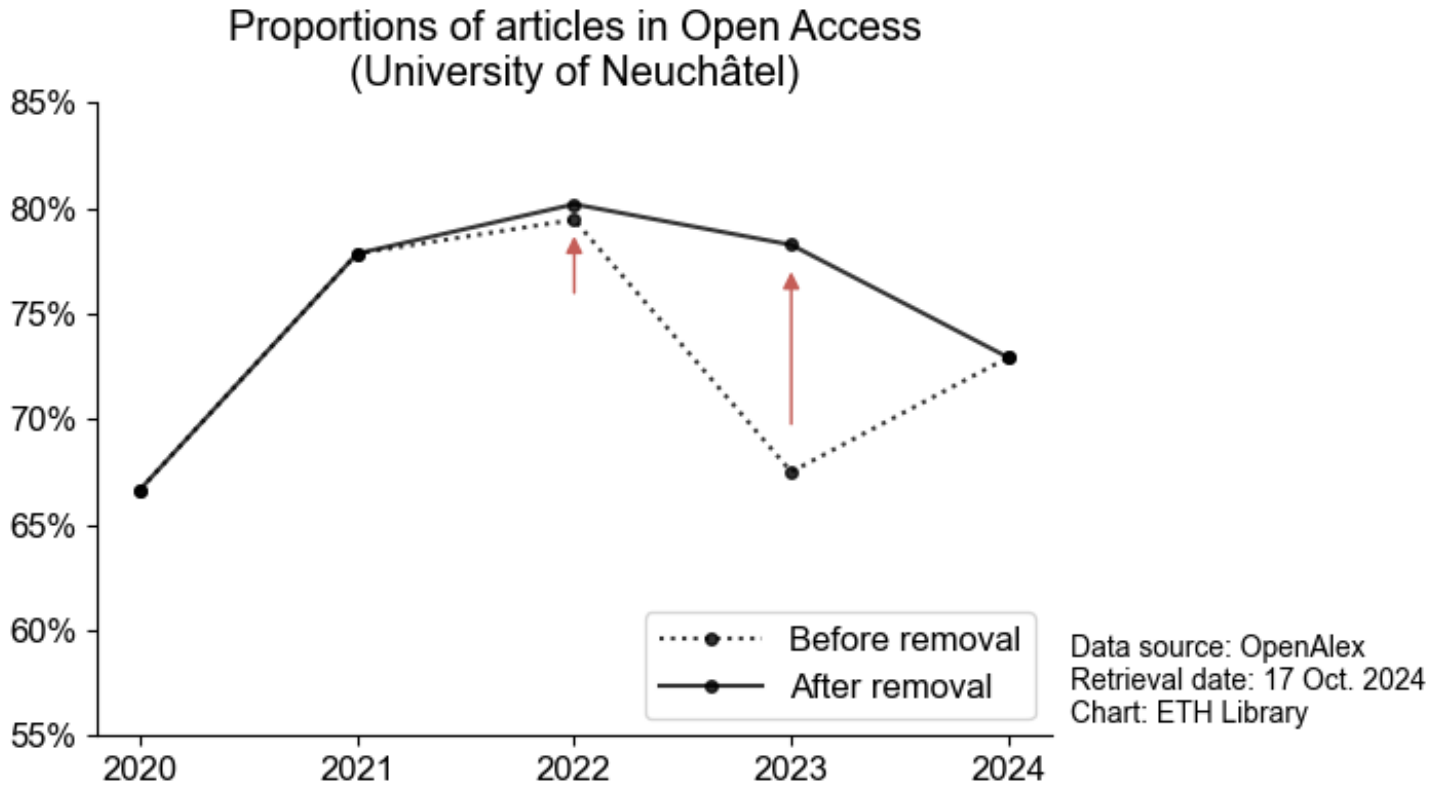
3 examples

- Publication type
- Deduplicated articles
- Misattribution of institution

3 cases

- Track the source of the mismatch
- Find ways to curate databases

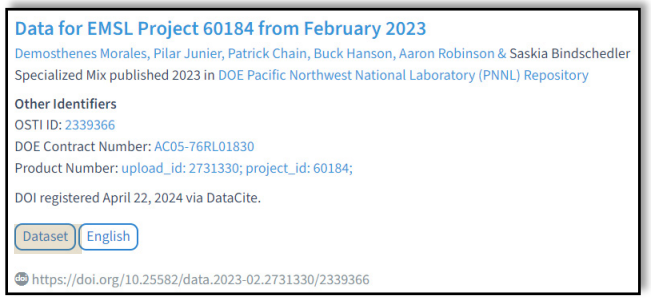
Example 1: Misattribution of publication type



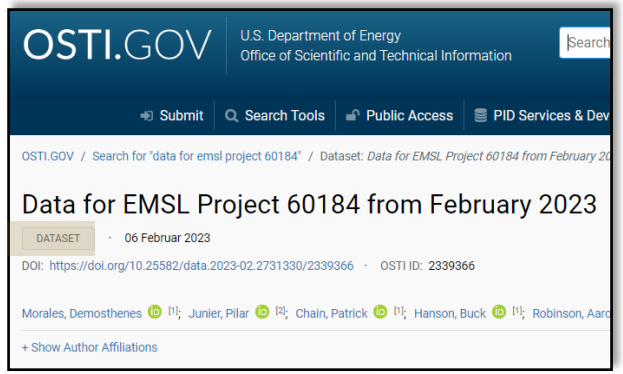
Case 1: Misattribution of publication type

OpenAlex

DataCite



OSTI



OpenAIRE

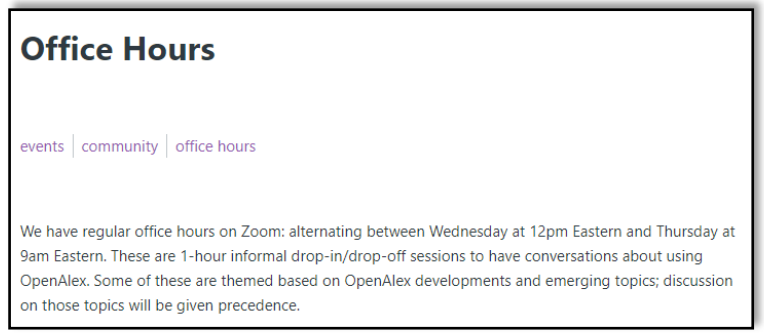
In this case,
the misattribution of type
seems to be
specific to OpenAlex

https://explore.openalex.org/works/w4395024076
https://commons.datacite.org/doi.org/10.25582/data.2023-02.2731330/2339366
https://www.osti.gov/biblio/2339366
https://explore.openaire.eu/search/dataset?pid=10.25582%2Fdata.2023-02.2731330%2F2339366

Case 1: Misattribution of publication type

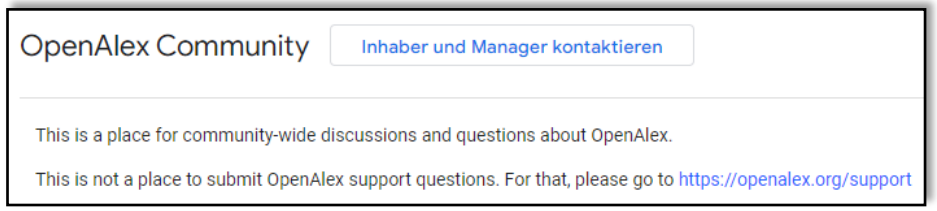
Click on “Send feedback”

Ask a question during Office Hours

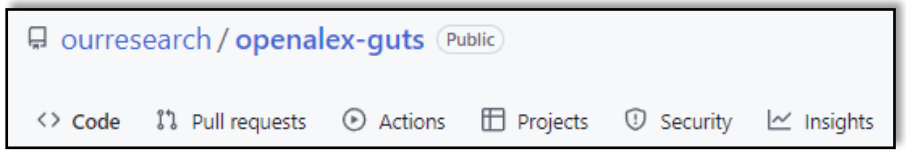


Curation of OpenAlex

Write a mail on the OpenAlex Community

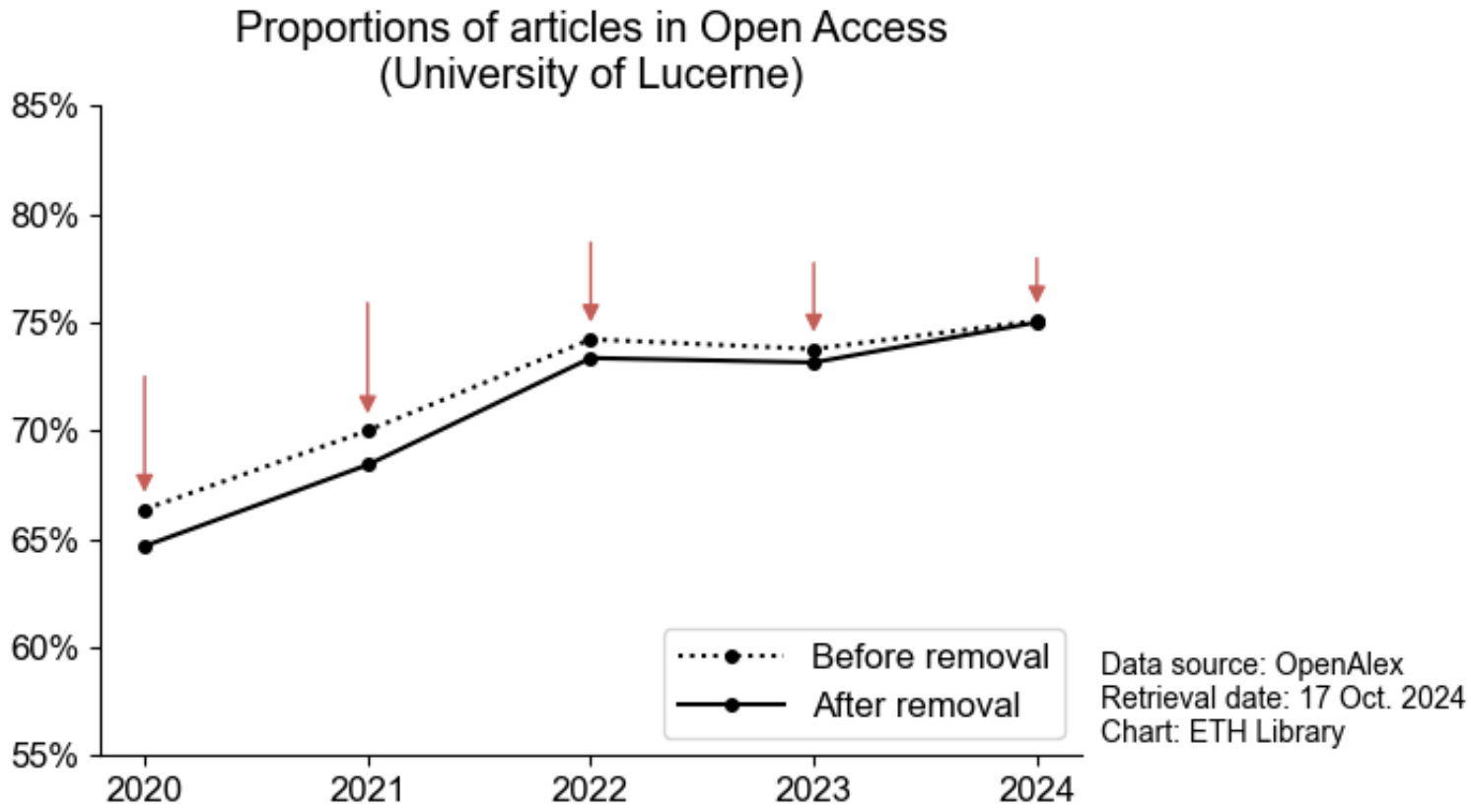


Dive into the code to continue investigation



https://explore.openalex.org/works/w4395024076
https://help.openalex.org/hc/en-us/articles/24428530346263-Office-Hours
https://groups.google.com/g/openalex-community/
https://github.com/ourresearch

Example 2: Deduplicated articles



Example 2: Deduplicated articles

Publications with the same year and title (up to letter case and special characters), sorted by count:

rank	reduced_title	year	id count	is_oa count
1	using exogenous organizational and regional hospital attributes to explain differences in casemix adjusted hospital costs	2023	4	4
2	the longitudinal impact of a chronic physical health condition on subjective wellbeing	2021	3	3
3	theorizing policy diffusion from a patchy set of mechanisms to a paradigmatic typology	2021	3	3
4	a debiased direct question approach to measuring consumers willingness to pay	2020	2	2
5	a raschbased comparison of the functional independence measure and spinal cord independence measure for outcome and quality in the rehabilitation of persons with spinal cord injury	2022	2	2
6	adaptation during spinal cord injury rehabilitation the role of appraisal and coping	2021	2	2
7	alcohol drinking and health in ageing a global scale analysis of older individual data through the harmonised dataset of athlos	2020	2	1
8	als helden der pandemie beklatscht dann im stich gelassen	2021	2	2
9	anatomical analysis of different helical plate designs for distal femoral fracture fixation	2022	2	0
10	anatomical analysis of different helical plate designs for proximal humeral shaft fracture fixation	2022	2	0
…	…	…	…	…
77	value of spectct in the assessment of necrotic bone fragments in patients with delayed bone healing or nonunion after traumatic fractures	2020	2	2
78	verschiebung planbarer eingriffe bei ressourcenknappheit	2021	2	2
79	what are the participants perspective and the systembased impact of a standardized interprofessional morbiditymortality conferences in a childrens hospital	2021	2	2
80	worries and anxiety in parents of adult survivors of childhood cancer a report from the swiss childhood cancer survivor studyparents	2023	2	2
81	zwischen ichgesellschaft und wirnation religionszugehorigkeit religiositat und der umgang mit religioser vielfalt in der schweiz	2022	2	2

“id count”: The number of unique work identifiers with the same reduced_title and year
“is_oa count”: The number of unique work identifiers in OA with the same reduced_title and year

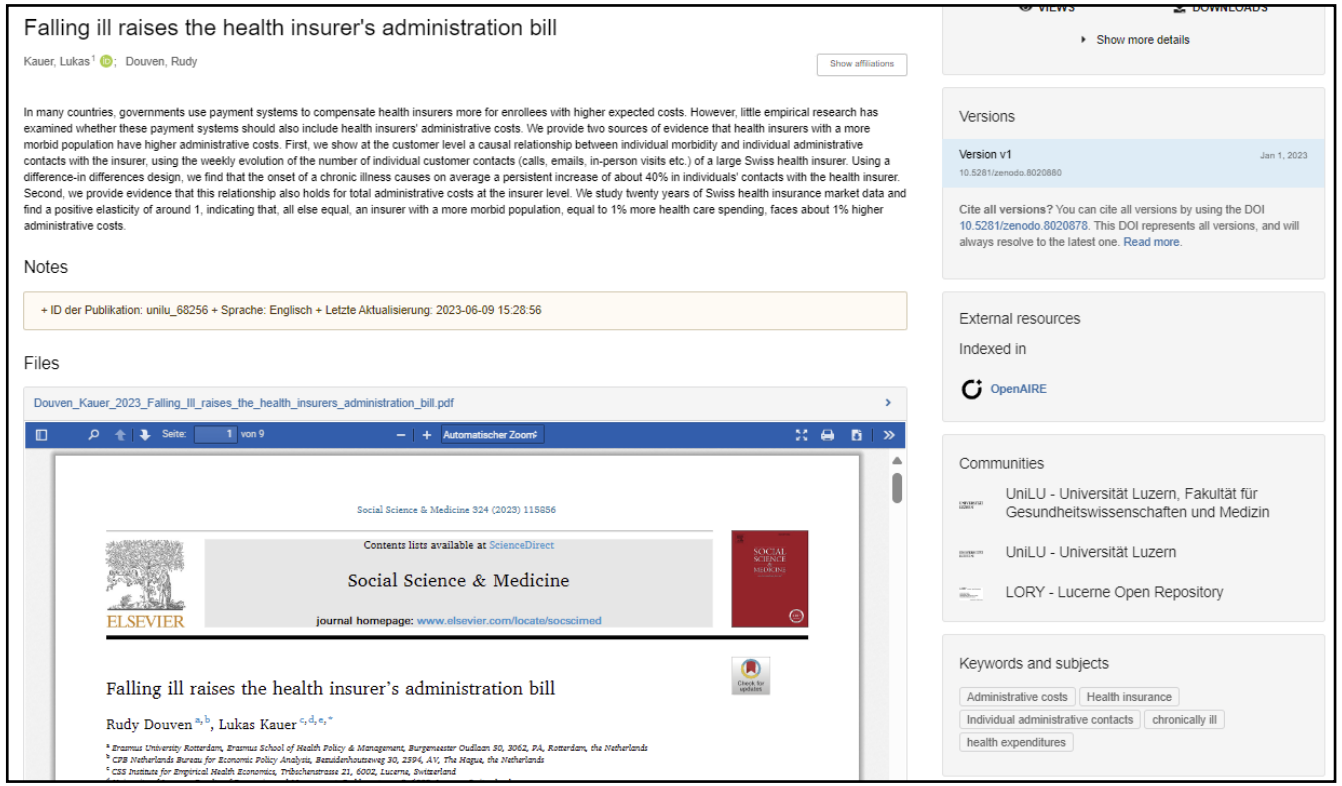
Case 2: Deduplicated articles

Most frequent DOI prefixes for duplicated articles (University of Lucerne, 2020-2024)

rank	doi_prefix	id_count	DOI Registration Agency https://doi.org/ra/{doi}	DOI https://api.test.datacite.org/prefixes/{doi_prefix} https://api.crossref.org/prefixes/{doi_prefix}
1	https://doi.org/10.5281/	67	DataCite	cern.zenodo
2	https://doi.org/10.4414/	11	Crossref	EMH Swiss Medical Publishers, Ltd.
3	https://doi.org/10.1007/	9	Crossref	Springer Science and Business Media LLC
4	https://doi.org/10.1016/	9	Crossref	Elsevier BV
5	https://doi.org/10.1002/	8	Crossref	Wiley
6	https://doi.org/10.1093/	6	Crossref	Oxford University Press (OUP)
7	https://doi.org/10.3389/	5	Crossref	Frontiers Media SA
8	https://doi.org/10.3390/	5	Crossref	MDPI AG
9	https://doi.org/10.2139/	5	Crossref	Elsevier BV
10	None	4		
11	https://doi.org/10.1186/	4	Crossref	Springer Science and Business Media LLC
12	Other prefixes	33		

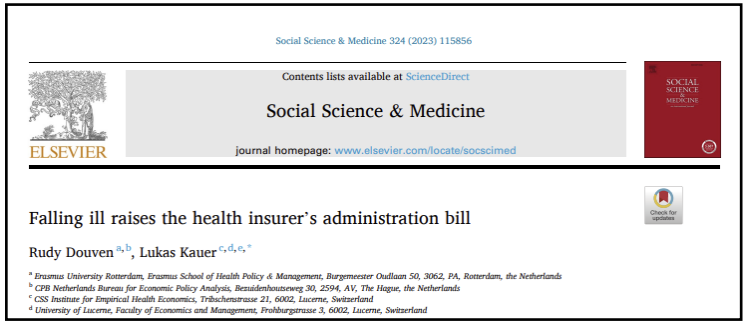
Case 2: Deduplicated articles (Zenodo) – Example I

Zenodo



https://doi.org/10.5281/zenodo.8020880

Publisher



https://doi.org/10.1016/j.socscimed.2023.115856

Case 2: Deduplicated articles (Zenodo) – Example I

Falling ill raises the health insurer's administration bill

Work

HTML PDF API

Year: 2023
Type: article
Source: Zenodo (CERN European Organization for Nuclear Research)
Authors Lukas Kauer, Rudy Douven
Institution University of Lucerne

Cites:
Cited by:
Related to: 10

Topic: Economics of Health Care Systems and Policies
Subfield: Economics and Econometrics
Field: Economics, Econometrics and Finance
Domain: Social Sciences

Open Access status: green

Falling ill raises the health insurer's administration bill

Work

HTML API

Year: 2023
Type: article
Abstract: In many countries, governments use payment systems to compensate health insurers more for enrollees with higher expected costs. However, little empirical research has examined whether these payment sy... more
Source: Social Science & Medicine
Authors Rudy Douven, Lukas Kauer
Institutions Erasmus University Rotterdam, CPB Netherlands Bureau for Economic Policy Analysis, University of Zurich, University of Lucerne

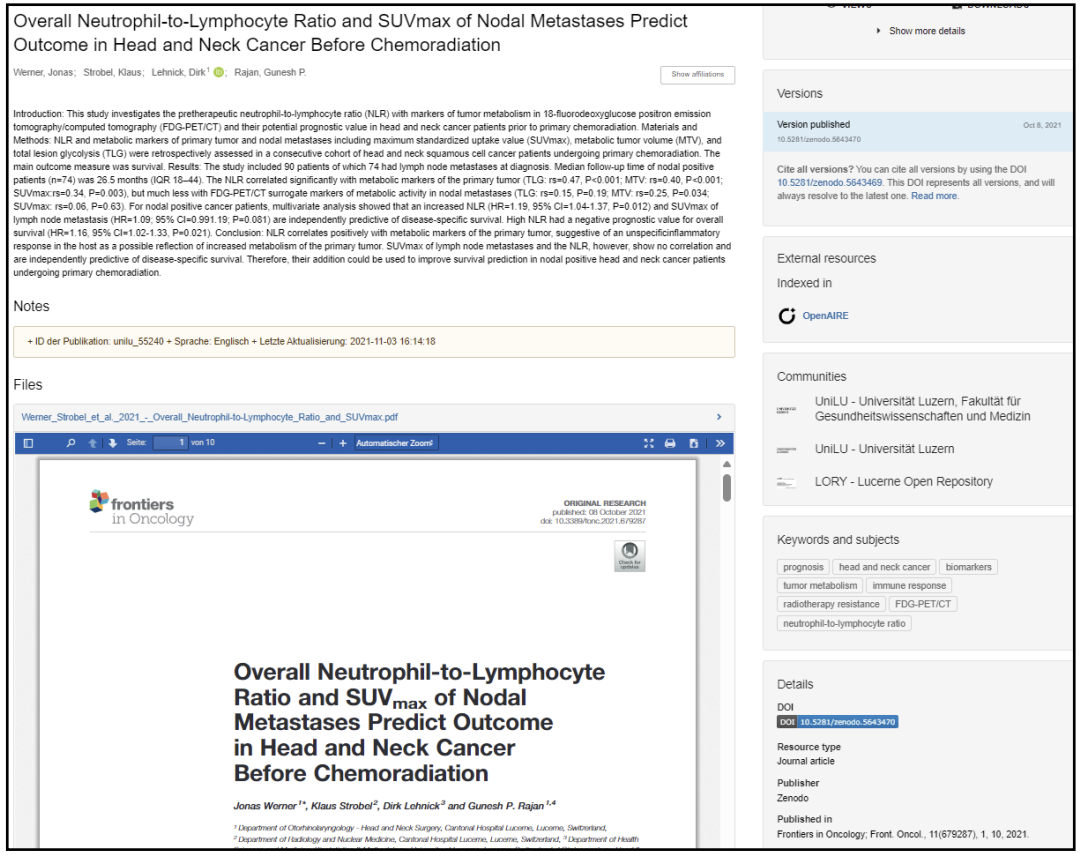
Cites: 20
Cited by:
Related to: 10

Topic: Economics of Health Care Systems and Policies
Subfield: Economics and Econometrics
Field: Economics, Econometrics and Finance
Domain: Social Sciences
Sustainable Development Goal Partnerships for the goals

Open Access status: hybrid
APC paid (est): $3,360

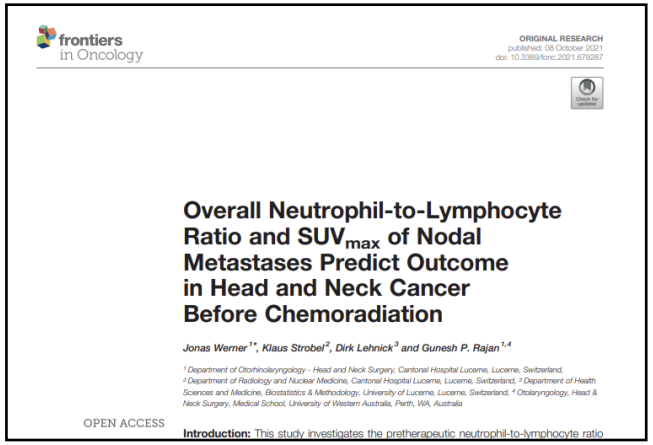
Case 2: Deduplicated articles (Zenodo) – Example II

Zenodo



https://doi.org/10.5281/zenodo.5643470

Publisher



https://doi.org/10.3389/fonc.2021.679287

Case 2: Deduplicated articles (Zenodo) – Example II

Overall Neutrophil-to-Lymphocyte Ratio and SUVmax of Nodal Metastases Predict Outcome in Head and Neck Cancer Before Chemoradiation

Work

HTML PDF API

Year: 2021
Type: article
Source: Zenodo (CERN European Organization for Nuclear Research)
Authors Jonas Werner, Klaus Strobel, Dirk Lehnick, Gunesh P. Rajan
Institution University of Lucerne

Cites:
Cited by:
Related to: 10

Topic: Inflammation's Role in Cancer Development and Progression
Subfield: Oncology
Field: Medicine
Domain: Health Sciences
Sustainable Development Goal Good health and well-being

Open Access status: green

Overall Neutrophil-to-Lymphocyte Ratio and SUVmax of Nodal Metastases Predict Outcome in Head and Neck Cancer Before Chemoradiation

Work

HTML API

Year: 2021
Type: article
Abstract: This study investigates the pretherapeutic neutrophil-to-lymphocyte ratio (NLR) with markers of tumor metabolism in 18-fluorodeoxyglucose positron emission tomography/computed tomography (FDG-PET/CT) ... more
Source: Frontiers in Oncology
Authors Jonas Werner, Klaus Strobel, Dirk Lehnick, Gunesh P. Rajan
Institutions University of Lucerne, University of Western Australia

Cites: 53
Cited by: 9
Related to: 10

Topic: Epidemiology and Treatment of Head and Neck Cancer
Subfield: Otorhinolaryngology
Field: Medicine
Domain: Health Sciences
Sustainable Development Goal Good health and well-being

Open Access status: gold
APC paid (est): $2,950

Case 2: Deduplicated articles (Zenodo) – Example III

Zenodo

https://doi.org/10.5281/zenodo.5749751

Publisher

https://doi.org/10.1007/s11136-021-03042-6

Case 2: Deduplicated articles (Zenodo) – Example III

"I don't take for granted that I am doing well today": a mixed methods study on well-being, impact of cancer, and supportive needs in long-term childhood cancer survivors

Work

HTML PDF API

Year: 2021

Type: article

Source: Zenodo (CERN European Organization for Nuclear Research)

Authors Manya J. Hendriks, Katharina Roser, E Harju, Gisela Michel

Institution University of Lucerne

Cites:

Cited by:

Related to: 10

Topic: Pediatric Cancer and Quality of Life

Subfield: Pediatrics, Perinatology and Child Health

Field: Medicine

Domain: Health Sciences

Open Access status: green

"I don't take for granted that I am doing well today": a mixed methods study on well-being, impact of cancer, and supportive needs in long-term childhood cancer survivors

Work

HTML PDF API

Year: 2021

Type: article

Abstract: Purpose With increasing numbers of childhood cancer survivors (CCS), it is important to identify the impact of cancer and CCS' needs for support services that can mitigate the long-term impact on psy... **more**

Source: Quality of Life Research

Authors Manya J. Hendriks, Nathalie Hartmann, E Harju, Katharina Roser, Gisela Michel

Institution University of Lucerne

Cites: 62

Cited by: 3

Related to: 10

Topic: Pediatric Cancer and Quality of Life

Subfield: Pediatrics, Perinatology and Child Health

Field: Medicine

Domain: Health Sciences

Sustainable Development Goal No poverty

Open Access status: hybrid

APC paid (est): $3,009

Case 2: Deduplicated articles (Zenodo)

What about the articles with a Zenodo DOI and without duplicates (University of Lucerne, 2020-2024)?

Have they been correctly matched?

Case 2: Deduplicated articles (Zenodo) – Example IV

Zenodo

https://doi.org/10.5281/zenodo.8009889

Publisher

https://doi.org/10.1007/s10198-022-01436-y

Case 2: Deduplicated articles (Zenodo) – Example IV

Should administrative costs in health insurance be included in the risk-equalization? An analysis of five countries

Work

HTML PDF API

Year: 2022
Type: article
Source: Zenodo (CERN European Organization for Nuclear Research)
Authors Rudy Douven, Lukas Kauer, Sylvia Demme, Francesco Paolucci, Wynand van de Ven **+2 more**
Institution University of Lucerne

Cites:
Cited by:
Related to: 10

Topic: Economics of Health Care Systems and Policies
Subfield: Economics and Econometrics
Field: Economics, Econometrics and Finance
Domain: Social Sciences

Open Access status: green

University of Lucerne is the only identified institution

Should administrative costs in health insurance be included in the risk-equalization? An analysis of five countries

Work

HTML PDF API

Year: 2022
Type: article
Abstract: Most countries that apply risk-equalization in their health insurance market(s) perform risk-equalization on medical claims but do not include other components of the insurance premium, such as admini... **more**
Source: The European Journal of Health Economics
Authors Rudy Douven, Lukas Kauer, Sylvia Demme, Francesco Paolucci, Wynand van de Ven **+2 more**
Institutions CPB Netherlands Bureau for Economic Policy Analysis, Federal Office for Information Security, University of Newcastle Australia, Erasmus University Rotterdam, University of Duisburg-Essen

Cites: 18
Cited by: 4
Related to: 10

Topic: Economics of Health Care Systems and Policies
Subfield: Economics and Econometrics
Field: Economics, Econometrics and Finance
Domain: Social Sciences
Sustainable Development Goal Decent work and economic growth

Open Access status: hybrid
APC paid (est): $4,390

University of Lucerne is missing

https://explore.openalex.org/works/W4379506120
https://explore.openalex.org/works/W4210864127

Case 2: Deduplicated articles (Zenodo) – Example IV

After further investigation of example 4, it appears that the University of Lucerne does not appear in the institutions list of the publisher's version in OpenAlex because:

1. The publisher does not make affiliations available in Crossref, and
2. the extracting and parsing algorithm (applied on an OA version of the article) only detects the first affiliation of each author for this specific publication

Intermediary takeaway:

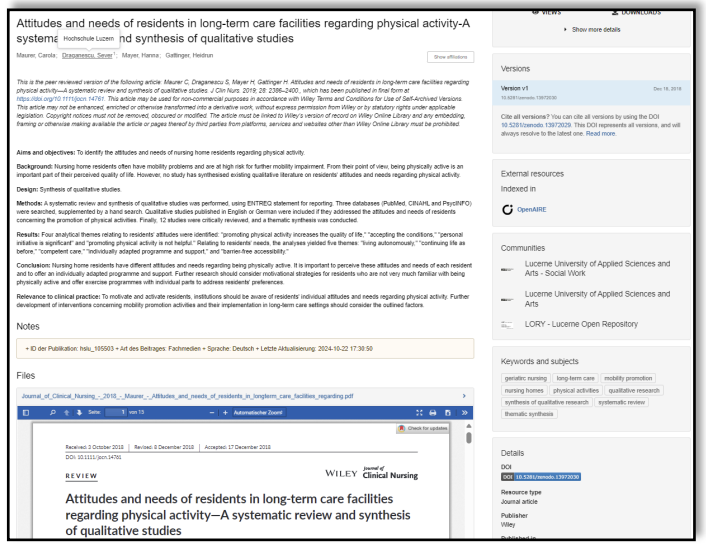
- Institutional repositories offer an opportunity to enrich affiliation metadata (i.e., the information available in the Zenodo version in OpenAlex could be used to enrich the publisher's version in OpenAlex when the metadata of both versions of the publication are merged), but…

https://explore.openalex.org/works/W4379506120
https://explore.openalex.org/works/W4210864127

Case 2: Deduplicated articles (Zenodo) – Example IV

Institutional repositories offer an opportunity to enrich affiliation metadata (i.e., the information available in the Zenodo version in OpenAlex could be used to enrich the publisher's version in OpenAlex when the metadata of both versions of the publication are merged), but…

- As of today, one cannot rely on the presence of a publication in an institutional repository to infer the presence of an affiliation with the institution
- It is therefore preferable to use repositories that include a metadata indicating whether or not the publications it contains are affiliated with the institution

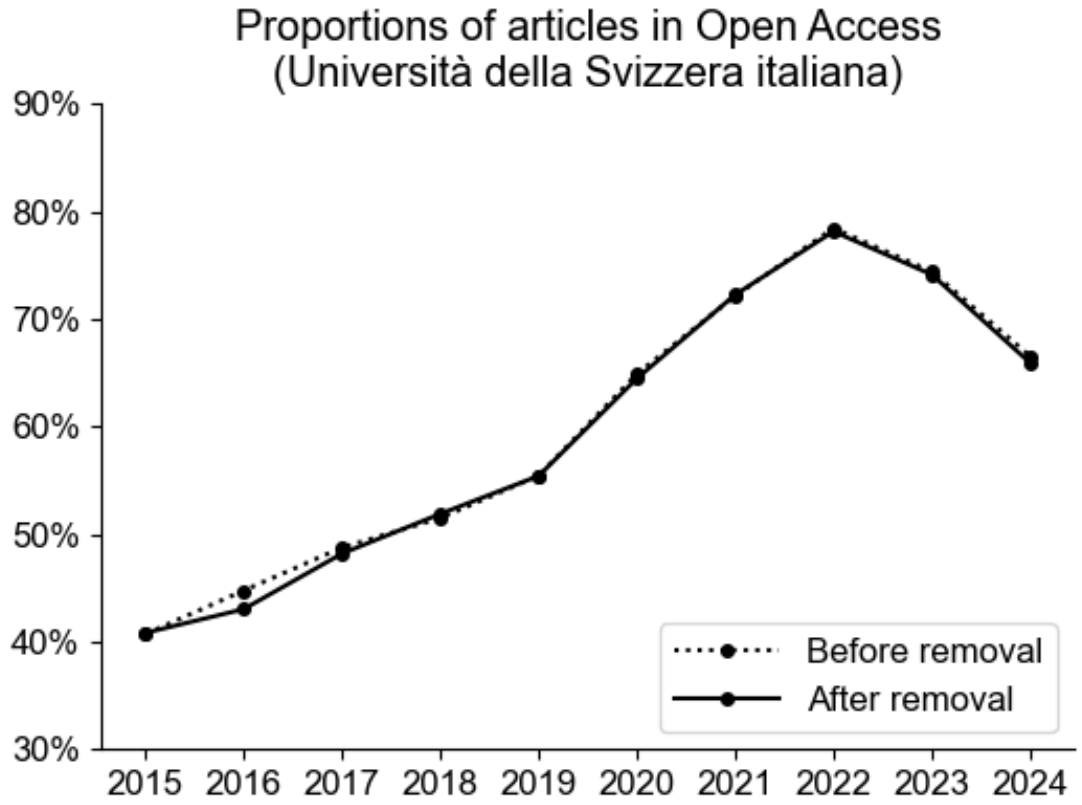


Example of a publication in the institutional repository of the University of Lucerne that does not have any affiliation with the University of Lucerne

https://doi.org/10.5281/zenodo.13972030

Takeaway:
Institutional repositories with a metadata indicating whether the publications they contain are affiliated with their institution are more likely to be used to enrich the affiliation metadata

Example 3: Misattribution of institution



Data source: OpenAlex
Retrieval date: 17 Oct. 2024
Chart: ETH Library

Example 3: Misattribution of affiliations

What can be done with the green list?

List USI		
rank	**substring**	**id count**
1	Università della Svizzera	3982
2	Università della Svizzera italiana	2307
3	Università della Svizzera Italiana	1697
4	University of Lugano	541
5	USI Lugano	171
6	Universita della Svizzera italiana	143
7	Università Della Svizzera Italiana	129
8	University of Italian Switzerland	123
9	Universita della Svizzera Italiana	108
10	USI, Lugano	84
…	…	…
150	Universita??? della Svizzera italiana	1
151	Universita` della Svizzera Italiana	1
152	université de Lugano	1

Case 3: Misattribution of affiliations

List USI		
rank	**substring**	**id count**
1	Università della Svizzera	3982
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9	Universita della Svizzera Italiana	108
10	USI, Lugano	84
…	…	…
150	Universita??? della Svizzera italiana	1
151	Universita` della Svizzera Italiana	1
152	université de Lugano	1

The Università della Svizzera italiana has a style guide stipulating explicitly that "the translation of the official name of the institution as University of Lugano is not to be used." Other unofficial names are not included in the style guide.

The green list suggests that mentioning “University of Lugano” and not mentioning other unofficial names is a wise choice, since it is the most widespread unofficial name in the considered sample.

https://www.desk.usi.ch/en/corporate-design-templates-and-rules

Case 3: Misattribution of affiliations

List USI		
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1	Università della Svizzera	3982
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10	USI, Lugano	84
…	…	…
150	Universita??? della Svizzera italiana	1
151	Universita` della Svizzera Italiana	1
152	université de Lugano	1

Examples of actions regarding future research outputs

- **Availability**
  Ensure that a style guide with official (and, if relevant, the most widespread unofficial) institution names is accessible and easily findable.
- **Awareness**
  Ensure that researchers and academic staff are aware of the official institution names.
  Encourage publishers to use persistent institutional identifiers like ROR.
- **Targeted actions**
  Use open databases to identify the origin of the most widespread unofficial naming and to target actions in a significant way (unawareness of authors from a specific research unit, improper semi-automatic entries for address on publishers' platforms…)

Example 3: Misattribution of affiliations

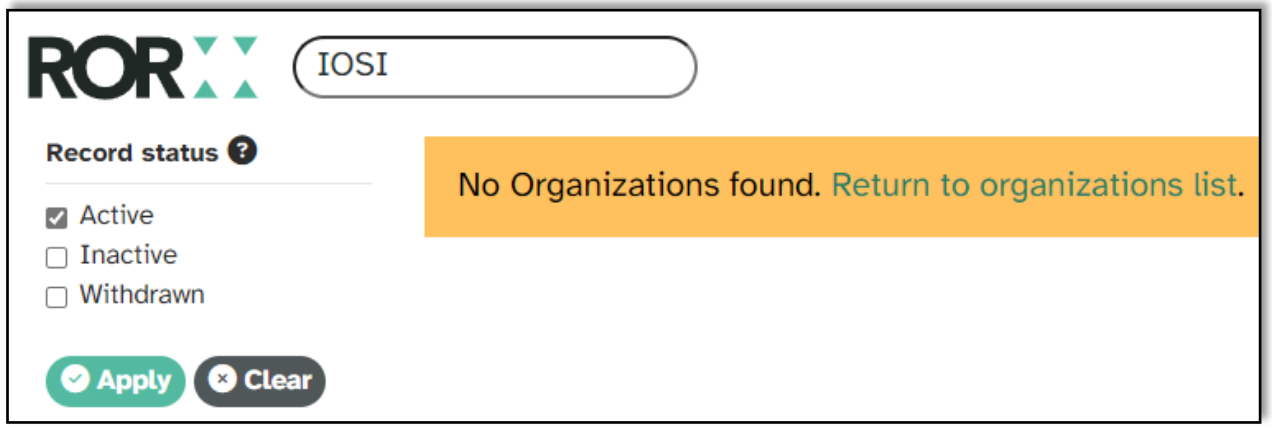
What can be done with the red list?

List non USI		
rank	**substring**	**id count**
1	Istituto Oncologico della Svizzera Italiana	99
2	Scuola Universitaria Professionale della Svizzera Italiana	86
3	Scuola universitaria professionale della Svizzera italiana	78
4	Istituto di Imaging della Svizzera Italiana	16
5	Istituto Pediatrico della Svizzera Italiana	12
6	Scuola Universitaria Professionale della Svizzera italiana	12
7	Istituto Imaging della Svizzera Italiana	9
8	Zurigo, Svizzera	8
9	Istituto Oncologico Svizzera Italiana	6
10	Neurocentro della Svizzera Italiana	6
…	…	…
51	Cardiac surgery department, L.U.de.S. University	1
52	Attualità dalla Svizzera italiana	1
53	facoltà di Lettere, Università di Friborgo (Svizzera)	1

Case 3: Misattribution of affiliations

List non USI		
rank	**substring**	**id count**
1	Istituto Oncologico della Svizzera Italiana	99
2	Scuola Universitaria Professionale della Svizzera Italiana	86
3	Scuola universitaria professionale della Svizzera italiana	78
4	Istituto di Imaging della Svizzera Italiana	16
5	Istituto Pediatrico della Svizzera Italiana	12
6	Scuola Universitaria Professionale della Svizzera italiana	12
7	Istituto Imaging della Svizzera Italiana	9
8	Zurigo, Svizzera	8
9	Istituto Oncologico Svizzera Italiana	6
10	Neurocentro della Svizzera Italiana	6
…	…	…
51	Cardiac surgery department, L.U.de.S. University	1
52	Attualità dalla Svizzera italiana	1
53	facoltà di Lettere, Università di Friborgo (Svizzera)	1

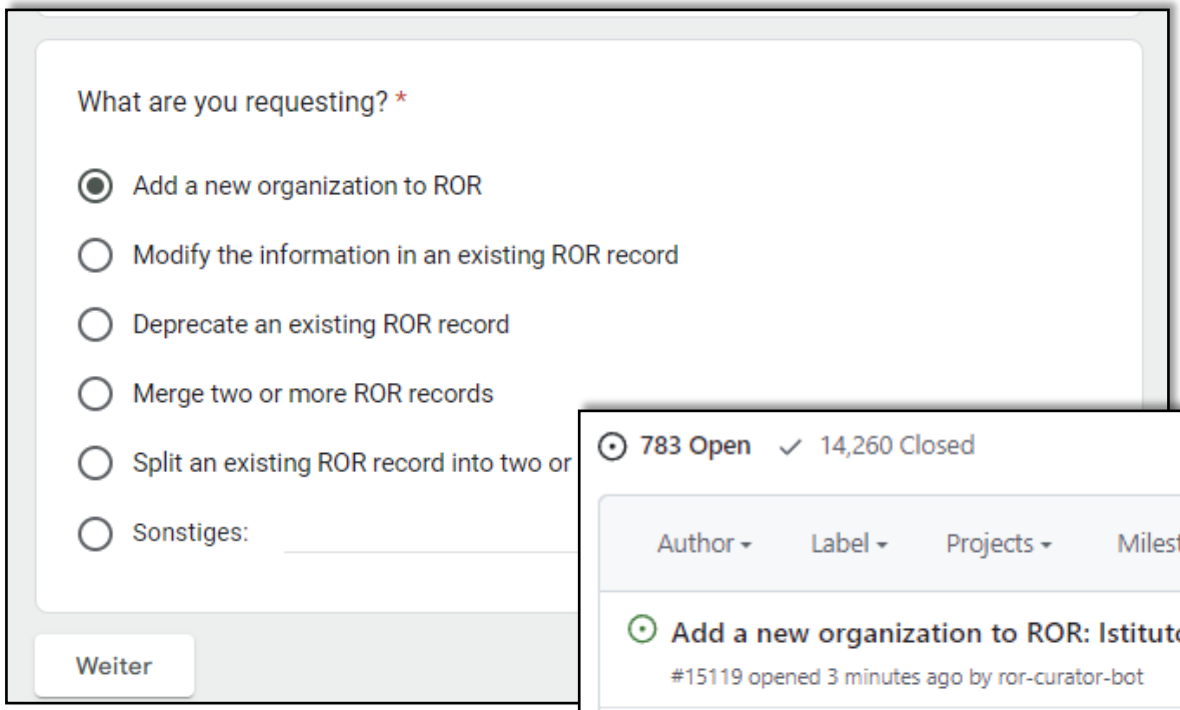
Case 3: Misattribution of affiliations: Missing institution in ROR



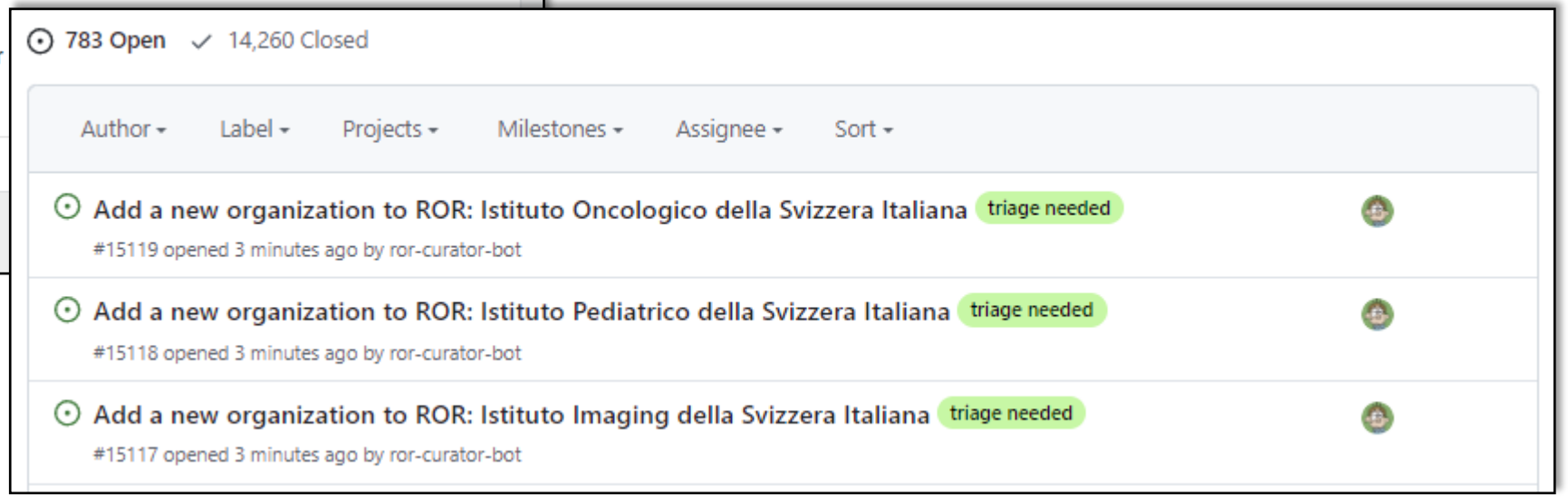
The misattributed institutions are missing in ROR (Research Organization Registry), the source used by OpenAlex to match affiliations.

https://ror.org/search?page=1&query=IOSI
https://ror.org/search?page=1&query=Istituto%20Oncologico%20della%20Svizzera%20Italiana

Case 3: Misattribution of affiliations: Missing institution in ROR



Solution:
Add the missing institutions to ROR



https://github.com/ror-community/ror-updates/issues

Case 3: Misattribution of affiliations: Other cases

List non USI		
rank	substring	id count
1	Istituto Oncologico della Svizzera Italiana	99
2	Scuola Universitaria Professionale della Svizzera Italiana	86
3	Scuola universitaria professionale della Svizzera italiana	78
4	Istituto di Imaging della Svizzera Italiana	16
5	Istituto Pediatrico della Svizzera Italiana	12
6	Scuola Universitaria Professionale della Svizzera italiana	12
7	Istituto Imaging della Svizzera Italiana	9
8	Zurigo, Svizzera	8
9	Istituto Oncologico Svizzera Italiana	6
10	Neurocentro della Svizzera Italiana	6
…	…	…
51	Cardiac surgery department, L.U.de.S. University	1
52	Attualità dalla Svizzera italiana	1
53	facoltà di Lettere, Università di Friborgo (Svizzera)	1

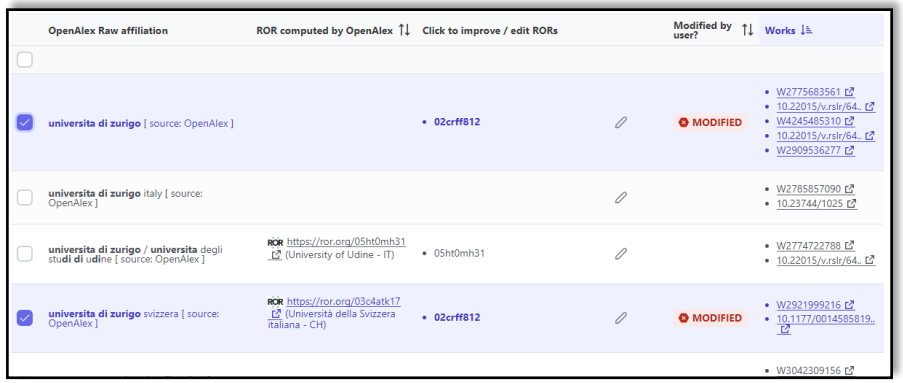
The misattribution of the *Sucola Universitaria Professionale della Svizzera Italiana* to the *Università della Svizzera italiana* is not due to missing or incomplete records in ROR

Case 3: Misattribution of affiliations: Other cases

Works magnet

to improve affiliation data in OpenAlex

Works magnet

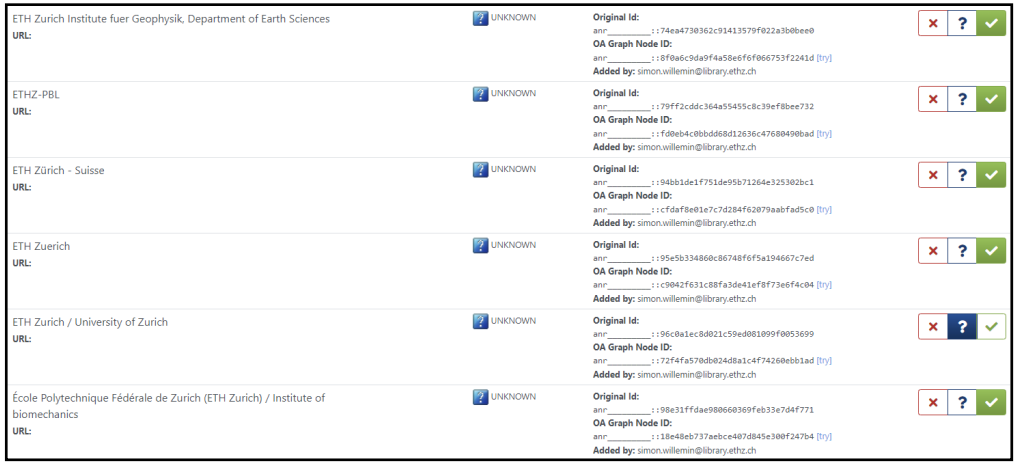


https://works-magnet.esr.gouv.fr/

OpenOrgs

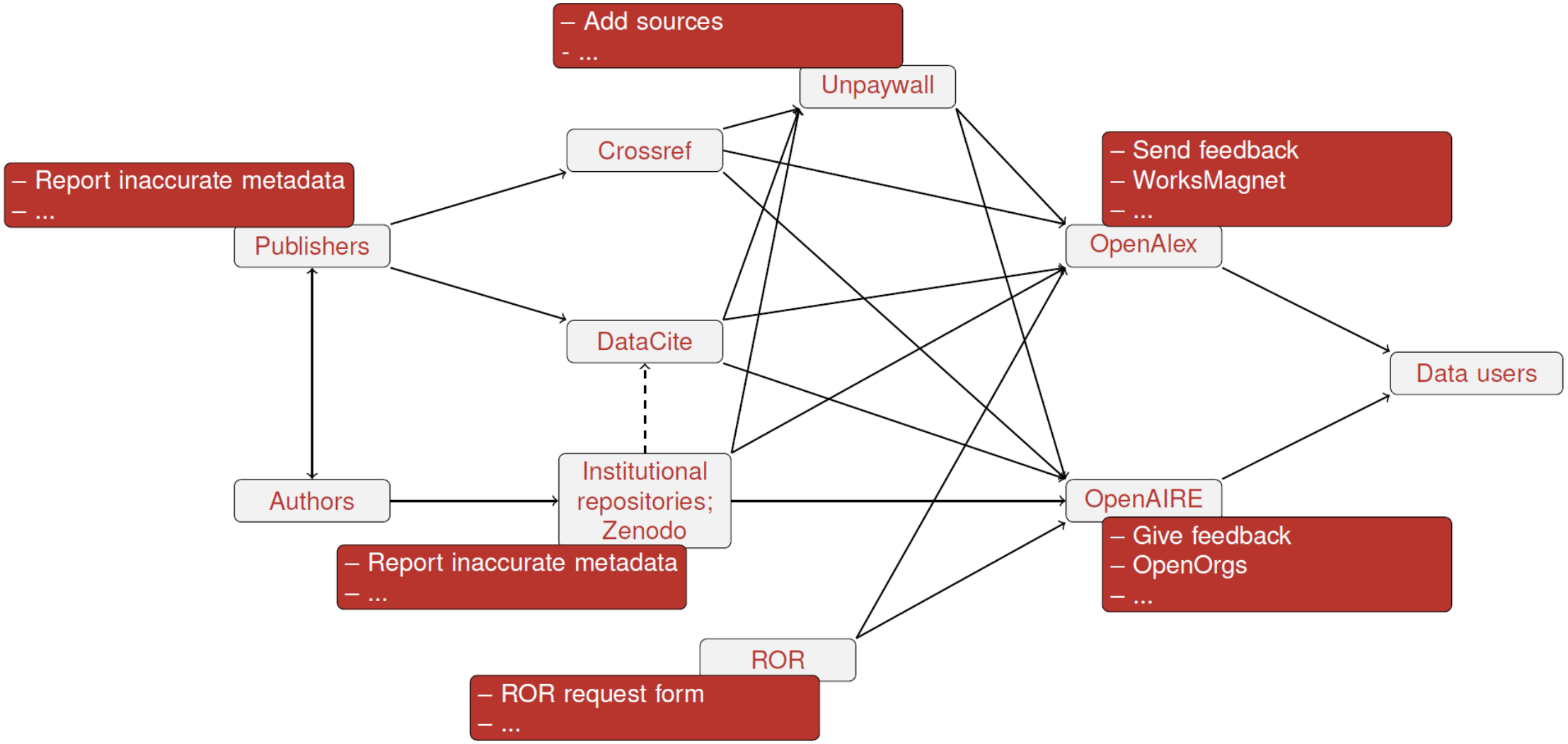
to improve affiliation data in OpenAIRE Graph

OpenOrgs

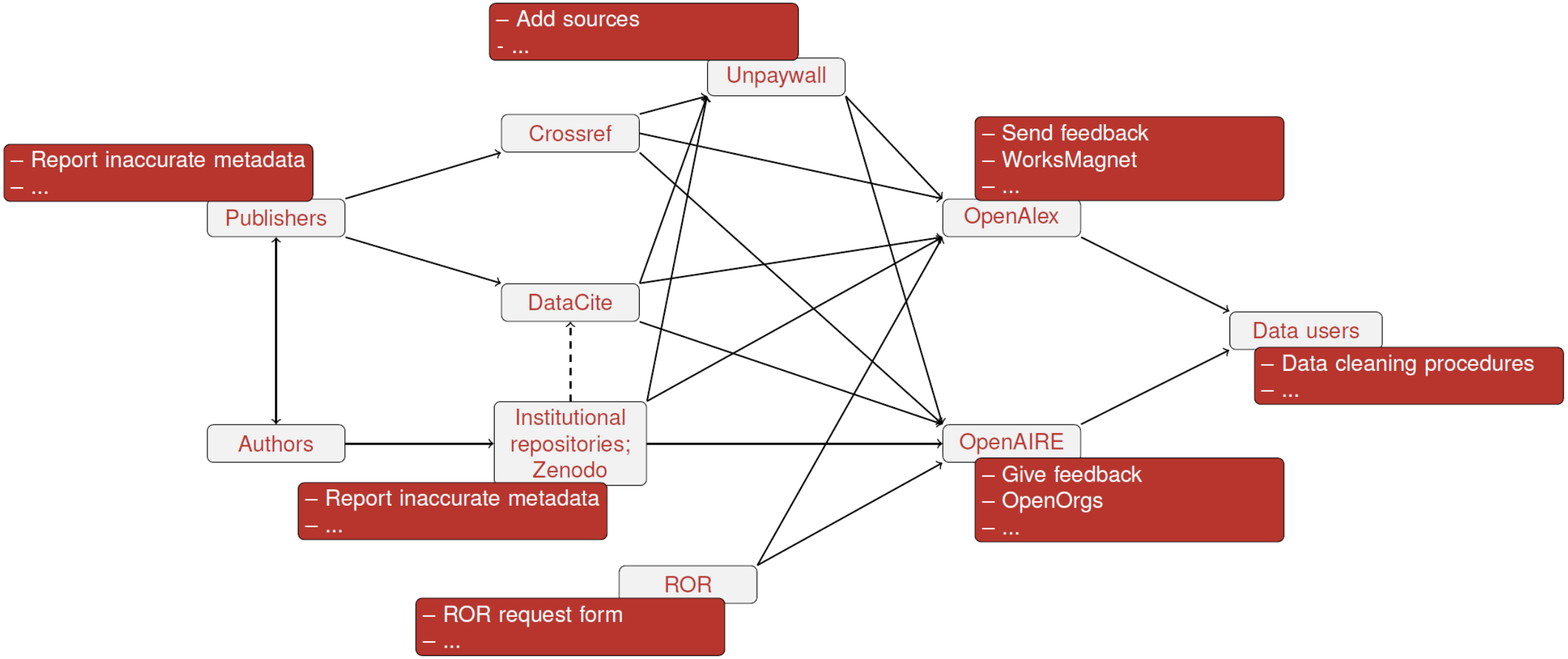


https://openorgs.openaire.eu/

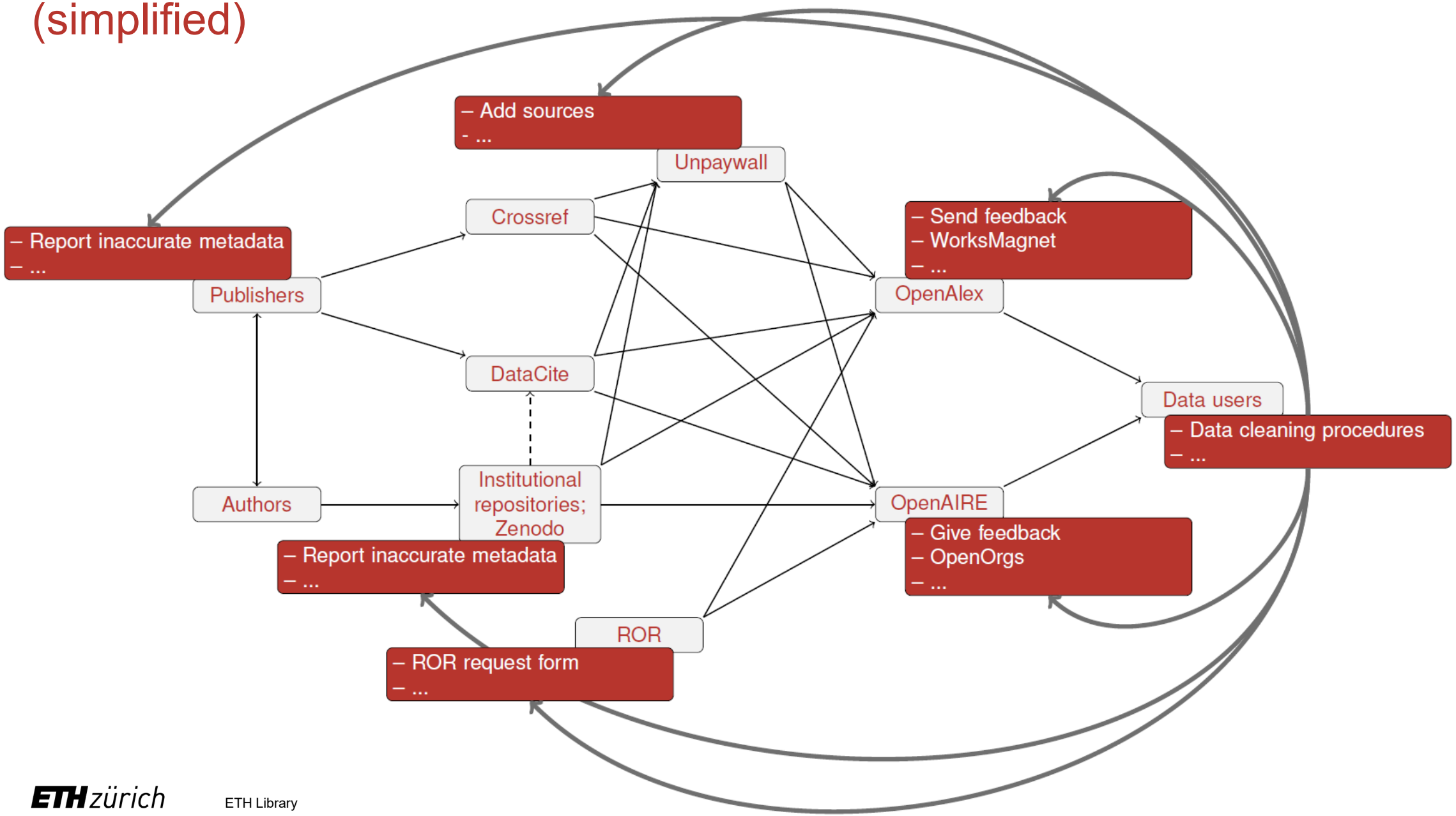
Curation processes of institutional metadata in a dynamic environment (simplified)



Curation processes of institutional metadata in a dynamic environment (simplified)



Curation processes of institutional metadata in a dynamic environment (simplified)



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   - Findings about OpenAlex
   - Three examples of data cleaning
3. How to improve the publication metadata in open data sources?
   - Golden paths
   - Three examples of data curation
4. Future projects and events
5. Questions and discussion

Future projects and events

TOBI deliverable in preparation

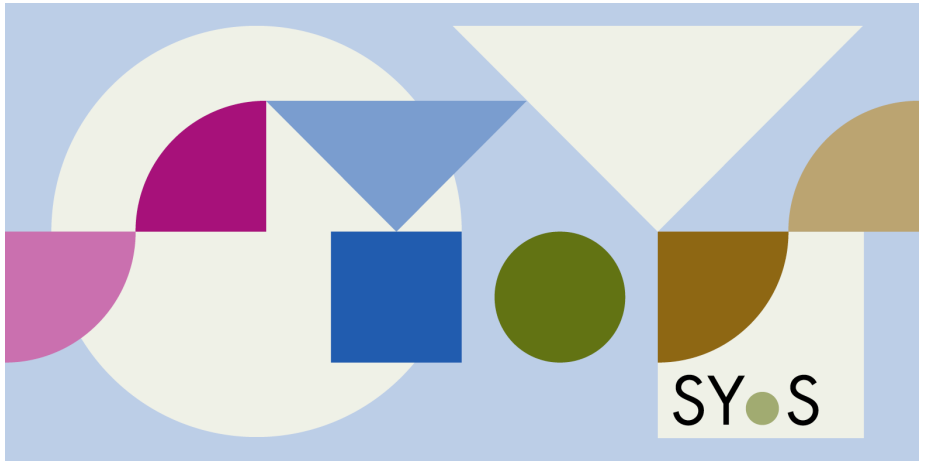
- “Recommendations for Swiss Higher Education Institutions to enhance the visibility of their research output in open databases”
  - A set of recommendations accompanied by use cases

- Possible focusses:
  - Increase of the availability of open metadata provided by **publishers** and other primary (meta)data providers
  - Improve accessibility, accurateness and interoperability of **institutional repositories**
  - Facilitate document upload and promotion of persistent identifiers for **authors and contributors**
  - Enrich and curate research outputs and research information in **global open databases**
  - …

Future project (metadata standards)

- We are planning a project in which the metadata standards of the HEIs repositories are further developed so that the data of the repositories allow the following:
  - Easy linkage with bibliometric data sources such as OpenAlex and OpenAIRE
  - (Comparative) bibliometric analyses of the Swiss higher education landscape
- Guidelines to set a gold standard will be developed and made available to all higher education institutions
- For the project to be a success, the project aims to encourage as many institutions as possible to declare their willingness to meet the set gold standard.
- With this project, we want to take the next step towards the goal of formal cooperation in the field of scientometrics

Swiss Year of Scientometrics (SYoS)



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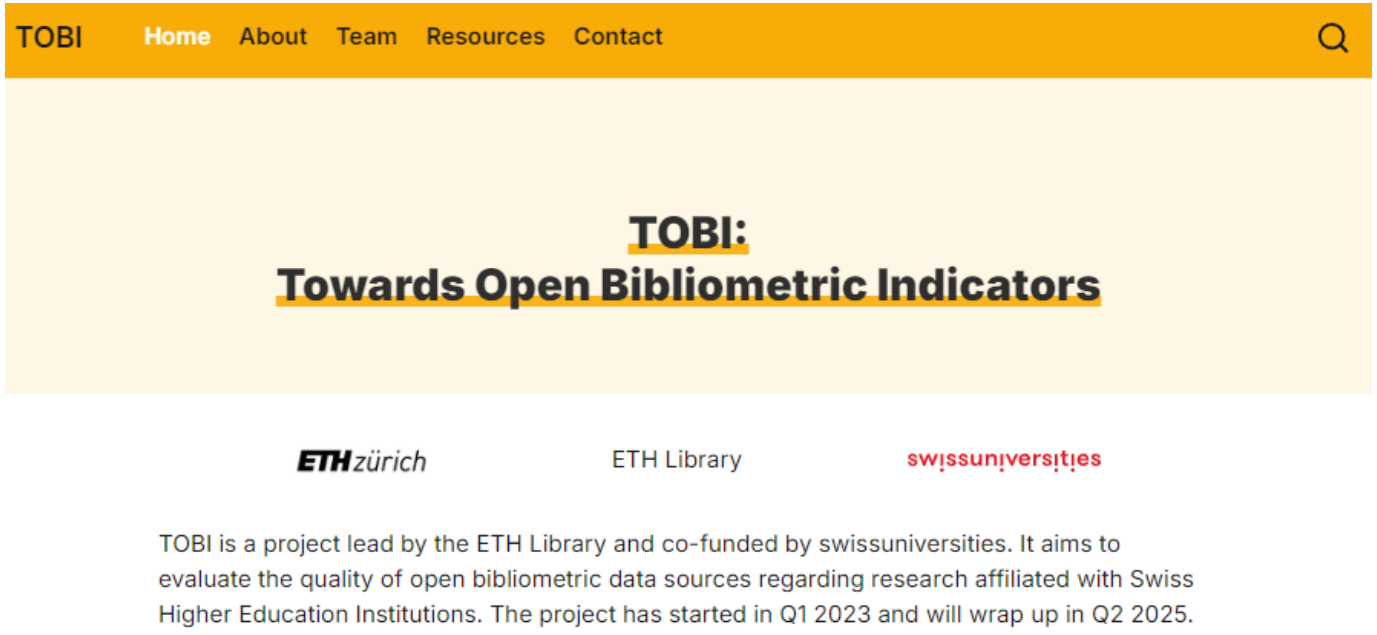
In 2025, the Swiss Year of Scientometrics event (SYoS 6) will address topics related to **open research information** and **open scholarly data** (OpenAlex, OpenAIRE, ROR, ORCID…)

Together with EPFL, we plan to organize a joint event gathering participants to share their findings and experiences with open scholarly data in Switzerland

More **details** will be provided at the end of the SYoS 5 Lecture on **Wednesday 13 November 2024,** at the **University of Fribourg (17:00-18:30)**

Thank you for your attention

- Further results are available on the project website



https://eth-library.github.io/tobi/

Questions and discussion

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8092 Zürich

https://www.library.ethz.ch
https://eth-library.github.io/tobi/