

Assessing author and referee diversity at The Company of Biologists

Katherine Brown, PhD, Executive Editor, Development, The Company of Biologists, Cambridge UK
katherine.brown@biologists.com

Introduction:

In June 2020, The Company of Biologists, which publishes five life sciences journals, was one of the founding signatories to the Joint commitment for action on inclusion and diversity in publishing. In joining this working group, we committed to better understanding and reflecting the diversity of our research community. As a first step, in early 2021 we started collecting self-reported data on gender within our manuscript tracking system. We have also, for many years, been collecting data on the geographic location of authors and referees. In this poster, I present initial data looking at the gender and geographic diversity of our authors and referees.

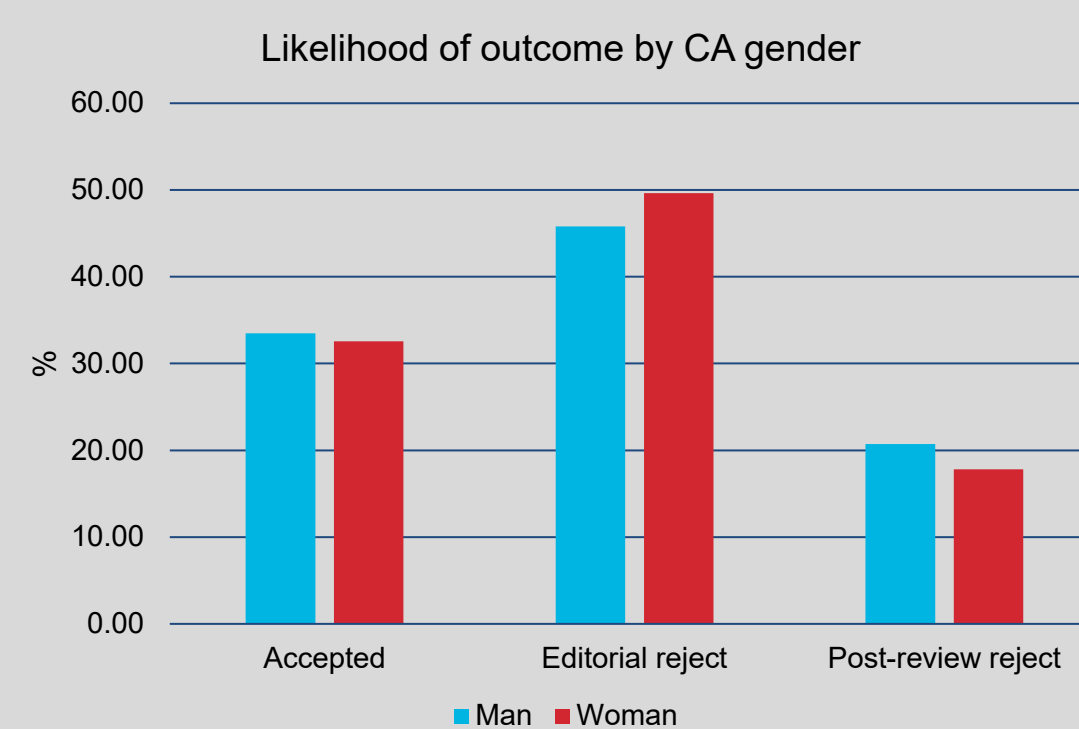
Gender diversity:

Collecting gender data: Since late January 2021, any user logging into our submission system has been required to provide information on their gender identity, selecting from the following options: **Man, Non-binary, Prefer not to say, Self-describe, Woman**. Portfolio-level data on our corresponding author (CA) and referee pools for 2022 are provided in the table below:

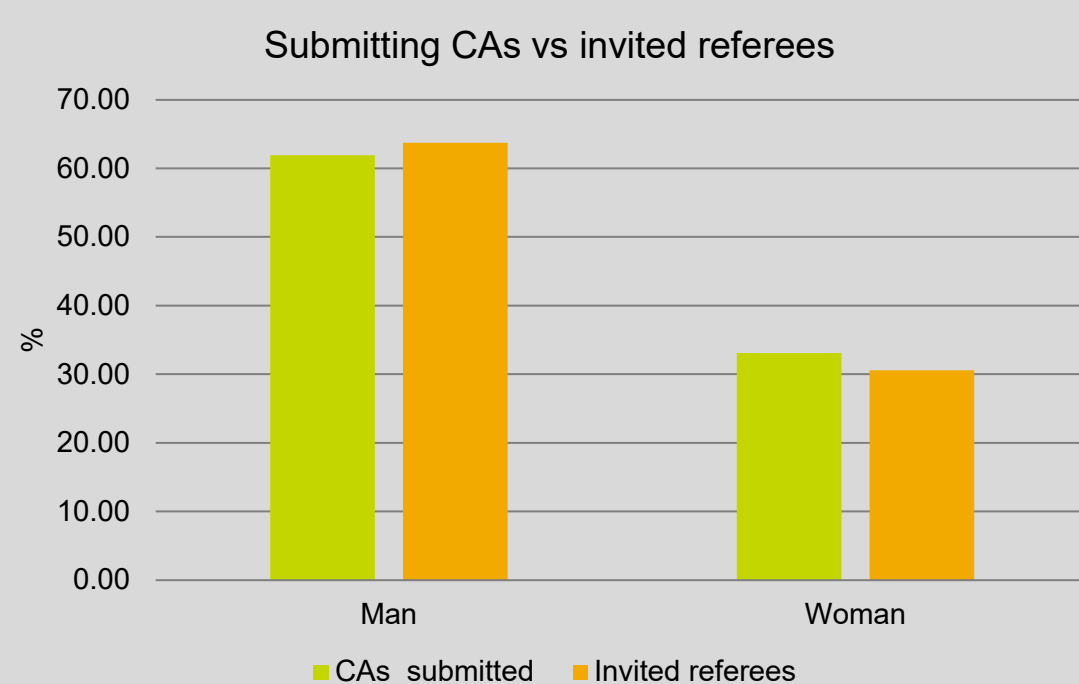
	Man	Non-binary	Prefer not to say	Self-describe	Woman
CA – submitted papers	61.9%	0.4%	4.3%	0.3%	33.1%
CA – published papers	62.5%	0.4%	2.4%	0.1%	34.7%
Invited referee	63.7%	0.2%	4.0%	1.6%	30.5%
Referee who returned report	65.2%	0.2%	3.4%	0.7%	30.5%

Over 95% of users are willing to provide their gender identity. Given the low numbers of people selecting 'non-binary' and 'self-describe', we focussed this analysis on the binary man/woman categories. The approximate 2/3 man: 1/3 woman ratio applied across each of our journals individually.

We considered whether CA gender affects the likelihood of a paper being accepted for publication – using all papers submitted since February 2021 to give us the biggest possible sample size. While the overall acceptance rate for men and women was approximately the same, there appeared to be a slight bias towards papers from women being rejected at the initial editorial assessment stage. This just failed to reach statistical significance ($P=0.052$). At the individual journal level, we did not detect any statistically significant disparities.



Next, we looked at whether our referee pool was reflective of our community. We expected that the gender balance of referees should match the gender balance of CAs. We focused on gender of invited referees as this is the metric over which we have internal control.

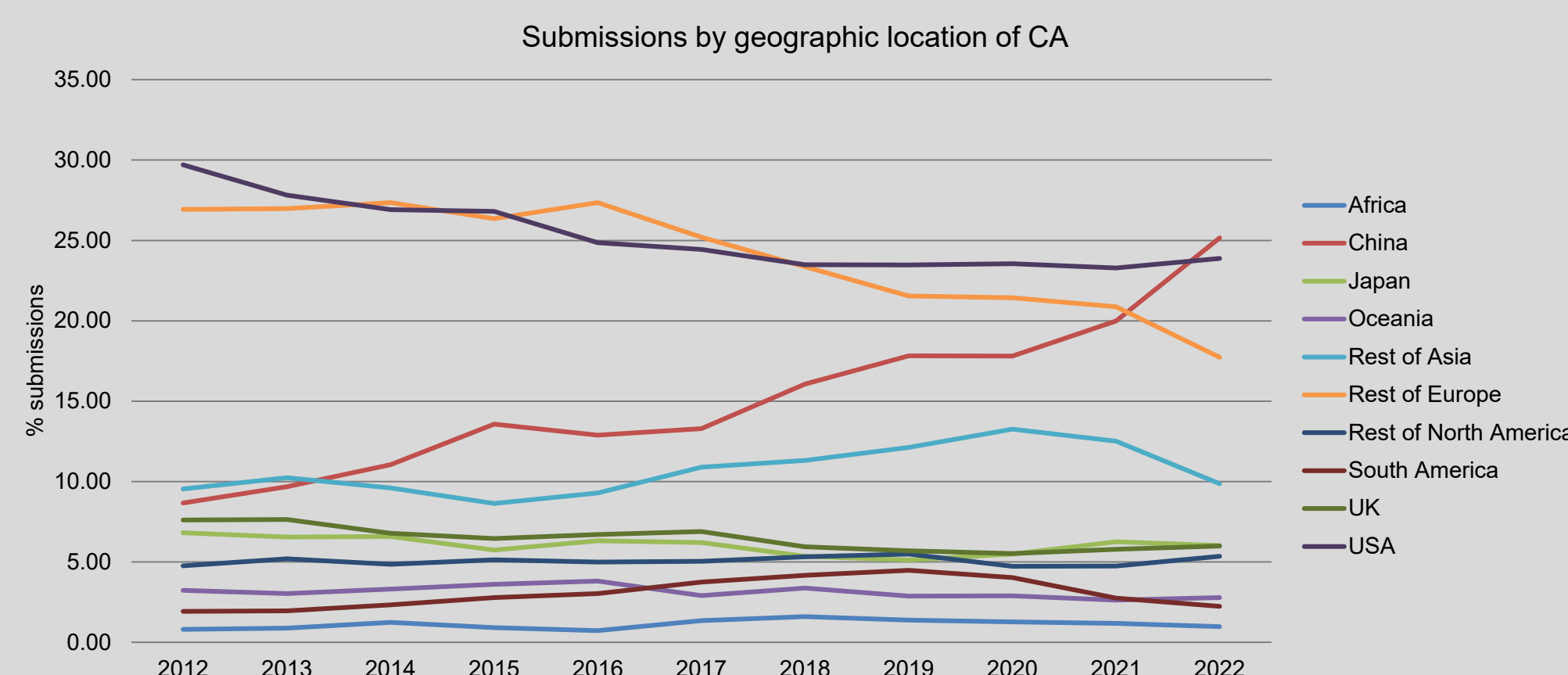


The proportion of women invited referees in 2022 was statistically significantly lower than the proportion of women CAs of submitted papers ($P=0.03$). Looking at an individual journal level, we find that two of our journals under-invite women to review papers, whereas for the other three journals, there is no statistically significant difference between the CA and invited referee pools.

Geographic diversity:

Our submission system requires users to provide their country of residence, and we are therefore able to assess the geographic diversity of our CA and referee pools. We extracted data from 2012 to 2022 and categorised the geographic region of CAs and invited referees according to the following classifications: **Africa, China, Japan, Oceania, Rest of Asia, Rest of Europe, Rest of North America, South America, UK, USA** (individual countries were separated from continent for one of the following reasons: large numbers of submissions – USA and UK; known growing market we wanted to track – China; distinct pattern from the rest of the continent – Japan).

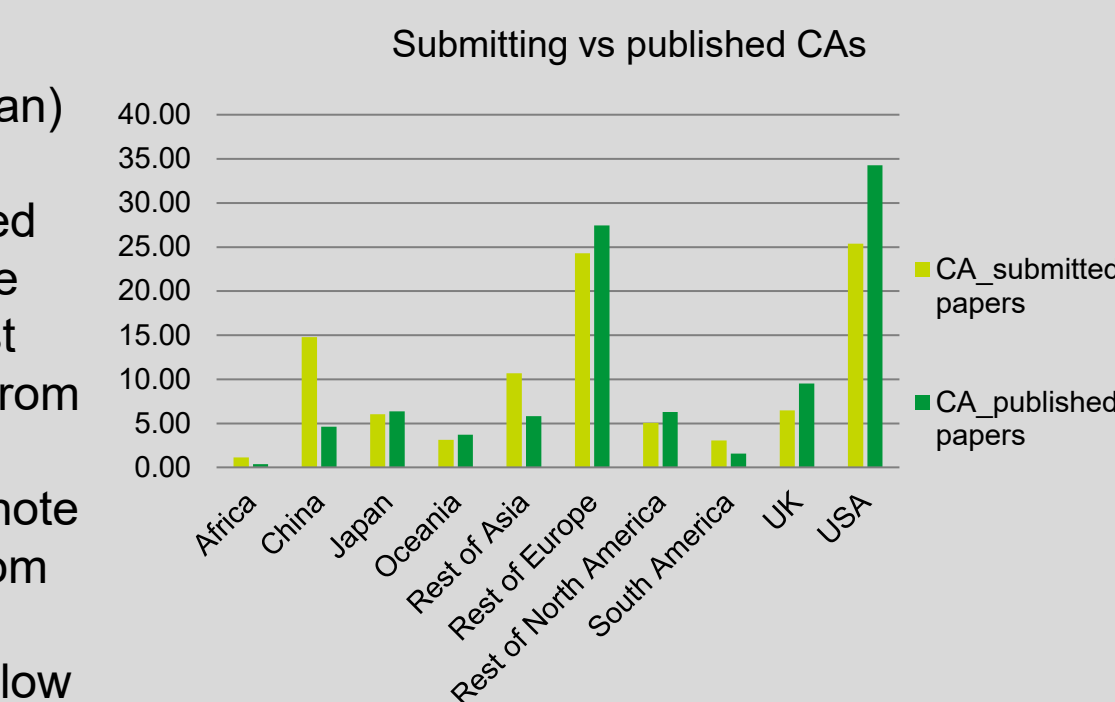
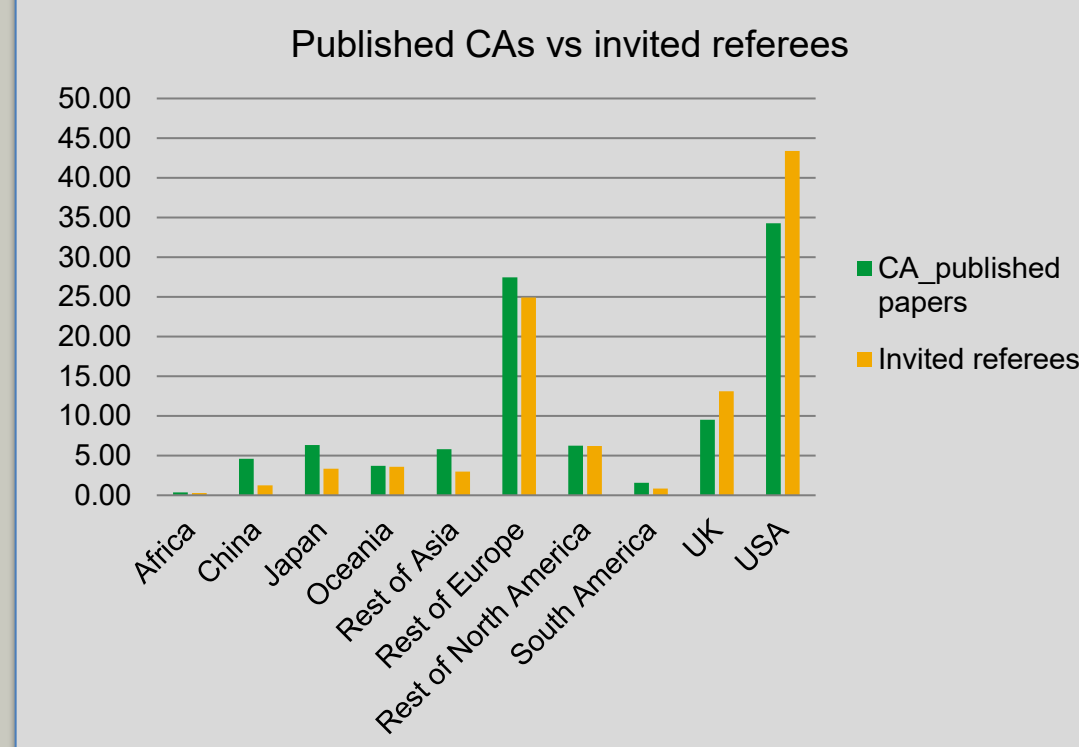
We first looked at the percentage of submissions from each geographic region over the 10-year period:



At the portfolio level, the two most notable trends were an increase in submissions from China, and a decrease in submissions from mainland Europe. However, these patterns differ significantly across the journals; we are currently looking at this in greater detail.

We then considered how geographic location impacts likelihood of publication – comparing the submitting CA pool to the published CA pool.

We find that authors from Africa, Asia (except Japan) and South America are significantly under-represented in the pool of published CAs compared to submitted papers. Given that all our journals are selective, we believe this can be explained at least partly by a disparity in the quality of submissions from these regions, though it is clearly very hard to disentangle this from any potential bias. We also note that the under-representation of published CAs from Asia (except Japan) holds true for 2022 only; numbers for the other geographic regions are too low to run appropriate statistics.



Finally, we looked at whether we are inviting referees at the rates expected given the geographic make-up of our community. Given the disparities in the quality of submissions from different regions, we compared the geographic diversity of referees to that of our published CA pool rather than our submitting CA pool. At the portfolio level, we significantly under-invite referees from all of Asia (including Japan), mainland Europe and South America. All five journals under-invite referees from Asia, while only two under-invite referees from mainland Europe. Looking at 2022 data alone, referees from Asia are still under-invited (though only by three journals), while referees from mainland Europe are invited at the expected rate; numbers from South America are too low to assess.

Conclusions & perspectives:

This initial analysis of gender and geographic diversity in our author and referee pools uncovered the following key points:

- For all our journals, there is no evidence that women CAs are less likely to have their paper accepted than men.
- At two of our journals, it appears that we under-invite women to peer-review papers.
- Authors from Africa, most of Asia and South America are less likely to have their paper accepted than authors from other geographic regions.
- Researchers from these regions are also less likely to be invited to peer-review papers, though there is some evidence that some of these disparities may have improved over the period analysed.

We will use these analyses to initiate discussions within our editorial teams – particularly in the context of ensuring appropriate diversity in invited referees. Over time, we hope that this will lead to a referee pool that better reflects our communities.

In future, we would be interested in addressing the following questions:

- All the analysis presented thus far relates to our research papers. What do our diversity statistics look like for our front section (review-type) content, which is largely commissioned by in-house staff?
- Are editors more likely to invite referees of the same gender/from the same geographic region as themselves?
- Anecdotally, editors have mentioned that it can be harder to find referees for papers from particular geographic regions e.g. Asia. Is this the case statistically?
- Is there any intersection between editor or referee gender/geographic region and success rate of submission according to author gender/geographic region?

We are also looking to implement data collection on race and ethnicity – as recommended by the Joint commitment – and will then be able to analyse our community according to these aspects of diversity.

Disclosures & acknowledgments:

I thank my colleagues at The Company of Biologists, including Claire Moulton, Seema Grewal, Rachel Hackett, Michaela Handel, Daisy Gudmunsen, Laura Patterson, Susannah Pearce, Rosie Thomas and Debbie Thorpe for assistance with data collection and discussion.

I am a member of the working group of the Joint commitment for action in inclusion and diversity in publishing, convened by the Royal Society of Chemistry, and sit on the sub-groups focussing on diversity data collection and on setting baselines and targets.

More information on the Joint commitment for action can be found at <https://www.rsc.org/new-perspectives/talent/joint-commitment-for-action-inclusion-and-diversity-in-publishing/>, or by scanning this QR code.

