



Data to support Gender Diversity

Stephane Berghmans, DVM PhD
Vice President, Academic & Research Relations EU

LIBRA Workshop

Sex & Gender in Research & Experimental Design Babraham Institute, Cambridge, UK 26-27th September 2018

Elsevier has a unique vantage point on the world of research





Primary publishing

Each year

- 1.4 million article manuscripts received by ~2,500 journals (all offer Open Access options)
- 400,000 new articles published, in addition to 14M existing articles
- 2,000 new books published
- ScienceDirect: 14M articles, ~900M digital article downloads
- Scopus: 60+M records, 22,800 titles, 5,000 publishers, 1.4B citations (back to 1970)
- SciVal: 170+ trillion metrics values
- Pure: current research information system: >200,000 researchers supported
- Mendeley: 5M users globally
- Grants:7,000 sponsors, 20,000+ active opportunities, ~5M awarded grants
- Patents: >93m records, 100 patent offices

Derived and aggregated data Global Agenda Council on the Future of Software & Society

Deep Shift Technology Tipping Points and Societal Impact Sept 2015



COMMITTED TO IMPROVING THE STATE OF THE WORLD

Technology tipping points expected to occur by 2025:

- People wearing clothes connected to the Internet
- Robotic pharmacists in the US
- The first 3D-printed car
- Consumer products printed in 3D
- 90 percent of the population with regular access to the Internet
- Driverless cars
- First transplant of a 3D-printed liver
- all will be influenced by sex-gender differences at the biochemical, physiological and behavioral levels
- > such differences should be taken into consideration when research results are used to drive innovation and product development

Statement of Principles and Actions Promoting the Equality and Status of Women in Research



Principles

To address the equality and the status of women in research and, in turn, change and improve systems, two aspects need to be considered:

- The participation and promotion of women in the research workforce. This includes the longstanding dominance of certain demographics in academic culture and historical obstacles to their participation within particular disciplines and fields of research.
- The integration of the gender dimension in research design and in the analysis of research outcomes.

GRC 5th Annual Meeting, New Delhi, May 2016

SHE FIGURES 2015



Next: SHE Figures 2018

In the period spanning from 2010 to 2013, the propensity to integrate a **gender dimension in research content** measured in scientific articles in the EU-28 ranged from virtually zero in agricultural sciences, engineering and technology, and natural sciences to over 6 % in the social sciences. This proportion increased in the EU faster than worldwide over the period spanning from 2002 to 2013. Although the proportion of publications with a gender dimension is highest in the social sciences, between 2002 and 2013 the growth rate was lowest in this field. Conversely, engineering and technology had one of the lowest proportions of publications with a gender dimension (0.1 % in 2010–2013), but the highest growth rate between 2002 and 2013 (14 %).

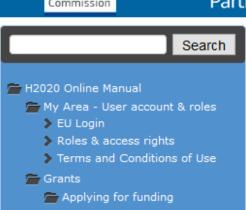
- Between 2010 and 2013 in the EU-28, the proportion of scientific publications with a gender dimension ranged from virtually zero in agricultural sciences, engineering and technology, and natural sciences to 6.2 % in the social sciences. The propensity to integrate a gender dimension in research content increased faster in the EU than worldwide during the period from 2002 to 2013.
- Compared to other countries, the Nordic countries often have higher shares of research output with a gender dimension. Note, however, that the gaps (in percentage points) between the Nordic and other countries are generally small.



RESEARCH & INNOVATION

Participant Portal H2020 Online Manual





- Find a call
 - Horizon 2020 structure and budget
 - What you need to know about Horizon 2020 calls
- Find partners or apply as individual
- Register in the Participant Register
 - Registration of your organisation
 - LEAR appointment

Gender in EU-funded research Toolkit and Training





Gender equality

GENDER EQUALITY IN HORIZON 2020

Gender equality concerns **all parts** of Horizon 2020. When drafting your proposal, you need to pay attention to gender equality from different angles, in terms of:

- 1. Human resources: balance between women and men in the research teams who will implement your project
- 2. <u>Content</u>: analysing and taking into account the possible differences between men and women, boys and girls, or males and females, in the research and innovation **content** of your project.

INTEGRATING THE GENDER DIMENSION IN THE CONTENT OF RESEARCH AND INNOVATION

When **applying** for a grant under Horizon 2020, you are invited to explore whether and how the gender dimension is relevant to your research. In the proposal template (section 1.3), you are asked to "describe how sex and/or gender analysis is taken into account in the project's content".

The way sex and/or gender analysis is taken into account in your proposal will be assessed by the evaluators alongside the other relevant aspects of the proposal. This is even more important if you submit your proposal to a topic where gender-related issues are explicitly mentioned.

All H2020 research topics with a gender dimension

Briefing Paper

n.1 June 2018

GENDER ACTION

Gender Equality in the ERA Community to Innovate Policy

GENDER IN HORIZON EUROPE

AN UNFINISHED BUSINESS

Horizon 2020 Interim Evaluation of Gender Equality, 2017

25% women among project leaders

50% women in advisory groups

14% funded projects with a comprehensive integration of the gender dimension

10 Recommendations

Conclusions

The design of Horizon Europe has given great importance to the links between inclusive societies, R&I and global challenges. The gender dimension is crucial to design inclusive societies as well as to produce responsible R&I, and constitutes a global challenge in itself as stated in the UN Sustainable Development Goals. Horizon Europe should not lose this momentum to advance gender equality in order to make R&I investments shape a more inclusive future based on better science and innovation.

News

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Culture

Lifestyle

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Books Music TV & radio Art & design Film Games Classical Stage

Publishing

Publishing industry is overwhelmingly white and female, US study finds

Survey of workforce at 34 book publishers and eight review journals in US reveals 79% of staff are white and 78% female with UK numbers still unmonitored

Man Booker winner Marlon James: 'Writers of colour pander to the white woman'





Our publishing commitment

We are committed to ensuring that publishing is fair and equitable for all

Because we believe greater diversity advances science and drives innovation.

Because we know our research communities look to us to be an inclusive, unbiased home for scientific research and discoveries.

Elsevier and Gender (Working Group)

- 1. Editorial policies and guidance to authors on reporting sex and gender in research
- 2. Gender diversity for reviewers, editors, and editorial board staff in journals
- 3. Gender diversity for speakers/panelists at Elsevier conferences
- 4. Adapt internal data systems to capture gender metrics
- 5. Address unconscious bias during peer review
- 6. Promote research and publishing STEM studies on sex & gender and overall diversity
- 7. Seek gender balance in internal/external communications & outreach
- 8. Enhance gender diversity within Elsevier management ranks and gender parity across the organization
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Editorial policies requiring sex- or gender- specific reporting of scientific research

"Failure to account for sex and gender may result in the inability to reproduce scientific findings, and often translates into less than adequate care of, or even harm to, men and women."



in Science, Health & Medicine, Engineering, and

Contributors

Links Translations

Search The Site

What is Gendered Innovations?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

Sex and Gender Analysis Policies of Peer-Reviewed Journals

A growing number of peer-reviewed journals have editorial policies requiring sex- or gender- specific reporting of scientific research. The International Committee of Medical Journal Editors (ICMJE) integrated sex and gender analysis into its guidelines December 2016. The Lancet and Sex and Gender Equity in Research (SAGER) have published guidelines for authors and journal editors for evaluating manuscript for excellence in sex and gender analysis. Journals with policies on sex- and genderspecific reporting include:

Recommendations

Conflicts of Interest

Journals

Stating That They Follow the ICMJE Recommendations

About ICMJE

News & Editorials

Recommendations

Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*

1. About the Recommendations

A. Preparing a Manuscripe for Submission to

Conflicts of Interest



Read the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals.

Use the ICMJE Form for Disclosure of Potential Conflicts of Interest to generate a disclosure statement for your manuscript.



Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals

Updated December 2017

- I. About the Recommendations
 - A. Purpose of the Recommendations
 - B. Who Should Use the Recommendations?
 - C. History of the Recommendations
- II. Roles and Responsibilities of Authors, Contributors, Reviewers, Editors, Publishers, and Owners
 - A. Defining the Role of Authors and Contributors
 - 1. Why Authorship Matters
 - 2. Who Is an Author?

1 Participants

- 3. Non-Author Contributors
- B. Author Responsibilities—Conflicts of Interest

- i. Registration
- ii. Data Sharing
- IV. Manuscript Preparation and Submission
 - A. Preparing a Manuscript for Submission to a Mical Journal
 - 1. General Principles
 - 2. Reporting Guidelines
 - 3. Manuscript Sections
 - a. Title Page
 - b. Abstract

d Methods

c. Introduction

www.icmje.org/icmje-recommendations.pdf

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Editorial policies for sex and gender analysis

Sex and gender are basic variables in preclinical and clinical scientific research.¹⁻⁴ Data show that physiology differs between male and female humans and animals...

*Londa Schiebinger, Seth S Leopold, Virginia M Miller
Department of History, Stanford University, Stanford,
CA 94305–2024, USA (LS); Gendered Innovations in Science, Health
and Medicine, Engineering, and Environment, Stanford University,
Stanford, CA, USA (LS); Department of Orthopaedics and Sports
Medicine, University of Washington, Seattle, WA, USA (SSL); Women's
Health Research Center, Mayo Clinic, Rochester, MN, USA (VMM)
schieb@stanford.edu

Standards for transparent reporting of sex and gender are For ICMJE recommendations

Panel: Proposed guidelines on reporting sex and gender in medical journals

- 1 Require correct use of the terms sex and gender. Using these terms precisely increases clarity, enables critical review, and facilitates meta-analysis.
- 2 Require the reporting of the sex, gender, or both of the study participants, and the sex of animals or cells. If males and females were not studied in appropriate proportions, these elements of study design should be justified in the Methods section, and considered in the Discussion section.
- Consider analysing data by sex, gender, or both where appropriate, or providing the raw data in the main manuscript, supplemental material, or in an accessible data repository. Report on the approach chosen for sex and gender analysis and comment on it in the Discussion section. In studies that are underpowered to detect sex or gender differences, access to data allows for use of those data in meta-analyses and systematic reviews.
- 4 Analyse the influence (or association) of sex, gender, or both on the results of the study where appropriate, or indicate in the Methods section why such analyses were not performed. Where those analyses were not performed, consider covering this topic in the Discussion section. Readers need to know whether the results generalise to both sexes. Include negative results as well as results that show differences.
- If sex or gender analyses were performed post hoc, indicate that these analyses should be interpreted cautiously. Negative post-hoc analyses may be underpowered, leading to a false conclusion of no difference. By contrast, if many such analyses were done, the additional comparisons may lead to spurious significance suggesting an erroneous conclusion of a sex-related or gender-related difference where no such difference was in fact present. To minimise this likelihood, authors could consider making a statistical adjustment (such as a Bonferroni correction).

THE LANCET

Volume 388, Issue 10062, 10-16 December 2016, Pages 2841-2842

https://doi.org/10.1016/S0140-6736(16)32392-3

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The European Association of Science Editors (EASE) is an international community of individuals and associations from diverse backgrounds, linguistic traditions and professional experience in science communication and editing.

About Us V Membership V Com

EASE > Blog > EASE Gender Policy Group > The gendered system of academic publishing: EASE GPC in the Lancet

The gendered system of academic publishing: EASE GPC in the Lancet

Members of the **EASE Gender Policy Committee** have published an article in The Lancet, addressing "the gendered system of academic publishing", suggesting that it "is both a reflection and a cause of women's under-representation and disadvantage in other areas of the scientific enterprise."

In addition to summarising current developments in gender issues within the publishing community (such as the self-report from *Nature* and 2015 study of *Obstetrics & Gynecology*), the article discusses outcomes from a workshop held in November under the title; Gender Equality in Academic Publishing: Challenges and Opportunities in Health Journals. The workshop looked at "identifying strategies to improve gender equity in peer review and publication processes."

The article is free to access from the journal here

Details of the work and impact of our Gender Policy Committee, including the SAGER Guidelines, can be found on their dedicated pages on the

Joan Marsh (EASE GPC Member; Deputy Editor, The Lancet) – raising sex & gender guidelines with the Council of Science Editors (https://www.councilscienceeditors.org/) to work with them to consider adopting/adapting the guidelines as relevant.

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HOW THEY HAPPENED

The guidelines were developed by a panel of 13 experts representing nine countries through a series of teleconferences, conference presentations and a 2-day workshop. The panel conducted an internet survey of 716 journal editors, scientists and others in the international publishing community and a literature search on sex and gender policies in scientific publishing.

HOW THEY WORK

The resulting guidelines are a comprehensive procedure for reporting of sex and gender information in study design, data analyses, results and interpretation of findings.





AND WHO SHARES RESPONSIBILITY

The use of the guidelines by authors and reviewers, their adoption by editors as gatekeepers of science, and their respect by funders all contribute to integrating the assessment of sex and gender into manuscripts as an integral part of the editorial process.



MEMBERSHIP OF THE GENDER POLICY COMMITTEE

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Paola De Castro
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Head of the Publishing Unit
National Institute of Health
– Italy
Executive editor Annali

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Ines Steffens Editor-in Chief, Eurosurveillance, Sweden ines steffens@ecdc.europa.eu

Cara Tannenbaum, MD, MSc Scientific Director Institute of Gender and Health Canadian Institutes of Health Research (CIHR) cara tannerbaum@umontreal.ca

Sera Tort Medical Editor, Cochrane, Spain tort.sera@gmail.com

CONTACT US

If you are interested in the work of the EASE Gender Policy Committee or in joining it, or the presentation and adoption of the SAGER guidelines, please contact us through secretary@ease.org.uk and visit http://www.ease.org.uk/ about-us/organisation-and-administration/gender-policy-committee.



SEPTEMBER 2016 . Content by GPC of EASE . Graphic Design: Marti Betz Design



SEX AND GENDER EQUITY IN RESEARCH



PREPARED BY
THE GENDER POLICY COMMITTEE
OF THE
EUROPEAN ASSOCIATION
OF SCIENCE EDITORS

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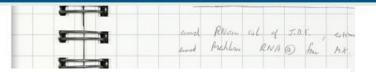
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EXPERIMENTAL MODEL AND SUBJECT DETAILS

*Please omit this section if your study does not use experimental models (e.g., computational studies).

Please list here under separate headings all of the experimental models (animals, human subjects, plants, microbe strains, cell lines, primary cell cultures) used in the study. For each model, provide information related to their species, maintenance, and care. In cases where this is appropriate, the influence (or association) of sex, gender, or both on the results of the study must be reported.

For in vivo animal studies, reporting of the sex and age/developmental stage of the subjects is required. If there are technical or scientific reasons why sex/gender and age/developmental stage cannot be reported, a statement must be provided to disclose this and the reasons why. We also ask authors to provide details recommended by ARRIVE guidelines. This includes the available and detailed information related to the species. strain and backcrossing status, developmental stage, weight, genotype.

For human studies, the age/developmental stage, sex, and gender identity (if known) of the subjects must be provided. If there are technical or scientific reasons why the sex and/or gender of the subjects cannot be reported, a statement must be provided to disclose this and the reasons why. Please also provide information related to the subjects (e.g., sample size, etc.) or indicate where in the manuscript such

For cell lines, primary cultures, microbe strains, and plants, please describe culture/growth conditions, including temperature. Sex of cells must also be reported. If this is not possible, a statement must be provided to disclose this and the reasons why. Please note here available information about cell authentication. As you may be aware, the practice of cell authentication is becoming more common, and

For studies that use organisms as source for materials used in experiments (e.g., crystallography, biochemistry, in vitro studies), please provide details on the source organism (e.g., strain, growth/husbandry conditions, sex, age, etc.).

Elsevier journals – Guidelines for Authors

... in 568 biomedical and life sciences journals

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender

should be used correctly.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments and, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

... in 2000+ journals

Use of inclusive language

Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

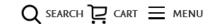
Elsevier and Gender (Working Group)

- 1. Editorial policies and guidance to authors on reporting sex and gender in research
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www.elsevier.com/about/open-science/science-and-society/unconscious-bias



Home > About > Open science > Science and Society > Unconscious bias

Unconscious bias

What is unconscious bias?

Unconscious bias (UB) arises from a feature of the human brain that helps us make decisions faster via a series of shortcuts. It shapes our perception of the world and our fellow human beings and can lead to us make questionable decisions. It means that we often end up treating people and situations based on unconscious generalizations and preconceptions rather than using a set of objective qualitative or quantitative parameters.

Externally

- Raising awareness as part of workshops (e.g. Author Workshops) encouraging institutions to have their own dedicated workshops
- Publication of an Editors' Update article "Why (and how) we need to kick the habit: exploring unconscious bias", by Christopher Tancock (Nov 2017)
- Elsevier.com page (January 2018) information, tools & resources, videos and tests and is linked to relevant pages such as Editors' and Reviewers' home pages

Internally

- <u>Publishers' Unconscious Bias Best Practice</u> internal webpage: located on our Publishers Corner; introduces the topic, tips and tricks, including case studies and editor-facing slides.
- Internal workshops for Elsevier staff including publishers
- Starting to introduce double blind peer review and/or other forms of peer review for journals where appropriate, adapted to the needs of the community in question



Home > Reviewers > How to review

How to conduct a review



1- Before you begin

Instructions for reviewers address unconscious bias

"Unconscious bias can lead us to make questionable decisions which impact negatively on the academic publishing process. <u>Read further</u> to find out more about this important subject and to view resources on how to identify and tackle bias"

- Page is linked in reviewer invitation letters
- Page is linked with free tutorials on

Elsevier Research Academy

Page has over 1M visits per year





Home > Elsevier Connect > Reviewers' Update > The importance of di...

The importance of diversity in peer review

Researcher Academy's latest webinar explores how early career researchers can support and encourage better and broader reviewing

By Priyanka Kalra and Christopher Tancock September 14, 2018





Raising awareness

Webinar on sex and gender reporting guidelines for reviewers

Peer reviewers can help identify sex/gender blindness in research and flag concerns if the sample(s) from which authors draw their conclusions could be impacted by differences or similarities in terms of sex or gender.

https://t.co/3x4jc8Ya3o



www.peere.org

NEW FRONTIERS OF PEER REVIEW



Q

Investigating Peer Review with large-scale database

Is Peer Review as a whole biased against female researchers?

- > PEERE received anonymized data from
 - 10 years historical data of 70 Elsevier journals across different disciplines
 - 10 years historical data of 100 Wiley journals
 - Entire database of Royal Society
- Ongoing project with outcomes to be published as a research article



IoP recently published an open report analyzing gender and geographical dataOn IOP Publishing authors, reviewers and Editorial Board Members between
2014 and 2018 (<u>link to the report</u>)



eLife recently reported a study of their database

Since its launch researchers outside North America and Europe were less-likely to be invited to perform a peer review and to be appointed as editors (<u>link to</u> the article).

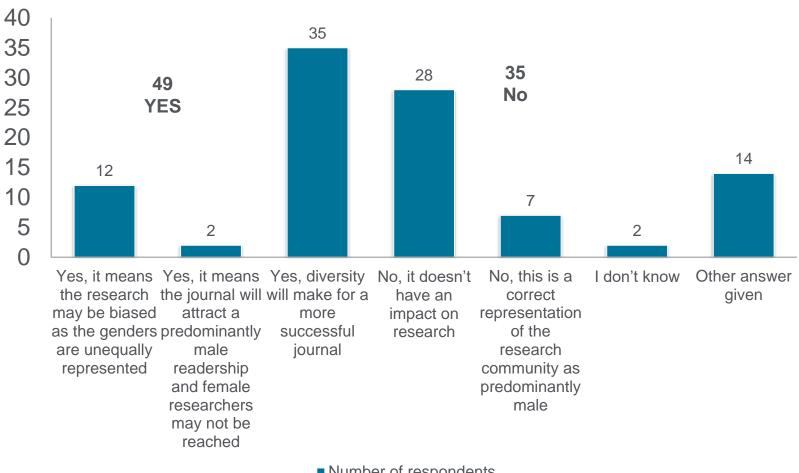
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What Elsevier editors say

Some of our journal editorial boards are exclusively male or predominantly male. Does this matter to a journal's community, and if so why?



[■] Number of respondents

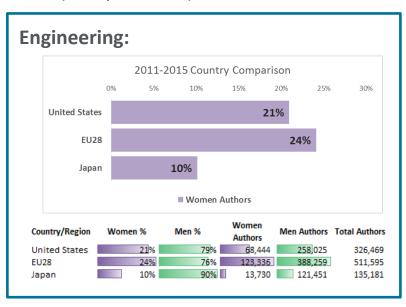
Gender-Balanced - Missing Data

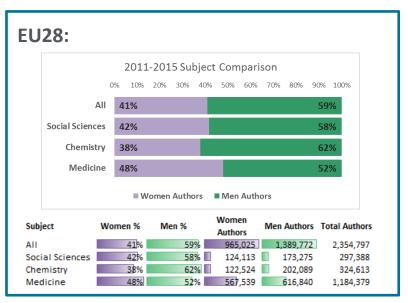
- Gender wasn't previously captured in our editorial database
- Added a mandatory 'Gender' field
 - Worked in partnership with Journals Operations and Legal
 - Binary Designation (Woman/Man, plus unknown)
 - Publishers and Publishing Directors asked to complete information retrospectively
 - Field must be completed for all new records, can be updated/corrected
- Quarterly reports extracted and shared with all publishers

Publisher-Editorial Gender Graphing Tool

All Publishers now have access to the author data used for the report + an Excel-based graphing tool

Select and compare **subjects** and **countries/regions** of interest to see the representation of women and men among researchers (examples below):





- Access to data about the shares of women and men among researchers for 27 subject areas (ASJC
 27) across 43 countries/regions
- Generate charts and tables showing comparisons of subjects/regions for reports and presentations
- The tool provides subject-specific benchmarks to help us analyse and contextualise gender balance on our editorial boards

But Not ONLY the Data

Editorial Boards

- Use the data to drive awareness and support discussion
- Acknowledging our responsibility, respecting editorial independence, acknowledging challenges
- Recognition of what the data covers vs. the nature of journal editorial board service

Institutions

- It resonates with what researchers are seeing and hearing at their own institutes
- It can help as it can be measured (e.g. Athena Swan award)
- Opportunity to introduce training through unconscious bias workshops

Industry

- We were a leader in the publishing sector but many publishers are now on board
- Example: supporting Royal Society of Chemistry

Our Action Plan Gender-balanced recruitment in editorial boards



Monitor/analysis: number of female and male editors

Strategic implementation:

- Set a realistic targets for gender balance
- Create awareness
- Value-based training
- Eliminate all-male shortlists
- Reflect on bias
- Reduce opportunities for bias
- Create visibility for women editors, highlight achievements
- Sponsor women in science workshops
- Create mentorship opportunities



Communication



Evaluation

Gender Diversity of Conference Panels

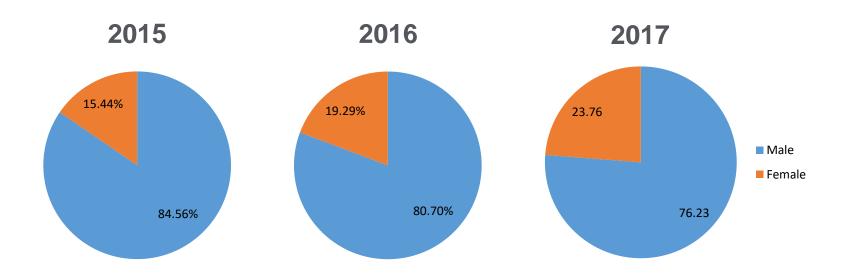




- First examined gender split of conferences portfolio in 2015
- Delegate gender split was broadly reflective of STEM fields, if not more diverse (60% men and 40% women)
- However, invited speakers much less diverse (85/15%)
- At the time, gender consideration was not mentioned in Publisher or Conference Chair guidelines

Using the Data to Measure Improvement

- Initial objective was to improve diversity without proscribed targets
- Chair guidelines were updated to stress importance of gender balance and, specifically, to avoid all-men panels
- Project Leads reiterated this during planning calls



Next Steps

- Data demonstrates progress toward goal
- > Readily accepted by Chairs and Committee
- Correlation between greater gender diversity and
- Net Promoter Score (metric "on a scale of 1-10 how likely are you to recommend this conference to a colleague)
- Conference Chairs will get access to our internal gender tool as well
- ➤ Considering the introduction of formal targets
- ➤ Issue discussed within the industry with wide acceptance of need to shift balance

Does it make any difference?



World UK Science Cities Global development Football Tech Business Environment Obituaries

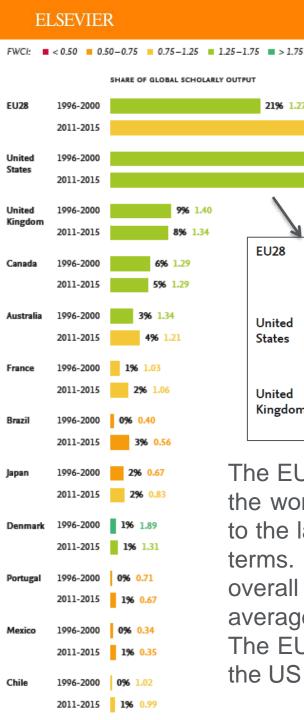
The Observer Science

Why science breeds a culture of sexism

Late-night research, isolation and a strict, male-dominated hierarchy are the perfect conditions for sexual harassment. With colleges struggling to enforce conduct codes, what can be done?







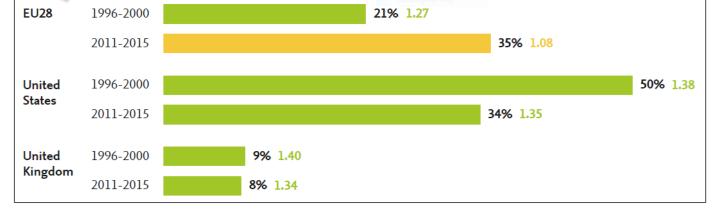
21% 1.27

35% 1.08

34% 1.35

50% 1.38

There are more than 23,000 gender published 2011research papers 2015, more than 2.5 times (2.7 factor of growth) the number of papers published between 1996-2000.



The EU's scholarly output in gender research represents 35% of the world's, increasing by 14 percentage points from the earlier to the later period, but more than quadrupling in size in absolute terms. In 1996-2000, it was cited at 27% more than the global overall average; in 2011-2015, 8% more than the global overall average.

The EU's strong growth leads it to catch up and slightly surpass the US in terms of gender research scholarly output

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Report and Other Materials



- Download the Report & Infographic
 - https://www.elsevier.com/researchintelligence/resource-library/gender-report/_nocache –
 Full Report
 - https://www.elsevier.com/research intelligence/campaigns/gender-17 Infographics
- Access the References
 - Public **Mendeley** group, a powerful community resource for anyone to join and contribute
 - https://www.mendeley.com/community/gender-in-the-global-research-landscape/
- Gender & Research Resource Center
 - **Dynamic resource** with information about gender and women in STEM activities, initiatives, and programs
 - https://www.elsevier.com/connect/gender-and-science-resource-center

Thank You

Thanks for their support to members of Elsevier Gender Working Group



Holly Falk-Krzesinski

Deborah Logan



Catriona Fennell



Bahar Mehmani



Nigel Clear