Enhancing Bibliometrics with CRIS-Data

CRIS2026

By Jens H. Aasheim

/Sikt/Open Science

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Agenda

- Sikt - National Services
- Bibliometric Challenges
- The Best of Both Worlds
  - CRIS + Bibliometric Database
- Analytics pilot - An Open Framework
  - Sikt-led Collaborative Effort

Sikt - Norwegian Agency for Shared Services in Education and Research













NVA: National CRIS + Publication Repository

- Replacing the previous national CRIS, Cristin
- Responsible for the annual official reporting of Norwegian institutions research publications to the Ministry of Education & Research
- ~400 000 scientific records/publications
- Improved data quality and control of Norwegian authors and affiliations
- Limited to Norwegian research output
- Missing/low coverage of certain bibliometric data. Such as citations, corresponding author, etc.

NIB - National Infrastructure for Bibliometrics

- A service openly available for Norwegian institutions
  - Web of Science (~85 mill records)
  - OpenAlex (~490 mill records) to Norwegian institutions
- Collaboration on building a set of relevant indicators and reference values for internal calculation in each database
- Shifting focus towards Open Science and Open Data

Institutions - Data Driven Decisions

- Institutions are relying more on analytics and BI (Business Intelligence). So, easy access to high quality data is becoming increasingly important.
- Bibliographic data is used for administrative tasks, planning, keeping track of production, reporting, etc.
- Bibliometrics is now a cornerstone of research evaluation and assessment.

“Lies, Damned Lies, and Bibliometrics”

- Bibliometrics is often complex, complicated, and comes with a number of caveats and warnings.

- NIB encourages openness, transparency and responsible use:
  - Barcelona-declaration
  - Leiden-manifesto



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Bibliometric Challenges

High thresholds for usage

- No or limited access to off-the-shelf-software
- Unless using expensive non-transparent proprietary solutions
- Reliance on domain expertise
- Difficult to access relevant and reliable data (national/institutional)



NIB Challenges

- Catering to different user groups. From researchers to research administrative, and librarians. With a wide range in technical proficiency and skills.
- Only accessible by SQL
- Complicated data models



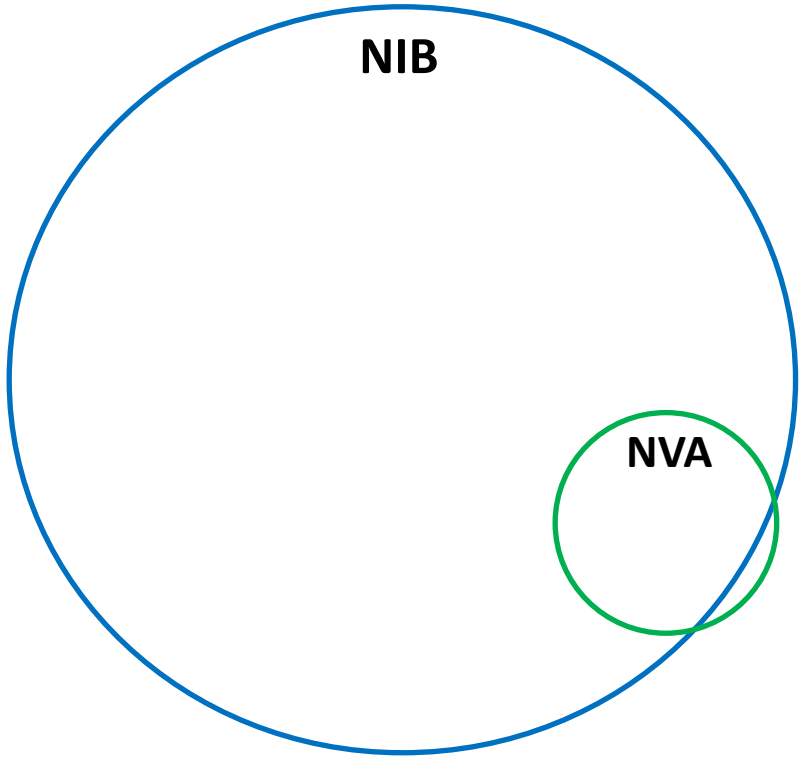


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NIB + NVA

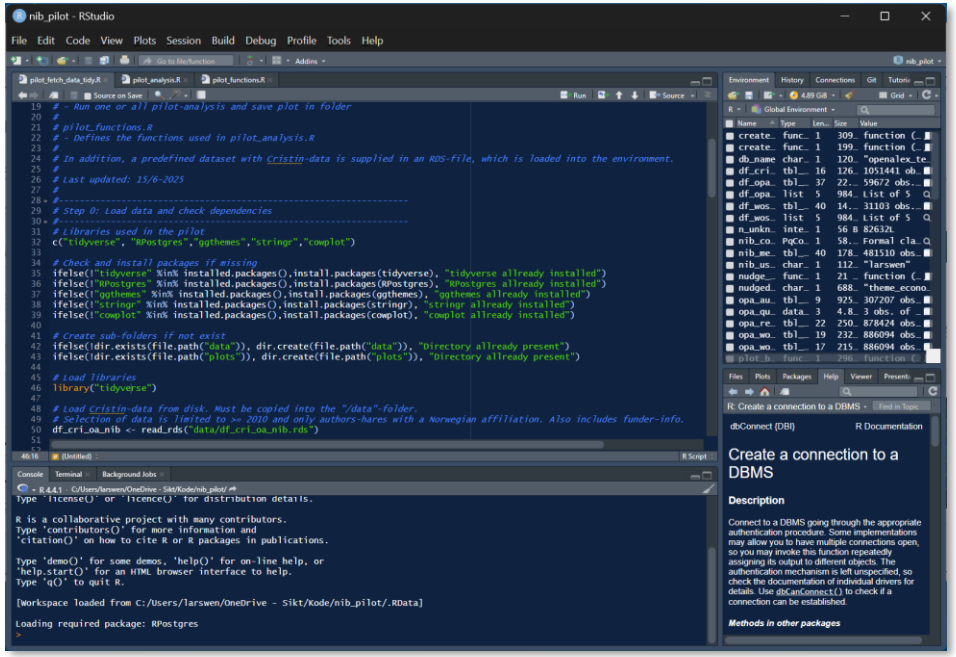
Using the strength of each, to mitigate the weaknesses of the other.

- Verified author affiliation data from the Cris to identify the right set of publications
- Currently DOI based matching only
  - ~94% coverage OpenAlex
  - ~84% coverage WoS
- Rolling out improved routine for matching
  - Article level
  - Author level

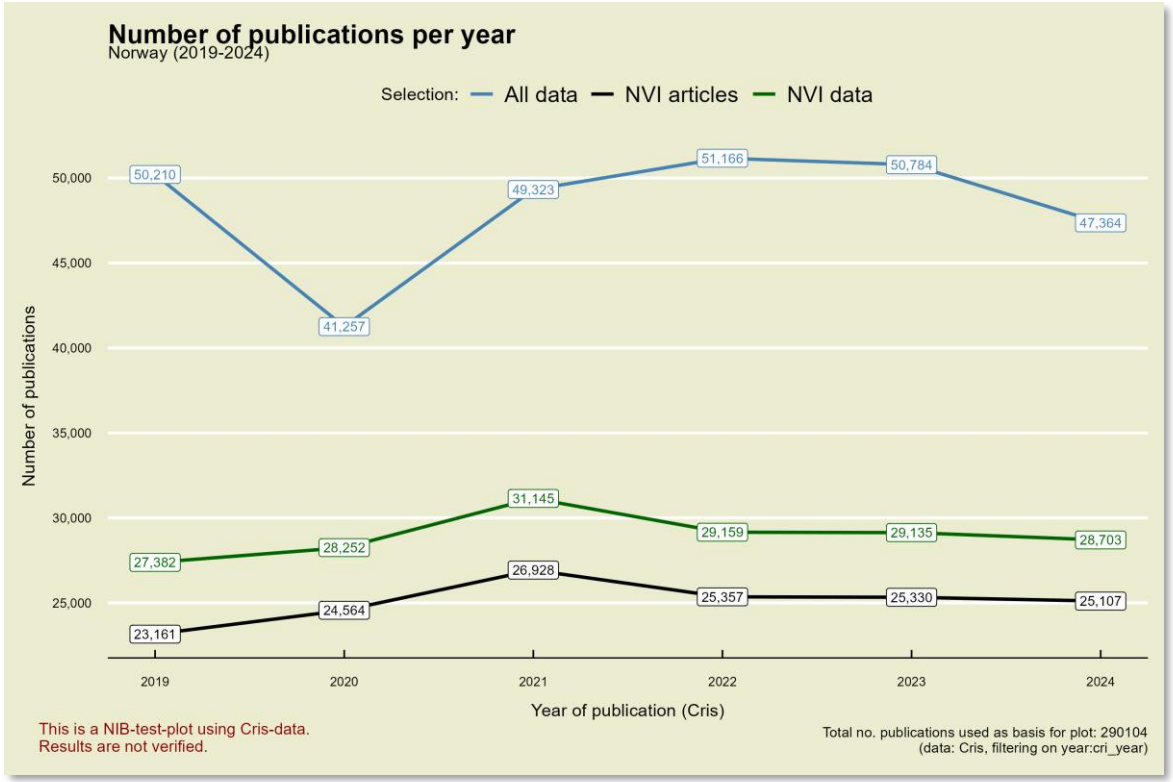


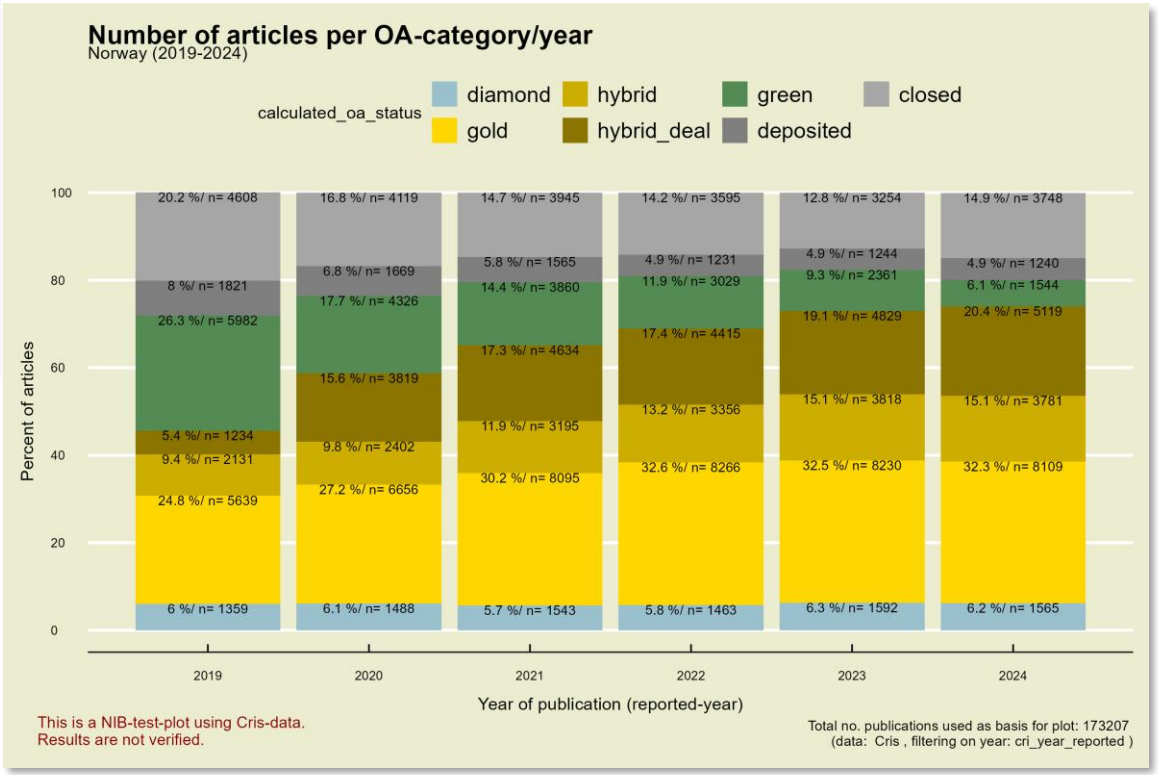
NIB - Analytics Pilot

- To help NIB users overcome some of the bibliometric obstacles.
- Built in R
  - Fetch
  - Filter
  - Analyse
  - Present
- Streamlining the path from data and analysis
  - Covers the steps from acquiring data, to presentation of results
  - Aims to minimise the technical knowledge required
  - Offers Norwegian institutions the perspective of both WoS and OpenAlex

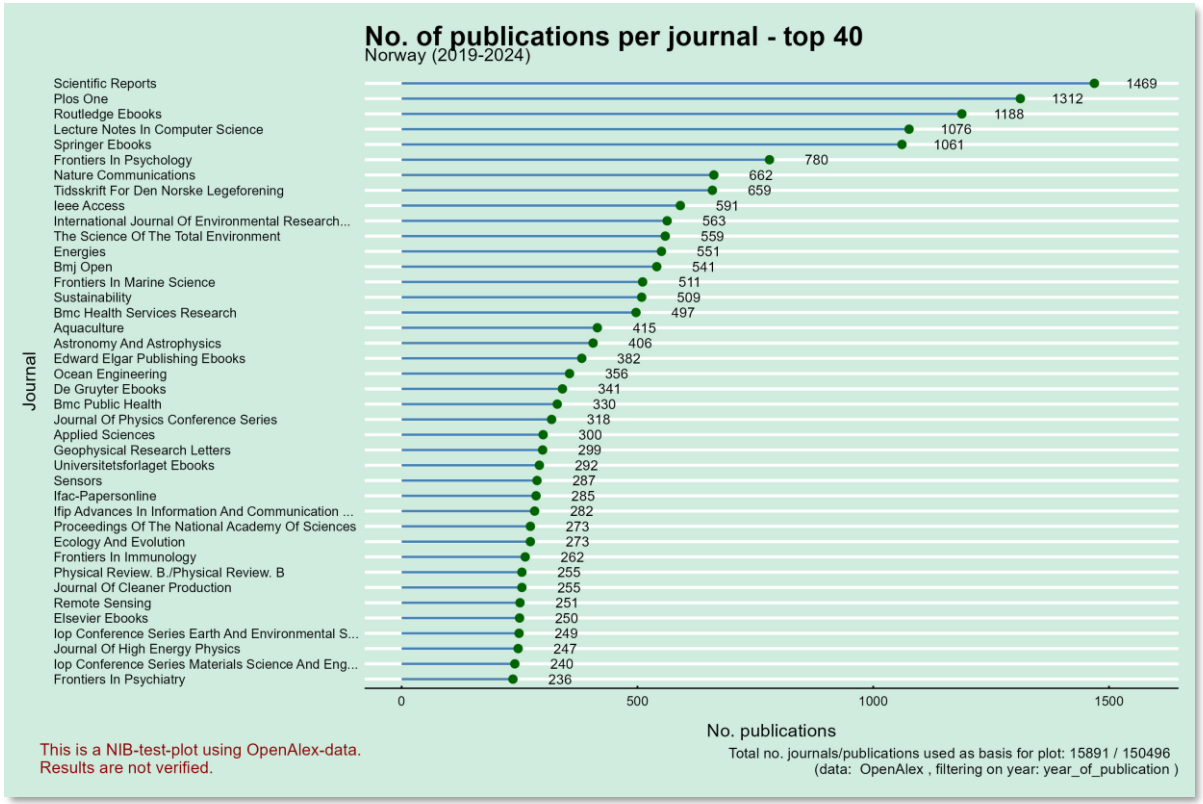


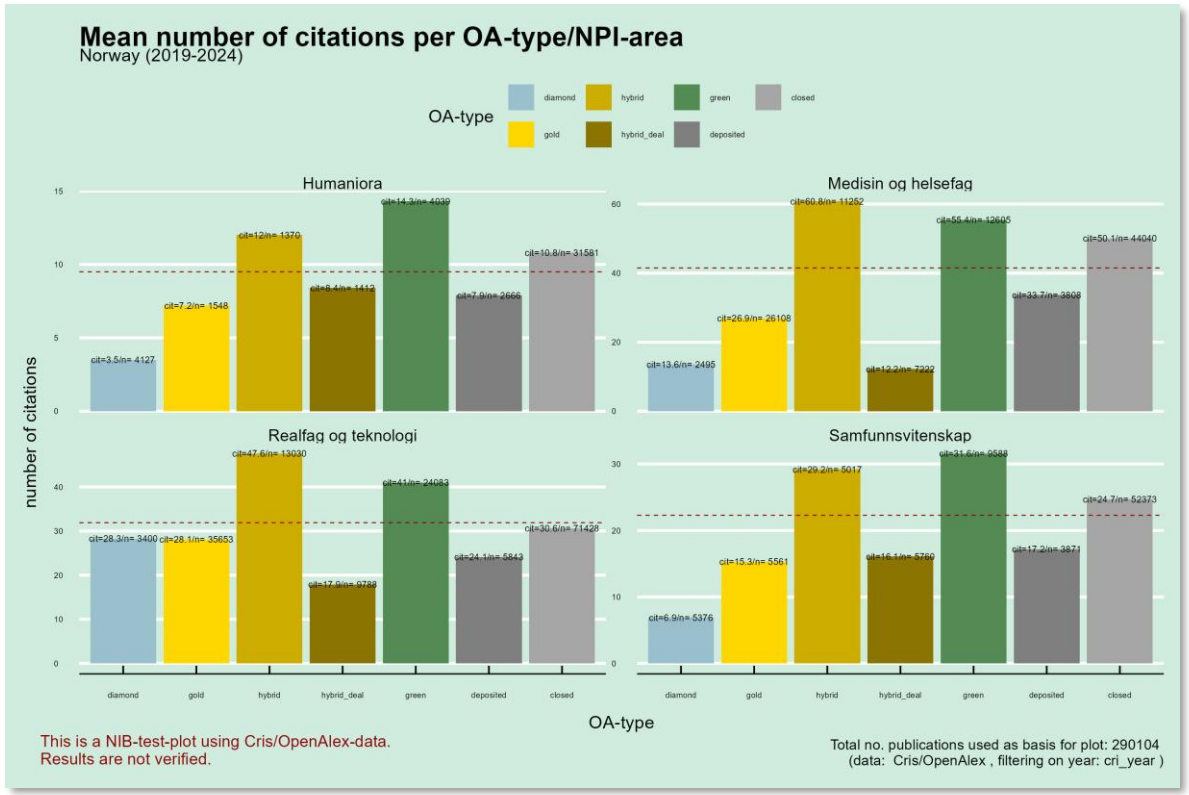
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Number of publications per year
Norway (2019-2024)
Selection: All data NVI articles NVI data
50,210
41,257
49,323
51,166
50,784
47,364
27,382
28,252
31,145
29,159
29,135
28,703
23,161
24,564
26,928
25,357
25,330
25,107
50,000
45,000
40,000
35,000
30,000
25,000
Number of publications
2019
2020
2021
2022
2023
2024
Year of publication (Cris)
This is a NIB-test-plot using Cris-data.
Results are not verified.
Total no. publications used as basis for plot: 290104
(data: Cris, filtering on year:cri_year)

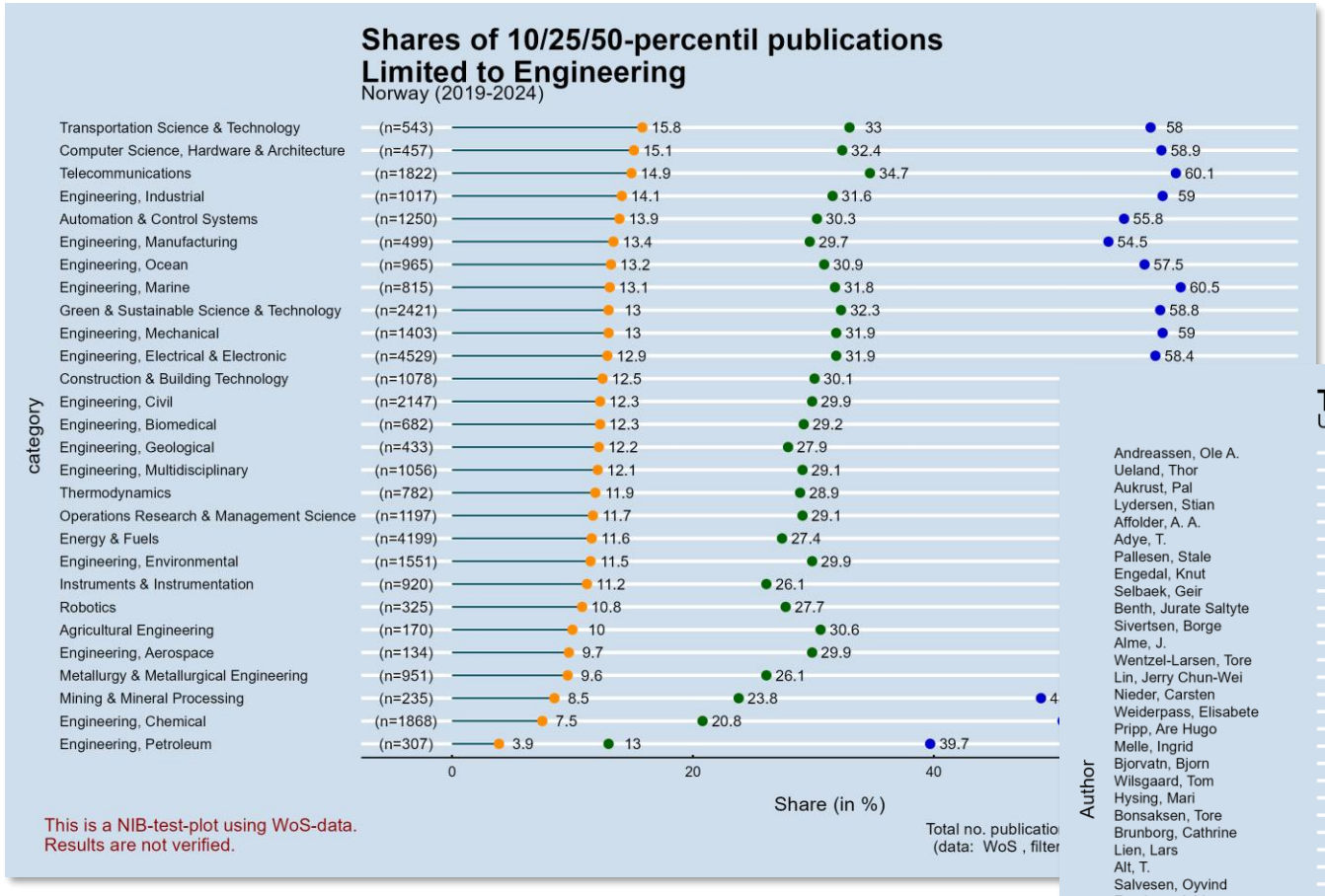

Number of articles per OA-category/year
Norway (2019-2024)
calculated_oa_status
diamond
hybrid
green
closed
gold
hybrid_deal
deposited
20.2 %/ n= 4608
8 %/ n= 1821
26.3 %/ n= 5982
5.4 %/ n= 1234
9.4 %/ n= 2131
24.8 %/ n= 5639
6 %/ n= 1359
16.8 %/ n= 4119
6.8 %/ n= 1669
17.7 %/ n= 4326
15.6 %/ n= 3819
9.8 %/ n= 2402
27.2 %/ n= 6656
6.1 %/ n= 1488
14.7 %/ n= 3945
5.8 %/ n= 1565
14.4 %/ n= 3860
17.3 %/ n= 4634
11.9 %/ n= 3195
30.2 %/ n= 8095
5.7 %/ n= 1543
14.2 %/ n= 3595
4.9 %/ n= 1231
11.9 %/ n= 3029
17.4 %/ n= 4415
13.2 %/ n= 3356
32.6 %/ n= 8266
5.8 %/ n= 1463
12.8 %/ n= 3254
4.9 %/ n= 1244
9.3 %/ n= 2361
19.1 %/ n= 4829
15.1 %/ n= 3818
32.5 %/ n= 8230
6.3 %/ n= 1592
14.9 %/ n= 3748
4.9 %/ n= 1240
6.1 %/ n= 1544
20.4 %/ n= 5119
15.1 %/ n= 3781
32.3 %/ n= 8109
6.2 %/ n= 1565
100
80
60
40
20
0
Percent of articles
2019
2020
2021
2022
2023
2024
Year of publication (reported-year)
This is a NIB-test-plot using Cris-data.
Results are not verified.
Total no. publications used as basis for plot: 173207
(data: Cris , filtering on year: cri_year_reported)

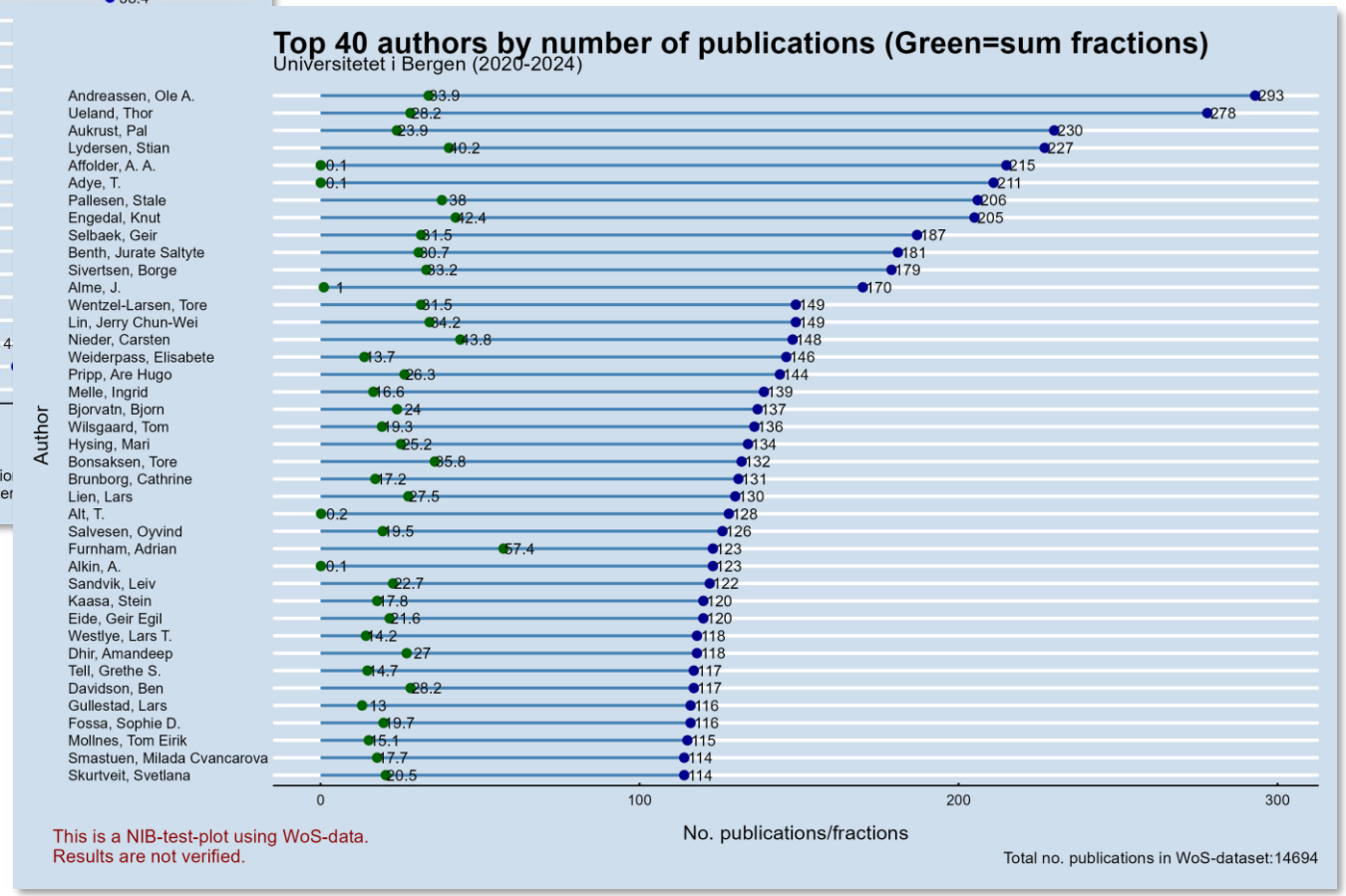
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No. of publications per journal - top 40
Norway (2019-2024)
Journal
Scientific Reports 1469
Plos One 1312
Routledge Ebooks 1188
Lecture Notes In Computer Science 1076
Springer Ebooks 1061
Frontiers In Psychology 780
Nature Communications 662
Tidsskrift For Den Norske Legeforening 659
Ieee Access 591
International Journal Of Environmental Research... 563
The Science Of The Total Environment 559
Energies 551
Bmj Open 541
Frontiers In Marine Science 511
Sustainability 509
Bmc Health Services Research 497
Aquaculture 415
Astronomy And Astrophysics 406
Edward Elgar Publishing Ebooks 382
Ocean Engineering 356
De Gruyter Ebooks 341
Bmc Public Health 330
Journal Of Physics Conference Series 318
Applied Sciences 300
Geophysical Research Letters 299
Universitetsforlaget Ebooks 292
Sensors 287
Ifac-Papersonline 285
Ifip Advances In Information And Communication ... 282
Proceedings Of The National Academy Of Sciences 273
Ecology And Evolution 273
Frontiers In Immunology 262
Physical Review. B./Physical Review. B 255
Journal Of Cleaner Production 255
Remote Sensing 251
Elsevier Ebooks 250
Iop Conference Series Earth And Environmental S... 249
Journal Of High Energy Physics 247
Iop Conference Series Materials Science And Eng... 240
Frontiers In Psychiatry 236
0
500
1000
1500
No. publications
This is a NIB-test-plot using OpenAlex-data.
Results are not verified.
Total no. journals/publications used as basis for plot: 15891 / 150496
(data: OpenAlex , filtering on year: year_of_publication)


Mean number of citations per OA-type/NPI-area
Norway (2019-2024)
OA-type
diamond
gold
hybrid
hybrid_deal
green
deposited
closed
Humaniora
cit=3.5/n= 4127
cit=7.2/n= 1548
cit=12/n= 1370
cit=8.4/n= 1412
cit=14.3/n= 4039
cit=7.9/n= 2666
cit=10.8/n= 31581
Medisin og helsefag
cit=13.6/n= 2495
cit=26.9/n= 26108
cit=60.8/n= 11262
cit=12.2/n= 7292
cit=55.4/n= 12695
cit=33.7/n= 3808
cit=50.1/n= 44040
Realfag og teknologi
cit=28.3/n= 3400
cit=28.1/n= 35653
cit=47.6/n= 13030
cit=17.9/n= 9788
cit=41/n= 24083
cit=24.1/n= 5843
cit=30.6/n= 71428
Samfunnsvitenskap
cit=6.9/n= 5376
cit=15.3/n= 5561
cit=29.2/n= 5017
cit=15.1/n= 5760
cit=31.6/n= 9588
cit=17.2/n= 3871
cit=24.7/n= 52373
number of citations
OA-type
This is a NIB-test-plot using Cris/OpenAlex-data.
Results are not verified.
Total no. publications used as basis for plot: 290104
(data: Cris/OpenAlex , filtering on year: cri_year)

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Shares of 10/25/50-percentil publications
Limited to Engineering
Norway (2019-2024)
category
Transportation Science & Technology (n=543) 15.8 33 58
Computer Science, Hardware & Architecture (n=457) 15.1 32.4 58.9
Telecommunications (n=1822) 14.9 34.7 60.1
Engineering, Industrial (n=1017) 14.1 31.6 59
Automation & Control Systems (n=1250) 13.9 30.3 55.8
Engineering, Manufacturing (n=499) 13.4 29.7 54.5
Engineering, Ocean (n=965) 13.2 30.9 57.5
Engineering, Marine (n=815) 13.1 31.8 60.5
Green & Sustainable Science & Technology (n=2421) 13 32.3 58.8
Engineering, Mechanical (n=1403) 13 31.9 59
Engineering, Electrical & Electronic (n=4529) 12.9 31.9 58.4
Construction & Building Technology (n=1078) 12.5 30.1
Engineering, Civil (n=2147) 12.3 29.9
Engineering, Biomedical (n=682) 12.3 29.2
Engineering, Geological (n=433) 12.2 27.9
Engineering, Multidisciplinary (n=1056) 12.1 29.1
Thermodynamics (n=782) 11.9 28.9
Operations Research & Management Science (n=1197) 11.7 29.1
Energy & Fuels (n=4199) 11.6 27.4
Engineering, Environmental (n=1551) 11.5 29.9
Instruments & Instrumentation (n=920) 11.2 26.1
Robotics (n=325) 10.8 27.7
Agricultural Engineering (n=170) 10 30.6
Engineering, Aerospace (n=134) 9.7 29.9
Metallurgy & Metallurgical Engineering (n=951) 9.6 26.1
Mining & Mineral Processing (n=235) 8.5 23.8
Engineering, Chemical (n=1868) 7.5 20.8
Engineering, Petroleum (n=307) 3.9 13 39.7
0
20
40
Share (in %)
This is a NIB-test-plot using WoS-data.
Results are not verified.


Top 40 authors by number of publications (Green=sum fractions)
Universitetet i Bergen (2020-2024)
Author
Andreassen, Ole A. 33.9 293
Ueland, Thor 28.2 278
Aukrust, Pal 23.9 230
Lydersen, Stian 10.2 227
Affolder, A. A. 0.1 215
Adye, T. 0.1 211
Pallesen, Stale 38 206
Engedal, Knut 12.4 205
Selbaek, Geir 31.5 187
Benth, Jurate Saltyte 30.7 181
Sivertsen, Borge 33.2 179
Alme, J. 1 170
Wentzel-Larsen, Tore 31.5 149
Lin, Jerry Chun-Wei 34.2 149
Nieder, Carsten 13.8 148
Weiderpass, Elisabete 13.7 146
Pripp, Are Hugo 26.3 144
Melle, Ingrid 16.6 139
Bjorvatn, Bjorn 24 137
Wilsgaard, Tom 19.3 136
Hysing, Mari 25.2 134
Bonsaksen, Tore 35.8 132
Brunborg, Cathrine 17.2 131
Lien, Lars 27.5 130
Alt, T. 0.2 128
Salvesen, Oyvind 19.5 126
Furnham, Adrian 57.4 123
Alkin, A. 0.1 123
Sandvik, Leiv 22.7 122
Kaasa, Stein 17.8 120
Eide, Geir Egil 21.6 120
Westlye, Lars T. 14.2 118
Dhir, Amandeep 27 118
Tell, Grethe S. 14.7 117
Davidson, Ben 28.2 117
Gullestad, Lars 13 116
Fossa, Sophie D. 19.7 116
Mollnes, Tom Eirik 15.1 115
Smastuen, Milada Cvancarova 17.7 114
Skurtveit, Svetlana 20.5 114
0
100
200
300
No. publications/fractions
This is a NIB-test-plot using WoS-data.
Results are not verified.
Total no. publications in WoS-dataset:14694

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Future Development

- Include relevant and requested features and analysis, based on user demands
- Improve sync between NIB and NVA
- Finalise export of data-sets in formats adapted to other tools (e.g. VOSviewer, etc.)



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Summary

- Increasing demand for high quality bibliometric data and reports
- The combination of CRIS-data and a bibliometric database can provide a more accurate analysis
- First steps have been taken, but there are still more
  - Improve workflow/robustness/quality/accessibility
  - Add features/functionality/analytics
- Continue moving towards a more open, transparent, interoperable future

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Thank you

Jens H. Aasheim

/Sikt/Open Science
Email: jens.aasheim@sikt.no

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github.com/
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