

Confronting gender bias in *Nature's* journalism

An external analysis of 15 years of stories finds men quoted more than twice as often as women.

A consistent finding of researchers studying the news media is that women are quoted much less often than men. The Gender Gap Tracker (GGT), an automated system created by a team at Simon Fraser University in Burnaby, Canada, has tracked seven Canadian news sites since October 2018 and found that 71% of interviewees quoted in articles were men (F. T. Asr *et al.* *PLoS ONE* 16, e0245533; 2021).

Four other media agencies around the world worked with the GGT to follow 5 days of their own news coverage last November, and found that 73% of quotes were from men. And the Global Media Monitoring Project reported in March that in 2020, just 25% of news sources and subjects were women – although this was an increase from 17% in 1995, when the project began its work.

Two researchers in the United States have now analysed *Nature's* journalism – and found similarly sobering results.

The researchers estimate that, in 2020, some 69% of the direct quotes (not including paraphrased comments) in *Nature's* journalistic articles were from men. This is according to a software analysis of the gender of people quoted in more than 16,000 *Nature* News, Features and Careers articles between 2005 and 2020. Overall, the proportion of men being quoted in *Nature's* journalism has been falling. It was around 80% before 2017, and 87% in 2005.

These findings are an important and welcome reminder of gender bias in journalism – a problem that *Nature's* editors are striving to address. The numbers also show how software can be used by writers and editors to recognize biases, and that at *Nature* we need to work harder to eliminate them.

The analysis, posted before peer review (N. R. Davidson and C. S. Greene Preprint at bioRxiv <https://doi.org/10.1101/2021.06.21.449261>; 2021), was automated with software. The researchers first scraped articles written by journalists and published on *nature.com*. They then wrote code to pick out the names of people quoted by reporters, counting those whose quotes are enclosed in speech marks. Another algorithm called *genderize.io* was used to assign gender, a standard approach for large bibliometric studies.

The idea for the study was developed in consultation with *Nature*, but the authors, Natalie Davidson and Casey Greene, both computational biologists at the University of Colorado School of Medicine in Aurora, worked

“*Nature's* journalists tend to quote more researchers with names commonly used in English-speaking cultures.”

independently to design and conduct the study.

The duo found one exception to the main finding on gender bias – in *Nature's* Careers features articles. Quotes from men and women appear in equal numbers in this section, which comprises reporting from journalists on different aspects of research careers.

The study does not assess all of *Nature's* non-primary-research output; for example, content written by invited expert authors is not included. This category of content tends not to directly quote other individuals.

But over the past five years, *Nature* has started collecting data on gender diversity among the authors of such commissioned content. For example, last year, women comprised 58% of authors in *Nature's* World View column – up from 35% in 2017, and from 18% in 2016. And, in 2020, women accounted for 34% of authors of News and Views articles – which explain and analyse new research – compared with 26% in 2017 and 12% in 2012. Another example of journalism is our photo-essay section, Where I Work, which profiles researchers in places where they study. This has featured 56% female scientists since its introduction in 2019.

Caveats and limitations

As with all studies, there are some caveats. Not all names could be analysed, and Davidson and Greene note that their software has a slight male bias when it comes to assigning gender to names. For instance, in a sample of articles from 2005 to 2015, it assigned 78% of quoted speakers as male, but the true number, when the authors checked, was 75%. It also cannot estimate non-binary gender.

To help contextualize their findings, the researchers consider various ways of measuring the overall proportion of women in academic research. The global science report by UNESCO, the United Nations science and education organization, was published earlier this month and puts this at 33% in 2018 (go.nature.com/3zl0jva). By comparison, Davidson and Greene found that women made up around 20% of last-author and 25% of first-author positions on *Nature* papers; the ratios are about 25% and 37% in a wider selection of papers in Springer Nature journals.

Davidson and Greene also analysed what they call the ‘name origins’ of quoted interviewees in *Nature's* journalism – a linguistic analysis that assigns names to broad regions of the world where a particular name is over-represented. The authors use an algorithm called NamePrism that excludes the United States, Canada and Australia because of the diversity of names in these countries.

This analysis suggests that *Nature's* journalists tend to quote more researchers with names commonly used in English-speaking cultures, and fewer with names that the algorithm classifies as being of East Asian origin (including China, Singapore, Vietnam and other southeast Asian countries). It also indicates that this imbalance in name origins is greater than that seen in the names of last authors in Springer Nature research papers.

Nature's journalism team has been making efforts to track and improve its representation of all under-represented groups, but previously this has not been a

centralized effort. In the past year, however, the team has been developing and trialling a prototype system, with the goal – while abiding by data-privacy regulations – of collecting information on the gender, career stage and location of journalistic sources, expert authors and other contributors. We hope to be able to use this to establish and report a set of baseline figures, and then to improve on them. We are also working hard to include more voices from all groups that are under-represented in research.

More than half of *Nature's* journalism team is female, but the overwhelming majority of its members are in Europe, the United States and Australia. We recognize that we need to strive harder to find diverse sources across the world.

Journalists, non-profit organizations and scientists have written excellent guides to diversifying sources, such as at the Open Notebook (go.nature.com/3czei0k). They have also produced databases of diverse experts in many scientific fields. And, as personal testimonies from science reporters and other journalists attest, keeping track of the numbers, as Davidson and Greene are doing, is an essential part of this process, so we can be reminded of just how much more we need to do.

Happy 21st birthday, Young Academies

A global movement of younger researchers is making its mark on science and policy.

The new millennium coincided with the start of an important new movement in research. In June 2000, early-career researchers in Germany established the first in a wave of national Young Academies, organizations dedicated to looking after the needs – and advancing the aspirations – of researchers at the start of their careers. Twenty-one years later, there are Young Academies in 45 countries, as well as international ones such as the Global Young Academy and the Young Academy of Europe. And the wave is growing: 2020 saw Young Academies launch in the Democratic Republic of the Congo, Nepal and Romania.

Young Academies are a necessary development in international science, as the founders of Hungary's Young Academy, which launched in 2019, explain on page 599. Most early-career researchers are in a much more precarious position than were previous generations – a situation worsened by the COVID-19 pandemic and a year of financial losses for universities. As we have reported, funding agencies are not doing enough to support these scientists. By organizing and collaborating on a larger scale, young

researchers are making themselves heard.

One of the aims of the Hungarian academy's founders is to encourage the formation of more Young Academies, and to show their peers how this can be achieved. It's timely advice: there are still plenty of places where Young Academies do not exist, including China, England, the United States and most of the Middle East, where only Egypt and Israel have Young Academies.

There's no one model for a Young Academy – their structure and funding will depend on national circumstances. Some are independent non-governmental organizations; others have a formal relationship with a country's national science academy. Regardless of the model, it's essential that they are a platform for researchers to have a voice on the issues that matter to their careers and to society.

Young Academies offer a range of activities. In the past year, they have run events and workshops on such diverse topics as working during the pandemic, grant-writing, responsible research, and supporting refugee and at-risk scholars. They also provide research-informed advice for decision-makers. For example, Young Academy members have been urging funding agencies to ensure that research-evaluation systems incorporate credit for parental leave.

The academies' advice to decision-makers is often on the topics that are front and centre for young people – such as open science and open data, climate change and biodiversity loss. Last November, members of the Netherlands Young Academy published a study, *Flying High But Flying Less*, on how researchers could reduce carbon emissions from work-related air travel.

Despite the pressures that early-career researchers experience – Young Academy members and office-holders are often carers and parents of young children – members are committed to carrying out public-engagement activities to encourage younger generations to get into science.

It takes time for the seeds of new institutions to bear fruit, but the Young Academy movement is already having an impact on scientific advice, for example. Last month, the European Commission included representatives from the 14 European Young Academies in the latest meeting of its official Group of Chief Scientific Advisors. The group advises Europe's leaders on science-policy questions, such as those related to cleaner energy or dealing with future pandemics. It's a rare example of how younger people's voices are being incorporated into official scientific advice – yet it shouldn't be a rarity. More science-advice systems need to be doing the same. This message is now more important than ever. But even before the pandemic, younger people's voices struggled to be heard in science's established institutions – especially by the leadership of funding agencies, universities and national academies.

Just as climate-change policy has been electrified by the activism of younger people, science, too, needs to hear – and act on – the voices of the next generation, as it did in earlier times. Remember that it was younger scientists – several in their thirties – who founded the Royal Society of London.

Happy 21st birthday to all Young Academies. May there be many more to come.

 It was younger scientists who founded the Royal Society."