

# IMPACT REPORT

2018-2024



An Australian Government Initiative

Women in STEM  
Ambassador

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## FOREWORD

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**As I write this in May 2024, I look back with great pride at what the Women in STEM Ambassador team at UNSW Sydney, together with our many STEM community partners, have achieved to advance equity in Australia's STEM sector.**

When I was asked to serve as Australia's first Women in STEM Ambassador in 2018, it was clear that accelerating national progress on gender equity in STEM would be a complex and challenging task. As a researcher, I also knew that the best guidance on where to focus our time and efforts would lie in the knowledge and evidence that has been gathered over many years by researchers in the social sciences and beyond. By engaging in that literature and sharing knowledge with frontline practitioners including teachers and professionals in STEM organisations, it was possible to bring evidence-based practice to hundreds of thousands of people, creating more equitable STEM learning and working environments across the nation.

We quickly built in-house research capability within the team, too – starting with a national program to anonymise applications for the use of research facilities including telescopes and supercomputers. We created a national evaluation portal, responding to a significant gap identified in the Women in STEM Decadal Plan. And we developed numerous other tools, reports, and peer-reviewed research papers on gender equity in grants, guidance on implementing workplace change, the gender pay gap, workplace harassment, disability inclusion and LGBTQIA+ inclusion in workplaces.

Our work was always designed to be an informer and a multiplier. The goal was to consolidate and add to the knowledge base to empower everyone across the sector – from policymakers, businesses, and educators – to make informed decisions. As such, our work will live on far beyond the end of the initiative.



If you are committed to enhancing equity and inclusion in the STEM sector, please access the many resources on our legacy website and put them into practice. Thank you for your interest in the Women in STEM Ambassador initiative, and for your commitment to a more vibrant, inclusive, and brighter STEM future.

A handwritten signature in black ink, appearing to read 'L. Harvey-Smith'.

**Professor Lisa Harvey-Smith**  
Australian Government's Women in  
STEM Ambassador

Engage with us



# IMPACT AT A GLANCE 2018-2024

The Women in STEM Ambassador mission was to cultivate the conditions in which all Australians can pursue successful and rewarding careers in STEM by mobilising everyone to remove barriers to full participation in STEM.

## VISION

A more inclusive, dynamic, and sustainable STEM sector in Australia.

## GOALS

To provide knowledge, resources, and tools to enable systemic change and remove barriers to equitable participation in STEM education and workplace settings.

To embed a consideration of intersectional barriers into everything we do.

## ENGAGEMENT

- **153,511** unique participants reached including over **100,000** educators and young people
- **2915** media appearances with **108.7 million** potential audience reach

### Future You

- **23.65 million** total audience reach
- **100,138** direct engagements with parents, teachers students
- More than **200** Indigenous schools and communities provided with STEM resources

## ADVISORY

- Provided advice and recommendations to all levels of government, informing policy and program design
- Provided input to more than 60 key reports and plans across government and industry (including the Women in STEM Decadal Plan)
- Furnished expert advice across the STEM sector, from workplaces to educational settings

## RESOURCES

Three tools to improve workplace equity created and adopted across the STEM sector:

- STEM Equity Evaluation Portal
- The National Evaluation Guide for STEM Equity Programs
- Workplace gender equity: An implementation guide

**7,198** downloads of the guides and **152** registered Evaluation Portal users (at 21 May, 2024)

From 2018-22, there was a 38% increase in the number of women in STEM qualified occupations, compared to a 10% increase for men.

More women also chose to study STEM. From 2018 to 2021, the number of women enrolled in university STEM courses increased from 77,673 to 92,162. This was an 18% increase, compared to a 9% increase for men.

Source: STEM Equity Monitor 2023

## RESEARCH

### Research reports

- Research Brief: Gender differences in Australian research grant awards, applications, amounts, and workforce participation
- Research Brief: Making research applications anonymous
- Initiatives for Workplace Equity and Inclusion: A series of rapid systematic reviews of the peer-reviewed literature

### Academic research publications

- Evaluating the cross-disciplinary utility of anonymising applications for scientific equipment in the Australian research sector
- Gender differences in Australian research grant awards, applications, amounts, and workforce participation





# ENGAGEMENT HIGHLIGHTS

TOTAL PEOPLE ENGAGED WITH DIRECTLY

11,850

35,150

74,438

18,225

32,990

6,181

2019

2020

2021

2022

2023

2024

- Delivered a National Press Club Address on gender equity in STEM.
- Expanded advocacy and diplomacy internationally with Ministerial and embassy visits to Europe and New Zealand.
- Presented at four major state and national education conferences on best-practice approaches to reducing gender bias.
- Contributed to the Australian Government's Advancing Women in STEM strategy, the Women in STEM Decadal Plan, the launch of the STEM Women database, and the Girls in STEM Toolkit.

- Engaged four major Australian research organisations in a trial of anonymous peer review, which resulted in significant structural changes to funding schemes.
- Launched a national awareness raising initiative which reached 2.3 million children, parents, and carers.
- Supported ongoing education during Covid-19 lockdowns by recording 3-part Astrophysics Live online program, Super STEM Careers Q&A for National Science Week, and STEM Story time supported by Questacon.

- Engaged with Australian students participating in the National Youth Science Forum Year 12 Program.
- Delivered keynote presentations at Science Alive!, Wear it Purple Day, National Science Week, and International Day of Girls and Women in Science.
- Participated in several international webinars in partnership with the Department of Foreign Affairs and Trade, Australian Ambassadors overseas, and foreign embassies in Australia.

- Delivered keynote presentations at Women in Data Science worldwide conference, Locate 22 Space & Spatial Industry Conference, Women in Public Service Leadership Conference, and Australian Conference in Science and Mathematics Education.
- Presented at inaugural Ladies Who Tech Convention in Chengdu, China.
- Showcased work on gender equity at EXPO2020 in Dubai and United Women Singapore STEM Festival.
- Provided input to Engineers Australia Women in Engineering Report and National Health and Medical Research Council's equity review.
- Directly influenced policy changes made by the National Health and Medical Research Council who achieved gender equity within just one year in their \$379 million health research grant program.

- Highlighted Australia's gender equity initiatives to a global audience at the UN Science Assembly.
- Contributed to discussion about revitalising Australia's vision for science and research.
- Provided advice to guide the National Strategy to Achieve Gender Equality.
- Presented findings from Australian grants by gender study to the 19th International Conference of Women Engineers and Scientists in Auckland, New Zealand.
- Contributed advice and knowledge to inform the design of CSIRO's Evidence X project.
- Influenced four major Australian research entities, serving approximately 850 research teams annually, to adopt anonymisation practices, promoting and levelling the playing field for all researchers applying for resources.

- Released evidence-based recommendations for effectively advancing progress towards equity and inclusion in Australia's STEM workforce.
- Delivered a keynote address in the NSW Parliament to the Young Women's Leadership Seminar for International Women's Day.
- Discussed findings from the team's research with the ARC Leadership group, the Department of Social Services, and senior managers at Optiver.
- Presented keynote addresses at events including the Energy Industry forum and the Women in STEM Leadership Summit.
- Shared anonymous review trial results at a joint NASA and Center for Open Science conference.
- Hosted a virtual event, Women in STEM Ambassador: Insights and Impacts, about advancing gender equity and diversity in STEM fields.

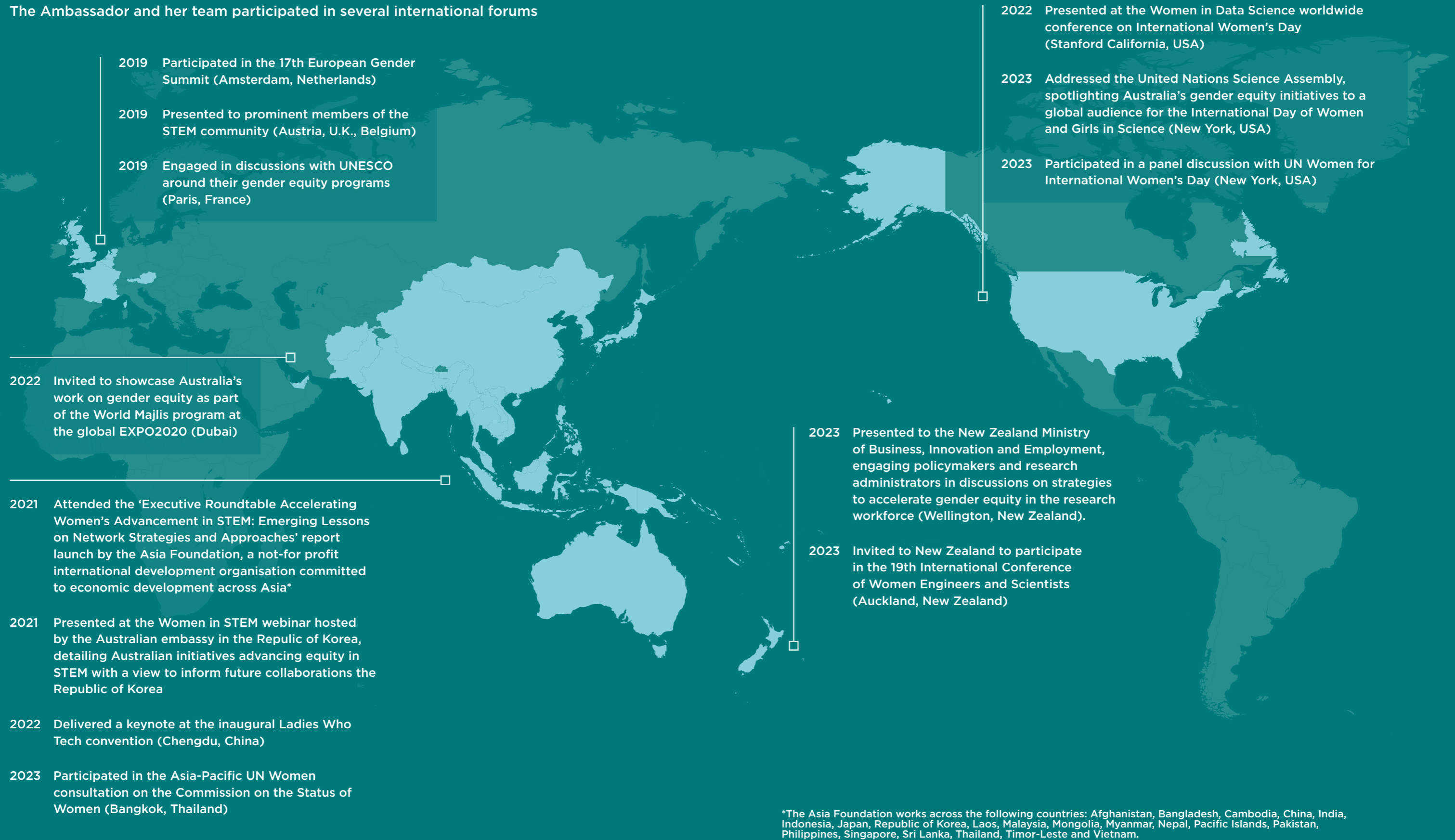


*Once again, thank you for your dedication and leadership in driving positive change within the STEM sector.*

Hon Steven Noel Dawson MLC

# INTERNATIONAL HIGHLIGHTS

The Ambassador and her team participated in several international forums



\*The Asia Foundation works across the following countries: Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Japan, Republic of Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, Pacific Islands, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Timor-Leste and Vietnam.



# MEDIA HIGHLIGHTS

The Ambassador and her team's work featured regularly in Australia's major metropolitan and national print, online, and broadcast media. An independent analysis of media coverage for the initiative from 1 October 2018- 31 March 2024 was undertaken by Medianet Insights.

Over the span of its lifetime, the initiative sparked discussions covering a diverse array of topics. From 2018 to 2020, media attention centered around the Ambassador's proficiency in astronomy. After 2021, the focus shifted towards analysing the effects of federal policies and exploring STEM-related barriers to equity, particularly in sectors like engineering, alongside initiatives to measure and evaluate gender parity.

## SUMMARY

**TOTAL MEDIA VOLUME**  
**2,915 items**

**POTENTIAL AUDIENCE REACH**  
**107.8m**

**ACTIVE INPUT FROM LISA HARVEY-SMITH**  
**1,911 items**

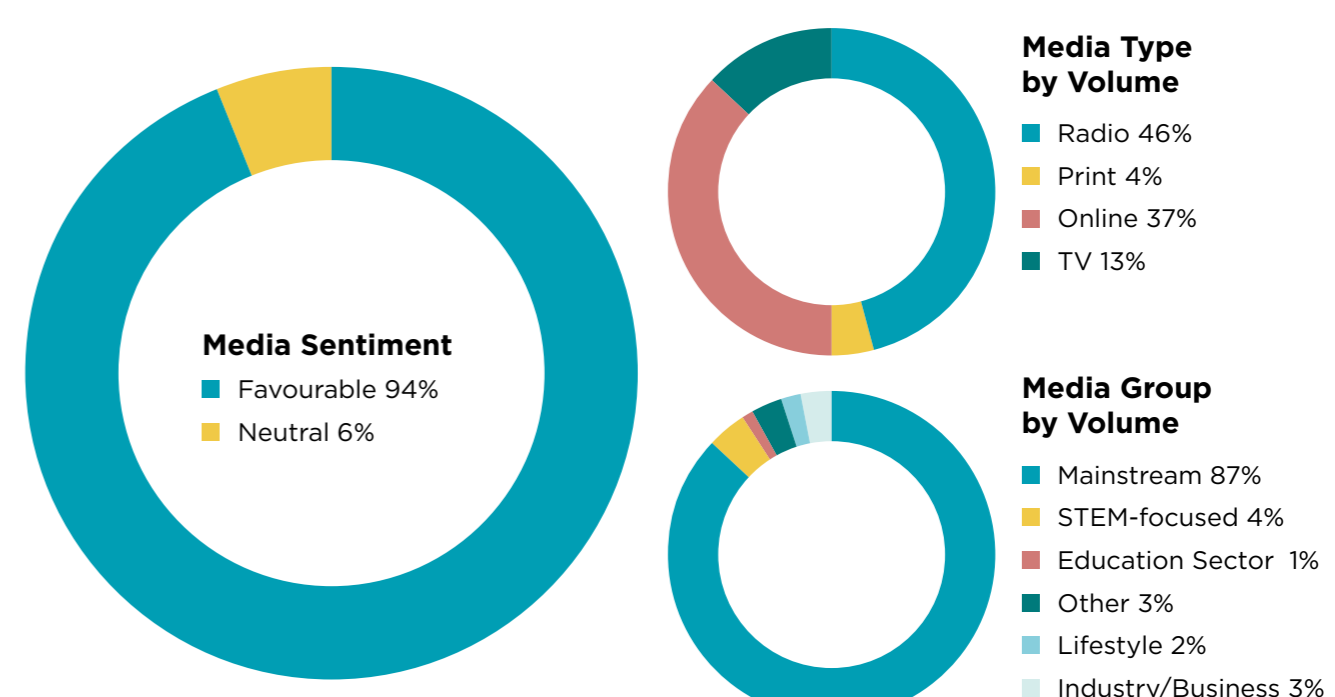
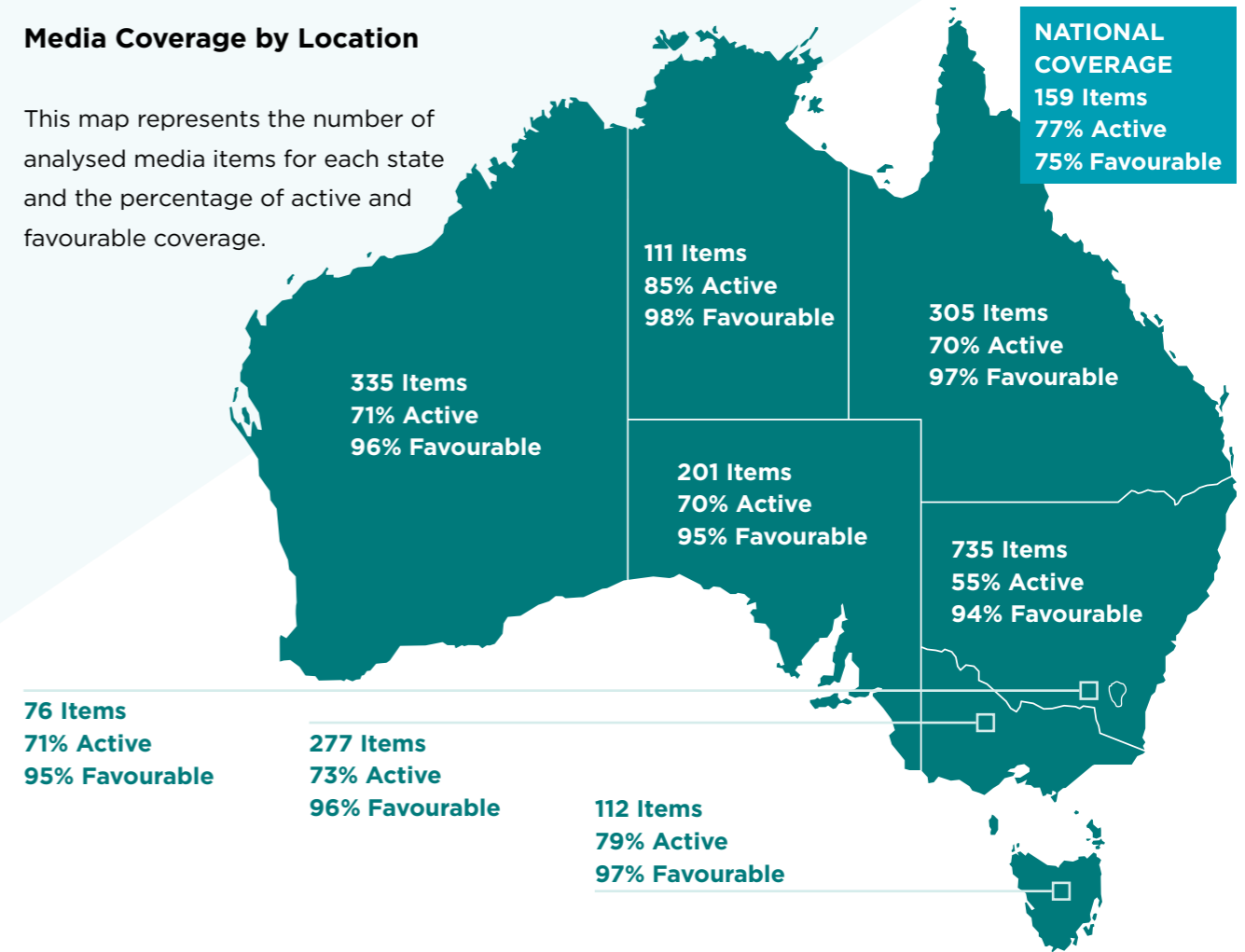
**FAVOURABLE COVERAGE**  
**94%**



Top Level Results  
Source: "Final Media Summary Report October 2018 to March 2024", Medianet Insights, published 22 April, 2024.

## Media Coverage by Location

This map represents the number of analysed media items for each state and the percentage of active and favourable coverage.



Media Location, Media Sentiment and Media Outlets & Journalists  
Source: "Final Media Summary Report October 2018 to March 2024", Medianet Insights, published 22 April, 2024.

## NOTABLE MEDIA APPEARANCES

### 2019

27 November 2019  
Professor Harvey-Smith delivered the **Science Meets Parliament National Press Club address**, speaking about the importance of gender equity in STEM education and careers. Her address was aired live on ABC News.

### 2020

21 January 2020  
**Australia needs more engineers. And more of them need to be women**, The Conversation

4 September, 2020  
**Measuring what works a key focus for Women in STEM ambassador**, Sydney Morning Herald

### 2022

27 September, 2022  
**Women in science not lifted by decade of investment**, The Age

16 November, 2022  
**New initiative will help primary school girls imagine themselves in STEM careers**, Women's Agenda

### 2021

8 March 2021  
**Revamping the effort to shift the dial on girls in STEM**, The Australian

20 May 2021  
**Beyond infinity: astrophysics Lisa Harvey-Smith is reaching for the stars**, Women's Weekly

### 2023

21 July, 2023  
**Australian STEM workplaces still far off from gender parity: new research**, Women's Agenda

15 September, 2023  
**NASA report on Unidentified Anomalous Phenomena**, The Project

### 2024

5 March 2024  
**The fix for STEM workplace inequity? Change the system**, The Mandarin

8 March, 2024  
**Just 13 per cent of engineers are female, but push for gender parity is building on International Women's Day**, ABC News

8 March, 2024  
**Supporting Pathways**, Australian Financial Review







## ADVISORY

The Ambassador's advocacy work with the Australian Government, state and territory governments, Commonwealth agencies, chief scientists, peak bodies, STEM businesses, and research funding organisations has contributed to improving gender equity in STEM.

This was achieved by:

- Advising leaders and policy makers on equity issues in STEM and evidence-based interventions and policies to advance inclusion in the sector.
- Collaborating with existing sector organisations to discuss opportunities and provide advice when requested.
- Working with the STEM sector to understand key challenges and promote mechanisms to support pathways to STEM education, careers, and leadership positions.
- Working with leaders in industry, advocating for the systemic changes required to advance equity in STEM.
- Engaging with international stakeholders in information exchange and sharing Australia's approaches to improving STEM inclusion.

The 2020 Women's Economic Security Statement noted: *"Professor Lisa Harvey-Smith has played a central role in the Government's efforts to encourage girls and women to study and work in STEM. This includes bringing together industry, organisations and educational providers to drive implementation of the Women in STEM Decadal Plan and the Government's Advancing Women in STEM strategy."*

“

*As Ambassador, Professor Harvey-Smith has driven social and cultural change and established herself as a public authority on STEM equity issues.*

Former Minister Hon Karen Andrews MP

## ADVISORY: SELECTED HIGHLIGHTS

### PROVIDED ADVICE AND RECOMMENDATIONS TO:

- The Hon Karen Andrews MP, Minister for Industry, Science and Technology and the Department of Industry, Science, Energy and Resources on ways to support women in STEM in COVID-19 economic recovery
- National Health and Medical Research Council on proposed changes to the Investigator Grant scheme
- Snow Medical Research Foundation on awarding grant funding following a keynote presentation delivered by the Ambassador at the Snow Medical Gender Equity Forum
- Formal submissions containing ten policy recommendations to Hon. Ed Husic MP and Minister for Women Senator the Hon. Katy Gallagher
- Diversity and Inclusion for the Space Sector Workshop, and contributing to the development of a comprehensive D&I statement for the sector
- National Gender Equity Strategy working group
- Gender Strategy Group (the Office for Women, Our Watch, The Australian Ambassador for Gender Equality, ANROWS, E-safety Commissioner and the Australian Sex Discrimination Commissioner)

### PROVIDED KEY INPUT TO:

- **Rapid Research Information Forum report on the impact of the COVID-19 pandemic on women in the STEM workforce**
- **Women in STEM Decadal Plan**
- **Chief Scientist's STEM workforce report**
- **Australian Cybersecurity Strategy**
- **National Skills Commission National Skills Priority List**
- **Engineering for Australia Taskforce report 'Increasing women's participation in engineering education: Actions for chance'**



### PROVIDED EXPERT ADVICE TO:

- Boosting the Next Generation of Women in STEM program
- Women in STEM and Entrepreneurship (WISE) grants program
- Department of Industry, Science and Resources' Technology and National Security Division on gender equity in the quantum technologies workforce
- National Curriculum Review and education policy documents for bodies such as the Australian Science Teachers' Association
- Technology Council of Australia on the design of gender equity initiatives aimed at fostering industry-wide change
- 10th Annual STEM Education Conference about inclusive STEM education and the Future You program
- Diversity Council Australia's submission to public consultation for the upcoming National Strategy to Achieve Gender Equality
- Australian Space Agency as a member of the advisory board
- Elevate: Boosting Women in STEM program

### INVITED TO PARTICIPATE IN:

- 'Harnessing Underutilised Cohorts' Roundtable hosted by the Honourable Leeanne Enoch MP and the Honourable Di Farmer MP
- Education and Training Services Roundtable to inform the development of the National Roadmap for Indigenous Skills, Jobs and Wealth Creation hosted by the National Indigenous Australians Agency
- Science in Australia Gender Equity (SAGE) Key Leaders Roundtable on Sexual Harassment, providing input to incorporate learning from the Respect@Work inquiry into the workplace sexual harassment SAGE initiative
- Science and Commercialisation Ministerial Roundtable
- Large Australian and Multinational Technology Companies Policy Roundtable
- ATSE Roundtable on Digital Skills the outcome of which was a submission to the Commonwealth Government on the Australian STEM workforce
- Champions of Change Coalition Revitalising Australia's Vision for Science and Research Roundtable hosted by Australia's Chief Scientist, Dr. Cathy Foley



# RESEARCH

Through the lifetime of the initiative, the Ambassador and her team played a significant role in driving the focus on evidence in national approaches to diversity in STEM. They achieved this by consolidating the existing peer-reviewed research and leading research studies into gender equity, and equity, diversity and inclusion more broadly, across the STEM ecosystem.

The team actively shared research with policymakers, practitioners, and decision makers to boost evidence-based practice in STEM education, workplaces, and research funding for equity.

While the set of research projects was diverse in their focus, many recommendations shared common themes. These themes include:

- The responsibility to remove entrenched systemic barriers to the attraction, retention, and progression in STEM careers of people from underrepresented backgrounds and identities rests with several entities, including government, employers, and educational and research institutions.
- While gender equity is an imperative, the sector will benefit from improved representation of people from a wide range of backgrounds and identities. Compounding barriers across different backgrounds and identities need to be better understood and addressed.
- Data on diversity metrics needs to be systematically collected and interrogated to pinpoint disparities and direct resources effectively. Ongoing evaluation is essential to gauge effectiveness and inform decision-making for extending, scaling, or changing interventions.
- Accountability mechanisms are a key lever for accelerating positive change. Such mechanisms can include policy, reporting requirements, and accreditation programs. Leadership is required to drive accountability at scale.

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*Research is a powerful tool for driving change within Australia's STEM sector. Presenting evidence-based solutions to government, industry representatives, peak bodies and research organisations enables them to address and rectify the systemic barriers impacting individuals.*

Professor Lisa Harvey-Smith



## MAKING RESEARCH APPLICATIONS ANONYMOUS



### Researchers

Dr. Isabelle Kingsley (lead)  
Amanda Chan  
Nicholas Ho  
Professor Lisa Harvey-Smith  
Associate Professor Lisa A. Williams



Scan or click here to download the report

This project involved a trial across Australia to study the effects of anonymising applications for the use of specialised scientific equipment. The research aimed to determine if anonymisation would impact outcomes for women and/or early-career researchers.

The trial involved four cross-disciplinary research entities that manage access to national scientific facilities:

- Anglo-Australian Telescope (AAT)
- Australian Centre for Neutron Scattering (ACNS)
- Australia Telescope National Facility (ATNF)
- National Computational Merit Allocation Scheme (NCMAS)

Application scores, outcomes, and allocated resources were analysed from data prior to and after anonymisation according to gender and career seniority of the lead investigator. The dataset contained 4,582 applications and their outcomes.

### Key findings and conclusions

The introduction of anonymisation led to improved success rates for early-career researchers, while generally maintaining the pre-existing gender equity landscape before anonymisation.

Anonymising applications for scientific equipment opens doors for early-career researchers, enhancing their chances of success. Since no prior gender gap existed, anonymisation would not be expected to impact gendered outcomes. Results confirmed this.

The implications extend beyond application outcomes, which represent only one piece of the puzzle that contributes to inequity in STEM research. By enhancing success rates for early career researchers, anonymisation may create a positive ripple effect in the career pipeline, diversifying the research pool, and supporting retention and career progression for researchers facing barriers in STEM research.

### Impacts

Based on the promising findings of this research, all four Australian research entities, serving approximately 850 research teams annually, adopted anonymisation practices past the research period.

The research team presented the findings to key policy-makers, including the leadership committee of the Australian Research Council. The Australian Research Council also cited this research in the *Policy Review of the National Competitive Grants Program Discussion Paper* released in April 2024 as an example of evidence-based actions that can improve access for underrepresented groups.

### Media and outreach snapshot

Article in Times Higher Education, [Anonymised applications](#) 'aid early career access to research kit', December 20, 2023

Presentation at the international NASA and Center for Open Science 'Year of Open Science Culminating Conference'

Presentation at the international UK Research and Innovation EDI Caucus 'Interventions for Funding Application Assessments' seminar



*For some researchers, equipment means more than money.*

Dr Isabelle Kingsley





# GENDER DIFFERENCES IN AUSTRALIAN RESEARCH GRANT AWARDS, APPLICATIONS, AMOUNTS, AND WORKFORCE PARTICIPATION



## Researchers

Dr. Isabelle Kingsley (lead)  
Dr. Eve Slavich  
Professor Lisa Harvey-Smith  
Professor Emma Johnston  
Associate Professor Lisa A. Williams



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This project was a longitudinal study examining gender differences of grants awarded by the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) across two decades (2000-2020). The research aimed to determine if the outcomes of competitive grant outcomes were influenced by gender.

We analysed patterns of grant outcomes according to gender and academic level of the lead investigator, the project field of research, and the research intensity of host organisation. The dataset for this research contained 46,912 awarded grants.

## Key findings and conclusions

Fewer awarded grants were led by women than men, especially at senior career levels (36% early career; 30% mid-career; 21% senior-career). There is progress: the percentage of women-led grants increased across all career levels from 2000 to 2020.

Fewer women applied for grants, but success rates were equivalent for women and men. However, success rates roughly halved for everyone over the 21-year period.

There are fewer women in the research workforce, especially at senior levels. Interestingly, women's award rates (the number of awarded grants relative to workforce participation) were higher than men's, especially at senior career levels.

Women and men received the same amount of funding per grant. But the overall difference accumulated over the 21-year period, with fewer women-led grants resulting in a large gap in total funds.

The findings point to a complex issue that extends beyond granting systems: fewer women researchers means fewer women applicants, leading to fewer women receiving grants. This pattern is particularly evident at senior levels and within certain fields of research. While there's been progress toward gender parity over time, gender differences remain.

## Impacts

The study's insights directly influenced policy changes made by the National Health and Medical Research Council in 2022. Those policy changes achieved gender equity within just one year in their \$379 million health research grant program.



*Our research highlights the need for sector-wide coordination to cultivate gender-equitable workforce participation, which should support equity in research grant outcomes.*

Associate Professor Lisa A. Williams

Informed advice was provided to the Snow Medical Research Foundation, a prominent Australian philanthropic organisation (estimated \$22 million in donations in 2023), to develop gender equity eligibility requirements to receive their funding.

The findings of the study were presented to the New Zealand Ministry of Business, Innovation and Employment. The team was involved in discussions about practical ways research funders and government in Australia and New Zealand can accelerate the change needed to achieve gender equity in the research workforce.

The report has been cited in the academic literature regarding gender equity in STEM disciplines (Marques, Hamilton, Barbeau, Morrison, & Chauvenet, 2024).

## Media and outreach snapshot

Article in The Conversation, [Fewer women receive research grants but the reasons are more complicated than you'd think](#), May 23, 2023

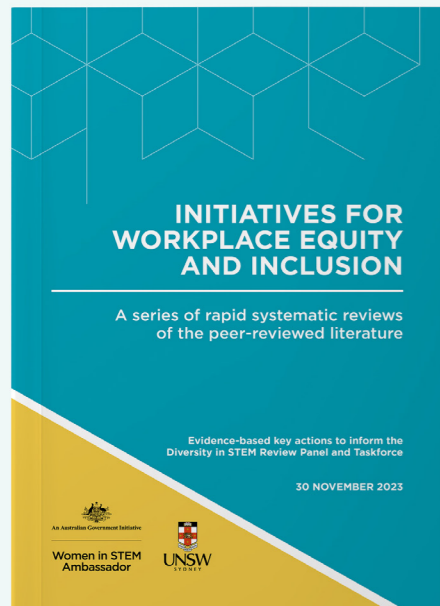
Article in Campus Morning Mail, [Why more men get grants](#), May 24, 2023

Article in Times Higher Education, [Professors' privilege: seniority helps men dominate research cash](#), August 14, 2023

Presentation to an international audience of STEM professionals at the 19th International Conference of Women Engineers and Scientists (Auckland, New Zealand)

Featured research at a joint event hosted by the Women in STEM Ambassador and Science in Australia Gender Equity 'Research funding as a mechanism to advance gender equity' (hybrid: virtual & Sydney, NSW)

## INITIATIVES FOR WORKPLACE EQUITY AND INCLUSION: A SERIES OF RAPID SYSTEMATIC REVIEWS OF THE PEER-REVIEWED LITERATURE



This project synthesised the academic literature regarding initiatives for equity, diversity and inclusion in workplaces. A focus was placed on evaluated initiatives, for which impact on employee and organisational outcomes was documented.

The reviews of four focal areas – gender equity, anti-harassment, pay equity, and disability inclusion – covered over 11,000 scientific articles. A rigorous data extraction process was applied to summarise the evidence about best practices for advancing progress to workplace equity.

### Key findings and conclusions

The team derived three evidence-based key points for progressing workplace equity from the four streams of research. These key points emphasise policies, accountability, evaluation, responsiveness, and systemic change.

#### 1. Prioritise policies for workplace equity and inclusion, and support with programs targeting systemic change.

Workplace equity will ultimately be achieved by changing the system, not the people within it. The evidence demonstrates that policies are a key mechanism to addressing systemic barriers to workplace equity and inclusion, especially in relation to gender and disability.

Prioritising policies over programs stems from the recognition that, while targeted programs can reduce historical disparities in participation and progression, policies hold promise for rectifying the systemic barriers that create and reinforce disparities.

#### 2. Change structures, not individuals, to ensure workplace equity and inclusion by default.

Inclusive workplace environments support the participation, retention, and progression of underrepresented groups. Workplaces should enable employees to work within their specific needs by providing autonomy in options and choices without requiring self-advocacy or disclosure.

Policies have the greatest impact by making equity and inclusion the default. Policies that make a range of options available for employees can alleviate barriers towards equity, with heightened impact in areas with greater ongoing disparities.

All programs and policies, no matter their target, should be high quality and equitably designed – that is, accessible, inclusive, and responsive to the needs of employees.

#### 3. Design and implement workplace equity and inclusion initiatives collaboratively and intentionally with ongoing reflection, assessment, and evaluation.

All workplace equity and inclusion initiatives need to be designed with clear goals in mind. This process starts with consideration of the problem being addressed, who is involved, and who is interested in the results. Meaningful collaboration with key stakeholders is required to support suitability, acceptability, and feasibility – and resulting effectiveness – of initiatives.

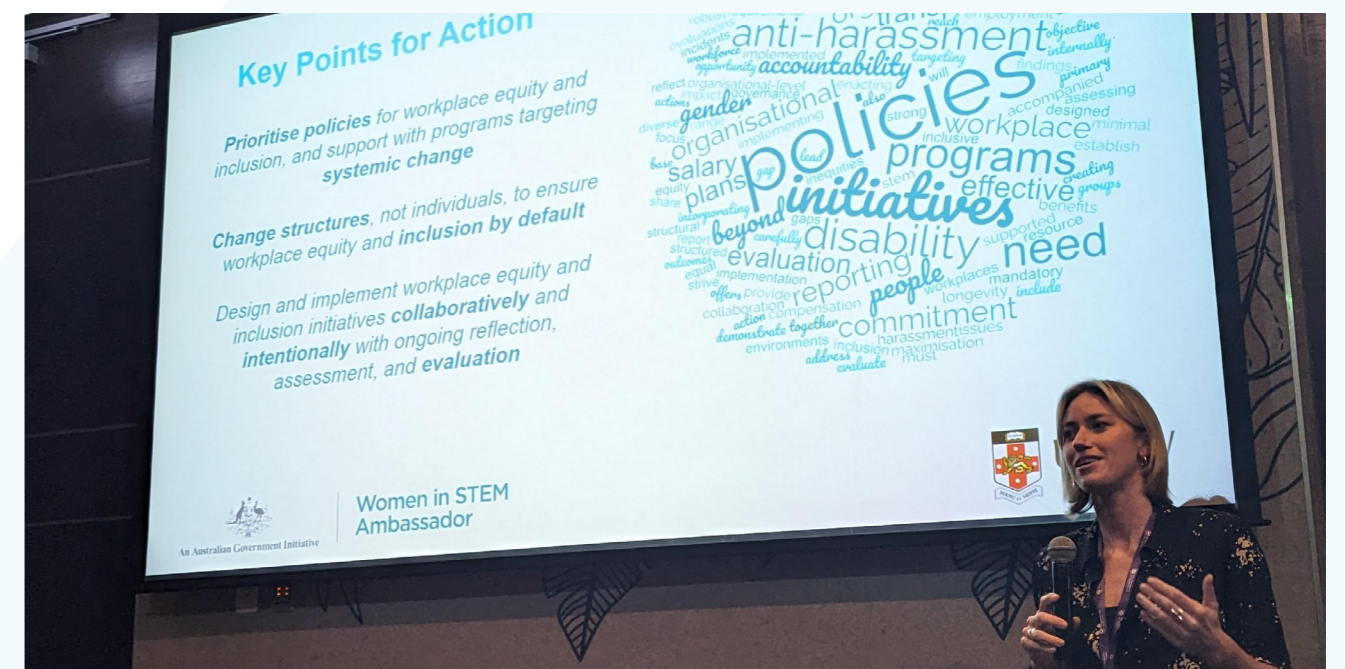
Evaluation is an ongoing process that starts with design and carries through to implementation. Robust evaluations include a diverse range of stakeholders, a variety of outcomes, and data over time. Evaluations should also include downstream effects and data collection at multiple timepoints. Communicating evaluation findings publicly is critical for building a collective understanding of what works (and doesn't).

### Researchers

Dr. Jessica Bergman (co-lead)  
Dr. Sarah E. Ratcliffe (co-lead)  
Professor Lisa Harvey-Smith  
Associate Professor Lisa A. Williams



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the report





## Impacts

The research on workplace equity was provided to the Australian Government to inform the Pathway to Diversity in STEM Review. The *Pathway to Diversity in STEM Review: Final Recommendations Report* cited the research throughout, highlighting the utility of this research for informing policy recommendations.

The research was also released publicly including to a network of more than 300 STEM stakeholders, to provide information that will drive evidence-based policies and programs across the sector over the coming years.

The report is listed in the *Analysis and Public Observatory* database, which is an open access evidence platform aiming to make public policy research and resources accessible and useable.

The evidence-based insights have informed the review of gender-related health and disability leave policies at international organisations such as the International Planned Parenthood Federation.

This project also enriched the STEM workforce by training 14 early career researchers, propelling their career opportunities forward and giving them the skills necessary to continue driving evidence-based progress in equity and inclusion work within the sector.

## Media and outreach snapshot

Article in The Mandarin, [The fix for STEM workplace inequity? Change the system](#), March 5, 2024

Presentation across two sessions at the SASP-ACPID 2023 conference session “Equity and Backlash Against Equity” (Noosa, QLD)

Presentation to the Women in STEM Collective’s “Advancing the Future: Gender Equity in STEM” workshop (Adelaide, SA)

Presentation to equity, diversity, and inclusion stakeholders within the School of Psychology, University of Sydney (Sydney, NSW)



“

*The findings of our research into initiatives for workplace equity and inclusion are clear: national efforts should prioritise policies, not programs targeting individuals, to create lasting change.*

Professor Lisa Harvey-Smith



## BIG MOB: STEM IT UP!



### Researchers

Associate Professor Marnee Shay (lead)  
Associate Professor Jodie Miller  
Amy Thomson  
Antoinette Cole  
Dr Suraiya Hameed  
Ren Perkins  
Dr. Pedram Rashidi  
Amanda Hurley  
Zoe Ockerby  
Professor Lisa Harvey-Smith  
Associate Professor Lisa A Williams



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The *Big Mob: STEM it Up* research project aimed to inform evidence-based strategies for enhancing the participation of Aboriginal and Torres Strait Islander peoples in STEM fields. The project used a multimethod approach including systematic literature reviews, a community-based survey, qualitative interviews, and international case studies on effective approaches to increasing Indigenous participation in STEM.

This Indigenous-led project used a strength-based approach centered on gathering and sharing the lived-experiences of Indigenous peoples currently in STEM. The research focused on understanding the challenges Indigenous peoples encounter in their pursuit of their STEM careers to ultimately gain insight regarding what works and what successfully supports meaningful recruitment and retention for Indigenous peoples in STEM.

### Key findings and conclusions

The recognition and valuing of Indigenous STEM knowledges is critical for advancing Indigenous participation in STEM and advancing Western STEM fields.

Substantial gaps exist in the literature on Indigenous participation in STEM. Available research is small, relatively recent, and mostly produced by non-Indigenous researchers. There is a lack of scholarly and independent evaluations of Indigenous STEM policy and program interventions. Likewise, research focusing on early education, higher education, and industry-based settings is sparse.

The research documented an overarching interest and positivity toward the possibilities of STEM among Indigenous people. However, barriers to STEM participation included institutional barriers such as racism, lack of support and self-confidence, affordability, awareness of STEM, and educational obstacles.

The issue of educational barriers surfaced repeatedly in this research. The barriers are connected to broader Indigenous education imperatives such as the overall goal to deliver positive educational outcomes for Indigenous peoples.

The evidence produced in this research shows that programs and research on Indigenous participation in STEM, undertaken collaboratively and using co-design approaches, support better outcomes.

This research culminated in a series of 15 recommendations to the Australian government with the goal of increasing Indigenous participation in STEM, detailed in full in the project report.

### Impacts

This work was cited frequently in the *Pathway to Diversity in STEM Review: Final Recommendations Report*, highlighting its value for informing policy recommendations.

The qualitative interviews for the project were published as a [podcast series](#), which has attracted more than 800 listeners across 6 months.



*Our comprehensive research design enabled Aboriginal and Torres Strait Islander voices to understand diverse perspectives on increasing Indigenous participation in STEM.*

Big Mob STEM it Up research team

### Media and outreach snapshot

Article in The Conversation, [‘Definitions are often very western. This excludes us.’ Our research shows how to boost Indigenous participation in STEM](#), March 8, 2024.

ABC Radio Evenings SA and NT spot featuring Associate Professor Marnee Shay in discussion with Jason Chong, March 20, 2024.



# EVALUATION TOOLS

The Women in STEM Ambassador team made major contributions to raising national standards in program design, monitoring and evaluation. They developed a trio of tools to enable evaluation of outreach programs, workplace change programs, and other equity initiatives within STEM organisations.

In 2020, **Evaluating STEM equity programs: A guide to effective program evaluation** (the Evaluation Guide), was launched. It has been accessed nearly 5,000 times to date and used to evaluate STEM equity programs such as the Australian Academy of Science's STEM Women Database and Education Services Australia's Girls in STEM Toolkit.

Mid-2021, the Ambassador received government funding to create a digital extension of the Evaluation Guide and produce an online evaluation tool and national repository for STEM equity programs. The STEM Equity Evaluation Portal was launched in November of 2022. The Portal contains standardised and interdependent elements that users can 'click & select' to build an evaluation plan and report on findings. It also includes a bank of recommended tools (surveys, tests, and other instruments) users can choose from for their evaluations. The Portal is also a searchable repository to discover program evaluations and learn what works and doesn't work to improve equity.

The Portal and Guide are complementary, user-friendly resources that offer practical advice to help STEM equity program leaders evaluate their programs. The tools enable project-level evaluation and demonstrate what works to attract, retain, and progress girls and women in STEM. These tools support a culture of evidence-based practice by enabling activities to be improved based on evaluation data that are consistency collected and comparable across programs and organisations. Over time, these tools support and incentivise collaboration between providers of programs within and across sectors to create stronger cohesion and consolidate efforts and resources.

During the initiative, the Ambassador also launched **Workplace Gender Equity: An Implementation Guide** to form a comprehensive set of evidence-based resources that assist workplaces in advancing their diversity and inclusion efforts with a strong focus on evaluation.



## IMPACTS

The development of the STEM Equity Evaluation Portal met all three strategic recommendations regarding evaluation in the *Women in STEM Decadal Plan*:

1. By 2022, establish a consistent national evaluation framework that guides evaluation efforts across all existing and future gender equity.
2. Organisations who fund STEM gender equity initiatives support evaluation and evidence-based approaches by requiring evaluation as a condition of funding.
3. Improve awareness of existing programs and their efficacy.



***The STEM Equity Evaluation Portal will drive a culture of evaluation and ensure that efforts and investments in this area lead to tangible benefits for all genders in the STEM sector.***

**Professor Lisa Harvey-Smith**

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*Diverse participation in STEM is a question of equity, as well as being crucial for Australia's ambition and prosperity. The STEM Equity Evaluation Portal is a welcome initiative that will allow us to measure outcomes and test what works.*

Dr Cathy Foley  
Australia's Chief Scientist

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*This practical guide for workplaces will create a more level playing field for everyone, regardless of gender, and help us progress towards a future where everyone has an equal opportunity to succeed and thrive.*

Dr Isabelle Kingsley

The evaluation resources were also an integral part of the Australian Government's *Advancing Women in STEM 2020 Action Plan* to embed a culture of evaluation within Australia's STEM sector.

The Portal is currently used by more than 140 users from organisations all over Australia, and overseas. The Champions of Change Coalition, SAGE, SYSTRA, the Bionics Institute, Careers with STEM and SYSTRA are just some of the organisations using the Portal to evaluate their equity programs.

The workplace equity webpage created to house these resources together quickly became a go-to platform for organisations seeking guidance on diversity and inclusion, with over 2,500 users accessing it.

The Evaluation Guide was selected as one of two most valuable resources for evaluating equity programs by the University of Oxford. The Evaluation Guide is also increasingly cited in the academic literature regarding best-practice tools for advancing equity (e.g., Coltman et al., 2023; Handley et al., 2020; Hobbs & Marks, 2022; McKinnon, 2022; Vassallo et al., 2021; Wolf & Brenning, 2023).

## MEDIA AND OUTREACH SNAPSHOT

Article in The Conversation, [Australia has hundreds of programs to get more women into science, but are they working? Time to find out](#), March 9, 2020

The Evaluation Guide featured as an element of progress in the [One Year In, Women in STEM Decadal Plan Champions Report](#), August 2020

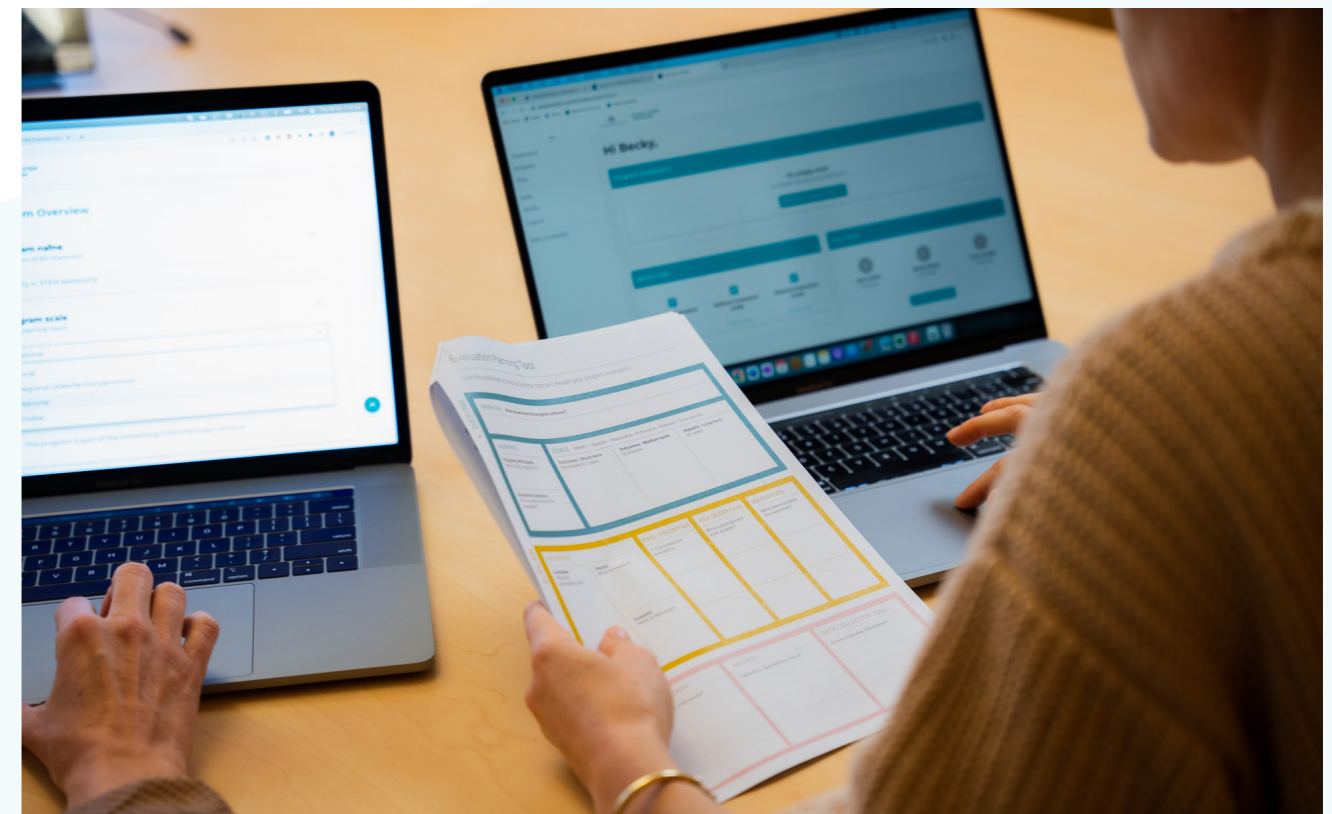
Launch event for the Evaluation Portal featured guest speakers including the Hon. Ed Husic MP, Minister for Industry and Science, CEO of the Academy of Science, Anna-Maria Arabia and CEO of Science in Australia Gender Equity, Dr Wafa El-Adhami

Article in Broad Agenda, [STEM: It's time to measure our impact](#), November 10, 2022

Invited presentation to the UNSW Equity Diversity and Inclusion Board

Hosted [Evaluation in Equity: Ask the Experts](#) webinar featuring Dr Isabelle Kingsley, creator of the STEM Equity Evaluation Portal, and Associate Professor Eric Jensen, global evaluation expert from Warwick University in the United Kingdom

Presentation at the international conference [Diversity Interventions 2022](#) (hybrid: virtual & Oxford, UK)





# FUTURE YOU

Future You raises awareness of STEM careers and provides role models to create a positive shift in the perception of STEM study and careers among students aged 8 to 12, educators, and the general public.

Future You currently features two program streams:

1. **Pathfinders** showcase diverse STEM professionals through films and written synopses, aiming to challenge stereotypes and highlight career pathways.
2. The **Imagining the Future** fiction series features five space-themed short stories to engage primary school-aged children in STEM.

Both program streams offer a variety of educational resources, including infographics, classroom activities, and career information sheets tailored to different age groups. The program aligns with the Australian Curriculum V9.0, making it relevant and adaptable for classroom use. The program caters to various learning styles with activities aligned with educational frameworks such as Bloom's Taxonomy and Gardner's Multiple Intelligences. The Future You initiative employs strategic channels and methods to increase awareness of STEM careers within underrepresented cohorts.

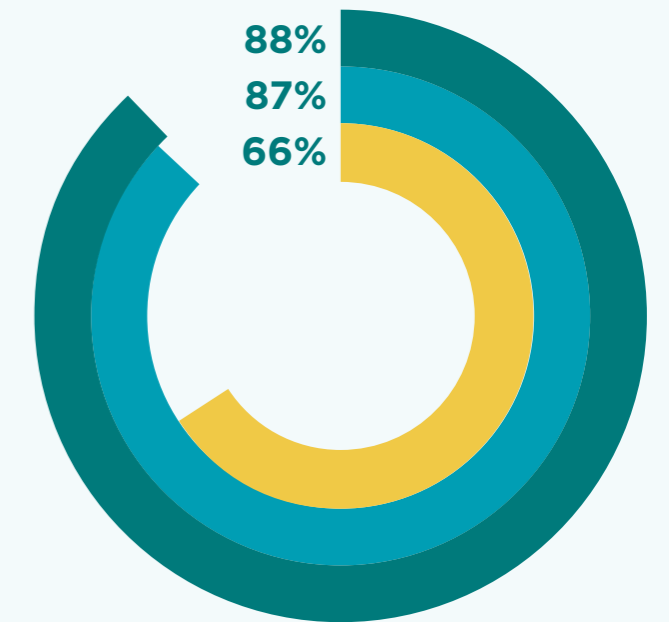


## IMPACTS

Future You increases student (and adult) awareness of a variety of STEM careers and provides valuable careers education, successfully addressing the careers education gap identified by the National Youth Commission Australia's Inquiry into Employment and Transitions.

Future You successfully changes perceptions of STEM careers. Evaluation research indicated that the campaign improves beliefs that STEM jobs are for everyone. Future You raises parents and carers' opinions of the importance of STEM skills for children's future job prospects whilst raising awareness of alternative pathways in educational settings.

After watching a Pathfinder video, 66% of children wanted to explore more about the Pathfinders on the website, 87% said they could picture themselves working in STEM in the future, and 88% were interested in learning more about STEM careers.



After watching a Pathfinder video, 81% of parents/carers agreed that they would encourage their kids to consider a career in STEM.



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*Engaging children early in STEM creates so many possibilities and means our children can contribute to a better world.*

Professor Lisa Harvey-Smith

From before to after watching a Pathfinder video, there was a 21% increase in the number of kids saying that heavy vehicle mechanic careers were for everyone, rather than more for boys or more for girls.







## KEY OUTCOMES

Future You reached a potential audience of 23.65 million children, parents, and educators. In 2023, 30,000 educators gained access to the curriculum-aligned resources via DART Learning. Future You enhanced learning for half of Australia's primary schools through a partnership with ClickView. A valuable collaboration with Tonic Media ensured the Pathfinder films achieved 16 million monthly views in 4,400 healthcare settings. Through engaging events, including a standout exhibit at Science Alive, the Future You team directly connected with 100,138 individuals. Plus, a partnership with Deadly Science delivered exciting STEM resources to more than 200 Indigenous schools and communities.

## MEDIA AND OUTREACH SNAPSHOT

Article in Women's Agenda, [New initiative will help primary school girls imagine themselves in STEM careers](#), November 16, 2022

Interview with NITV radio, [First Nations girls encouraged to take up STEM and future proof their skills](#), November 28, 2022

Article in The Age, [Girls have overtaken boys in science participation. In workplaces it's a completely different story](#), July 26, 2023

Featured throughout Series 8 of the [Teachers Supporting Teachers podcast](#), May 23, 2023

Interactive stand presented at Science Alive! 2023, attracting more than 20,000 people over 3 days (Adelaide, SA)

Engagement with more than 1500 educators at the National Education Summit 2023 (Melbourne, VIC)

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*Future You challenges stereotypes and helps children, their parents, and teachers, to understand that STEM is for everyone, and there are so many pathways to get there.*

Professor Lisa Harvey-Smith



[www.futureyouaustralia.com.au](http://www.futureyouaustralia.com.au)



# ABOUT

**The Women in STEM Ambassador was an Australian Government initiative that aimed to remove structural barriers to participation in science, technology, engineering, and mathematics (STEM). Professor Lisa Harvey-Smith was first appointed to the role in December 2018 and was reappointed for a further three consecutive terms until the initiative ended on 31st May 2024.**

Based at UNSW Sydney, the Women in STEM Ambassador and her team worked closely with governments, public sector agencies, peak bodies, learned academies, businesses, research organisations, and educators to drive evidence-based policy, practices, and initiatives to enhance gender equity in STEM.

The Women in STEM Ambassador's team employed a collaborative and evidence-based approach to identify effective strategies for mitigating STEM inequities. They conducted research, crafted policy advice, created workplace equity and evaluation tools, and created Future You - a national digital awareness-raising initiative about STEM careers tailored for children, parents, and caregivers.

The team began with the Ambassador, a Chief Investigator, and one member of staff. They focused on outreach to schools and offered expert advice to the government, education, and industry sectors. Soon, a research associate was appointed and the team's focus on evidence, impact, and evaluation grew. In subsequent years, additional funding was awarded to develop a national awareness-raising initiative for STEM careers. The team comprised dynamic, dedicated professionals and numerous external contractors all contributing to the shared vision for the initiative.

The Ambassador and her team conducted rigorous research to evaluate and inform strategies that promote diversity and inclusion in STEM sectors. They delivered high-impact projects including the STEM Equity Evaluation Portal and Future You, a STEM careers education initiative for primary school students.



In five-and-a-half years, the Ambassador and her team achieved significant positive impacts to gender equity in STEM education and workplaces through evidence-based outputs.

Data from the 2023 STEM Equity Monitor revealed that from 2018-22, there was a 38% increase in the number of women in STEM-qualified occupations, compared to a 10% increase for men. Data for other gender identities was not available.

More women also chose to study STEM. From 2018 to 2021, the number of women enrolled in university STEM courses increased from 77,673 to 92,162. This was a 18% increase, compared to a 9% increase for men.

The team's context-specific research provided clarity around the causes and drivers of inequities in STEM and identified effective strategies to enhance equity, diversity, and inclusion in the STEM sector.

The team shaped government programs and policy by providing evidence-informed advice to the Australian Government about how to effectively improve gender equity across the STEM sector.

The team developed several publicly available programs and tools that contributed to, and will continue to contribute to, equity at all stages of the STEM pipeline, benefitting schoolchildren, educators, parents, businesses, government, and employers alike.

In partnership with government, educational institutions, research entities, and private sector organisations, the team advocated for systemic changes that facilitate the full engagement of all people in STEM education and the workforce.

Through informative and practical presentations about gender equity in STEM education at more than 15 education conferences, the team have inspired changes in the classroom to ensure more students feel welcome in STEM.

During her time in the role, the Ambassador made 2915 media appearances with a potential audience reach of 107.8 million. The Ambassador used her media platform to support more Australians to understand the barriers to full participation in STEM and know what they can do to help shift the dial towards equity in STEM.

# PARTNERS

The Office worked with partners across government, industry, research, and education to:

- Advocate for the removal of systemic barriers to drive change.
- Identify, support, and encourage evaluation of existing gender equity activities.
- Collaborate to boost the reach and impact of STEM equity initiatives.

## GOVERNMENT

ANSTO, AusIndustry, Australia's Chief Scientist, Australian Ambassador for Gender Equality, Australian Department of Education, Australian Research Council, Australian Space Agency, Department of Education, Skills and Employment (DESE), Defence STEM Council, Department of Industry, Science and Resources, Department of the Prime Minister and Cabinet, Department of Foreign Affairs and Trade (DFAT), Department for Industry, Innovation and Science (DIIS), Forum of Australian Chief Scientists, National Indigenous Australians Agency, NSW Department of Education, NT Department of Education, QLD Department of Education, QLD Department of Small Business and Training, Queensland Government, Questacon, SA Department of Education, TAS Department of Education, The Australian Bureau of Statistics, The eSafety Commissioner, The Office for Women, VIC Department of Education, Victorian Government, Workplace Gender Equality Agency (WGEA)

## PEAK BODY/ADVOCACY

ANROWS, Australian Academy of Science, Australian Academy of Technological Sciences and Engineering, Australian Human Rights Commission, Australian Space Agency, Australian Space Discovery Center, Chief Executive Women, Engineers Australia, MCC STEM, National Quantum Collaboration Initiative, Our Watch, Science and Technology Australia, Science in Australia Gender Equity (SAGE), Space Command, STEM Sisters, Technology Council of Australia, Tradeswomen Australia, Universities Australia, Women in Aviation Australia, Women in Leadership Australia

## RESEARCH

Astronomy Australia Limited, Australian Research Council, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Monash Education Futures, National Health and Medical Research Council (NHMRC), National Computation Infrastructure

## INDUSTRY

Alphabet Design, BioMelbourne Network, CCC Power, Champions of Change Coalition, CommBank, Education Services Australia, Google, Jala, Laing O'Rourke, Naval Shipbuilding College, NRI, Prosple, STEM Returners, Tonic Media

## MEDIA

ABC News Breakfast, ABC Radio National, ABC Radio's Drive with Lucy Breaden, ABC Radio's Drive with Richard Glover, ABC TV, Australian Financial Review, Australian Women's Weekly, Australian Women's Weekly, Bundaberg Today, Broad Agenda 50/50, Campus Morning Mail, Casey-Cardinia Kids, Children's Books Daily, Climate Change News, Cosmos, Courier Mail, Cranbourne News, Create Digital, Create Magazine, Daily Aus, Food & Drink Business, Glenorchy Gazette, Helix Magazine, Innovation Aus, Kids Magazines-Star News Group, KidsNews, Mirage News, Nature, News.com.au, NITV, Refraction Media, SBS, Smart Company, South Coast Register, STEMPunk Magazine, Stock and Land, Teacher Magazine, The Adelaide Advertiser, The Age, The Australian, The Canberra Weekly, The Conversation, The Guardian, The Mandarin, The Mercury, The Project, The STEM Wrap, The Sydney Morning Herald, Third Sector, Times Higher Education, Women in Security Magazine, Women's Agenda

## EDUCATION

ANU, arludo, Australian Primary Principals Association, Australian Science Innovation, Australian Science Teachers Association, Careers with STEM, Centre for Social Impact, CoRE Learning Foundation, DART Learning, Day of AI, Deadly Science, Deakin University, IncludeHer, James Cook University, Little Ripples, Macquarie University, Monash University, National Science Week Committee, National Youth Science Forum, NUW Alliance, RMIT, Science Alive!, Science Educators' Association of the Australian Capital Territory, Story Factory, Tech Girls Movement, The Girls in STEM Toolkit, The Smith Family, University of New England, University of Wollongong, UNSW Sydney, Western Sydney University, Young Change Agents

## INTERNATIONAL

APEC, Advance HE, Australian embassies in Japan and South Korea, EXPO2020 Dubai, Ladies Who Tech China, NZ Ministry of Business, Innovation and Employment, The Asia Foundation, The Ambassador of the United Arab Emirates to Australia, The United States Embassy in Australia, UNESCO, UN Women, United Women Singapore, WiSET

## OTHER

Access2Arts, Career Trackers, Dream Big Australia, InDigital, Stronger Smarter Institute, Taronga Zoo, The Graeme Wood Foundation, The Wheeler Foundation





An Australian Government Initiative

## Women in STEM Ambassador



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SYDNEY

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