

# Post-pandemic changes in the adoption of OA models – a case study on Covid-19 and cancer research

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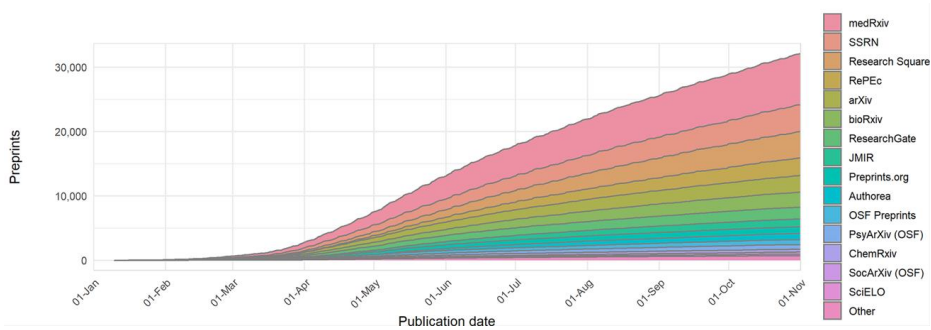


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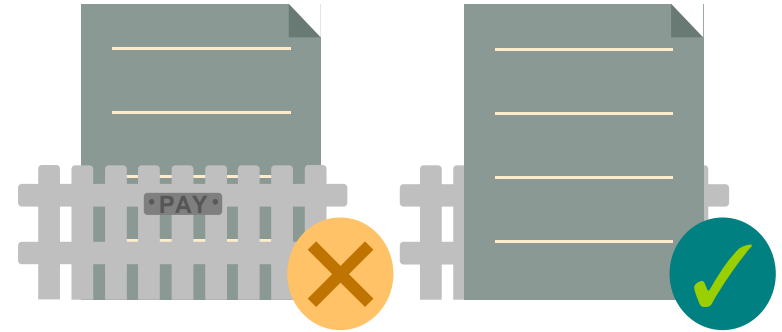
# The Covid-19 pandemic and Open Science

Rapid impact of the pandemic on the adoption of **openness** in science:



Source: Fraser et al. (2021)

Researchers make increasing use of preprints to swiftly publish new findings (**Green Open Access**).



Scholarly publishers provide temporary free access to their research articles (**Bronze Open Access**).

(OA definitions based on Piwowar et al. [2018])

# Bronze Open Access – issues and criticism

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Although dubbed Bronze *Open Access*, respective articles are **not actually OA compliant** (Chan et al., 2002):

- Without identifiable license, Bronze OA articles might be free to read, but **do not allow extended reuse rights beyond reading** (Piwowar et al., 2018)
- Permanence of their free accessibility is not guaranteed and **can be revoked by publishers** (Sanford, 2022)
- Timeframes and criteria for which publishers grant or revoke Bronze OA are **intransparent**
- In light of OA citation advantages (Fraser et al., 2020), Bronze OA can be considered an **interference with the scientific reputation system** outside the control of the authors themselves

# Research questions

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- 1) Do the changes in Open Access adoption observed during the pandemic apply to biomedical research unrelated to Covid-19 as well?
- 2) How stable is the temporary Bronze Open Access granted by publishers during the pandemic?
- 3) Which publishers' contents are particularly frequently affected by the loss of Bronze Open Access?

## Data sources

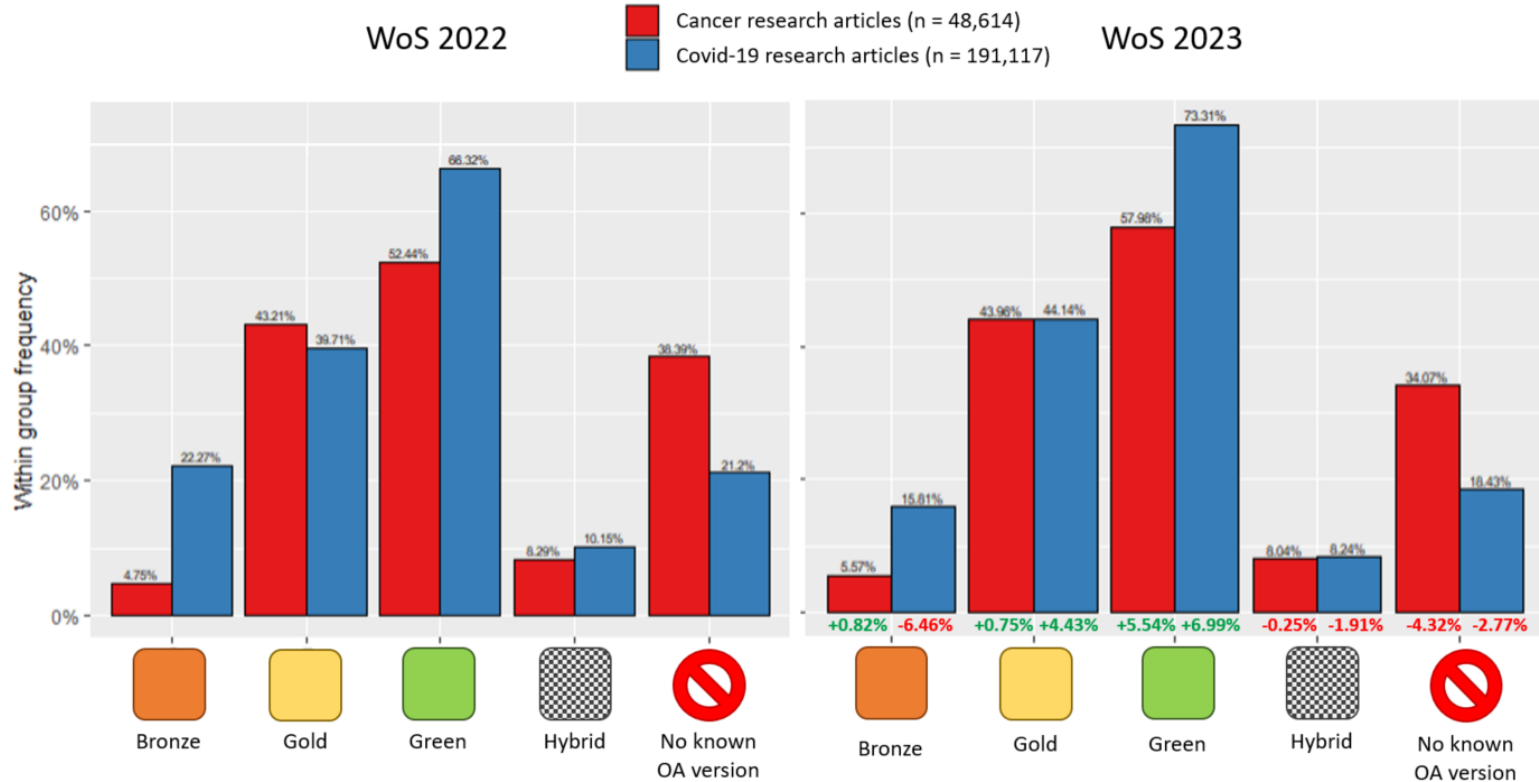
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- **Dimensions** for the identification of Covid-19- or cancer research-related publications, to create our analysis datasets
- **Web of Science** for additional publication metadata and especially publications' Open Access status



<b>Two datasets of articles &amp; reviews from publication years 2020-2021, as well as their Open Access statuses in 2022 and 2023</b>	
<b>191,117</b> <b>Covid-19 research publications</b>	<b>48,614</b> <b>Cancer research publications</b>

# Do changes in OA adoption observed during the pandemic apply to biomedical research unrelated to Covid-19 as well?



# What are the most common developments regarding OA status in both groups?

Covid-19 Research (n = 191,117)

OA Status 2022	OA Status 2023	Frequency	Share among all publications	Share among changed pub.
		10,184	5.33%	25.89%
		5,007	2.62%	12.73%
		3,674	1.92%	9.34%
		3,672	1.92%	9.33%
		3,291	1.72%	8.37%
		2,569	1.34%	6.53%
		2,049	1.07%	5.21%
		984	0.51%	2.50%
		913	0.48%	2.32%
		774	0.40%	1.97%

...

Cancer Research (n = 48,614)

OA Status 2022	OA Status 2023	Frequency	Share among all publications	Share among changed pub.
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		451	0.93%	8.61%
		351	0.72%	6.70%
		335	0.69%	6.40%
		251	0.52%	4.79%
		201	0.41%	3.84%
		198	0.41%	3.78%
		185	0.38%	3.53%
		175	0.36%	3.34%

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Green lines indicate a change resulting in more OA, red lines indicate changes resulting in less OA concerning the respective articles.

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**In general, higher shares of Covid-19 research are affected by changes to OA status than shares of cancer research (20.58% vs. 10.77%).**

respective articles.



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**Among Covid-19 research, loss of Bronze OA is more frequent than among cancer research (7.53% vs. 1.06%).**

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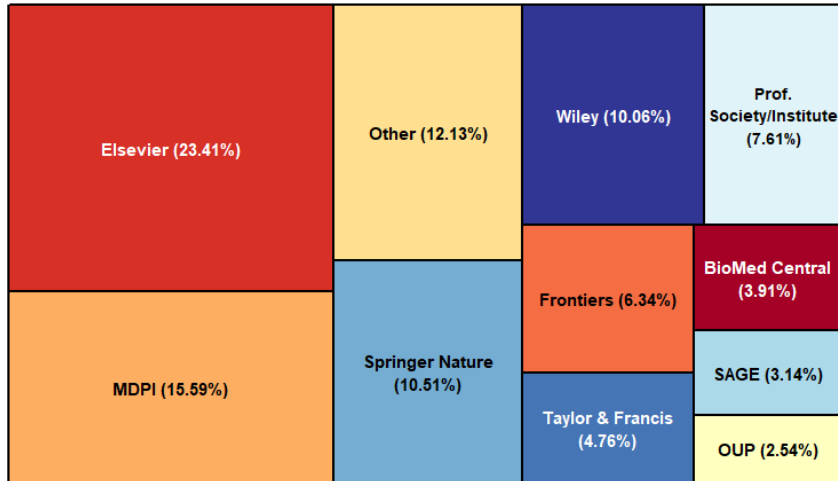
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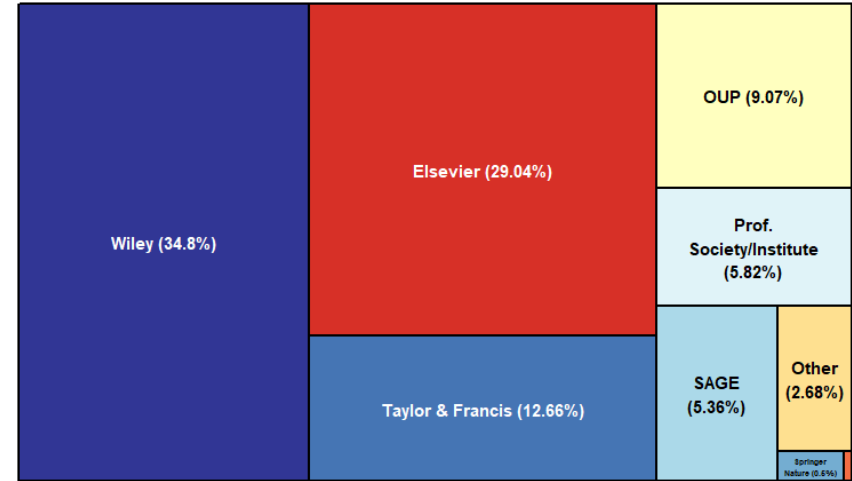
Green lines indicate a change resulting in more OA, red lines indicate changes resulting in less OA concerning the respective articles.

# Which publishers' contents are particularly frequently affected by the loss of Bronze OA?

All Covid-19 Research (n = 191,117)



Covid-19 Research that lost Bronze OA (n = 14,393)



## Conclusions and outlook

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- Overall **shares of OA (in particular Green and Bronze) are substantially larger for Covid-19 than for cancer research** (although Green OA increases at similar rates among both groups)
- Covid-19 research is **less stable regarding changes to OA status** than cancer research (20.58% vs. 10.77% of affected publications)
- Covid-19 research is **more strongly affected by the issue of Bronze OA-publications disappearing behind paywalls** than cancer research (7.53% vs. 1.06% of affected publications)
- The **return behind paywalls** happening in the post-pandemic period **does not affect all publishers' publications equally**
  - Especially *Wiley*, *Taylor & Francis*, and *Oxford University Press* overrepresented among publications that lost Bronze OA

AUGUST 30, 2023

# Update on Access to Coronavirus-related Articles in PubMed Central (PMC) COVID-19 Collection after end of Public Health Emergency

Early in the COVID-19 pandemic, the National Library of Medicine (NLM) [collaborated with publishers and scholarly societies](#) to expand access to coronavirus-related journal articles in PubMed Central (PMC). Through this collaboration, more than 50 publishers made more than 350,000 coronavirus-related articles accessible under various license terms through the [PMC COVID-19 Collection](#) (previously the PMC COVID-19 Public Health Emergency Initiative).

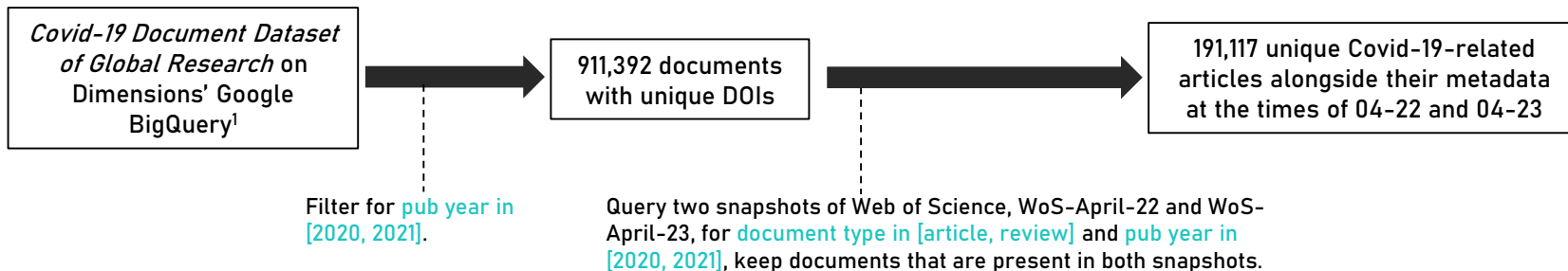
As COVID-19 emergency declarations expired in the United States and around the globe, so too did article-level license

➤ **~50,000 articles removed from the PMC OA subset, ~1,500 of those removed from PMC entirely**

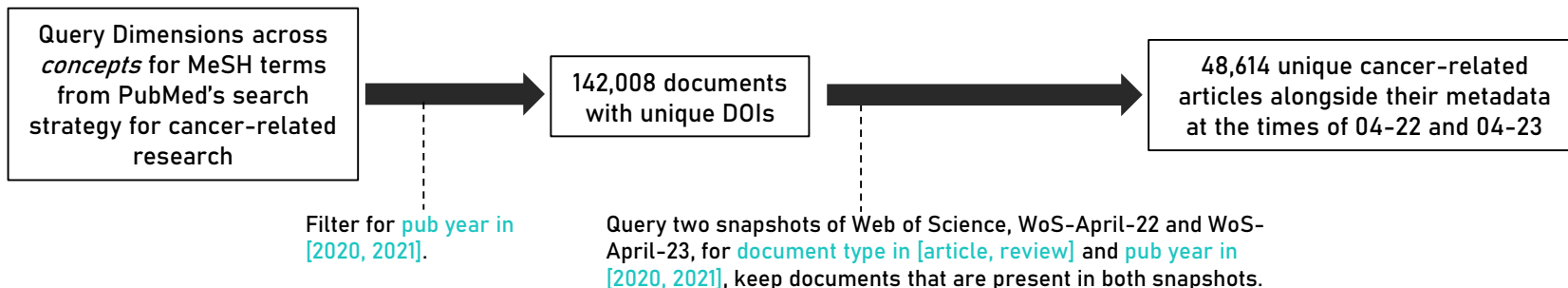
- Chan, L., Cuplinskas, D., Eisen, M., Friend, F., Genova, Y., Guédon, J.-C., Hagemann, M., Harnad, S., Johnson, R., Kupryte, R., La Manna, M., Rév, I., Segbert, M., de Souza, S., Suber, P., & Velterop, J. (2002, Februar 14). Declaration of the Budapest Open Access Initiative (BOAI). <https://www.budapestopenaccessinitiative.org/read/>
- Fraser, N., Brierley, L., Dey, G., Polka, J. K., Pálffy, M., Nanni, F., & Coates, J. A. (2021). The evolving role of preprints in the dissemination of COVID-19 research and their impact on the science communication landscape. *PLOS Biology*, 19(4), e3000959. <https://doi.org/10.1371/journal.pbio.3000959>
- Fraser, N., Momeni, F., Mayr, P., & Peters, I. (2020). The relationship between bioRxiv preprints, citations and altmetrics. *Quantitative Science Studies*, 1(2), 618–638. [https://doi.org/10.1162/qss\\_a\\_00043](https://doi.org/10.1162/qss_a_00043)
- Piwowar, H., Priem, J., Larivière, V., Alperin, J. P., Matthias, L., Norlander, B., Farley, A., West, J., & Haustein, S. (2018). The state of OA: A large-scale analysis of the prevalence and impact of Open Access articles. *PeerJ*, 6, e4375. <https://doi.org/10.7717/peerj.4375>
- Sanford, H. (2022). The state of unpaywall: Analyzing the consistency of open access data. 26th International Conference on Science, Technology and Innovation Indicators (STI 2022), Granada, Spain, 7-9 September 2022.

# Dataset creation

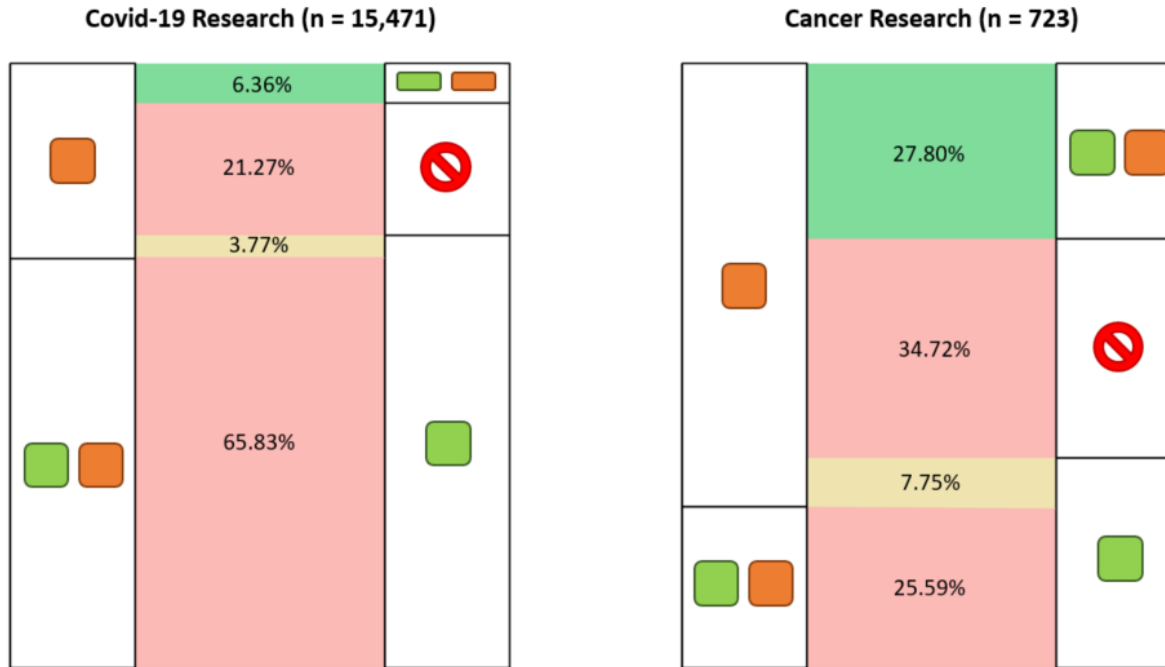
## 1) Dataset of Covid-19-related research publications



## 2) Dataset of cancer-related research publications



# What are common developments regarding OA status of publications that were Bronze OA in 2022?

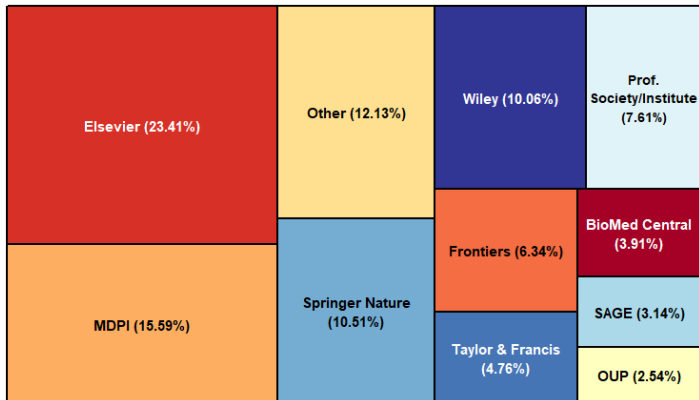


Green bars indicate a change resulting in more OA, red bars indicate changes resulting in less OA concerning the respective articles. Plots only include the types of changes that individually account for at least 1% of all status changes within the respective publication group. Percentages reflect shares of respective changes among all OA status changes of publications that had been classified as Bronze in 2022.

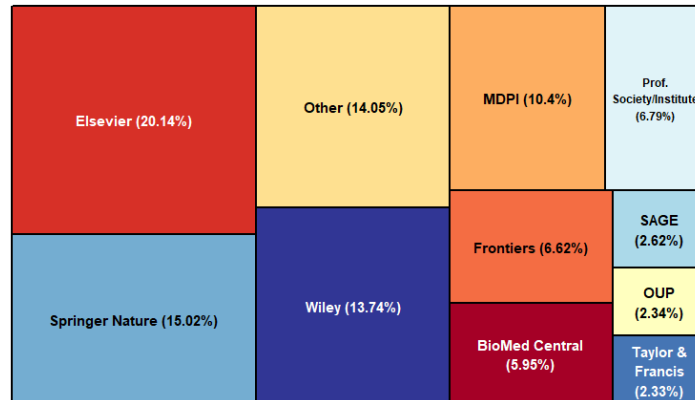


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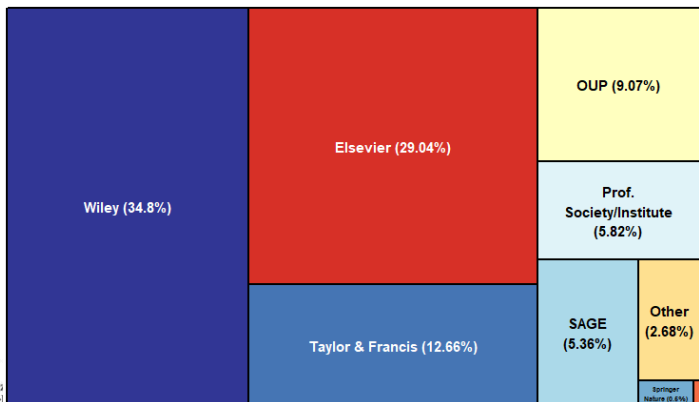
Covid-19 Research (n = 191,117)



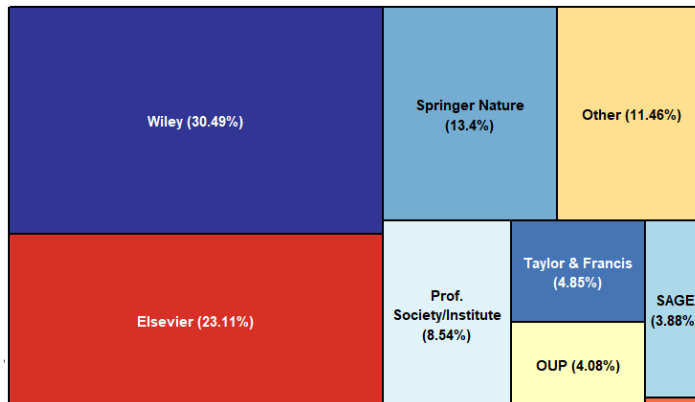
Cancer Research (n = 48,614)



Covid-19 Research (n = 14,393)



Cancer Research (n = 515)



All publications:

Lost Bronze OA: