

DIVERSITY AND INCLUSION AT AIP PUBLISHING

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FOREWORD

We have a vision for AIP Publishing: We want our publishing programs to reflect the communities we serve, create a more equitable workplace for those communities, amplify diverse voices, and broaden access to publishing. The path to a more equitable, fair, and inclusive research community starts with being transparent and accountable with regard to where we are on our journey.

Like many in our sector, AIP Publishing was compelled by the social justice movement in 2020 to address the bias, inequality, and exclusivity that exists in scholarly publishing. In the autumn of 2020, we formed AIP Publishing's Diversity, Equity, and Inclusion (DEI) Committee, setting high-level goals around both publishing and internal team needs. This report marks the first time AIP Publishing and our partner societies have shared public data on our demographic composition. It includes geography, gender, and estimated ethnicity data on our authors, reviewers, editors, editorial boards, and editors-in-chief.

This has been a lengthy and complex exercise. Since announcing our intentions to do this work in October 2021, we sourced more than 500,000 person records; worked with a third party to clean and analyze those records; and manually verified the findings before producing this report on what we have learned so far.

What we've learned is that things are getting better — but it's not enough. In part, these first results show signs that commitments to DEI are starting to make a difference — notably, in the composition of our editorial boards, where work is underway to diversify editorial recruitment. But we also see room for improvement. Comparing our data against industry benchmarks, especially within physics, shows we need to encourage greater diversity at every stage of the editorial structure, from our authors to our editors-in-chief.

This is just the start of a journey. There is a long road ahead as we look to increase diversity at every level and put important goals in place. But actively collecting information allows us to be strategic — and sharing our progress transparently will help hold us accountable. Tackling inequity in STEM has inherent challenges, but we all have a role to play. With a baseline in place, we're now developing a process to collect demographic data systematically, which will give a more accurate understanding of diversity across our portfolios. We'll continue to measure ourselves against this first benchmark report as we track our progress over time. We hope sharing our progress will encourage long-lasting change in our sector — to the benefit of everyone.

ALEXANDRA VANCE

Chief Executive Officer

SARA GIRARD

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INTRODUCTION

AIP Publishing's commitment when it comes to DEI is clear: We believe that *"Science belongs to everyone. It should be practiced, published, and available to anyone who seeks it, regardless of that person's race, sex, color, gender identity, sexual orientation, age, nationality, religion, socioeconomic standing, or physical abilities."*¹ DEI is also a core tenet of The American Institute of Physics' strategic framework, which aims to *"advance the physical sciences with a unifying voice of strength from diversity."*² AIP has developed a program of initiatives aimed to deliver on this mission, notably scholarships and awards; DEI policies and best practices; and statistics and reports that shed light on the state of minority representation in physics. Our internal motivation for this exercise was to uphold our DEI commitments, using data, tools, and collaboration to inform and define future action.

Externally, the case for DEI has been firmly documented, with evidence that increasing diversity also increases performance.³ Previous industry reports have identified subtle variances in decision making by reviewers and editors depending on demographic differences, such as gender.⁴ Increasing diversity at every stage of publishing helps reduce the risk and impact of unconscious bias in decision making.

This is not the first report of its kind. Companies across all industries have recognized the importance of tracking diversity, with increasing momentum behind disclosing those numbers transparently.⁵ Within our industry, there have been increasing efforts to collect demographic data.⁶ We recognize the first step in making progress toward greater diversity starts with understanding where we are now, and we have worked with other publishers as part of the *Joint Commitment for Action on Inclusion and Diversity in Publishing* to determine the right approach to collating and sharing our data.⁷ The highly collaborative nature of this group has been invaluable in our progress to date.

The reports from others in the Joint Commitment have taken a number of forms, in some cases including self-reported findings from researcher surveys, and in others providing author and reviewer data.⁸ At AIP Publishing, we already had a sense of our editorial advisory board demographics as we have been manually estimating the gender and geographic location for AIP Publishing since 2020. With that as our foundation, we worked with our publishing partners to put in place a broader benchmarking exercise to look at authors and reviewers, in addition to editorial boards, editors, and editors-in-chief. Along with AIP Publishing-owned journals, the publishing partners who participated in this exercise are: **Acoustical Society of America (ASA); American Association of Physics Teachers (AAPT); The Structural Science Society (ACA); AVS: Science & Technology of Materials Interfaces, and Processing (AVS);** and **The Society of Rheology (SOR).**

Collecting DEI data is not without risks. We were conscious of the high level of care required in data management and security, as well as the risk of perpetuating stereotypes that can inadvertently occur if DEI data is misinterpreted. Despite these risks, gathering DEI data is crucial to ensuring that science can belong to everyone. By collecting this information at every stage, from authorship to editors, we can learn more about similarities and differences in comparison to STEM community-related demographic data as a baseline for diversity. We can assess the potential for unconscious bias at each point in the publication process, acknowledging where there is an imbalance of demographics. And we can work with our community to make recommendations, set targets, and increase our diversity over time.

“Science belongs to everyone. It should be practiced, published, and available to anyone who seeks it, regardless of that person’s race, sex, color, gender identity, sexual orientation, age, nationality, religion, socioeconomic standing, or physical abilities.”

¹ <https://publishing.aip.org/about/diversity-equity-and-inclusion/>

² <https://www.aip.org/diversity-initiatives/diversity-statement>

³ <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters>

⁴ Is publishing in the chemical sciences gender-biased? Driving change in research culture. Royal Society of Chemistry.
<https://www.rsc.org/policy-evidence-campaigns/inclusion-diversity/surveys-reports-campaigns/gender-bias-in-publishing/>

⁵ <https://hbr.org/2022/09/how-companies-should-set-and-report-dei-goals>

⁶ <https://www.nature.com/articles/d41586-022-00426-7>

⁷ <https://www.rsc.org/policy-evidence-campaigns/inclusion-diversity/joint-commitment-for-action-inclusion-and-diversity-in-publishing/>

⁸ See for example https://www.aaas.org/sites/default/files/2023-01/2022-DEI-Report-DIGITAL_508_0.pdf

DATA COLLECTION AND METHODOLOGY

The initial DEI data collection goals were to identify the estimated gender, race/ethnicity, and geographic diversity for all authors, reviewers, editors, and editorial board members across every AIP Publishing journal and participating partner journal.

Data collection of this nature and scale is no small feat, as we have written about elsewhere.⁹ We chose to work with the consultancy Delta Think, who had an established process for collecting and analyzing benchmarking data.¹⁰ The ideal methodology for benchmarking would rely on self-reported data, however, putting a system of collection in place for this takes time. As initial discussions began on self-reporting, we next looked for ways to provide initial baseline analysis by using estimating software from our existing publication metadata.

The analysis comprises three years of data, from 2019-2021. Lists of names for corresponding authors, reviewers, editors, and editorial board members were gathered from AIP Publishing and partner journal sites using the Peer X-Press (PXP) web-based editorial system for manuscript handling. All data was securely transferred, with unnecessary identifying information removed.

Delta Think conducted an automated analysis on the PXP data to estimate and understand patterns of gender and ethnicity. Data was cleaned, taking 500,000 ‘person/activity’ records to a final 200,000 entries that included unique name and country information. This was essential to allow comparison across journals. The cleanup included de-duplicating as well as setting uniform naming for roles — for example, associate editor, deputy editor, and executive editor.¹¹

The data was then processed using approximating software, Namsor,¹² which estimates gender and ethnicity based on name patterns. Namsor is a well-regarded commercial tool that has been cited more than 287 times since 2016 and used regularly in related industry benchmarking exercises.¹³ It has an international outlook, basing its classification algorithms on global datasets. The software does not try to assign identity to a person. It simply analyzes the likely gender or ethnicity by assessing names and associated countries and returning probabilities of a good match against a category. Geography plays a crucial role in the categorization, as names might signify different genders in different regions. For example, “Andrea” is typically female in the UK, but male in Italy. Our analysis also uses a version of the US Census ethnicity taxonomy, which enabled us to make comparisons with other benchmarking, such as reports from the National Science Foundation.¹⁴

It is important to understand the limitations of an automated estimation of demographic data, as

the primary forms of comparison are through aging census data. Namsor cannot recognize non-binary identities purely from names; gender is only classified as male or female. The predefined set of ethnic classifications — white, Black, Hispanic/Latin, and Asian — influenced by the US Census may also not capture the nuances of global ethnicity. For example, the “Asian” category is very broad, including both East Asia (for example, Chinese heritage) and South Asia (including Indian or Pakistani heritage). The software is also more accurate for some data classifications than others, with higher confidence and accuracy for female names and Asian names. The data nevertheless provide a proxy from which to assess trends across our community.

To verify Namsor’s accuracy, samples underwent manual checking. This was applied where self-declared gender data was available. Manual checks were done for many editors and all editors-in-chief due to the relatively low volumes of data. Overall, the software claimed 83% confidence in gender matches and 85% in ethnicity. To improve this, Delta Think then refined the process, incorporating self-reported information (gender) and an initial diaspora analysis step (ethnicity).¹⁵ A sample of the final data, checked against manually classified information, revealed a 93% and 94% confidence level, respectively.

⁹ [update footnote with link to blog].

¹⁰ See also: <https://deltathink.com/how-diverse-are-your-publications/>

¹¹ Authors are corresponding authors only. Reviewers are counted by counting the number of review report(s) provided within the selected year, so the effects of more prolific reviewers were accounted for. Editors are defined as individuals who make decisions on manuscripts. XPR journal teams are summarizing contracted editors only. Board members play a variety of supporting roles, depending on the journal and the society; Board member lists were reviewed and approved by society key stakeholders.

¹² <https://namsor.app/>

¹³ Such as [https://doi.org/10.1016/S2214-109X\(19\)30342-0](https://doi.org/10.1016/S2214-109X(19)30342-0)

¹⁴ <https://new.nsf.gov/od/oia/ceose>

¹⁵ The “diaspora step” in our analysis involved using a larger number of more specific ethnicity groupings for an initial pass, which were then later recategorized into the four ethnic groups chosen for reporting, aligning with standard demographic and census data categories.

BENCHMARKING DATA

AT A GLANCE



GEOGRAPHY: More than half of all activity (authors, reviewers, editors, and board) across all journals is from Asia. The top 15 countries represent 85% of all activity, although this distribution is markedly different across roles.

When broken out by roles, Asia accounts for most authors, but is considerably less represented in editorial roles.

North America accounts for most editorial roles, although the proportion of participation from other continents has been increasing year-over-year.



GENDER: The share of females in editorial roles is increasing each year. There is least female representation as reviewers and editors-in-chief.



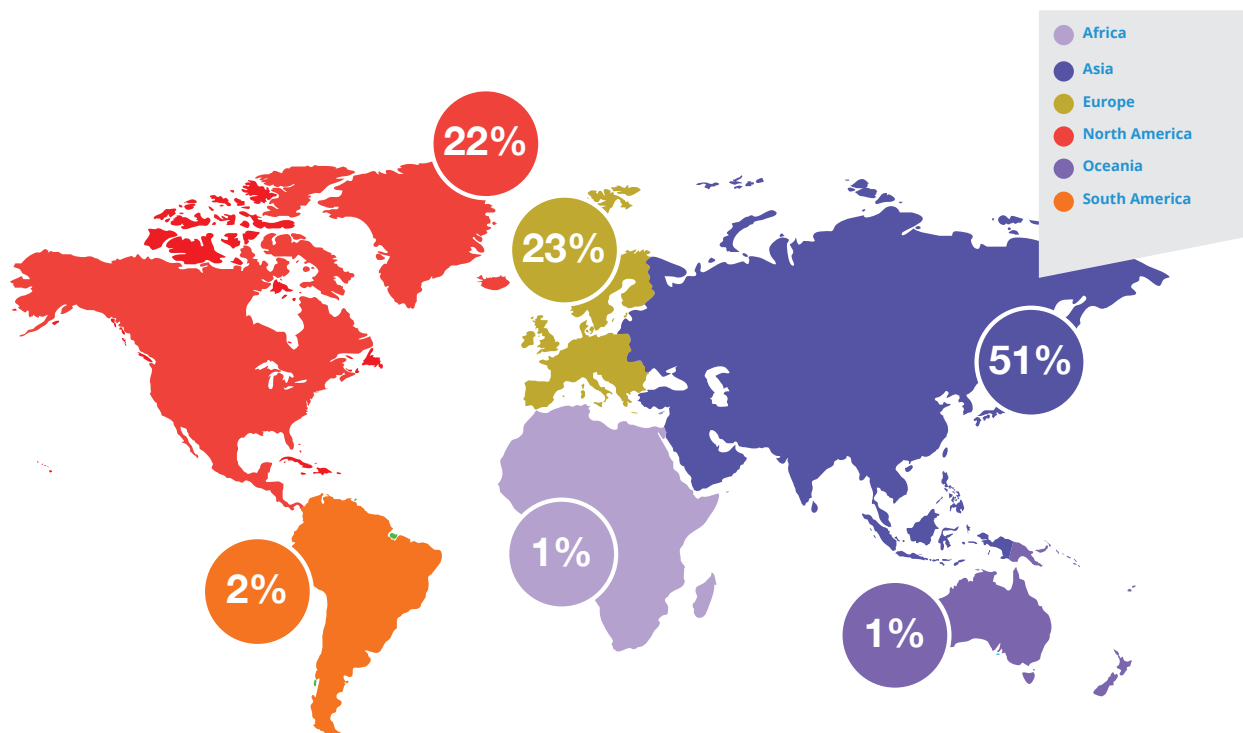
ETHNICITY: Researchers with Asian ethnicity represent more than half of all authors, likely reflecting the high volume of authors geographically based in countries in the region.

White researchers account for the majority of editor roles, although the proportion of other ethnicities is increasing a small amount each year. Fewer than 1% of contributors are Black. There are no Black editors-in-chief.

GEOGRAPHIC SHARE - ALL ACTIVITY

The majority of activity is from Asia

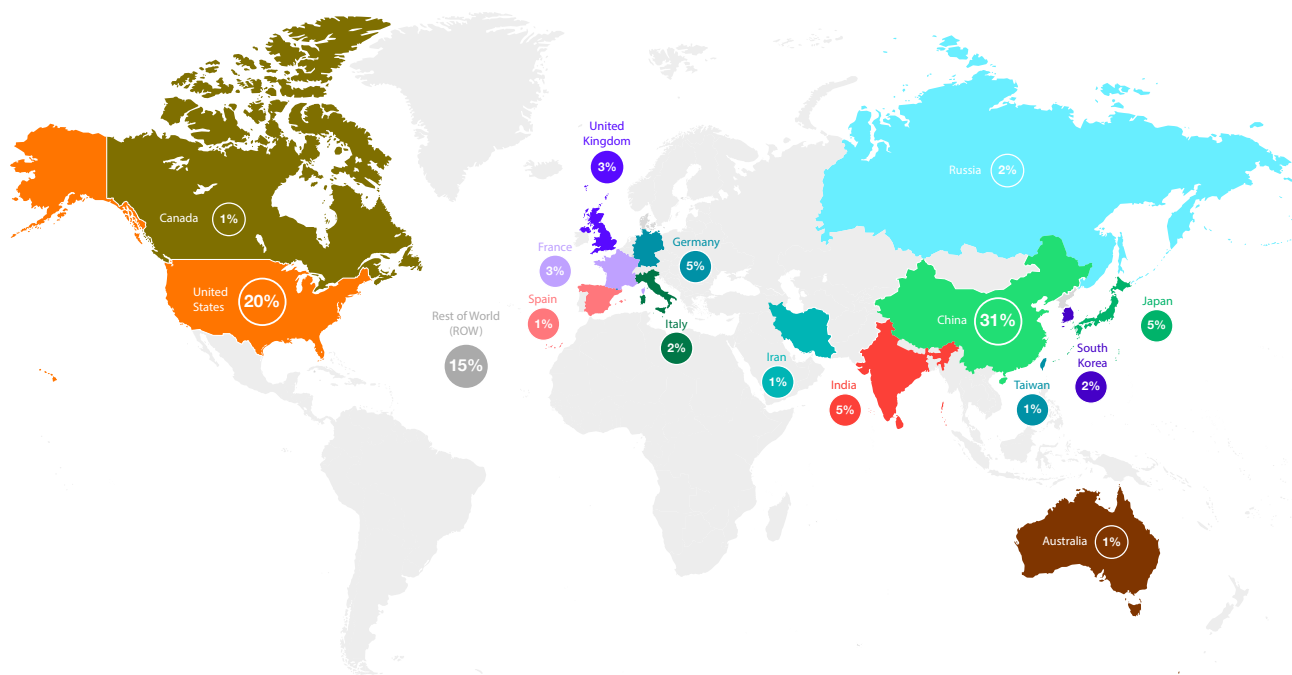
More than half of all activity (as authors, reviewers, editors, and editorial board members) for all journals combined is from Asia (51%). North America and Europe make up most of the remaining activity (22% and 23%, respectively). There is very little representation from South America, Africa, or Oceania.



THE TOP 15 COUNTRIES COVER 85% OF ACTIVITY

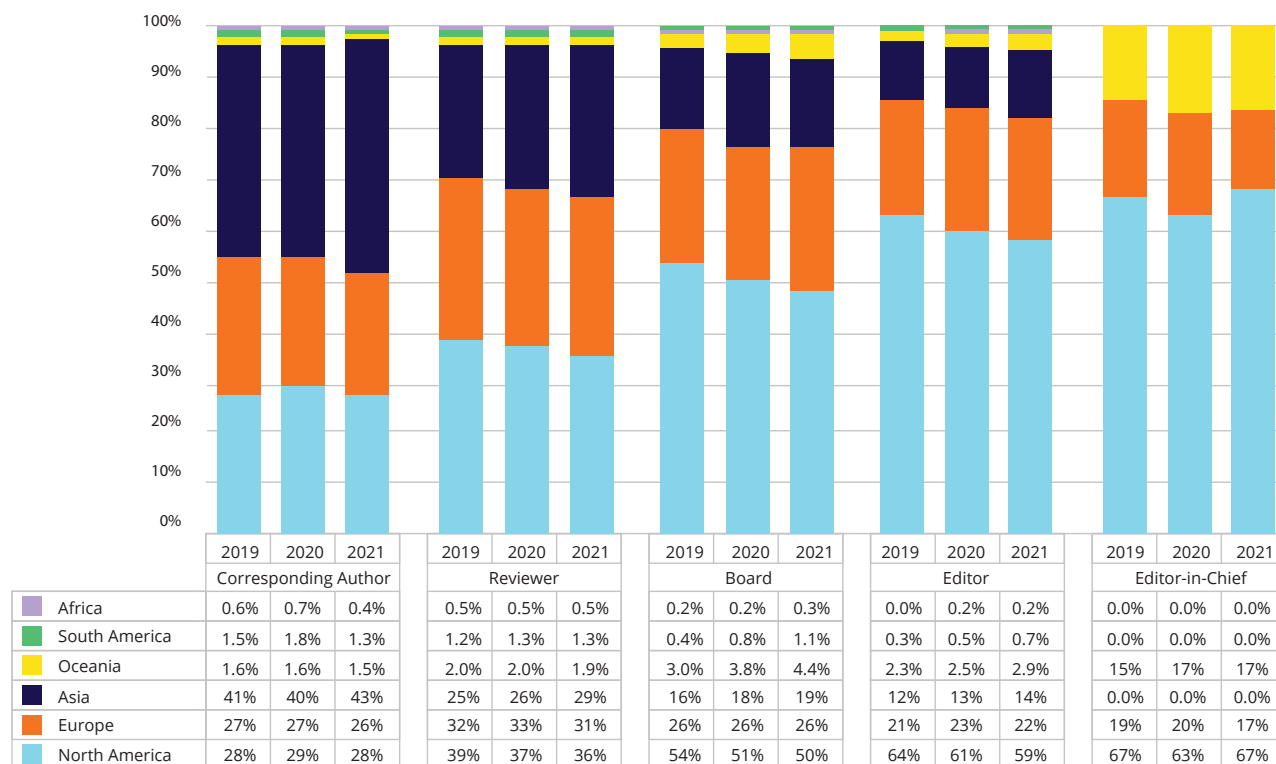
Within Asia, China accounts for 31% — the most prominent of the top 15 countries represented. Also in the top 15 countries are India and Japan, accounting for 5% each; South Korea, Taiwan, and Iran.

The United States alone is responsible for a fifth of all activity, while other countries in North America have noticeably smaller shares. Within Europe, Germany accounts for the largest share, representing 5% of all activities.



GEOGRAPHIC REPRESENTATION BY ROLE

All Societies - All Journals - Share of All Activity by Continent



ASIA ACCOUNTS FOR MOST AUTHORS

More than 40% of corresponding authors were from Asia, which is higher than the global average of 35% from industry figures for all subject areas¹⁶.

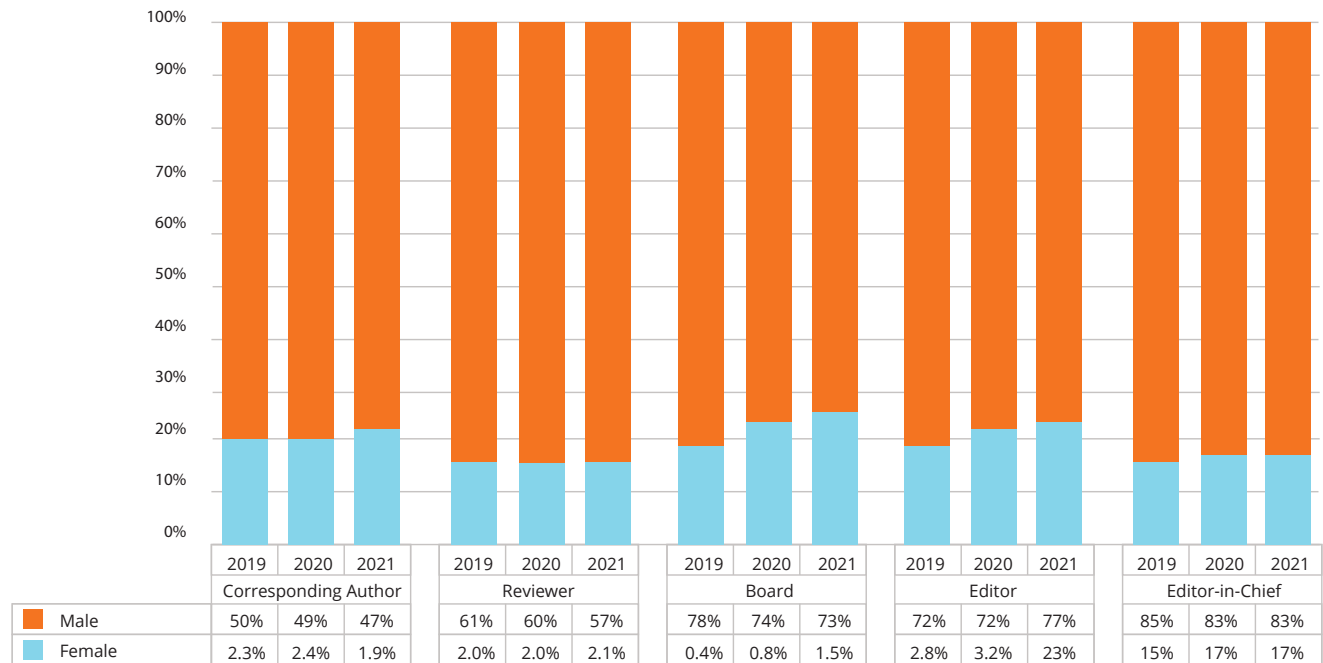
Although there is a small year-on-year increase in the percentage of Asian activity in every role (reviewers, board members, editors, and editors-in-chief), the representation of Asia is considerably smaller in editor roles — particularly when compared to North America.

NORTH AMERICA ACCOUNTS FOR MOST EDITOR POSITIONS

Although North America and Europe account for similar shares of authors (28% and 26% in 2021, respectively), North America accounts for almost twice as many board members and approximately a third more editors and editors-in-chief compared with Europe. However, there is a year-on-year decline in this share.

GENDER REPRESENTATION BY ROLE

All Societies - All Journals - Gender Split by Role Over Time



¹⁶ Delta Think analysis of COKI data (based on Unpaywall and Crossref), and Web of Science, for all subject areas.

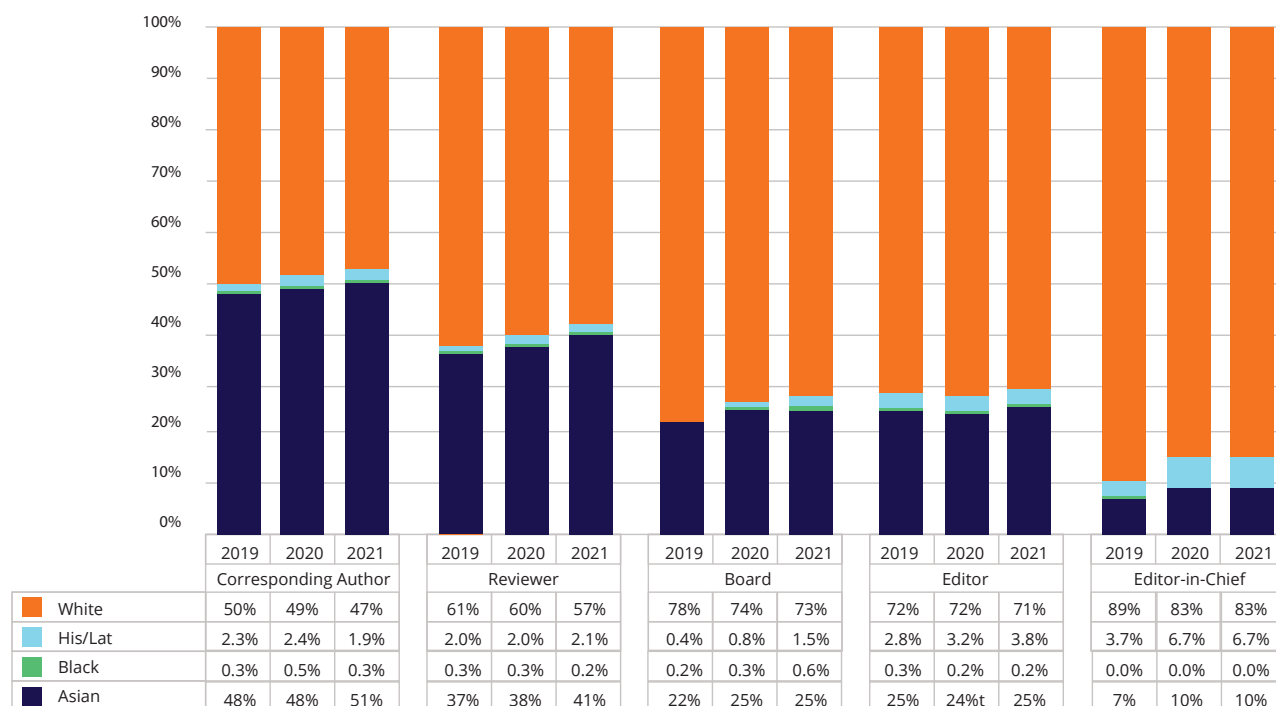
THERE IS AN IMBALANCE TOWARDS MALES IN ALL ROLES

Gender distribution across all roles shows a heavy imbalance towards males in every stage of editorial hierarchy. Unfortunately, this does mirror current industry data on the scientific community, which shows women represent 27% of STEM graduates globally¹⁷, and just 19% of Physics faculty members, according to a workplace survey.¹⁸

The imbalance is consistent in all three years of data analyzed, although there is a yearly trend of increasing female representation of both editors and boards. By 2021, approximately a quarter of all boards and editors were female. There is least female representation for reviewers and editors-in-chief (16% and 17% respectively in 2021).

ETHNIC REPRESENTATION BY ROLE

All Societies - All Journals - Ethnicity Split by Role Over Time



ASIANS REPRESENT OVER HALF OF ALL AUTHORS

It is unsurprising to see approximately half of all authors in all three years of data were Asian, given the high volume of corresponding authors with a geographic location in Asia. More than 40% of reviewer activity was also by Asians. But again, as noted in previous sections, this declines at each stage of editorial hierarchy, with only a quarter of all board members and editors — and only 10%

¹⁷ OECD/UIS/Eurostat (2021), Table B5.2 STEM average - figures are for 2018.

¹⁸ <https://www.aip.org/statistics/reports/women-among-physics-and-astronomy-faculty>

of editors-in-chief — representing Asians in 2021. There is a small increase in share for Asians year-on-year across all roles.

Editor roles are dominated by white researchers, again complementing the higher proportion of North Americans holding roles as reviewers, board members, editors, and editors-in-chief. The gap is greatest for editor-in-chief positions, where in 2021, 83% were white — although the balance is very slowly shifting.

Fewer than 1% of contributors are Black, with no change from 2019 to 2021. There is a small positive progression in the level of Black board members year-on-year, although this still represents less than 1%. There are no Black editors or editors-in-chief. These observations align with AIP's TEAM-UP report, which highlighted persistently low representation of African Americans at Batchelor degree level in the USA.¹⁹

¹⁹ <https://www.aip.org/diversity-initiatives/team-up-task-force>

OBSERVATIONS

When we set out our intentions to undertake this analysis, we acknowledged we might see things we didn't like. There is a great deal of disparity for certain demographics within our community. This is particularly true for women and Black researchers.. There is an imbalance towards white, North American males, particularly in editor roles. Our data indicate the imbalance we see is even greater than across our sector when comparing against all disciplines. That's unacceptable. We're going to do better.

The average aggregated journal data we have now clarifies where we can focus action to increase diversity. We have already shared these findings with all editors-in-chief to bring visibility to where we are and where we believe we should be. All AIP Publishing editors-in-chief have agreed to diversify the demographics of their editorial teams, working alongside their AIPP counterparts. We're also exploring projects and tools to support diversity in recruitment, as well as navigating unconscious bias. As these projects and conversations unfold, we will be taking action. This data implores us to put into place the training, structures, hierarchical changes, and targeted incentives we need to embrace a broader and more diverse swath of authors and editors — and support them on their journeys.

The next steps, which are already underway at AIP Publishing, involve getting active data collection into place, which will in turn allow us to replace the estimated data shown in this report with self-reported data directly from our community. The more granular demographic data, across all four key roles, will provide a more accurate and deeper view of our communities and our progress. We are currently assessing approaches to collect self-reported data and will be sharing more about this in the coming months.

Ultimately, this is a starting point. We will continue to share our next steps — and our progress — as conversations crystallize into action. We welcome feedback from our community on what we have shared so far, and their collaboration on the journey ahead.



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