

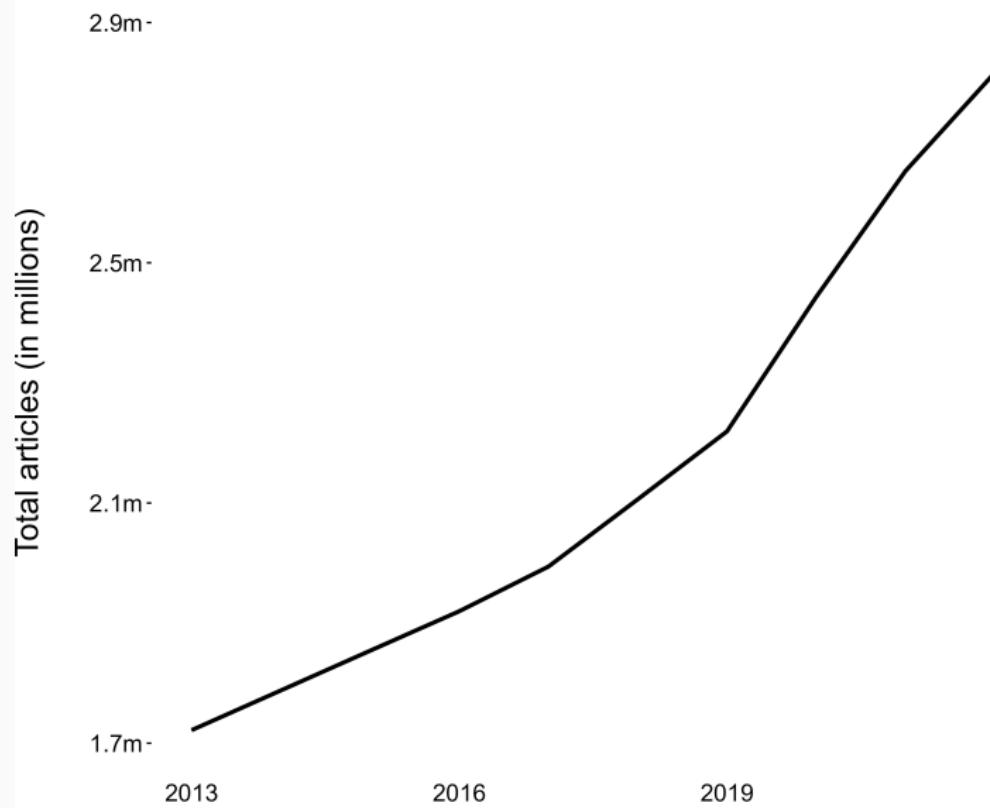
We've got issues

Understanding the current strain on scientific publishing

M. A. Hanson, P. Gómez Barreiro, **P. Crosetto**, D. Brockington

Scientific publishing day at Saclay - March 21st, 2024

Academic publishing is undergoing an **exponential** growth

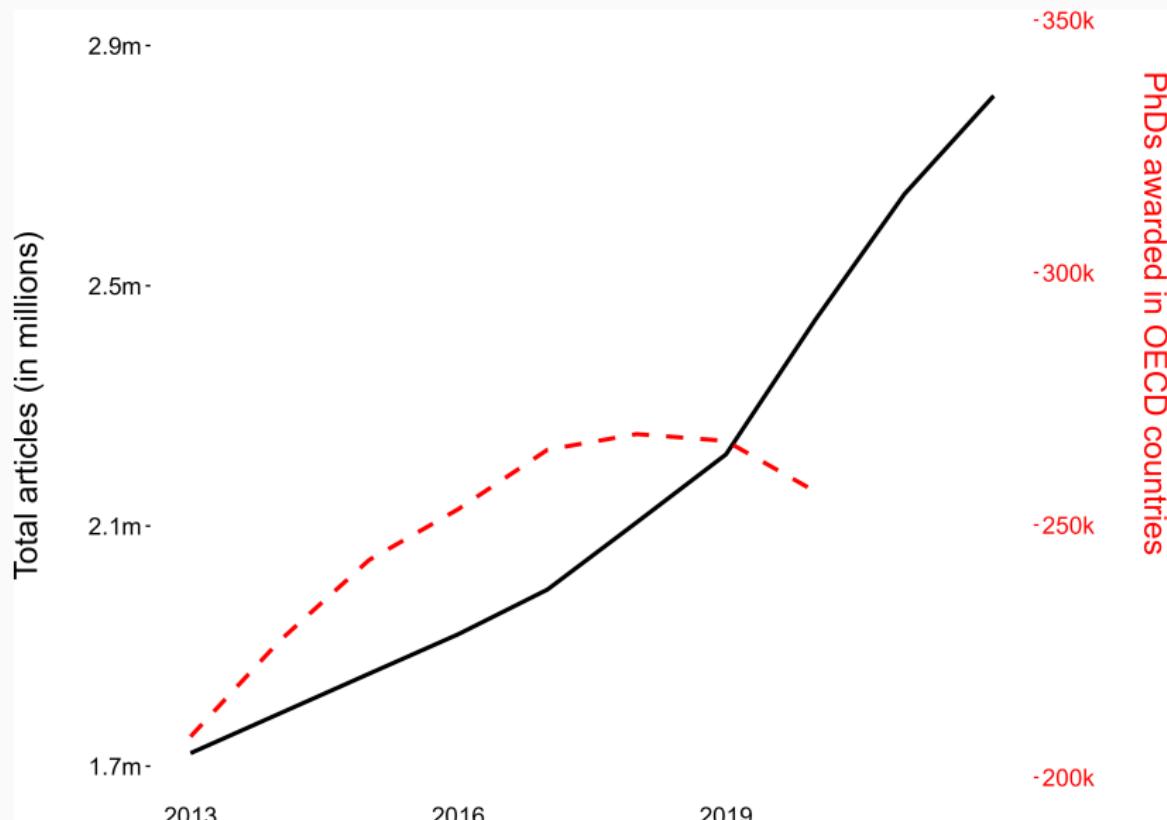


Source: N papers -- Scimago website data; N PhDs - OECD

This is mostly a good thing

- More scientists around
- More funds for research
- Open Access: more results available to anyone
- Web tools: faster dissemination of ideas
- Lower file drawer effects
- More replications, robustness, reviews, meta-analyses

But the number of scientists has hit a limit



Source: N papers -- Scimago website data; N PhDs - OECD

...and we've got issues

Editors resigning over high fees

Chris Chambers  @chrisdc77 · 16h

Following Elsevier's decision to raise the APC for NeuroImage to \$3,450, all editors (inc. EiCs [@fmrib_steven](#) [@tobermann](#) [@BirteUta](#)) from NeuroImage and NeuroImage:Reports have resigned, effective immediately. I am joining this action and have also resigned [imaging-neuroscience.org/Announcement.p...](#)

Elsevier: NeuroImage transition - all editors have resigned over the high publication fee, and are starting a new non-profit journal, Imaging Neuroscience

Summary: NeuroImage has long been the leading journal focusing on imaging neuroscience, with both the highest impact factor and the largest number of papers published annually. NeuroImage's editorial team has tried to convince Elsevier to reduce the publication fee from \$3,450, as we believe large profit is unethical and unsustainable. Elsevier is unwilling to reduce the fee; therefore, with great regret, all editors (more than 40  editors) of NeuroImage and NeuroImage:Reports have resigned. We are starting a new non-profit Open Access journal, *Imaging Neuroscience*, intended to replace NeuroImage as our field's leading journal.

19 671 1 617 360,6 k

...and we've got issues

Gemma E Derrick @GemmaDerrick · 17 mars ...
Today I resigned my position as Editor-in-Chief of [@Public_MDPI](#). I do not consider our journal, Publications, to be predatory in any way but my decision is precipitated by a continual tension between my outward-facing role as Editor in Chief of Publications 1/3

11 106 247 114,2 k

Gemma E Derrick @GemmaDerrick · 17 mars ...
and increasing discourse within my own professional community around the predatory publishing practices of MDPI journals. The behaviour of our Editorial board has been exemplary, both in assuring the integrity and honesty of our peer review practices in upholding quality 2/3

1 3 52 12,1 k

Gemma E Derrick @GemmaDerrick · 17 mars ...
standards. Despite this, backstage practice of key values at MDPI are increasingly at odds with the values we prioritise in publication practices. I consider my time with the journal to be complete and am grateful for the experience but now is time is now to move on. 3/3

7 7 76 12,5 k

Editors resigning over **bad publisher practices**

...and we've got issues

Paper mills
mass producing
fake articles

NEWS FEATURE | 23 March 2021

The fight against fake-paper factories that churn out sham science

Some publishers say they are battling industrialized cheating. A *Nature* analysis examines the 'paper mill' problem – and how editors are trying to cope.

...and we've got issues



Nick Wise
@nickwizzo

...

The guest editor of an open special issue in [@Symmetry_MDPI](#) on e-learning openly **selling authorship of papers on e-learning**
mdpi.com/journal/symmet...

Traduire le Tweet

The can join the team of authors, if you wish.

The paper will be indexed in both Scopus (Q4) and Web of Science.
1st position costs €390, 2nd position €290, positions 3 to 6 €200.
Payment is after acceptance.
Would you like to be a part of the team? Register at

* ICT

Papers will be published in a book series indexed in Scopus (Q4) and Web of Science.
1st position costs €390, 2nd position €290, positions 3 to 6 €200.
Payment is after acceptance.
If you wish to join, please register at
<https://rtsarev.ru/coauthor/>

**Call for Scopus
coauthors
E-learning and
Economics
200 euro**

If you wish to be in the list of co-authors, you are welcome to join.
1st position costs €390, 2nd position €290, positions 3 to 6 €200.
Payment is after acceptance.
Are you with us? Please, register at
<https://rtsarev.ru/coauthor/>

#scopus #webofscience #wos
#science #coauthor #coauthorship

8:29 PM · 4 mars 2023 · 35,6 k vues

Authorship sales
rings

...and we've got issues

Stunningly **prolific**
authors

EL PAÍS

ce & Tech

SILICON VALLEY - YOUTUBE - I

SCIENTIFIC ETHICS >

One of the world's most cited scientists, Rafael Luque, suspended without pay for 13 years

The prolific chemist, who has published a study every 37 hours this year, has been sanctioned by the University of Córdoba over his research work for other institutions in Russia and Saudi Arabia

...and we've got issues

Pay to get faster
through peer-review

Dr Elizabeth Gadd @lizziegadd@mastodon.online
@LizzieGadd

"Accelerated publication" charges still make my eyes pop out of my head. taylorandfrancis.com/partnership/co...

Traduire le Tweet

...

Publish in 3 – 5 weeks from submission*

- Submission to acceptance: 2-3 weeks
 - 1-2 weeks for peer review†
 - 1 week for author revision
- Acceptance to online publication: 1-2 weeks, with proofs within 5 working days and 48 hours for author review

Publish in 7 – 9 weeks from submission*

- Submission to acceptance: 5-6 weeks
 - 3-4 weeks for peer review
 - 2 weeks for author revision
- Acceptance to online publication: 2-3 weeks, with proofs within 10 working days

Cost per article: \$7000 / €6200 / £5500

ALT

Cost per article: \$3900 / €3400 / £3000

4:30 PM · 4 avr. 2023 · 36,9 k vues

...and we've got issues

The screenshot shows the homepage of PHR (Public Health Reviews). At the top, there's a navigation bar with a blue logo, the text "PHR Public Health Reviews", "CiteScore 9.6", "How to publish", and a "Submit" button. Below the header, there are download and share icons. A section titled "EDITORIAL" features an image of a person, the title "«I Do Not Have Time»—Is This the End of Peer Review in Public Health Sciences?", and the authors' names: Nino Künzl^{1,2,3*}, Anke Berger^{1,3}, Katarzyna Czabanowska⁴, Raquel Lucas⁵, Andrea Madarasova Geckova⁶, Sarah Mantwill⁷ and Olaf von dem Knesebeck⁸. The URL <https://doi.org/10.3389/phrs.2022.1605407> is also visible.

Editors **unable**
to find referees

...and we've got issues

SCIENCEINSIDER | SCIENTIFIC COMMUNITY

Fast-growing open-access journals stripped of coveted impact factors

Web of Science delists some 50 journals, including one of the world's largest

28 MAR 2023 • 5:55 PM • BY JEFFREY BRAINARD



Mega-journals being
delisted from WoS

How does publishing work?

A caveat: no need for "predatory" labels

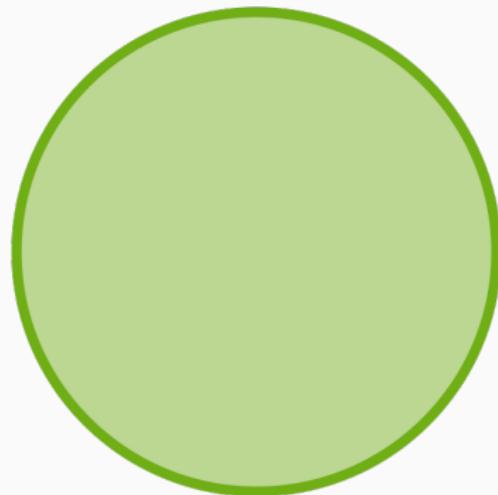
We don't think binary labels improve our understanding

There'll be no "predatory" judgments here

- outright fraudsters **do** exist (publishers *and* **authors**)
- agents just follow their **interest**
- **market rules** generate outcomes
- outcomes can be good or bad
 - for the different actors
 - for the **public good** that is science

Behold the scientific publishing system

Publishers



Researchers

Funders

What does the system **do?**

What are the **functions** the system fulfills...

for **Scientists**

- dissemination
- reputation
- sorting

for **Publishers**

- profits
- dissemination
- sustainability

for **Funders**

- selection
- prioritization
- public access

What do the different actors **want**?

What do different actors want from the system?

Scientists

- high reputation
- low effort
- stability

Publishers

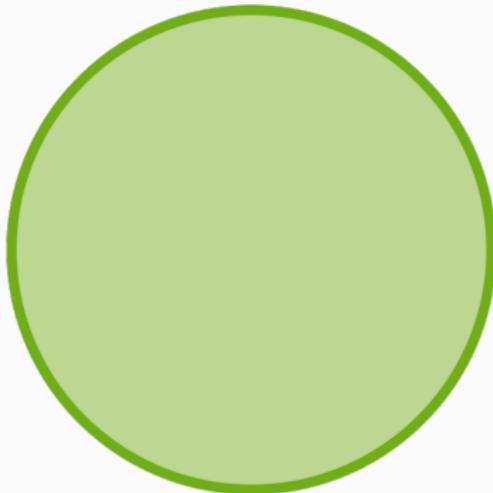
- high reputation
- high quantity
- high revenue

Funders

- stability
- true signal
- low spending

The system, growing under strain

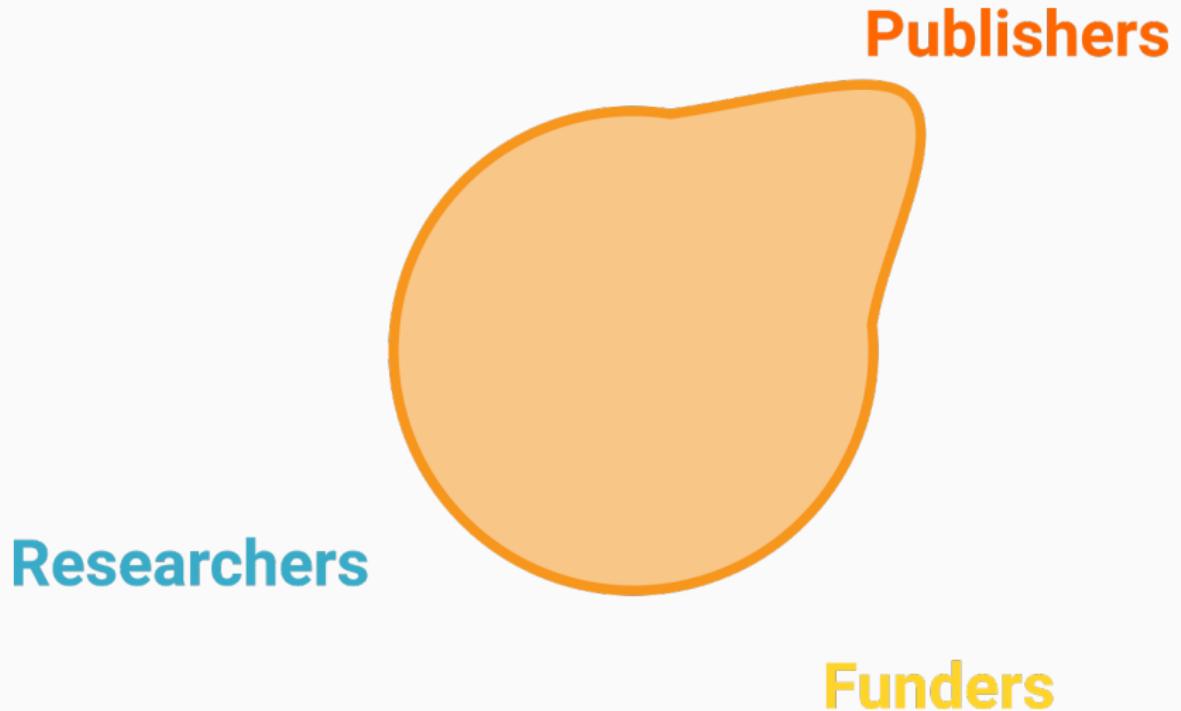
Publishers



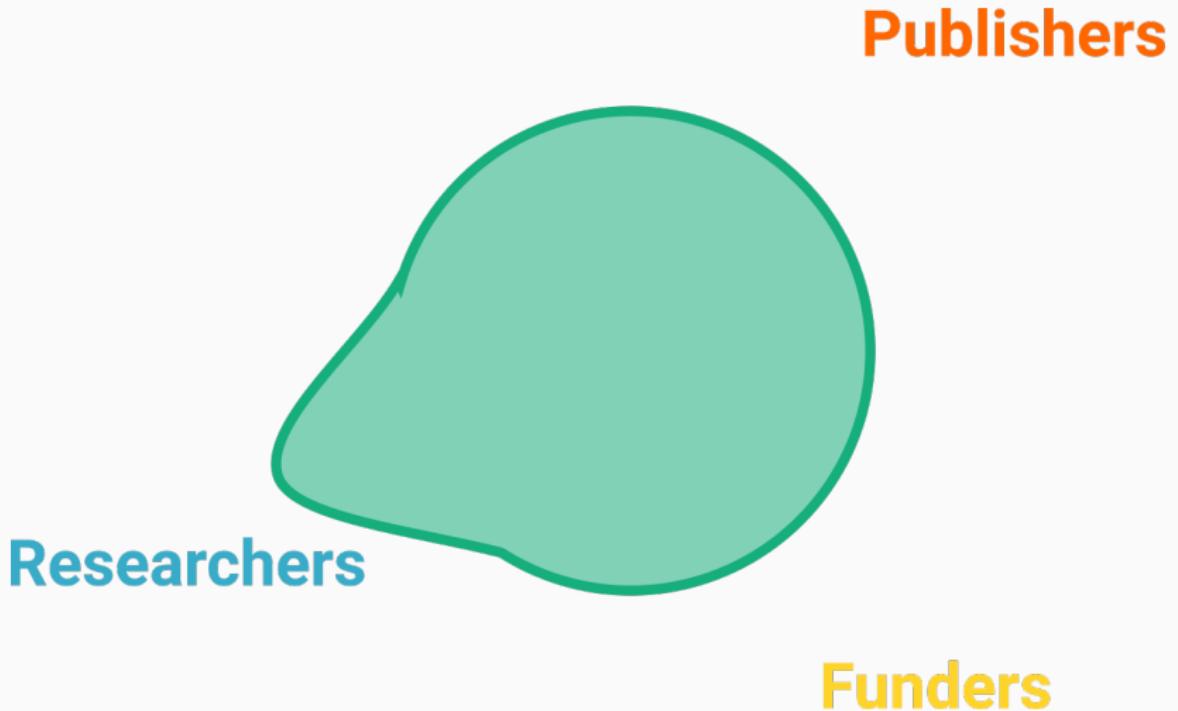
Researchers

Funders

The system, growing under strain

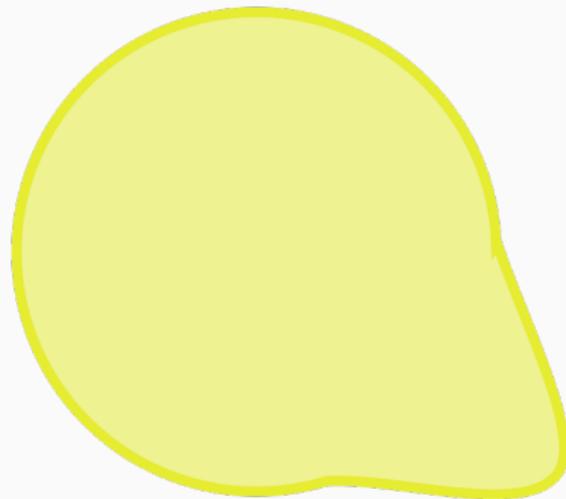


The system, growing under strain



The system, growing under strain

Publishers



Funders

What is going on?

More is different

Growth is not **more of the same**:
growth means **change**.

- new practices
- new business strategies
- new incentives
- new constraints
- new meanings

4 August 1972, Volume 177, Number 4047

SCIENCE

More Is Different

Broken symmetry and the nature of
the hierarchical structure of science.

P. W. Anderson

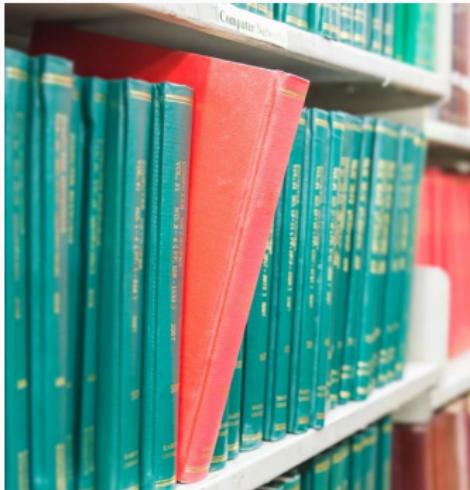
less relevance they seem to have to
very real problems of the rest of
science, much less to those of sc

The constructionist hypothesis fails
down when confronted with the
difficulties of scale and complexity.
Behavior of large and complex sys-
tems of elementary particles it
can not be extrapolated from
of a simple extrapolation of the
entities of a few particles. Instead
each level of complexity entirely
properties appear, and the under-
ing of the new behaviors requir

A semantic shift

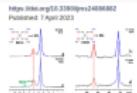
"Journal"

used to mean

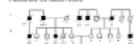


A physical object with limited available space

now it also means



Case Report
Germline Variants in MLH1 and ATM Genes in a Young Patient with MSI-H in a Precancerous Colonic Lesion
By Antonio Nóbrega et al.
Int J Mol Sci **2023**, *24*(5), 5870;
<https://doi.org/10.3390/ijms24056987>



Article
Molecular Analysis of SARS-CoV-2 Spike Protein-Induced Endothelial Cell Permeability and vWF Secretion
by Yuxin Guo and Venkateswara Komarapalpu
J. Mol. Sci. **2023**, *24*(4), 5664;
<https://doi.org/10.3390/jms24045664>



CRISPR-sRNA-Encapsulated PLGA Nanoparticles Suppress Tumor Growth in MCF-7 Human Breast Cancer Cells

by Shuping Xiong,¹ Hyun Lee,¹ Soontae Kim,¹ Hyewon Park,¹ Hyejin Kang,¹ Se-Jeong Choi,¹ Dong-Hyung Kim,¹ Mi-Keon Son,¹ Eun-Joo Lee,¹ Byung-Won Kim,¹ Dae-Sub Kim,¹ Yea-Sub Bae² and Cai-Liang Kwon¹

¹ Korea Institute of Science and Technology (KIST), Seoul, South Korea; ² Korea Research Institute of Bioscience and Biotechnology (KRIBB), Daejeon, South Korea

Abstract: Mitochondrial-coded prokaryotic phosphatase (D4PK) system evolution in cancer cells explained as a target for anti-cancer therapeutic development. The downregulation of D4PK expression in cancer cells induced by CRISPR-sRNA-encapsulated PLGA nanoparticles suppressed tumor growth in vitro. In this study, we investigated 3D spheroid model.

(This article belongs to the Special Issue *Nanoparticles in Biomedicine and Nanoscience*)

Detailed Protein-Bound Uremic Toxin Interaction Mechanisms with Human Serum Albumin in the Pursuit of Designing Competitive Binders

by [Vida Dehghani-Niknam](#) **and** [Larry D. Unsworth](#)
J. Mater. Sci. **2023**, *52*, 1452–1462. <https://doi.org/10.1007/s00146-023-1452> (Register DOI) – 15 Apr 2023

Abstract Chronic kidney disease is the gradual progression of kidney dysfunction and involves numerous co-morbidities, one of the leading causes of mortality. One of the primary complications of kidney dysfunction is the accumulation of toxins in the bloodstream, particularly protein-bound uremic toxins (PHTs), which [1] need more. This article belongs to the Special Issue Macroscopic and Microscopic Thermodynamics: From Fundamentals to Practical Applications 2.0

A limitless electronic repository with a name

A semantic shift

"Publication"

used to mean

- a handful of journals
- long delays
- low acceptance rates
- free for authors
- do it and thrive

⇒ *good science rejected?*

now it also means

- thousands of journals
- short delays
- high acceptance rates
- authors pay
- don't do it and die

⇒ *bad science accepted?*

A semantic shift

"Special issue"

used to mean

- A once-in-a-while issue
- About a special topic
- Strict editor control
- regular > special

now it also means

- A many-a-day issue
- About any topic
- Relaxed editor control
- special > regular

A semantic shift

"Publisher business model"

used to mean

- Many small journals
- Readers pay
- \$ through subscription
- "*Polish your gems*"

Incentive to ↑ quality,
quantity? ...

now it also means

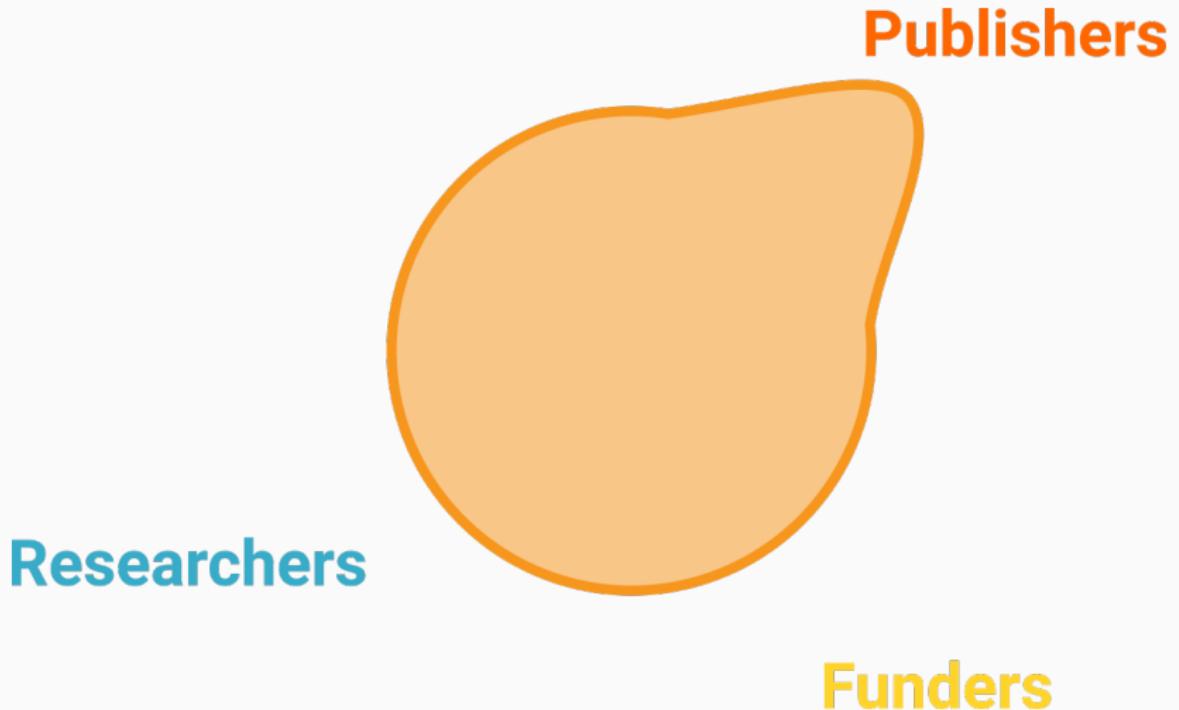
- Few mega-journals
- Authors pay
- \$ through publication
- "*Get authors on board*"

Incentive to ↑ quantity,
quality? ...

Our analysis:

Understanding the strain put on the system
by evolving **publishers** practices

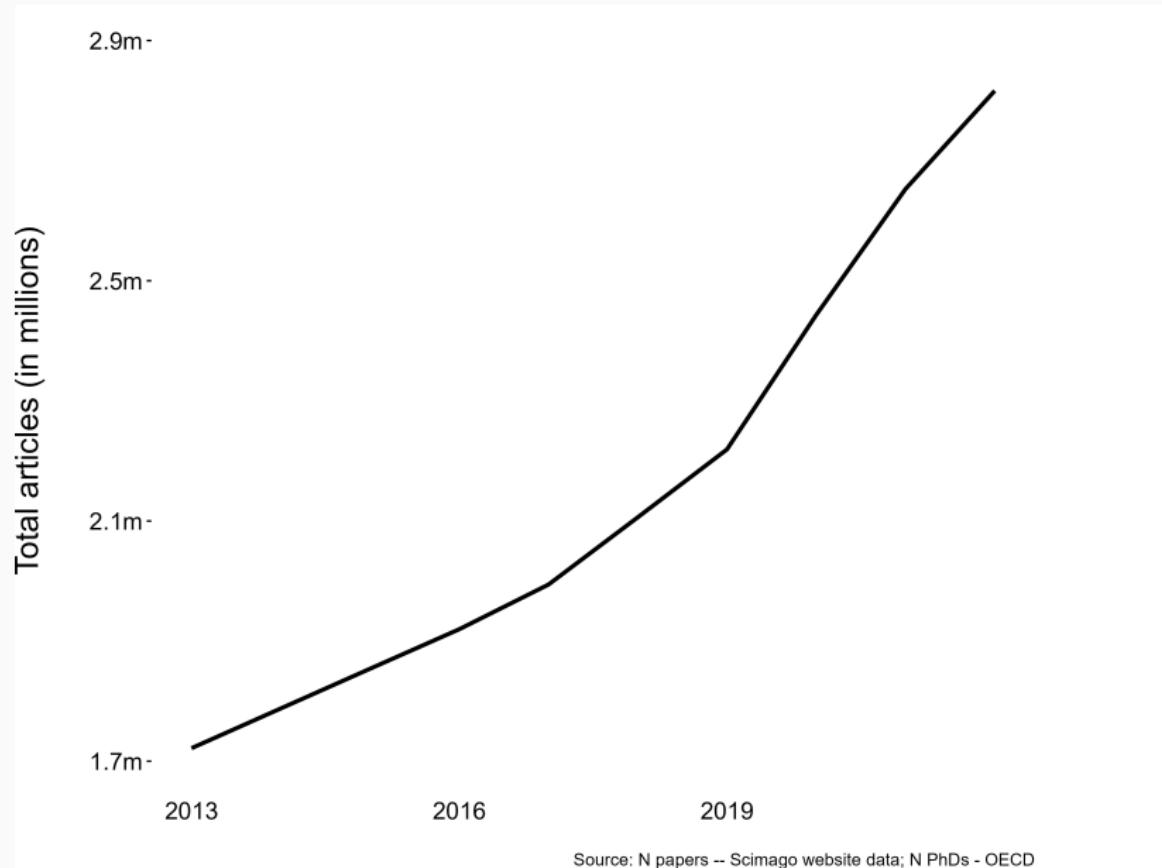
So, this



Wanna know more? get our preprint



Which trends and threats hide behind this exceptional growth?



Analysis plan

We single out **five** indicators of strain on the system:

- Number and **size** of journals
- Number and role of **Special Issues**
- **Turnaround** times
- **Rejection** rates
- Impact Factor **inflation**

None of them is critical *per se*

together they indicate **strain imposed by publishers**

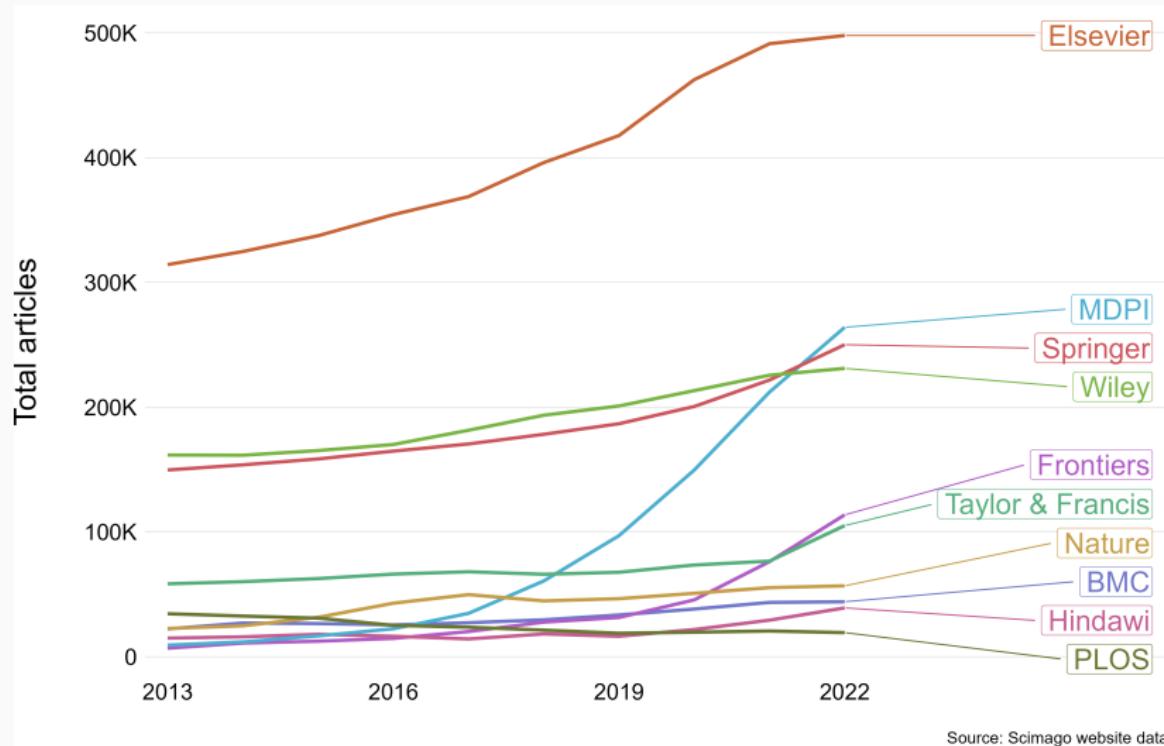
Data sources

We exploit data coming from various sources:

- A full scrape of the **Scimago Journal Rankings** database
used for: comparisons across publishers, IF, SJR rank...
- OECD and US NSF data
used for: number of PhDs awarded per year
- **Web scrape** of MDPI, Frontiers, Hindawi, PLoS
used for: turnaround times, special issues
- First hand data from **publisher reports** and websites
used for: rejection rates

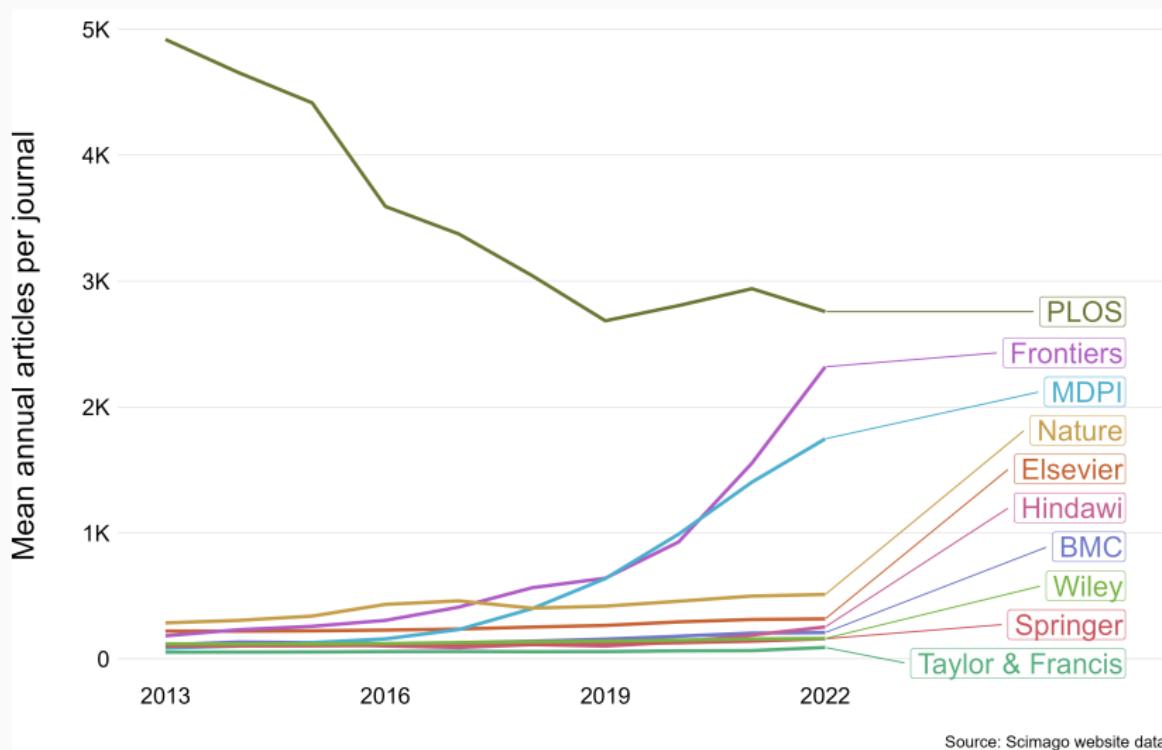
Number of articles & journal size

The rise of new publishers



Source: Scimago website data

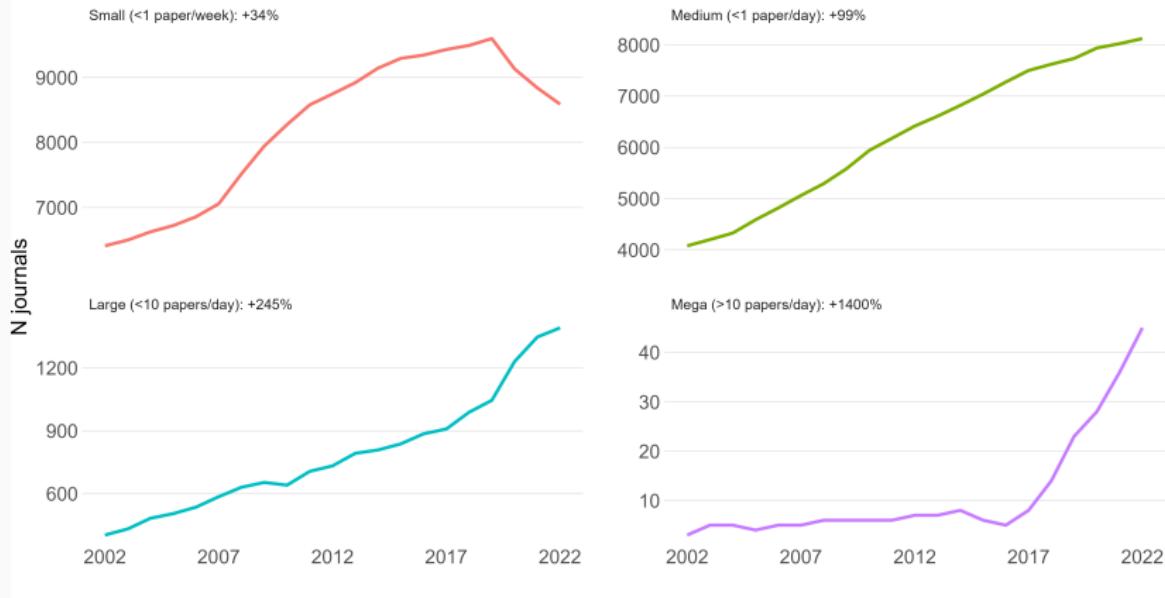
Bigger journals



Source: Scimago website data

The rise of mega-journals

Number of journals by class of size, 2002-22



Source: Scimago website data

What's going on?

Trends:

- Growth means concentration, especially for new players

Why?

- Scientists tend to flock to journals with high reputation
- Hard to set up, but if you have one, exploit it

Threats

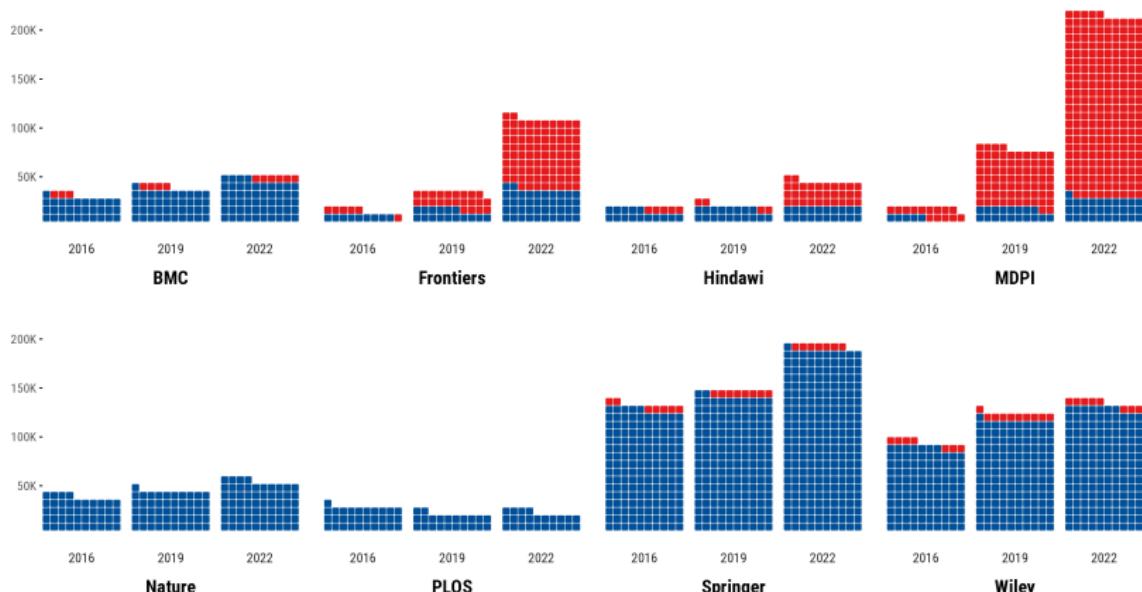
- How much can a journal inflate before it loses reputation?
- Risk of instability of quality signals

The role of special issues

Not so **special** after all

Number of papers published in **regular** vs **special** issues, 2016-22

One square = 800 articles



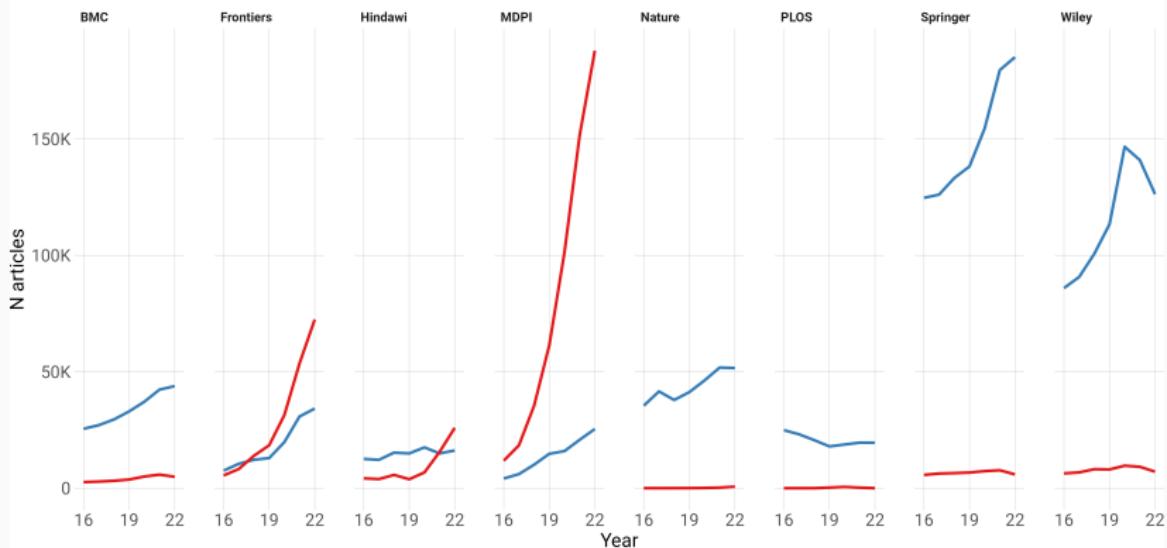
Source: data scraped from the publisher's website

Note: Special Issues are called Collections at PLOS and Topics at Frontiers. For MDPI Collections, Sections and Topics not shown.

Not so special after all

Number of papers published in regular vs special issues, 2016-22

Wiley decrease in 2022 likely due to limited coverage of Wiley papers in 2022

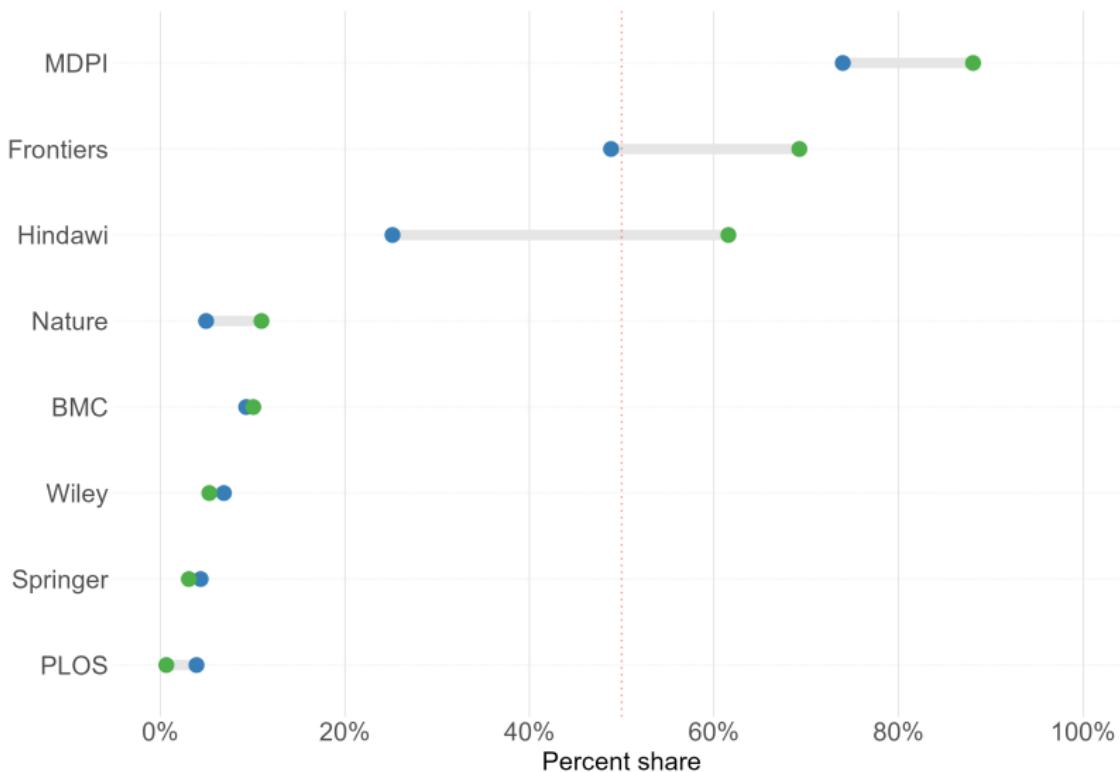


Source: data scraped from the publisher's website

Notes: Special issues are called Collections at PLOS and Topics at Frontiers. For MDPI Collections, Sections and Topics not shown.

Journals at most big OA publishers are mostly special issues

Evolution of the share of papers appearing in Special Issues, 2016 to 2022



Source: data scraped from the publishers' website
Special issues are called Collections at PLOS and Topics at Frontiers. For MDPI Collections and Topics not shown.

What's going on?

Trends:

- SI as a fantastic **engine of growth** for big OA publishers

Why?

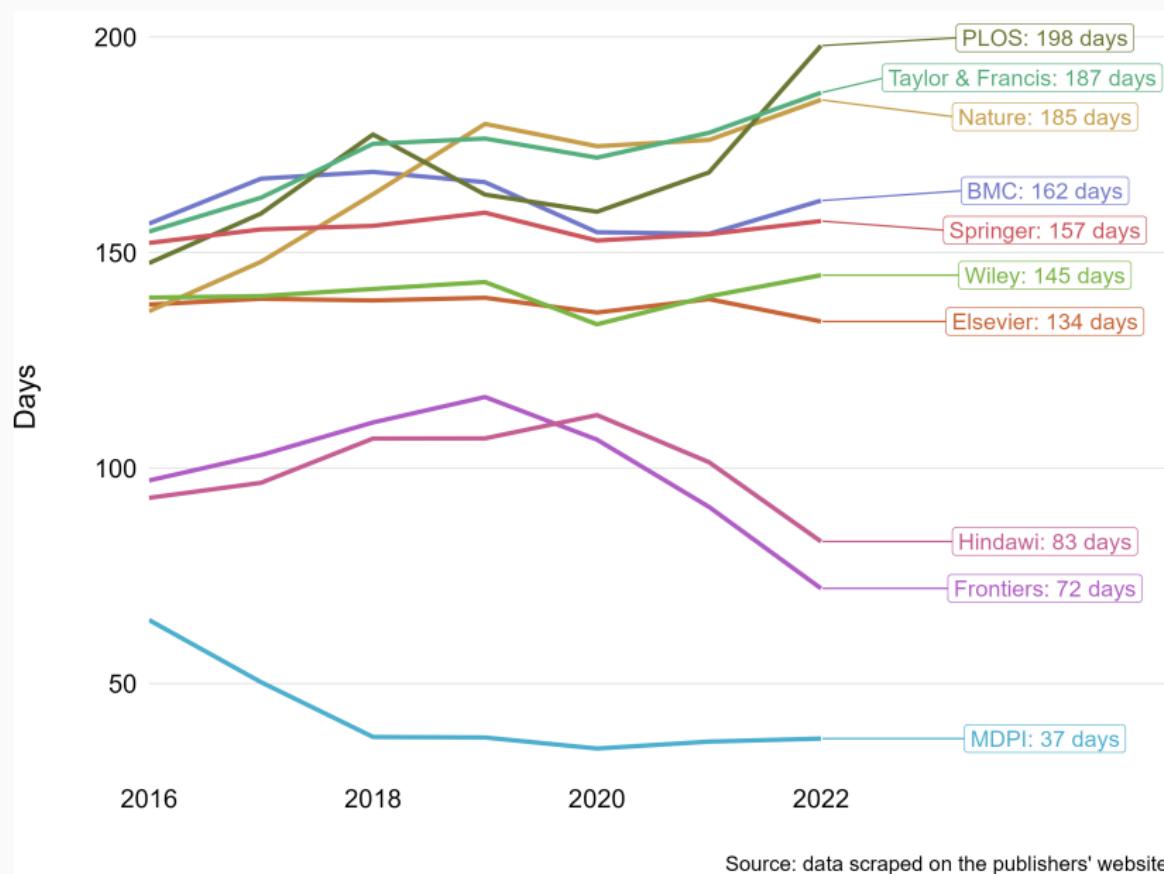
- Mobilization of an **army of guest editors** & their networks

Threats

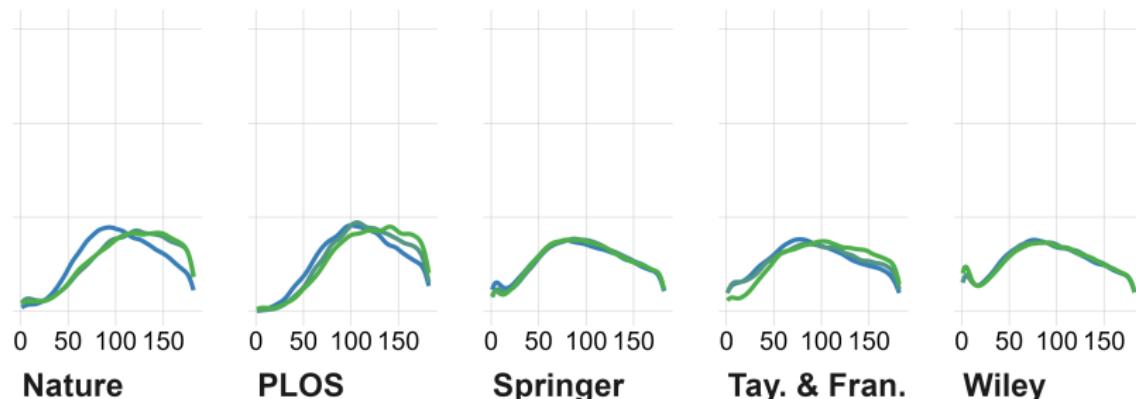
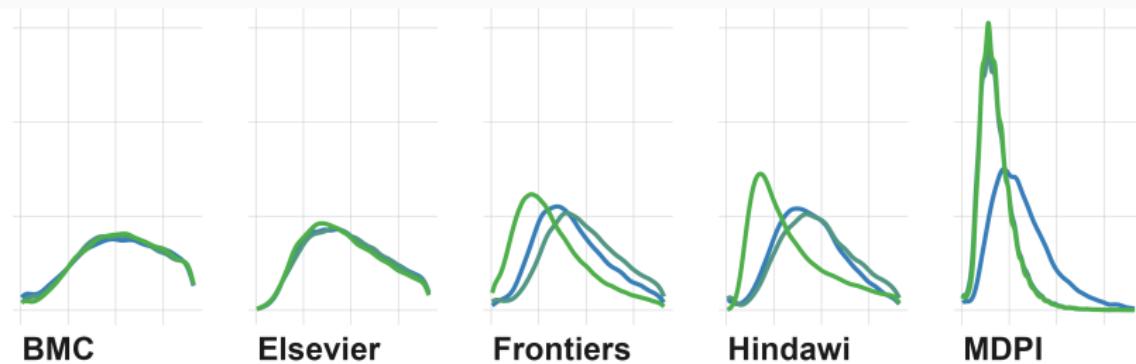
- Less control increases **chance of exploitation** by authors
- Potential **crisis** of the SI model (Hindawi, IJERPH delisting)

Turnaround times

Turnaround times have decreased for all for-profit OA publishers



Turnaround times are getting more homogeneous

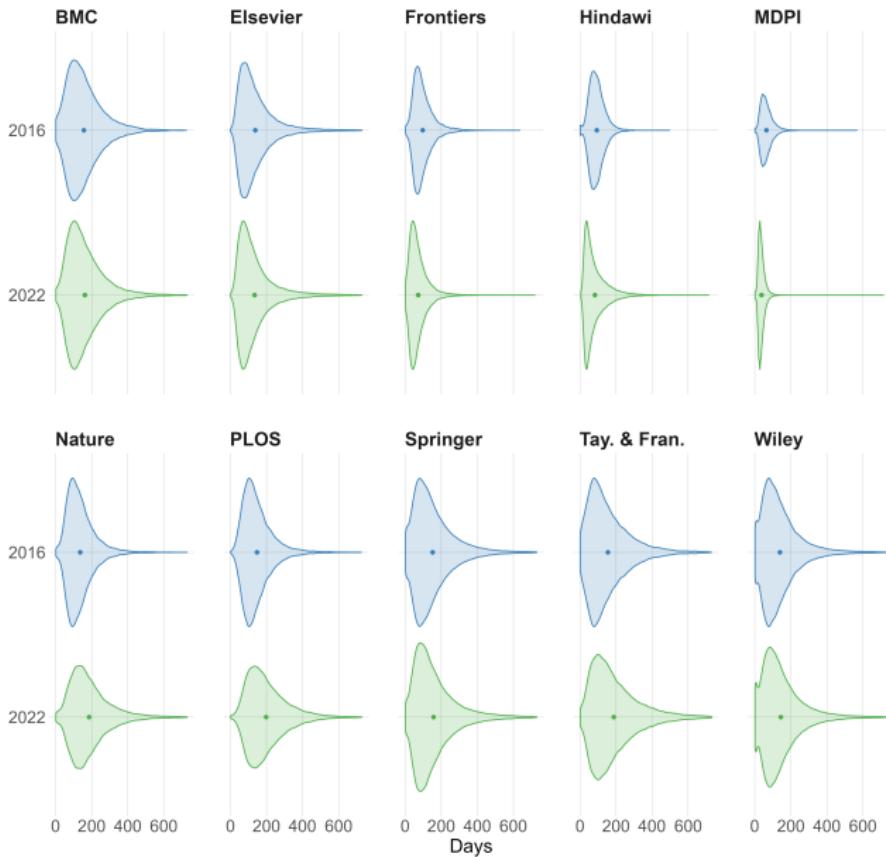


Days

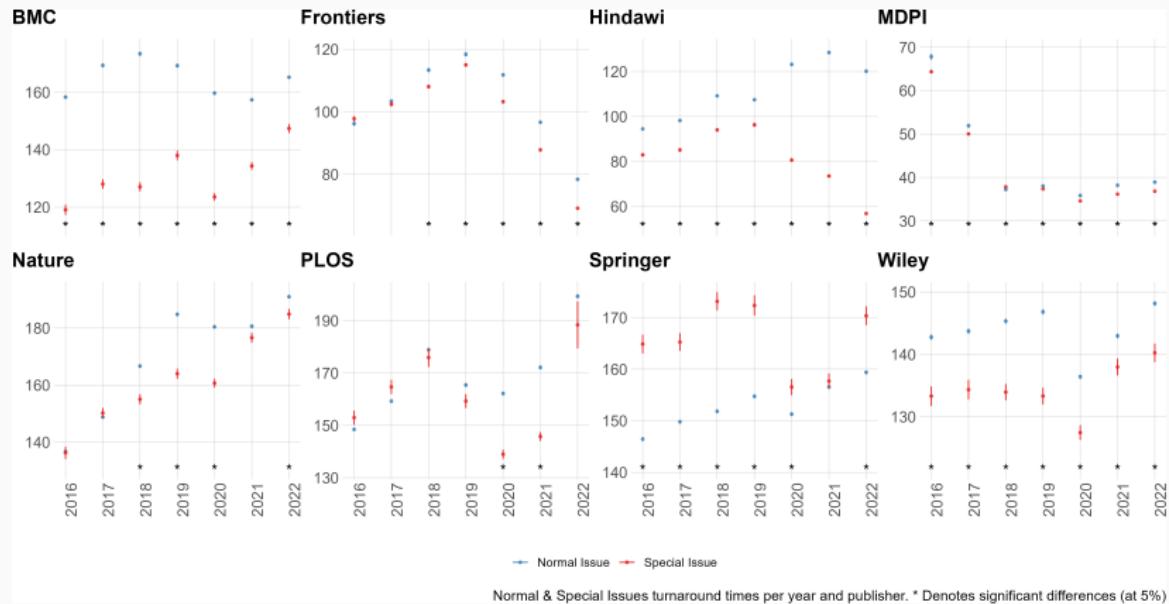
■ 2016 ■ 2019 ■ 2022

Turnaround times are getting more homogeneous

Article heterogeneity in turnaround times by publisher, 2016-22



Lower TATs for Special Issues



What's going on?

Trends:

- TAT can be due to inefficiencies – good that they go down

Why?

- Convergence of authors & OA publishers incentives

Threats

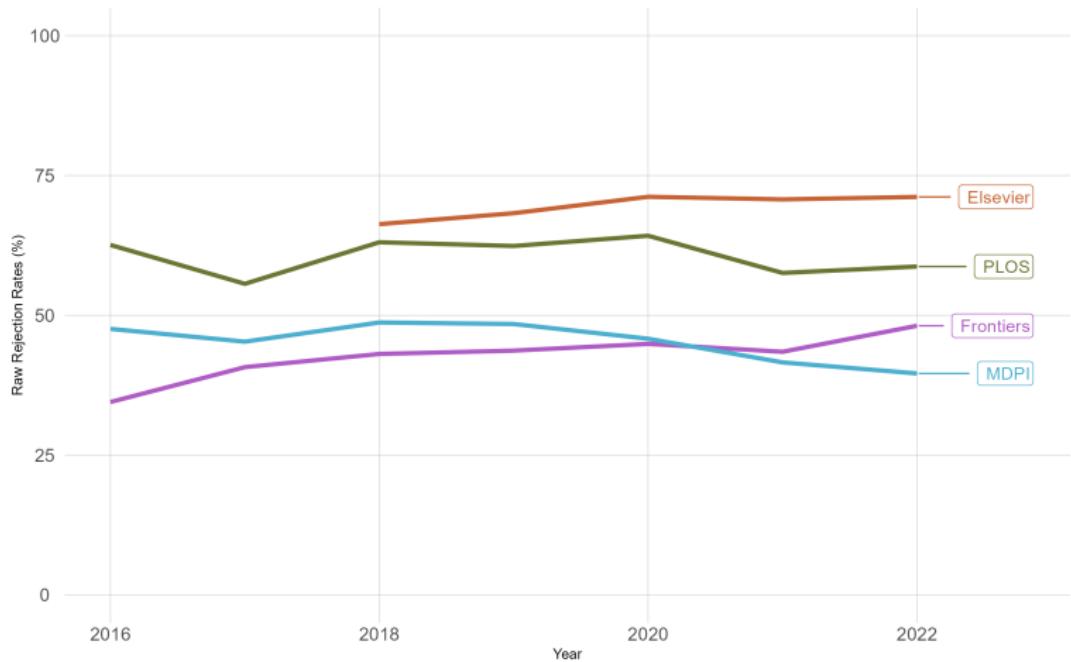
- Lower TAT must still allow for proper peer review
- Some TAT so low, it casts doubts on quality

Rejection rates

Rejection rates: absolute values

Evolution of raw rejection rates

Raw rejection rates calculated by publishers using own protocols (not standardised)

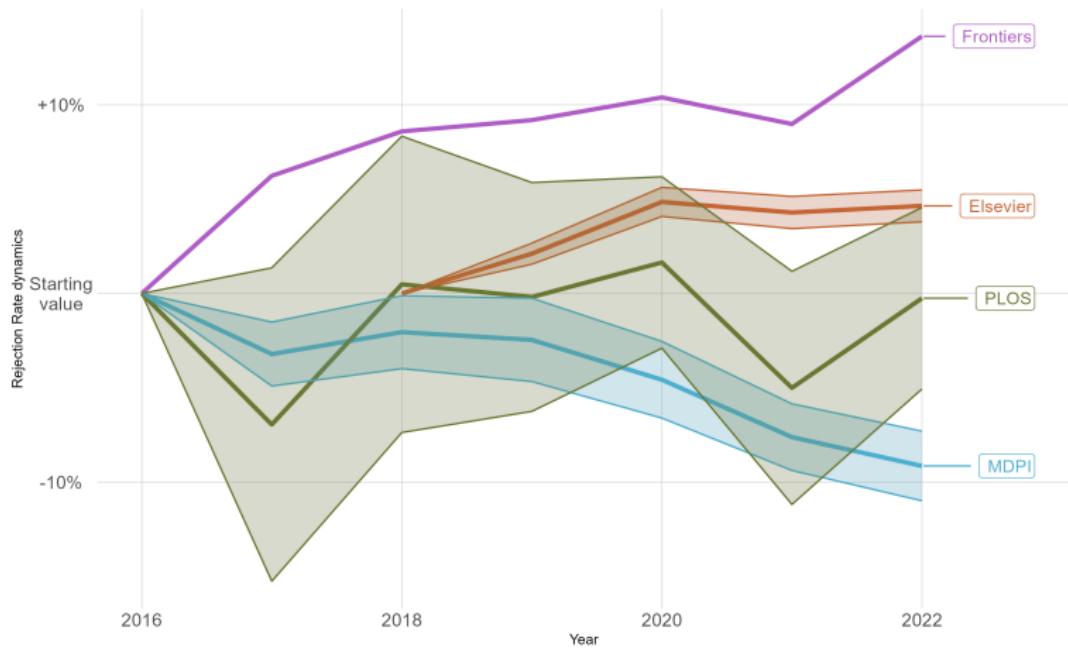


Source: web scraped data

Rejection rates: normalized

Evolution of normalised rejection rates

With respect to the first year in our dataset

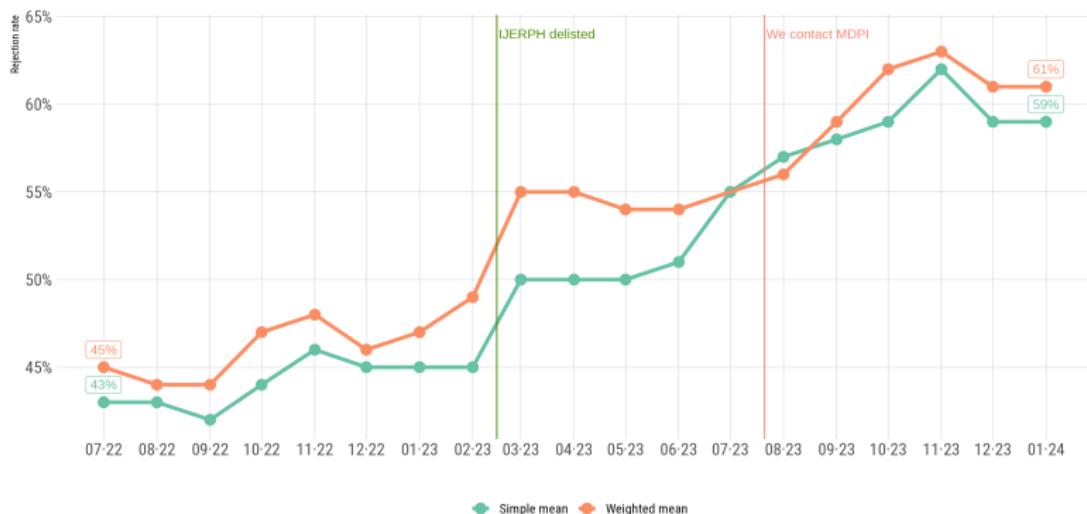


Shaded areas represent 95% CI. Frontiers has no CI as Frontiers data are aggregate over all journals from annual reports
Source: web scraped data

To be fair: RR at MDPI on the rise since 2023

Monthly Rejection rates at MDPI, 2022-2023

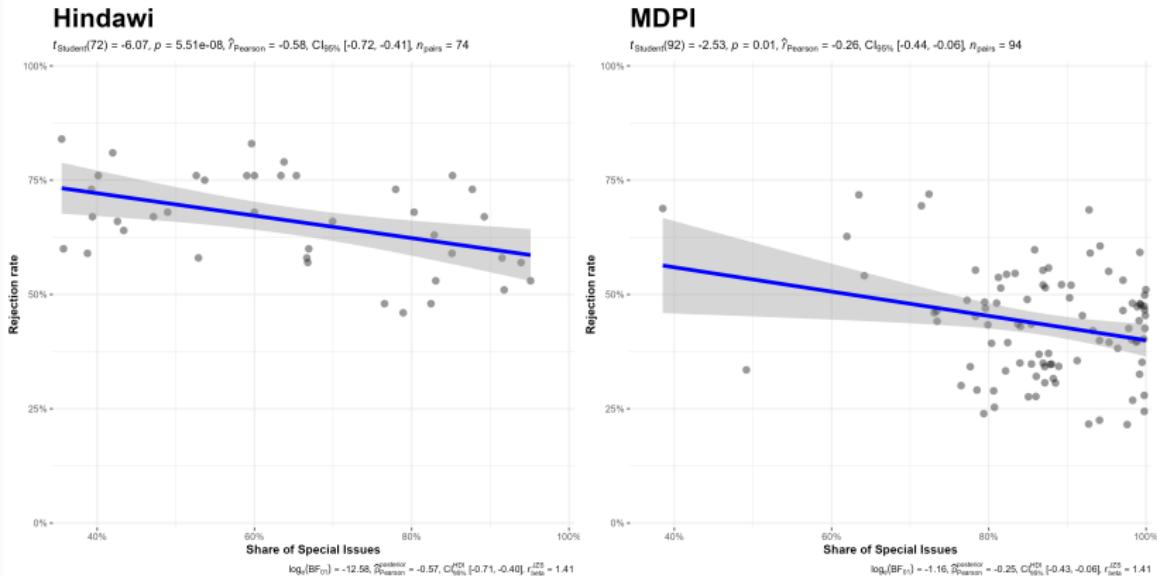
Simple or weighted by the number of papers published in each journal



More SIs, less rejections

Share of Special Issues and Rejection Rate at Hindawi and MDPI

92 MDPI journals with an IF as of January 2023, 72 Hindawi journals for which we have data



What's going on?

Trends:

- Rejection rates are **decreasing** at some key publishers
- **Increasing** at others
- Very little data

Why?

- **Convergence** of authors & OA publishers incentives

Threats

- Lower rejection rates might mean **lower quality**
- Risk of **instability** of quality signals

Impact Factor inflation

Indicators of impact: Impact factor, Scimago Journal Rank

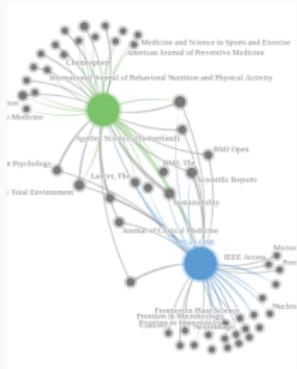
We measure **Impact Factor Inflation** as the ratio of IF to SJR

Impact Factor:

- cites/document at N years
- easily gamed

SJR: citation network counts

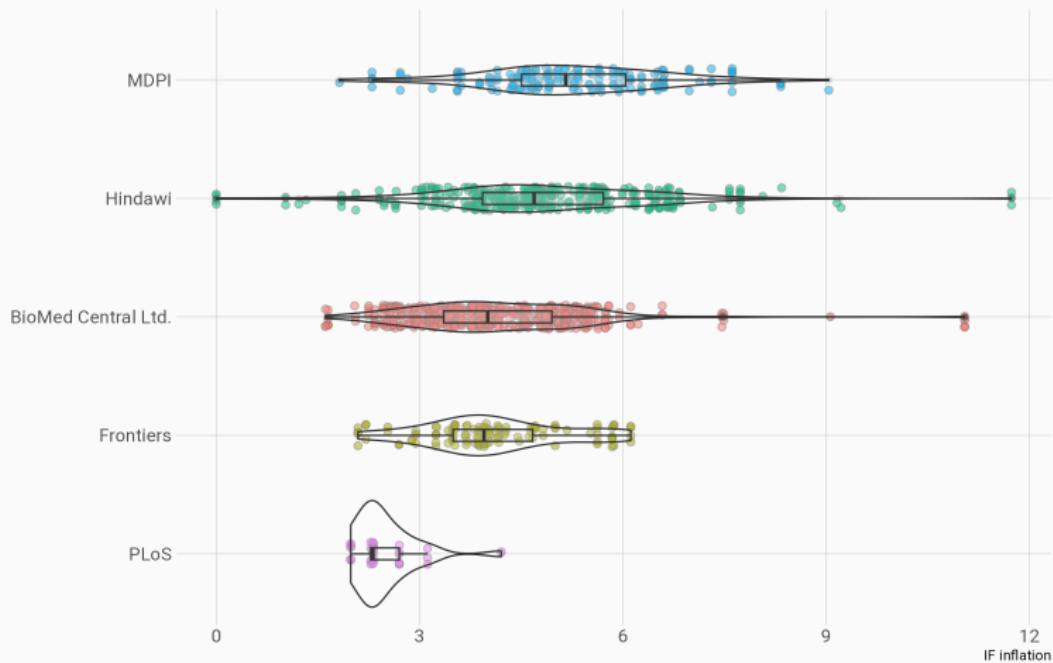
- Limits prestige from single source
- More prestige if cited by relevant journals
- Normalizes for field size
- Less easily gamed



IF inflation 2021: some publishers

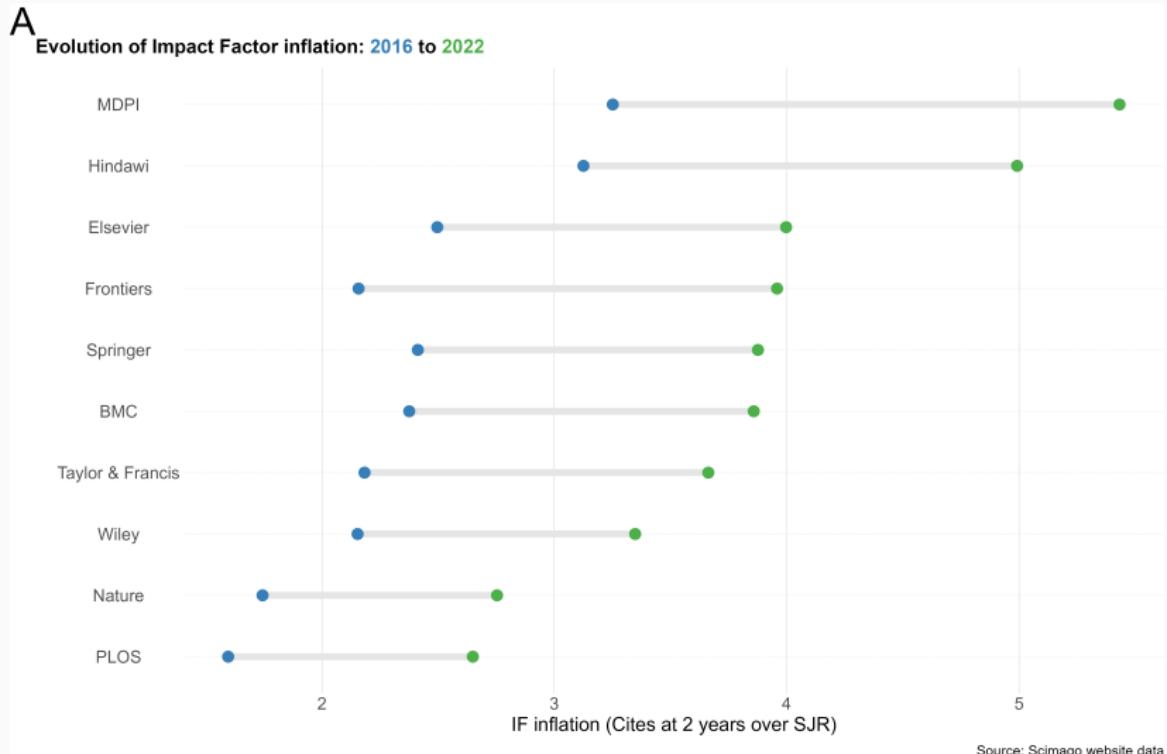
Impact Factor inflation, 2021

2y cites over SJR

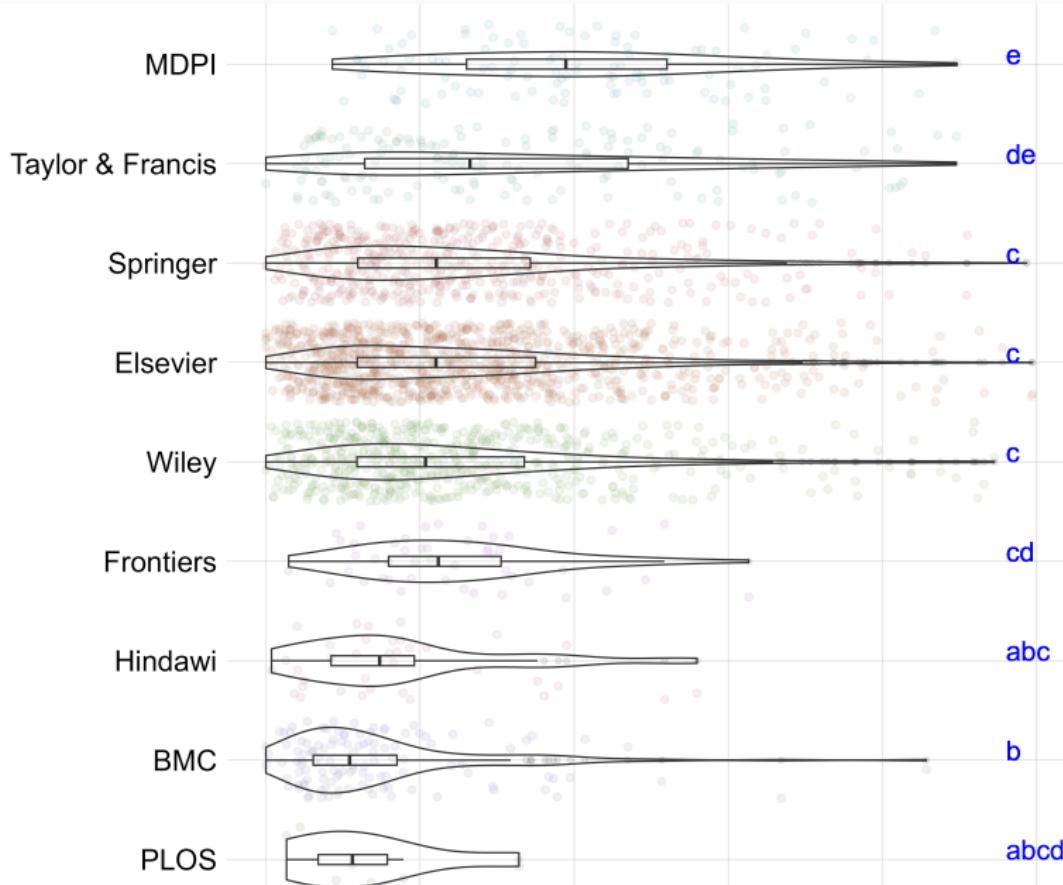


Scimago data – analysis MH, PC, PGB, DB

Evolution of IF inflation



IF inflation: why? Self-cites



What's going on?

Trends:

- IF is **inflating** across the board – more so at some publishers

Why?

- **Goodhart's law:** *When a measure becomes a target, it ceases to be a good measure*

Threats

- Risk of **instability** of quality signals

At a glance

At a glance

Strain indicators at a glance: 2022 and evolution 2016-22

	2022					Change 2016-22				
	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION
Overall	2816k	38%	116	62%	3.3	+47%	+27pp	-23	-1pp	+1.1
Elsevier	498k	--	134	71%	4.0	+41%	--	-4	+5pp*	+1.5
MDPI	264k	88%	37	40%	5.4	+1080%	+14pp	-28	-8pp	+2.2
Springer	250k	3%	157	--	3.9	+52%	-1pp	+5	--	+1.5
Wiley	231k	5%	145	--	3.3	+36%	-2pp	+5	--	+1.2
Frontiers	114k	69%	72	48%	4.0	+675%	+20pp	-25	+14pp	+1.8
Taylor & Francis	105k	--	--	--	3.7	+59%	--	--	--	+1.5
Nature	57k	11%	185	--	2.8	+32%	+6pp	+49	--	+1
BMC	44k	10%	162	--	3.9	+73%	+1pp	+5	--	+1.5
Hindawi	39k	62%	83	74%	5.0	+139%	+36pp	-10	+3pp*	+1.9
PLOS	19k	1%	198	59%	2.6	-23%	-3pp	+50	-4pp	+1.1

At a glance

Strain indicators at a glance: 2022 and evolution 2016-22

	2022					Change 2016-22				
	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION
Overall	2816k	38%	116	62%	3.3	+47%	+27pp	-23	-1pp	+1.1
Elsevier	498k	--	134	71%	4.0	+41%	--	-4	+5pp*	+1.5
MDPI	264k	88%	37	40%	5.4	+1080%	+14pp	-28	-8pp	+2.2
Springer	250k	3%	157	--	3.9	+52%	-1pp	+5	--	+1.5
Wiley	231k	5%	145	--	3.3	+36%	-2pp	+5	--	+1.2
Frontiers	114k	69%	72	48%	4.0	+675%	+20pp	-25	+14pp	+1.8
Taylor & Francis	105k	--	--	--	3.7	+59%	--	--	--	+1.5
Nature	57k	11%	185	--	2.8	+32%	+6pp	+49	--	+1
BMC	44k	10%	162	--	3.9	+73%	+1pp	+5	--	+1.5
Hindawi	39k	62%	83	74%	5.0	+139%	+36pp	-10	+3pp*	+1.9
PLOS	19k	1%	198	59%	2.6	-23%	-3pp	+50	-4pp	+1.1

What can **you** do?

Explore our data!

We built a tool that lets you explore data journal by journal

https://pagoba.shinyapps.io/strain_explorer/



How to **survive** in this system

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as a funder Focus on quality rather than quantity. Beware of the perverse effects of your incentives.

Thank you!