



# Inequities of article processing charges

How the oligopoly of academic publishers profits from open access

Stefanie Haustein & Leigh-Ann Butler

## Outline

- Introduction
- APCs of oligopoly journals
  - Canadian Tri-Agency data
  - Global data
- Conclusions

## What is OA?

### → Serials crisis

*Unaffordability of journal subscriptions*

### → Digital era

*From print to online publishing*

### → OA movement

*Free, unrestricted access and reuse of peer-reviewed journal literature*

#### → OA manifestos

→ Budapest OA Initiative (2002)

→ Bethesda Statement on OA Publishing (2003)

→ Berlin Declaration on OA to Knowledge in the Sciences and the Humanities (2003)

“By open access to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.”

BOAI (2002, para. 3)

## OA models

- Published in OA journal
  - Gold with APC
    - Author pays*
  - Gold without APC (=Diamond/Platinum)
    - Free for author – institution/society pays*
  - Via Transformative Agreement (=Read & Publish)
    - Free for author – library pays*
- Published in subscription journal
  - Hybrid
    - Author and library pay*
  - Bronze
    - Unclear – lacking license for reuse*
  - Green
    - Self-archiving, free for author – possible copyright restrictions*
  - (Black)
    - Unauthorized (e.g., SciHub)*



# Inequities of APCs

## Common misconceptions

→ Cost of OA

*OA > APCs*

→ Diamond and green OA are free to authors

→ OA and quality

*OA ≠ predatory publishing | peer review ≠ publisher*

→ Gatekeeping is not dependent on publisher

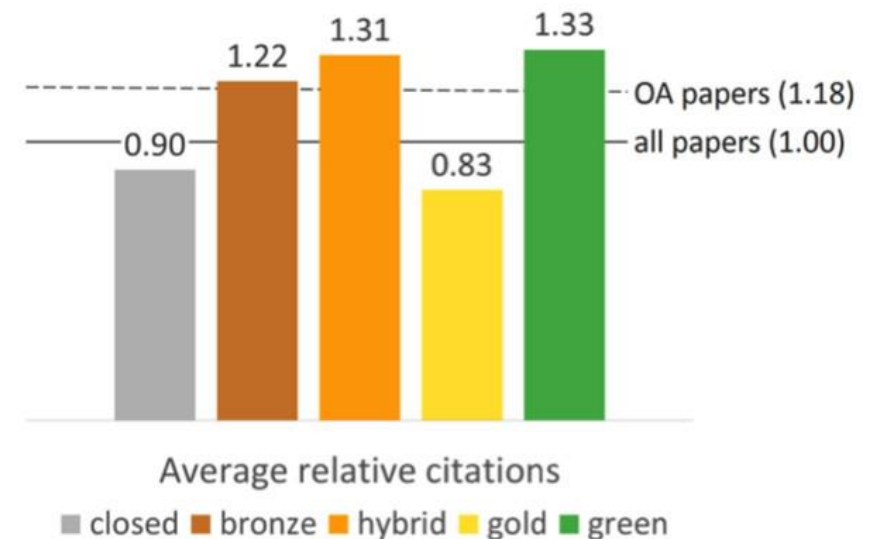
→ Peer review is done by scholarly community

→ OA and impact

*journal prestige ≠ article impact*

→ OA leads to larger readership than closed access

→ Green OA articles obtain highest citation rates

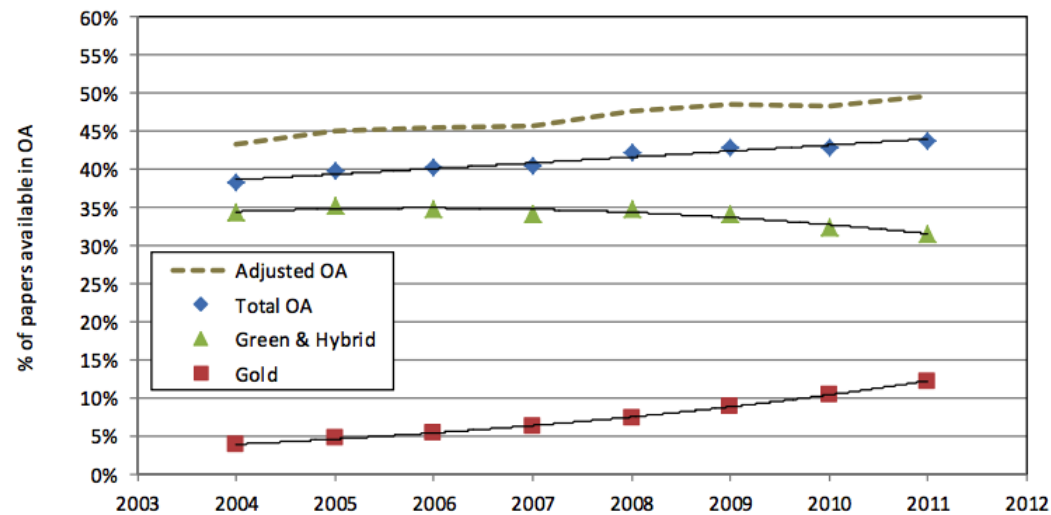


Field-normalized citation rate of a random sample of journal articles and reviews with a DOI, published between 2009 and 2015, covered in Web of Science.

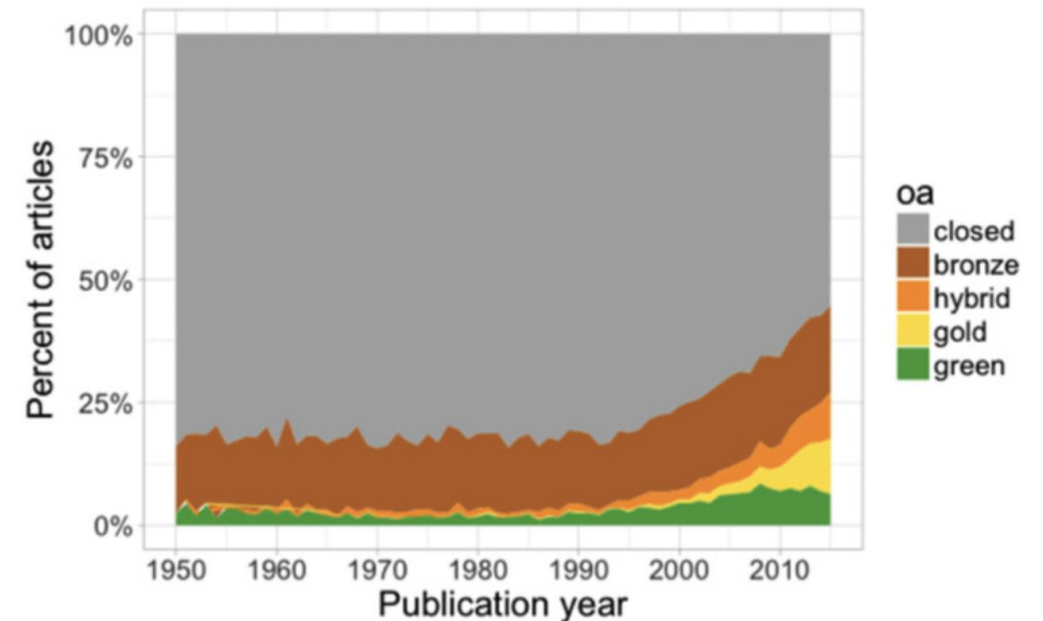
# Inequities of APCs

## Growth of OA

→ Measuring OA depends on definition, operationalization and time of measurement



Archambault et al. (2013)



Piwowar et al. (2018)

Archambault, É., Amyot, D., Deschamps, P., Nicol, A., Rebout, L. & Roberge, G. (2013). Proportion of Open Access Peer-Reviewed Papers at the European and World Levels 2004-2011. *Report for the European Commission*. [http://www.science-metrix.com/pdf/SM\\_EC\\_OA\\_Availability\\_2004-2011.pdf](http://www.science-metrix.com/pdf/SM_EC_OA_Availability_2004-2011.pdf)

Piwowar et al. (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>

## BOAI 20th Anniversary Recommendations

1. Host OA research on open infrastructure
2. Reform research assessment and rewards to improve incentives
3. Favor inclusive publishing and distribution channels that never exclude authors on economic grounds

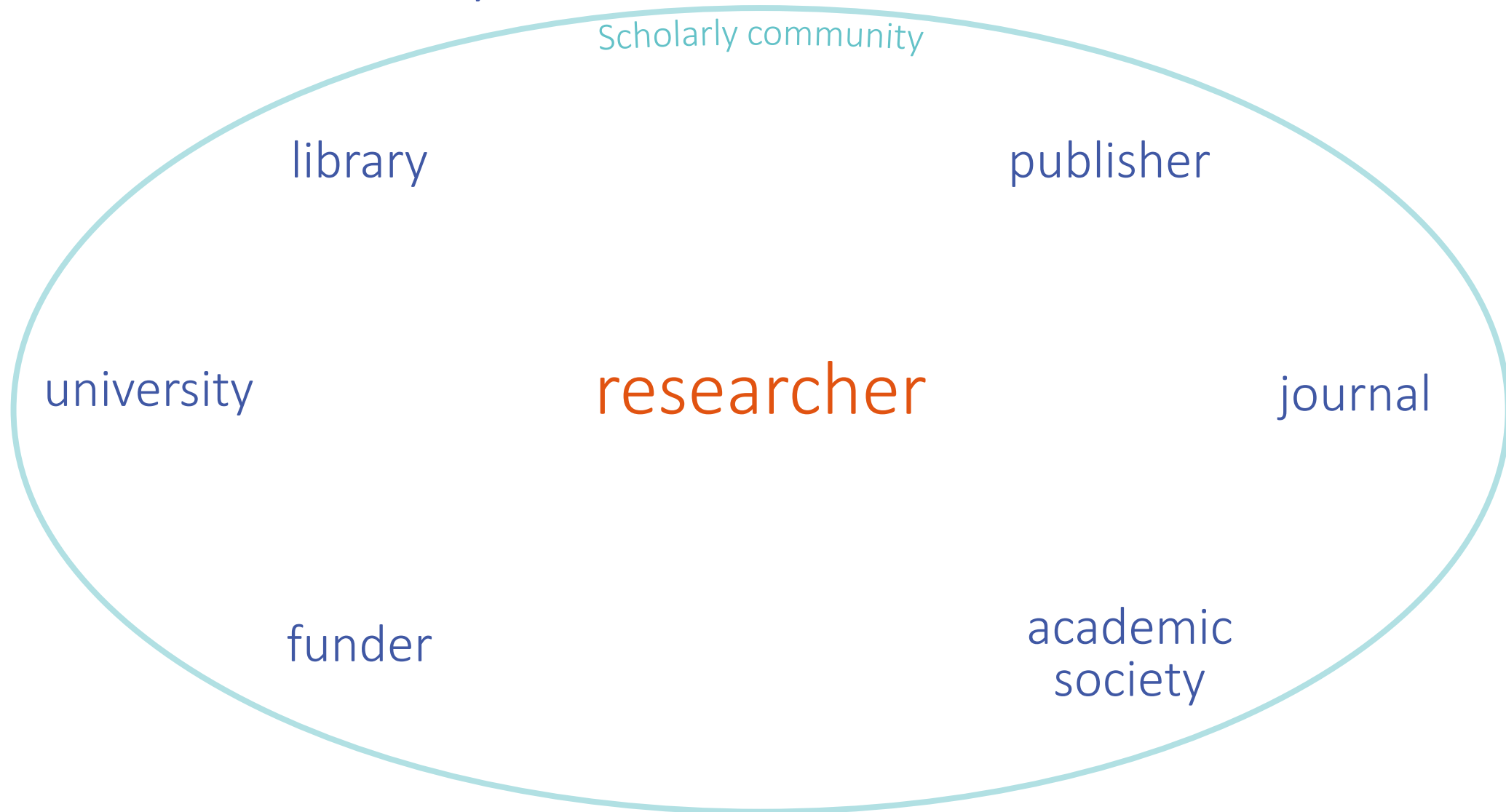
*Take full advantage of OA repositories and no-APC journals (“green” and “diamond” OA).  
Move away from article processing charges (APCs).*

4. When we spend money to publish OA research, remember the goals to which OA is the means

*Favor models which benefit all regions of the world, which are controlled by academic-led and nonprofit organizations, which avoid concentrating new OA literature in commercially dominant journals, and which avoid entrenching models in conflict with these goals. Move away from read-and-publish agreements.*

# Inequities of APCs

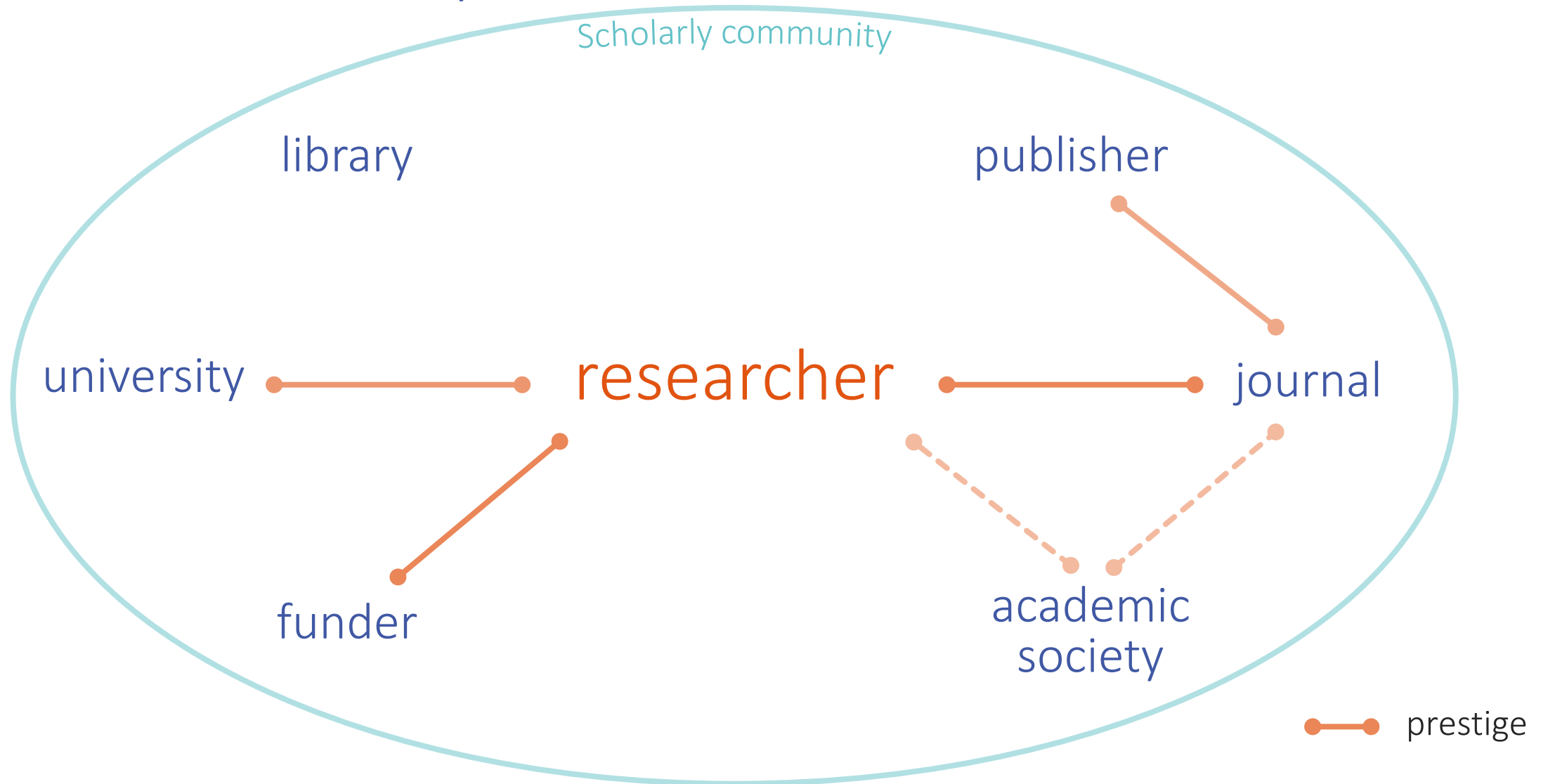
## Academic reward system





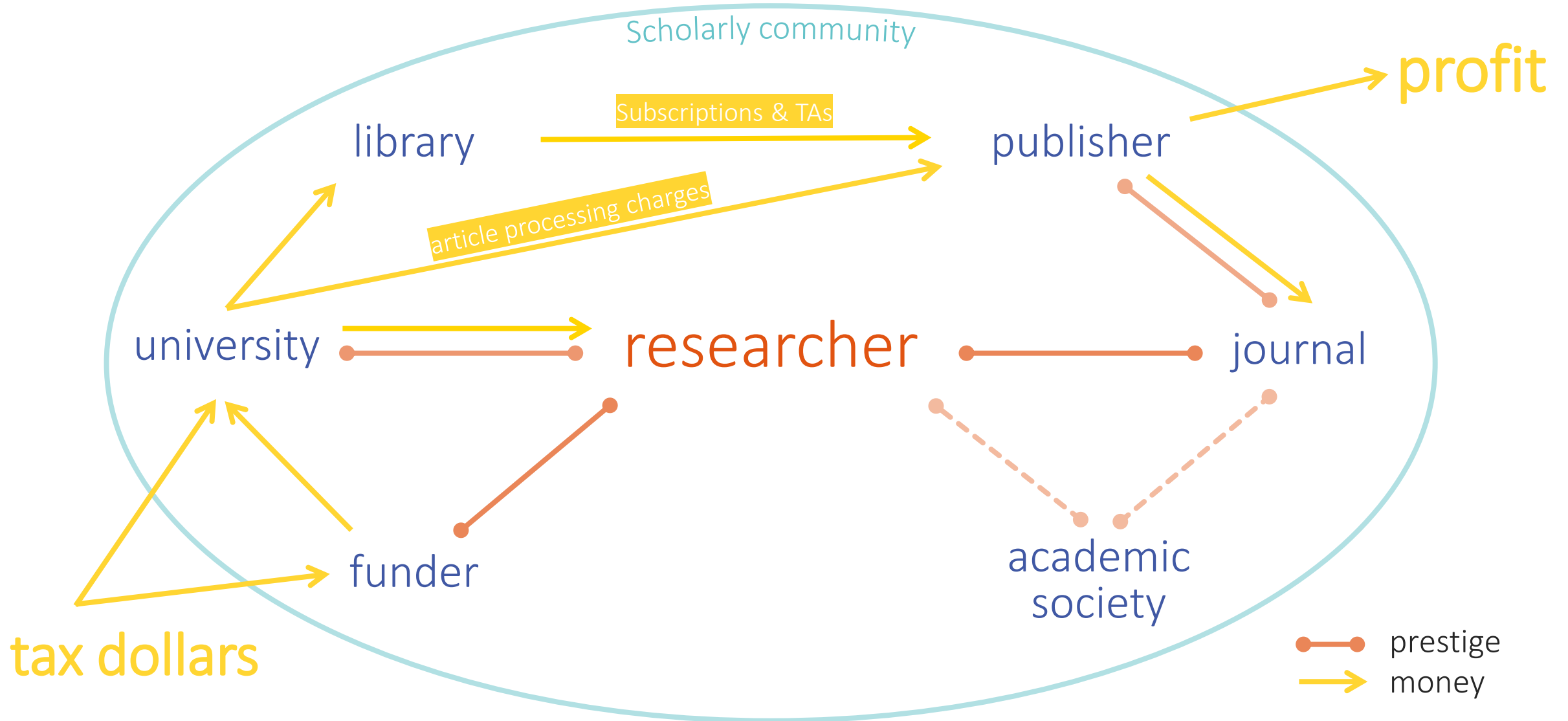
# Inequities of APCs

## Academic reward system



# Inequities of APCs

## Academic reward system



## Cost of APCs

- How much APCs *should* cost
  - Up to \$1,000 (Fair Open Access Alliance)

- How much APCs *actually* cost

“The ability and willingness of consumers to pay for products influences supply-side pricing decisions.” (Siler & Frenken, 2020)

- Average gold APC

- Journal level
  - \$889 (Siler & Frenken, 2020)
  - \$958 (Morrison et al., 2021)
- Article level
  - **\$1,800** (Solomon & Björk, 2016)
  - \$1,626 (Morrison et al., 2021)

- Average hybrid APC

- **\$3,000** (Solomon & Björk, 2016)
- \$2,600 (OpenAPC, 2022)

## Systemic problems

- Dependencies on proprietary infrastructure
  - Knowledge as commodity
  - Prestige of publishers
  - Academic reward system
  - Hiring, tenure and promotion
- Exacerbating existing inequities
  - Geography
  - Gender
  - Career stage
  - Language
  - Discipline
  - Funding
  - Diverse forms of knowledge

Chan, L., Hall, B., Piron, F., Tandon, R., & Williams, W. L. (2020). *Open Science Beyond Open Access: For and with communities, A step towards the decolonization of knowledge*. <https://doi.org/10.5281/ZENODO.3946773>

Siler, K., & Frenken, K. (2020). The pricing of open access journals: Diverse niches and sources of value in academic publishing. *Quantitative Science Studies*, 1(1), 28–59. [https://doi.org/10.1162/qss\\_a\\_00016](https://doi.org/10.1162/qss_a_00016)

Olejniczak, A. J., & Wilson, M. J. (2020). Who's writing open access (OA) articles? Characteristics of OA authors at Ph.D.-granting institutions in the United States. *Quantitative Science Studies*, 1(4), 1429–1450. [https://doi.org/10.1162/qss\\_a\\_00091](https://doi.org/10.1162/qss_a_00091)

## APCs and OA

### → Alternatives to APCs

“systematically under-noticed, under-discussed, under-appreciated, under-funded and under-used” (BOAJ, 2022)

### → Gold journals w/out APC (diamond/platinum OA):

→ 73% of gold journals in DOAJ have no APCs

→ 43% of articles without APCs

### → Green OA

→ free for authors

→ highest citation impact

→ complicated by publisher through copyright restrictions (embargoes, versions, repositories)



# APCs of oligopoly journals

## Motivation

- Oligopoly of academic publishers control majority of journal publishing
  - Elsevier
  - Sage
  - Springer-Nature
  - Taylor & Francis
  - Wiley
- Library subscriptions and APCs (public tax dollars) to read/publish research lead to profits of >30%
- Resources intended to support research are leaving academia to maximize shareholder profits
- APCs shift barriers from reader to author, exacerbating inequities

## Research questions

→ What is the estimated amount of APCs for gold and hybrid OA articles indexed in WoS in journals published by oligopoly (Elsevier, Sage, Springer-Nature, Taylor & Francis, Wiley) published between 2015 and 2018?

*in collaboration with Philippe Mongeon, Lisa Mathias & Marc-André Simard*

→ What is the estimated amount of APCs for Canadian gold and hybrid OA articles indexed in WoS that acknowledge the Canadian Tri-Agency in journals published by oligopoly publishers between 2015 and 2018?

*Master's thesis, uOttawa ÉSIS*



## Methods

- Global data
  - Articles with DOI 2015-2018 (WoS)
    - Number of publications per journal per year
    - Oligopoly publishers and associated imprints and/or subsidiary publishers
  - Article-level OA status (Unpaywall)
    - Gold or hybrid journals
  - APC list prices
- Canadian Tri-Agency data
  - *same as above*
  - Publications with institutional address in Canada
  - Funding acknowledgements (WoS)
    - Acknowledging funding from Tri-Agency (CIHR, SSHRC, NSERC)

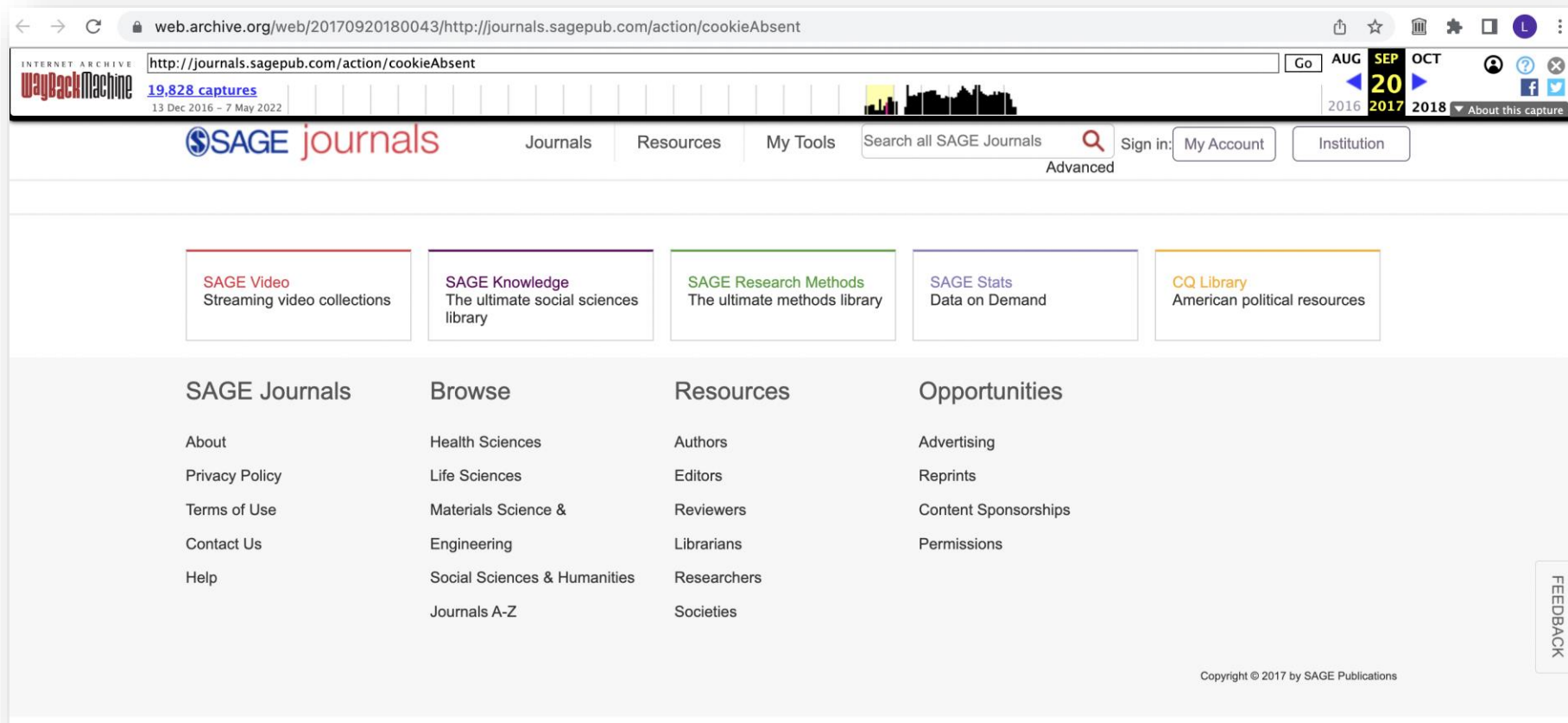
## Methods

- APC list prices
  - List prices for oligopoly publishers  
*open dataset: Matthias (2020)*
  - List prices for gold OA journal  
*open dataset: Morrison (2021)*
  - Manual look up of historical APCs  
*Internet Archive Wayback Machine*
  - Filling remaining gaps  
*applying closest available APCs*

# Inequities of APCs

## Methods: Internet Archive Wayback Machine

*Sage journal page fails to load all information*



# Inequities of APCs

## Methods: Internet Archive Wayback Machine

*Wiley made list prices downloadable in 2017*

Wiley Online Library

Publications A - Z

AAHE-ERIC/Higher Education Research Report  
Currently known as: ASHE Higher Education Report

Abacus

About Campus

Academic Emergency Medicine

Academic Review  
Currently known as: Design Management Journal

Accounting & Finance

Accounting Forum

Accounting Perspectives

Acta Anaesthesiologica Scandinavica

Author Resources > Journal Authors > Licensing & Open Access > Open Access > Article Publication Charges

Find journal

Prepare

Submission & Peer Review

Licensing & Open Access

Promote

Article Publication Charges (APCs)

OnlineOpen: Open Access Option on Subscription Journals

Fully Open Access Journals

Price List for journals offering OnlineOpen, Wiley's hybrid gold open access option

Price List for Wiley's fully open access journal portfolio

OnlineOpen Price List

Open Access Price List

## Limitations

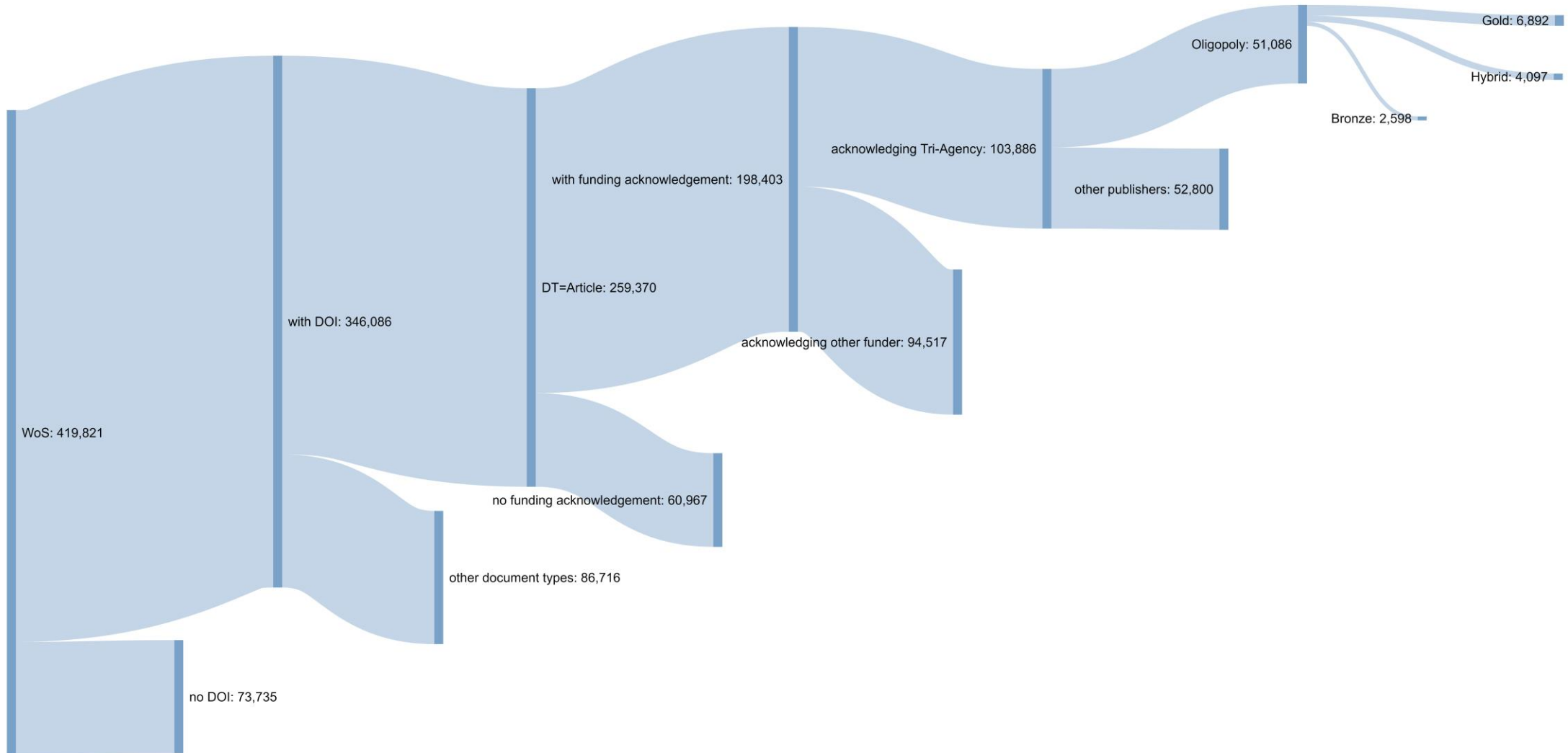
- WoS
  - Bias against non-English, non-Western publications
  - Focus on STEMM
- Estimation, not calculation of actual prices paid
  - Do not account for discounts or waivers
- Link to Tri-Agency funding
  - Not capturing all articles supported by Tri-Agency funding
    - Dependant on author self-reporting
    - No standardized format to acknowledge funders
  - Unclear who paid APC of multi-authored publications



# Canadian Tri-Agency data

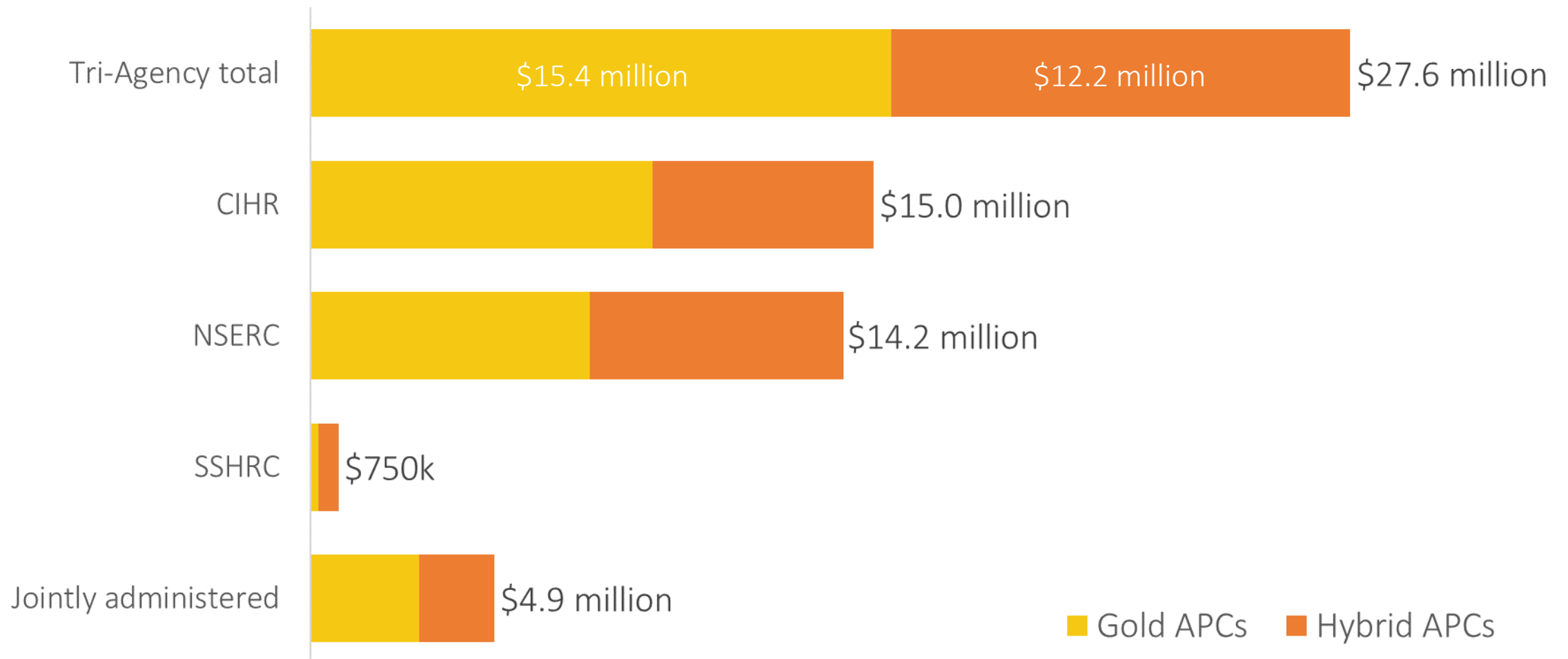
# Inequities of APCs

## Canadian WoS oligopoly articles acknowledging Tri-Agency funding



# Inequities of APCs

## Tri-Agency: Hybrid and gold APCs per funder





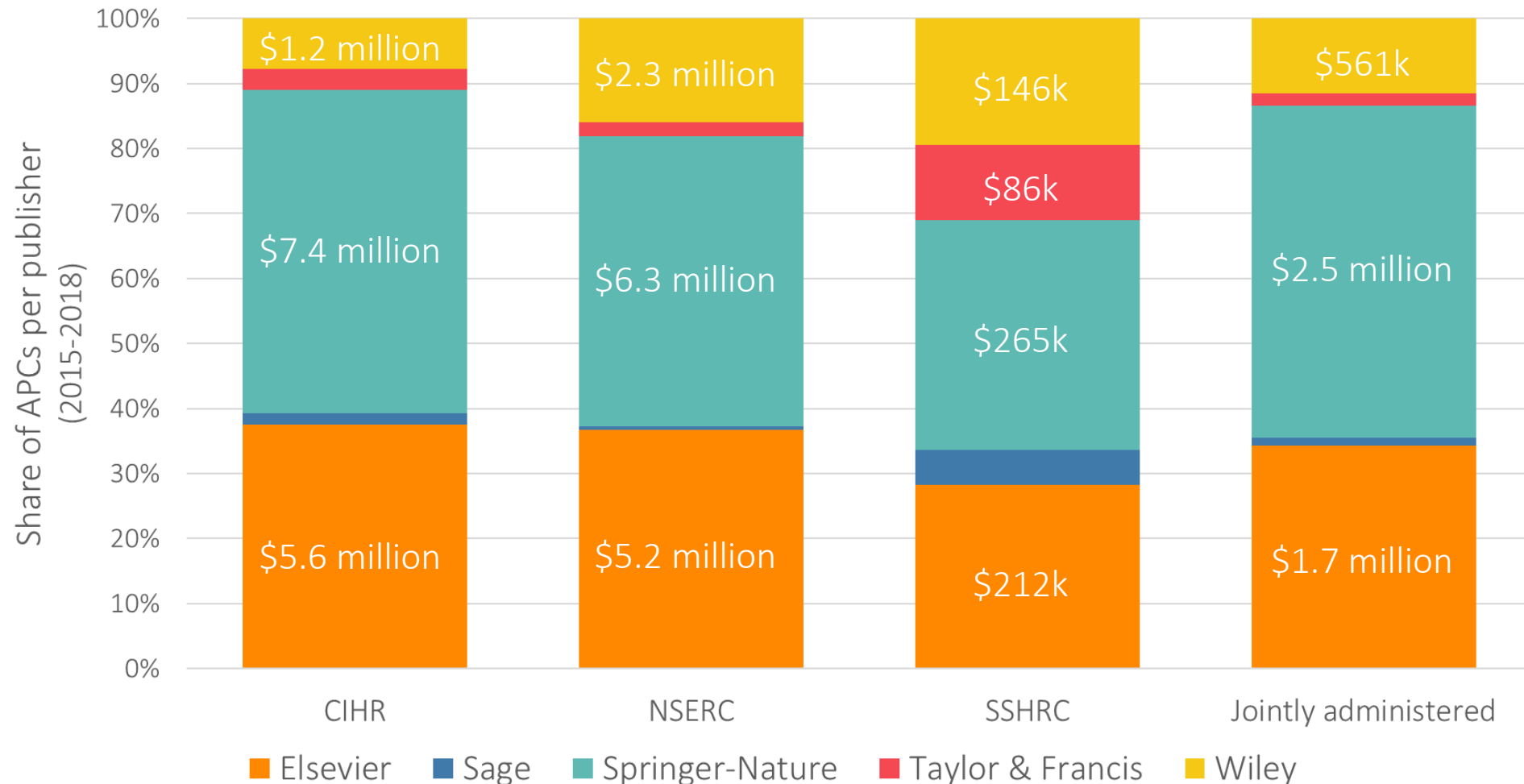
# Inequities of APCs

## Tri-Agency: Average hybrid and gold APCs per funder

	Gold			Hybrid		
	N	Average APC (median)	Max APC	N	Average APC (median)	Max APC
All Tri-Agency	6,892	\$2,241 (\$2,145)	\$5,200	4,097	\$2,974 (\$3,000)	\$5,200
CIHR	3,534	\$2,571 (\$2,145)	\$5,200	1,739	\$3,390 (\$2,950)	\$5,200
NSERC	3,668	\$2,022 (\$1,760)	\$5,200	2,424	\$2,782 (\$2,950)	\$5,200
SSHRC	126	\$1,703 (\$1,805)	\$5,200	211	\$2,538 (\$3,000)	\$5,000
Jointly Administered	1,306	\$2,208 (\$2,145)	\$5,200	604	\$3,296 (\$3,000)	\$5,200

# Inequities of APCs

## Tri-Agency: APCs per publisher per funder

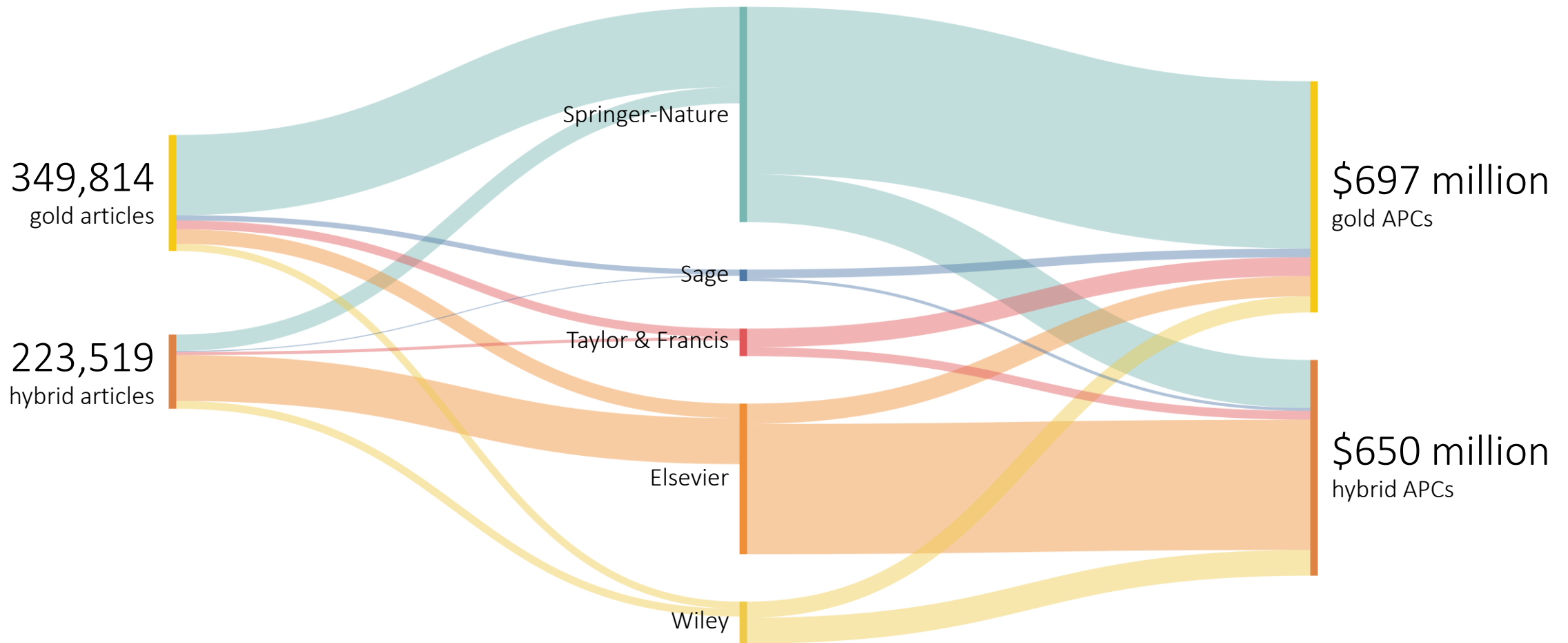




Global data

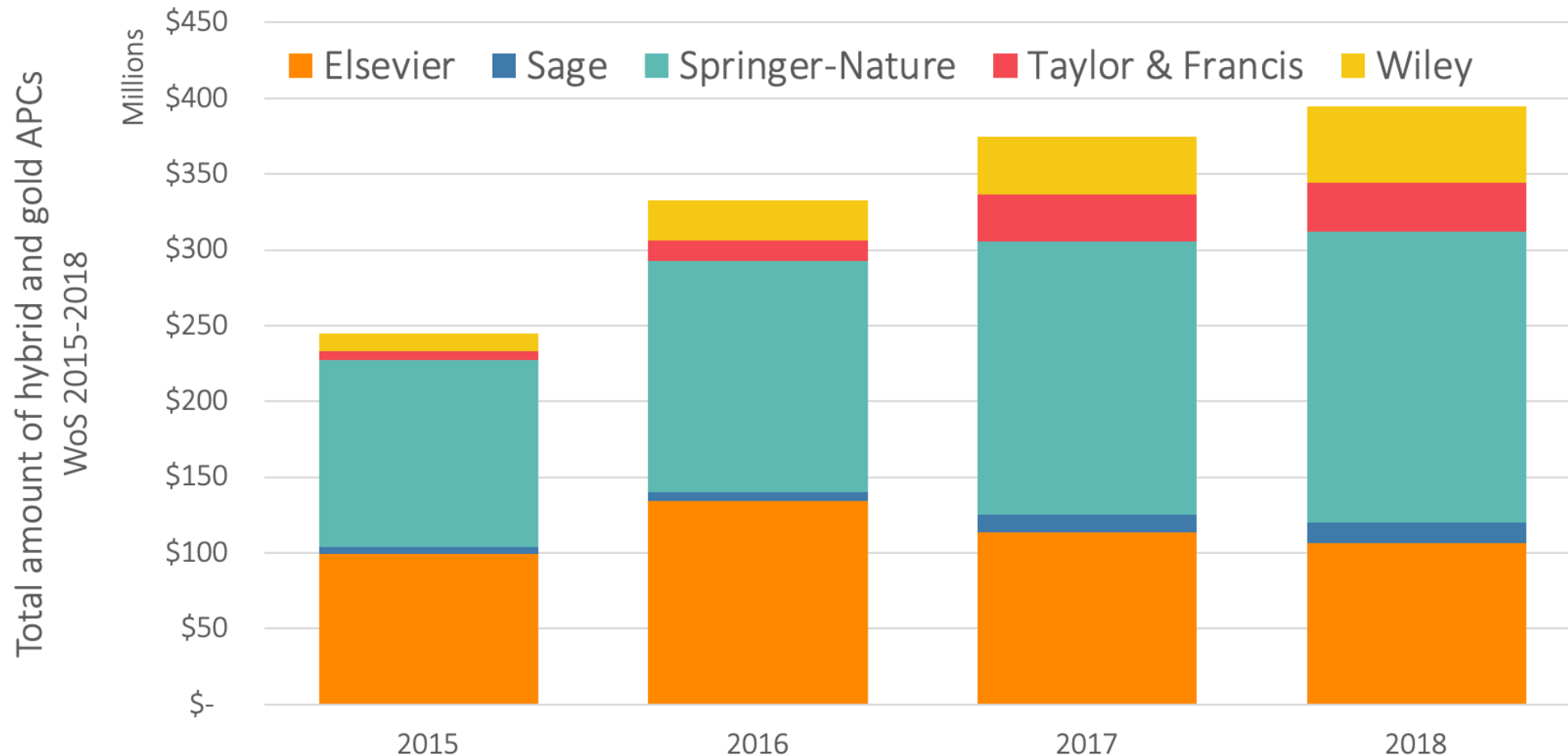
# Inequities of APCs

## WoS: APCs 2015-2018



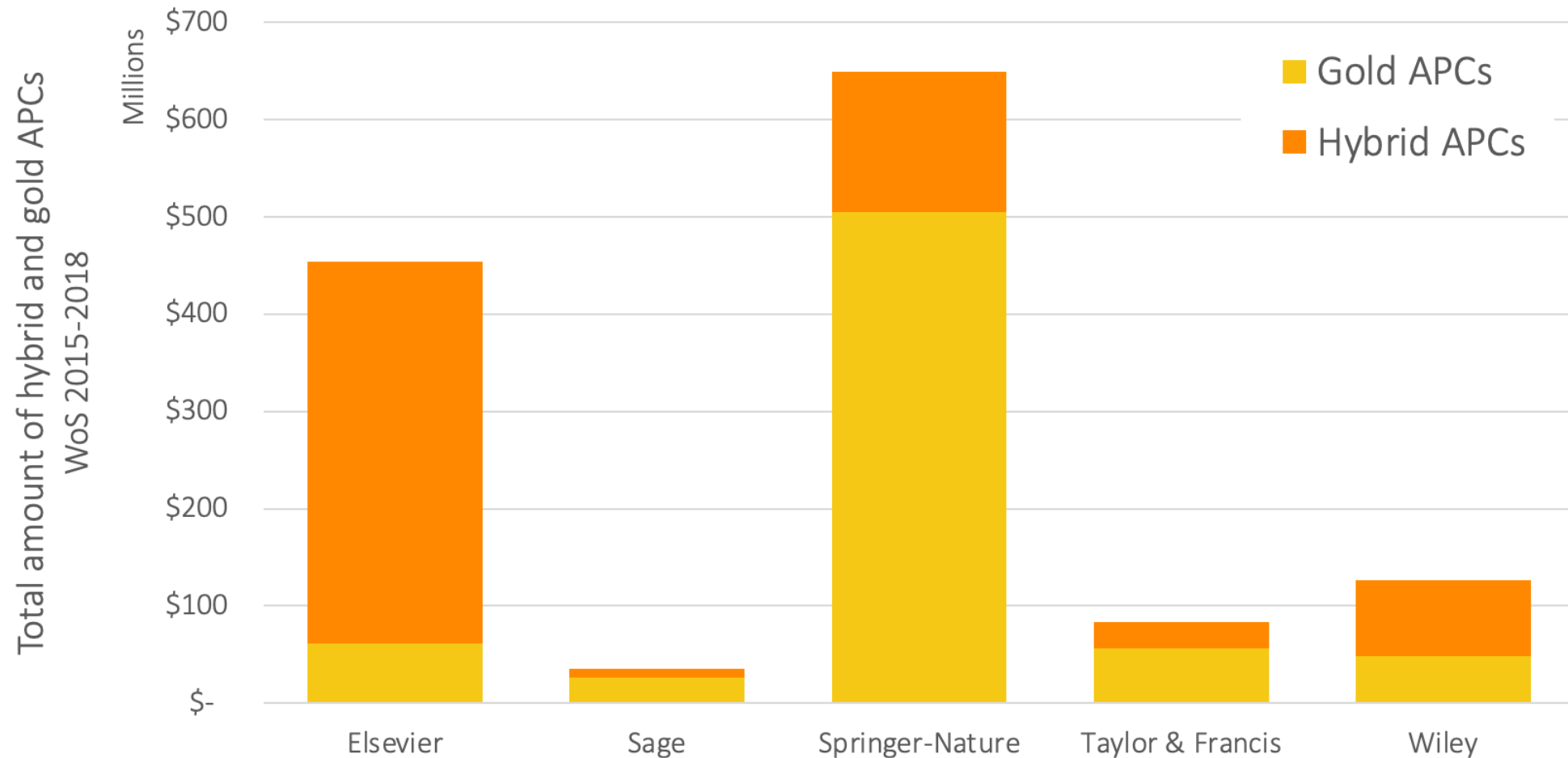
# Inequities of APCs

## WoS: APCs per year



# Inequities of APCs

## WoS: APCs per publisher



# Inequities of APCs

## WoS: Gold and hybrid APCs per publisher

→ Different OA “portfolios”

*% of USD from gold/hybrid APCs*

→ Elsevier: 13% / 87%

→ Sage: 75% / 25%

→ Springer-Nature: 78% / 22%

→ Taylor & Francis: 68% / 32%

→ Wiley: 39% / 61%

→ Diamond OA

*% of gold OA w/out APC*

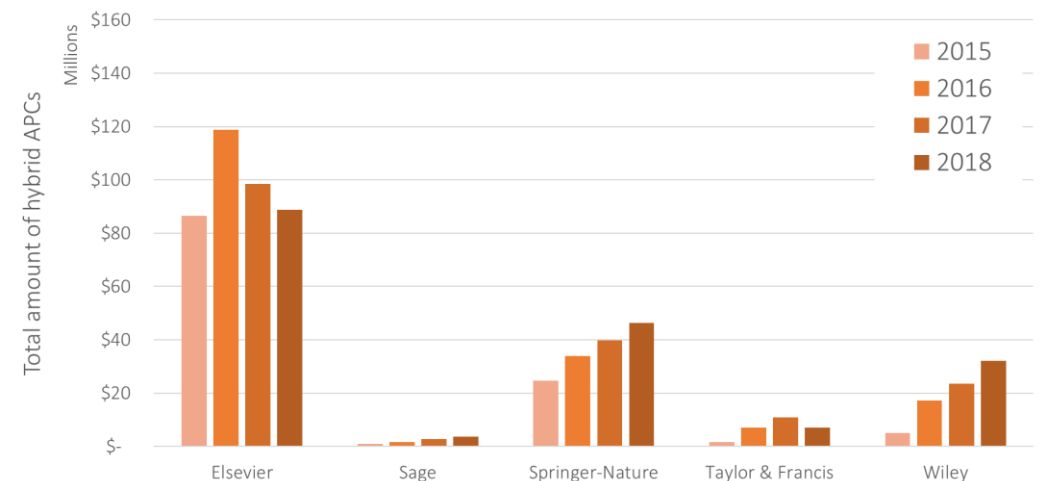
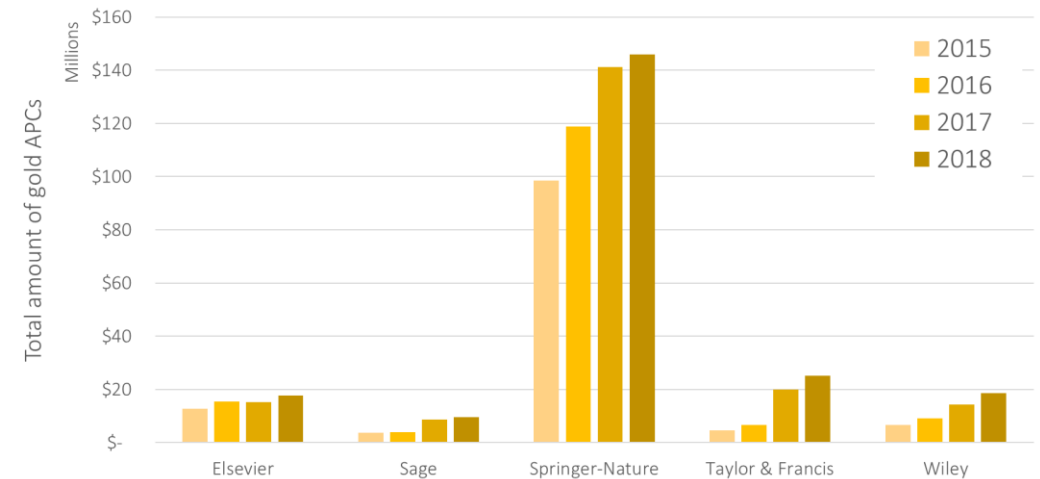
→ Elsevier: 43% (18,748)

→ Sage: 3% (414)

→ Springer-Nature: 5% (12,955)

→ Taylor & Francis: 10% (2,702)

→ Wiley: 2% (442)

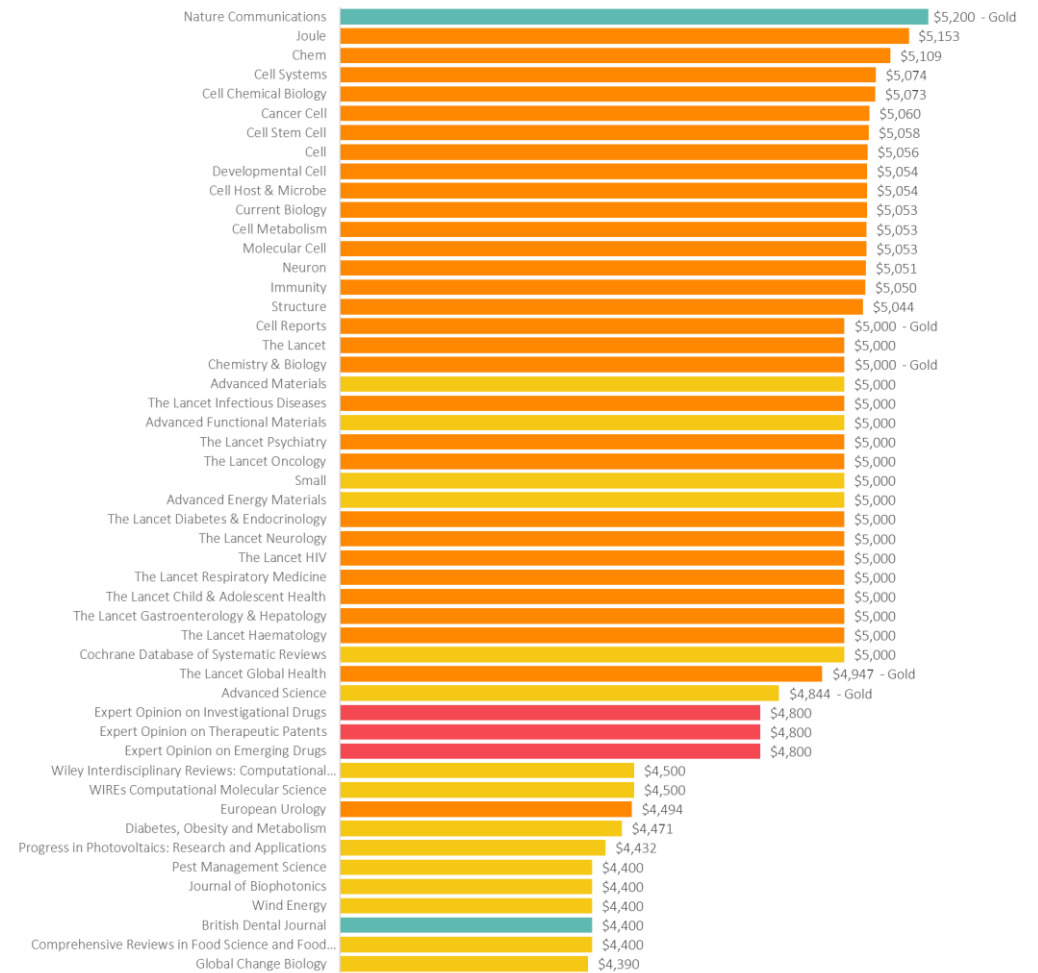
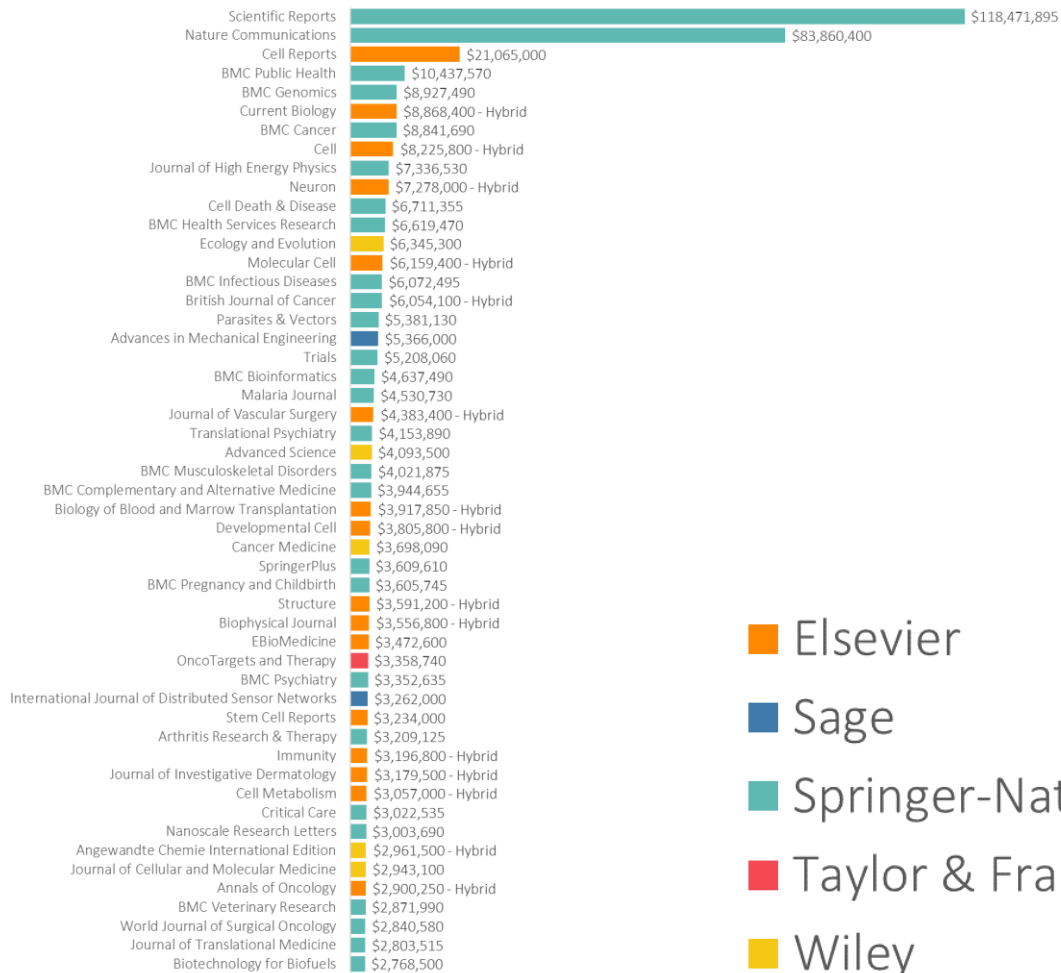


# Inequities of APCs

## WoS: APCs per journal

→ Top 50 by total APC

→ Top 50 by average APC



- Elsevier
- Sage
- Springer-Nature
- Taylor & Francis
- Wiley



## Next steps

- Additional analyses
  - Per discipline
  - Per country
  - Citations
- Tri-angulation with data from Open APC



# Conclusions

## Conclusions

### → Inequities of APCs

- Exclusion of authors on economic grounds
- Socio-economic factors influence market pricing
- Spending money not to improve OA but to finance a business

### → Change the system

- Untangling academic reward system from publisher prestige
- Financial support of publishing, not companies

“To encourage fairer, more diverse open access practices worldwide, governments, research funders and UNESCO **should financially and institutionally support a wide range of actors**...rather than giving precedence and fiscal advantage to international, for-profit, unilingual publishing industries.”

Chan et al (2020)



# Thank you!

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