

# PARTICIPATION STRATEGY SECURING AUSTRALIA'S MATHEMATICAL WORKFORCE

**Progress Report** 

Stage 3 | 2018/19

## **Participation Strategy**

## Securing Australia's Mathematical Workforce

### **Progress Report**

Stage 3 | 2018/19

INTRODUCTION	4
PARTICIPATION	6
GRANTS	10
OUTREACH & ENGAGEMENT	11
CAREER AWARENESS	16
MEDIA	19

"The project aligns with the National Innovation and Science Agenda (NISA), and aims to improve outcomes for higher-education students in science, technology, engineering and mathematics (STEM). It will strengthen research training for STEM graduates in Australia, and contribute to a highly-skilled mathematical workforce."

> Department of Education and Training, Australian Government 13 September 2016

Source: education.gov.au/australian-mathematical-sciences-institute-project

# INTRODUCTION

The Securing Australia's Mathematical Workforce (SAMW): 2016–2020 project builds on the success of the AMSI Vacation Schools and Scholarship project (2012–2016) and will continue to grow the nation's future public- and private-sector workforce with advanced skills in the mathematical sciences, while also providing opportunities for increasing participation by female and indigenous students.

The project's overarching objective is to contribute to the preparation of a world-class mathematical sciences workforce in Australia. The specific project objectives are to:

- strengthen research training and the work-readiness of advanced mathematical sciences graduates
- promote university-industry collaborations that will encourage the private sector employment of mathematical sciences graduates
- attract and improve the retention of senior undergraduate students in the mathematical sciences

In addition to the challenge to achieving overall participation growth, the project aims to progress female and Aboriginal and Torres Strait Islander (ATSI) participation in each of the project activities.

## SHORT-TERM OBJECTIVES

- Female and male participants should reflect the current cohort of enrolled mathematical sciences undergraduate and postgraduate students
- Participants of Aboriginal and Torres Strait Islander (ATSI) descent should reflect the current cohort of enrolled mathematical sciences undergraduate and postgraduate students

### LONG-TERM OBJECTIVES

- Female and male participants are approximately equal in number and of a high calibre
- Significant increases in participation of high-calibre persons of Aboriginal and Torres Strait Islander (ATSI) descent

This project directly addresses three imperatives identified by NISA—improved STEM education, enhanced industry collaboration, and increased female and ATSI participation in the STEM workforce—providing significant and enhanced commercial return on the public investment in research training in the mathematical sciences.

This document reports on the implementation of the first year of the SAMW 2016–2020 project and should be read with the annual stage reports for this project's activities (AMSI Flagship Events):

- AMSI Optimise 2018: Decision Making Under Uncertainty & Humanitarian Applications
- AMSI Winter School 2018 on Curvature
- AMSI BioInfoSummer 2018: A Symposium in Bioinformatics
- AMSI Summer School 2019 in the Mathematical Sciences
- AMSI Vacation Research Scholarships (VRS) 2018/19: Experience Life as a Researcher



# PARTICIPATION

The SAMW: 2016–2020 project aims to have at least 360 domestic participants across five project activities in 2018/19, including 30 per cent female student participation and the participation of one ATSI mathematical sciences student.

The overall participation target has been exceeded, with 499 attendees participating in the project's activities. This follows the increase in overall participation, with the 2012–2016 project over the previous four years, the addition of AMSI Optimise from 2017 and rotating events through all major cities for national benefit.

	Optimise	Winter School	BioInfoSummer	Summer School	VRS
2012/13	N/A	49	120	132	41
2013/14	N/A	24	188	155	57
2014/15	N/A	30	204	107	56
2015/16	N/A	39	228	127	50
2016/17	N/A	45	206	168	43
2017/18	108	70	178	168	40
2018/19	95	27	138	171	68

#### FIGURE 1: Total participation by project activity over the past 7 years

Overall, 93 percent of the annual SAMW domestic participation target was achieved, with event targets surpassed in two out of the five project activities. AMSI Optimise 2018 was well-attended by domestic participants whilst AMSI VRS 2018/19 attracted a record number of applicants and completions. Notably AMSI held its first flagship event in Perth - BioInfoSummer, which had three university partners and wellattended for a west coast event.

actual participation in 2018/19 across the project's activities			
	Target	Actual	
Optimise	50	69	
Winter School	20	18	
BioInfoSummer	130	98	
Summer School	120	88	
VRS	50	62	
TOTAL	360	335	

## **FIGURE 2: Domestic participation target against**

## FEMALE PARTICIPATION

The SAMW: 2016–2020 project aims to have at least 30 per cent female participation in the project activities per year, in line with female representation in the mathematical sciences student cohort. Participants are asked to self-declare their gender at the time of applying to attend.

The female participation target has been exceeded in the third year of the project, with 177 female participants (36 per cent of total participation).

	Optimise	Winter School	BioInfoSummer	Summer School	VRS	Total
2012/13	N/A	12%	44%	24%	17%	29%
2013/14	N/A	25%	39%	27%	28%	32%
2014/15	N/A	23%	40%	15%	18%	29%
2015/16	N/A	8%	46%	33%	30%	37%
2016/17	N/A	42%	51%	31%	28%	41%
2017/18	29%	33%	51%	29%	28%	36%
2018/19	34%	11%	54%	28%	28%	35%

FIGURE 3: Percentage of female participation by project activity over the past 7 years

In 2018/19, 32 women attended AMSI Optimise, 3 attended AMSI Winter School 2018, 75 attended AMSI BioInfoSummer 2018, 48 attended AMSI Summer School 2019 and 19 received a 2018/19 AMSI Vacation Research Scholarship. The largest shortfall in female participation was at the 2018 Winter School. The overall school participation was lower but provided a significant research training opportunity for students in pure mathematics.

## FIGURE 4: Total female participation target percentages against actual participation in 2018/19 across the project's activities

	Target	Actual
Optimise	30%	34%
Winter School	30%	11%
BioInfoSummer	30%	54%
Summer School	30%	28%
VRS	30%	28%

AMSI is also focused on the importance of achieving a gender balance of lecturers/speakers at each activity, with female participation within the program a key discussion topic and objective in the planning of each event, and achieved at least one-third female representation in all four events in 2018/19:

- Optimise—twelve women out of 41 speakers (29 per cent)
- Winter School-two women out of four lecturers (50 per cent)
- BioInfoSummer—twelve women out of 25 speakers (48 per cent)
- Summer School—four women out of 11 lecturers (36 per cent)
  SECURING AUSTRALIA'S MATHEMATICAL WORKFORCE | STAGE 3

#### **CHOOSEMATHS**

The BHP Billiton Foundation and the Australian Mathematical Sciences Institute (AMSI) formed a partnership in April 2015 to deliver the CHOOSE**MATHS** program, a \$22.2 million investment aiming to promote greater interest and academic achievement of girls in mathematics, leading to an increased participation in STEM subjects and contributing to a more sustainable and competitive economy.

The program increases the impact and reach of AMSI's activities to address pipeline issues from primary school into secondary school and through to university and the workplace. Increasing awareness of the value of mathematics in careers and lifestyle, especially for women, is a program highlight.

The CHOOSE**MATHS** program has a high impact in the long term on Australian student enrolments in undergraduate, honours and PhD mathematical sciences programs, and will significantly increase participation in the AMSI Higher Education programs.

CHOOSE**MATHS** works with students, parents and teachers over five years through a program of professional development, awareness and reward to turn around community attitudes to participation in mathematics, especially for girls and young women. The program is building self-sustaining education communities where girls and young women share equally in the rewarding careers and rich life experiences that mathematics offers.

#### Women in STEM & Diversity in STEM Events

AMSI, host universities and the Women in Mathematics Special Interest Group (WIMSIG) of the Australian Mathematical Society (AustMS) continue to collaboratively deliver Women in Maths events within the project activity programs. Three events were held at 2018/19 AMSI Flagship events, each open to all participants. These events provide an active forum of discussion focused on highlighting the contributions of women in STEM, raising awareness about issues for women and promoting career pathways.

#### Winter School—Women in Maths Networking Event

In collaboration with WIMSIG, a Women in Maths event was held on the evening of Wednesday 4 July to celebrate women's contributions to the mathematical sciences and encourage diversity in the sector. Panel members discussed their career experiences and changes they had observed. In a lively Q&A, the audience shared tips on fostering diversity within the mathematical sciences. Over 50 guests were in attendance to participate in this lively supper.

#### **BioInfoSummer—Diversity in STEM Lunch Event**

A catered networking lunch celebrating diversity in STEM was held on Tuesday 4 December at the University of Western Australia. Following on from the poster session chaired by Dr Saskia Freytag from the Walter & Eliza Hall Institute of Medical Research, the lunch gave attendees the opportunity to view each of the posters and participate in a Q&A session with the 12 poster presenters.

#### Summer School—Diversity in STEM Event

The Diversity in STEM event was a panel discussion hosted in conjunction with the Careers Day Fair. Themed 'This Is What a Scientist Looks Like', the session was hosted by Professor Catherine Greenhill (UNSW) and featured panellists Dr Giang Nguyen (University of Adelaide, WIMSIG), Dr Thomas Morrill (UNSW Canberra) and Kirsten Banks (astronomer and science communicator, UNSW). Approximately 30 people attended, 22 of whom were Summer School attendees.

In addition, CHOOSE**MATHS** Networking Sessions were hosted at AMSI Winter School, AMSI BioInfoSummer and AMSI Summer School by Dr Julia Collins (CHOOSE**MATHS** Outreach Officer) and Professor Inge Koch (CHOOSE**MATHS** Executive Director), inviting all female Summer School students to identify and discuss in an all-female environment:

- issues facing women in the mathematical sciences
- goals of the CHOOSE**MATHS** program
- career opportunities for women

This session was also used to generate questions for the Women in the Mathematical Sciences Panel later in the program, and to provide an opportunity for networking among female students.

## **ATSI PARTICIPATION**

The SAMW: 2016–2020 project aims to have at least one ATSI participant per year, in line with ATSI representation in the mathematical sciences student cohort. Participants are asked to self-declare their ATSI status at the time of applying to attend, with an option not to disclose.

The ATSI participation target has been exceeded in 2018/19, with two participants (.04 per cent of total participation) in self-identifying as being of Aboriginal and Torres Strait Islander (ATSI) descent—one attended AMSI Summer School 2019 and another was an AMSI 2018/19 Vacation Research Scholar.

This follows the success in attracting ATSI participation in the Vacation Schools and Scholarships 2012-2016 project in the previous five years. However, it must be noted that the high number of students identifying as ATSI in 2014/15 and 2015/16 may have included international students who did not fully understood the question upon registration. From 2016 onward, the definition of ATSI status was clearly defined and therefore more accurate data can be assumed to have been collected.

	ATSI	Undisclosed
2012/13	1	43
2013/14	2	22
2014/15	12	22
2015/16	16	37
2016/17	3	2
2017/18	4	46
2018/19	2	3

#### FIGURE 5: Total participants who have identified as being of Aboriginal and Torres Strait Islander (ATSI) descent by project year over the past 6 years

NB: Participants who elected not to disclose their ATSI status or did not answer the question are included while non-ATSI participants are not shown

# GRANTS

Recognising the building of professional networks and research collaborations as vital to a successful academic career in mathematics and cognate disciplines, two types of grants were offered: AMSI Travel Grants and CHOOSE**MATHS** Grants, dedicated to providing financial support in funding expenses associated with attending AMSI Flagship Events.

AMSI Travel Grants were offered to support the travel and accommodation costs of AMSI Member university students attending AMSI Flagship Events. These grants are funded by this project, as well as the event-host universities, and were awarded on a competitive basis.

#### Ninety-five AMSI Travel Grants were awarded in 2018/19.

CHOOSE**MATHS** Grants, an initiative funded by the BHP Billiton Foundation as part of the CHOOSE**MATHS** program, offered full or partial support for female mathematical sciences students and early-career researchers to attend AMSI's Flagship events by providing financial support in funding travel, accommodation and caring-responsibility expenses associated with attending AMSI Flagship Events.

#### Fifty-eight CHOOSEMATHS Grants were awarded in 2018/19.

It should be highlighted that three of these grants included financial assistance towards the provision of alternative accommodation or travel support for the recipient and accompanying family members. Two of these grants went towards caring responsibilities for young children, enabling the grant awardee to fully participate in the program.



# **OUTREACH & ENGAGEMENT**

## SCHOOLS ENGAGEMENT

Through the CHOOSE**MATHS** project, delivered by AMSI Schools, school engagement occurs across four main components:

- Schools Outreach Activity
- CHOOSEMATHS Awards
- Women in Maths Network
- Careers Awareness Campaign

#### **Schools Outreach Activities**

Eight AMSI Schools Outreach Officers worked with over 138 schools in 12 geographic regions across Australia to enhance teacher knowledge of and confidence in mathematics, with a special focus on the education of girls. Many of these schools are in rural and remote areas where there are significant numbers of students of ATSI descent.

Teachers working with AMSI focus on enhancing content knowledge through the development of classroomspecific materials, planning of lesson activities and linking quality online resources and upcoming events, including public lectures. Professional-development sessions are also offered to schools on a regular basis, aimed at bringing together targeted regional clusters to discuss the curriculum, develop mathematics knowledge and share successful strategies for engaging students in mathematics.

#### **ANONYMOUS TEACHER FEEDBACK 2018/19**

"As a regional school, we don't have access to the range of professional learning opportunities as those in the metropolitan area, so we are very fortunate to have [Schools Outreach Officer] Helen's expertise to deliver sound advice and guidance in planning for the delivery of mathematics."

"The input from the CHOOSE**MATHS** programme has given teachers added skills and confidence in the classroom and promoted positive professional conversations across the school and within year groups. The parents have seen the benefit through parent workshops and their own child's development in mathematics."

"CHOOSE**MATHS** has been a fantastic initiative for our school. Having a maths expert in our school has created confidence in delivering maths across all year levels."

"...is a new school to the CHOOSE**MATHS** project and I have only had a handful of visits with them...this morning when I walked in one of the year 1/2 teachers approached me and told me that she has completely changed the way she teaches maths and she has gone from hating it, to it now being her favourite subject to teach. As you can imagine, I was pretty chuffed."

"Well, let me tell you about the feedback I got today from 2 teachers with whom I have worked regularly for 3 years. They both said they had not only changed the way they taught maths, no longer surfing the waves and ticking the boxes of we've taught it, now taking the time to dive deep, looking for teachable moments, but they felt more confident in their teaching and their content knowledge which allowed them to make decisions about when to move on, when to repeat and when to revisit...."

### **CHOOSEMATHS** Awards

#### **STUDENT AWARDS**

The CHOOSE**MATHS** Student Awards encouraged students to get creative as they stepped beyond the classroom to bring their understanding of mathematics to life on film. The aim of these awards was for students to produce a video that explained a mathematical problem or demonstrated an application of mathematics using clear and precise mathematical language, in a creative and entertaining way.

**Best Senior Video** Geelong Grammar (Victoria) *The Mathematician* 

Best Intermediate Video Ferny Grove State High School (Queensland) Pass It On

**Best Junior Video** St Matthews Catholic College (New South Wales) *Without Maths* 

To view the videos please see: choosemathsawards.org.au/2018-award-winners/

#### **TEACHER AWARDS**

The CHOOSE**MATHS** Teacher Awards identified and acknowledged Australia's most engaging and innovative teachers. Two types of awards were up for grabs, the *Mentoring Girls in Mathematics Award*, for demonstrated outstanding achievement in inspiring and fostering the participation of girls in mathematics, and the *Teaching Excellence Awards*, for excellence in demonstrating dedication to fostering student achievement, enjoyment and potential.

#### **Mentoring Girls in Mathematics Award**

Corinne Vingerhoed, Hunter School of Performing Arts (New South Wales)

#### **Outstanding Primary Teacher**

Sheila Griffin, Singleton Primary School (Western Australia)

#### **Outstanding Secondary Teacher**

Hayley Dureau, Mount Waverley Secondary College (Victoria)

To view all the award winners please see: <a href="mailto:choosemathsawards.org.au/2018-award-winners/">choosemathsawards.org.au/2018-award-winners/</a>

#### Women in Maths Network

The Women in Maths Network aims to link senior high-school and undergraduate university students with women in industry and academia through a mentoring program. This network of role models will be established to inspire young women to seek the opportunities mathematics offers, through:

- a community of high-achieving women
- young women connecting with women working in STEM through shadowing opportunities
- careers events at AMSI Member universities
- the Maths and Biology Initiative
- scholarships to students to attend higher education events

#### **Careers Awareness Campaign**

The Choose Maths national careers awareness campaign works with students, parents and teachers to turn around community attitude and participation in mathematics and statistics as a career choice, especially for girls and young women. As the demand for technology and innovation increases, so does the demand for STEM occupations. It is estimated that 70 per cent of the fastest-growing occupations will require STEM skills, and maths is undoubtably the tool students will need to take advantage of these jobs of the future and for those wanting to make a difference in our world.



The 2019 campaign once again expanded on previous years with an increase in advertising reach and classroom resources for schools. The print materials, which included posters and our annual careers guide, were sent nationally to secondary schools with our web presence expanding to include more downloadable content, videos and study information for teachers, parents and students.

The advertising campaign has increased to include a wider digital presence, with advertising across platforms such as Snapchat, Instagram and a range of websites that engage well with the audience. More traditional media, such as outdoor, public transport and radio advertising, have again been used for a wider reach.

AMSI communicates to diverse CHOOSE**MATHS** stakeholders via the following online resources (as of 21 June 2019):

- Facebook: <u>@choosemaths</u> (837 Likes), <u>@amsischools</u> (358 Likes)
- Instagram: <u>@choosemaths1</u> (347 followers)
- Twitter: <u>@AMSIschools</u> (736 followers)
- CHOOSEMATHS Website (<u>choosemaths.org.au</u>)
- Calculate Teacher Resource Portal (calculate.org.au)

## **PUBLIC LECTURES**

In 2018/19, the project activities included three public lectures, contributing significantly toward increasing public awareness of the public-lecture program, the project activity, and particularly the role of the mathematical sciences through an applied theme.





### AMSI Winter School 2018 Public Lecture The Spectrum: Incomputable yet Tangible Numbers

Associate Professor Julie Rowlett, Chalmers University of Technology

The Public Lecture was hosted on Monday 9 July at the University of Queensland's Abel Smith Lecture Theatre. Winter School lecturer Associate Professor Julie Rowlett (Chalmers University of Technology) presented a talk entitled 'The Spectrum: Incomputable yet Physically Tangible Numbers' that was was engaging and inspired many questions. Discussions continued over a light supper afterwards



### AMSI BioInfoSummer 2018 Public Lecture

# Wildlife Detectives: The Story of Genome Research, Discovery and Exploration at Australia's First Museum

Professor Rebecca Johnson, Australian Museum Research Institute (AMRI)

Professor Rebecca Johnson, Director of the Australian Museum Research Institute (AMRI), gave a public lecture entitled 'Wildlife Detectives: The Story of Genome Research, Discovery and Exploration at Australia's First Museum' to over 70 attendees. Rebecca presented case studies from her work to demonstrate how

important museum research is to engage, educate and inspire custodianship in the next generation of researchers. She also provided an overview of her career pathway cumulating in her current role as the first female director of science at the Australian Museum in its 191-year history. This free event open to BioInfoSummer delegates and the general public attracted a range of attendees including a young budding scientist currently in primary school!



#### **AMSI Summer School 2019 Public Lecture**

#### A Math/Physics View of Ocean Circulation

Dr Stephen Griffies, NOAA Geophysical Fluid Dynamics Laboratory and Princeton University

Dr Stephen Griffies (NOAA Geophysical Fluid Dynamics Laboratory and Princeton University), a leading expert on ocean circulation and ocean fluid dynamics, presented the 2019 Summer School Public Lecture. His presentation 'A Math/Physics View of Ocean Circulation' focused on some of the mechanisms of ocean circulation and the questions confronting ocean scientists today. This lecture was hosted at UNSW's Science Theatre and was well received with over 114 people attending the event, including 30 students of the Summer School.



Professor Rebecca Johnson with the youngest attendees of the BioInfoSummer 2018 Public Lecture

# **CAREER AWARENESS**

## **Careers Events**

AMSI and the host universities continue to collaboratively deliver careers events within the project-activity programs. In 2018/19, three events were delivered and were well-attended. Although these events across the three project activities were unique in their format, each promoted career awareness to attendees and encouraged networking.



### **BioInfoSummer COMBINE Careers Session**

The COMBINE Careers Session was held on Thursday 6 December. Organised in partnership with the University of Western Australia's COMBINE (the student-run Australian organisation for students in computational biology, bioinformatics, and related fields) representative, the event showcased bioinformatics career opportunities and provided a forum for discussion around different career pathways.

Attendees heard about the APR.Intern program from Rachel Geddes, Senior Business Development Partner. The panel of speakers (listed below) then shared their own experiences and career journeys before opening it up for questions from the audience.

- Professor Matthew Hahn, Indiana University
- Dr Monica Kehoe, WA Department of Primary Industries and Regional Development
- Dr Ashley Waardenberg, James Cook University
- Professor Sue Wilson, The University of New South Wales

### **Summer School Careers Day Fair**

The Careers Day Fair is always a highlight of the Summer School, providing valuable careers information and contacts for students. This year the presentations and panel discussion were hosted by Professor Tim Brown. Presentations on careers in mathematics were given by:

- Bureau of Meteorology
- Alpha Beta
- Australian Signals Directorate
- Optiver

• Commonwealth Bank of Australia

These were followed by three different panel sessions about the APR.Intern program, diversity in STEM ('This is What a Scientist Looks Like'), and career pathways in academia and industry. These panel sessions gave students the opportunity to find out more about different career paths available to them, exposure to different career experiences and a chance to engage in deeper discussion with members of academia and industry.

The final part of the Careers Afternoon was an expo where students were able to talk with presenters and stallholders about career paths and graduate employment opportunities. 120 students participated in the event with very positive feedback from both presenters and students.



### **VRS Guest Speakers**

Three guest speakers gave careers presentations, sharing their experiences and giving professional advice to the scholarship recipients at AMSIConnect (the two-day conference for Vacation Research Scholars and their supervisors):

- Dr Laura Karantgis (La Trobe University): Life as a PhD Student
- Professor Steven Siems (Monash University): Life as a Researcher
- Professor Tim Brown (AMSI): Careers in Maths

## **Maths Adds**

Maths Adds gathers together a sample of job advertisements from recent years. The common theme of the ads is mathematics and statistics, but the actual jobs vary across a very broad spectrum—from health to computing, data analysis to biology, and meteorology to finance.

Highlighting opportunities available to students who include mathematics or statistics in their degrees—only adding to future career options—this print resource is updated annually and circulated to over 120 schools, in addition to AMSI's 31 Member Universities around Australia. 28,000 were distributed in 2018/19.



In addition to job advertisements, Maths Adds features student case-studies and profiles of mathematicians and statisticians, including participants in the SAMW 2016–2020 project.

Targeting senior secondary students and undergraduate students, this resource is prepared by AMSI and La Trobe University and is also available online at <u>careers.amsi.org.au/</u>.

## MEDIA

## AMSI in the Media

AMSI has continued to achieve significant increases in the number of news articles featured in community, local and national media coverage across channels and platforms, including print newspapers and website articles, social media posts and radio interviews. This has increased the number of visits to the AMSI website and to the event sites.

AMSI's Research and Higher Education activities have featured strongly in the media in 2018/19, with 15 unique instances of coverage. This success results in a wide reach, increased awareness, and the enhanced profile of the project and the program.

A collection of news articles is featured and promoted on AMSI's website. To find out more about the coverage, reach and profile of AMSI, or to read some of the articles, please visit the website at: <u>amsi.org.au/category/amsi-in-the-news</u>.

Due to ongoing AMSI website upgrades and mergers, AMSI Research and Higher Education website statistics are not available. New data will be available for new RHED websites in the next reporting period.

### **Media Coverage of Flagship Events**

AMSI Optimise 2018 received national and international coverage in two articles, with a reach of over 2.417 million.

	Publisher	Title	Reach
18 June 2018	<u>Gizmodo</u> <u>Australia</u>	88-Year-Old Statistics Pioneer Says Some Barriers for Women in STEM 'Haven't Changed Since The 60s'	1,093,014
27 June 2018	<u>The</u> <u>Australian</u>	[Content removed at the request of the publisher]	1,324,814

#### FIGURE 6: AMSI Optimise 2018 media coverage

AMSI Winter School 2018 received national coverage in 11 articles, with a reach of over 13.223 million.

	Publisher	Title	Reach
9 July 2018	<u>The Australian</u>	[Content removed at the request of the publisher]	1,270,198
13 July 2018	<u>The Daily</u> <u>Telegraph*</u>	Surprising Way Maths Is Used in the Real World	1,146,466
13 July 2018	<u>Herald Sun*</u>	Surprising Way Maths Is Used in the Real World	1,039,884
13 July 2018	<u>The Courier-</u> <u>Mail*</u>	Surprising Way Maths Is Used in the Real World	539,258
13 July 2018	<u>The Advertiser*</u>	Surprising Way Maths Is Used in the Real World	495,634
13 July 2018	<u>ntnews.com.au*</u>	Surprising Way Maths Is Used in the Real World	71,347
13 July 2018	<u>Townsville</u> <u>Bulletin*</u>	Surprising Way Maths Is Used in the Real World	43,493
13 July 2018	<u>news.com.au*</u>	Surprising Way Maths Is Used in the Real World	8,382,425
13 July 2018	<u>Gold Coast</u> <u>Bulletin*</u>	Surprising Way Maths Is Used in the Real World	114,461
13 July 2018	<u>Geelong</u> <u>Advertiser*</u>	Surprising Way Maths Is Used in the Real World	47,857
13 July 2018	<u>The Mercury*</u>	Surprising Way Maths Is Used in the Real World	72,781

FIGURE 7: AMSI Winter School 2018 media coverage

\* Licensed by copyright agency

#### AMSI VRS 2018/19 received national coverage in two articles, with a reach of over 555,000.

#### FIGURE 8: AMSI VRS 2018/19 media coverage

	Publisher	Title	Reach
8 Feb 2019	<u>Illawarra</u> <u>Mercury</u>	AMSI Scholarship Helps UOW Student Research the 'Maths of Laughter'	78,000
13 Feb 2019	<u>Adelaide</u> <u>Advertiser</u>	Maths Whiz Full of Energy Ideas	477,434

### e-News

AMSI's monthly Research and Higher Education newsletter consistently achieves healthy open rates (averaging 25 per cent) and click rates, as made evident throughout the past 12 months.

AMSI promotes its programs and events to direct segments and targeted audiences via this channel, increasing engagement with the wider mathematical sciences audience, and promoting the SAMW project and activities. The format includes promotion of upcoming events and other opportunities, recaps of past events, and links to quirky maths problems and fascinating stories worth sharing.

	Number of Subscribers	Open Rate (%)	Click Rate (%)
Jun-18	4499	24%	2%
Jul-18	4415	24%	2%
Aug-18	4344	27%	2%
Sep-18	4352	26%	3%
Oct-18	4348	26%	2%
Nov-18	4353	26%	2%
Dec-18	4320	26%	2%
Jan-19	N/A	N/A	N/A
Feb-19	4288	25%	3%
Mar-19	4238	25%	3%
Apr-19	4291	25%	2%
May-19	4292	25%	3%
Jun-19	N/A	N/A	N/A

FIGURE 9: Research & Higher Education e-News subscriber numbers and unique open- and click-rate statistics from June 2018 to May 2019

NB: Statistics exclude June 2019 figures as report due date is 21 June 2019

### **Social Media**

Social media is an important marketing tool for bringing greater awareness to the mathematical sciences and is an effective platform for promoting AMSI and its initiatives, including the SAMW project activities. AMSI's social media following continues to expand through a reach to both Australian and international audiences. The AMSI Research and Higher Education program has a strong presence on Facebook (<u>facebook.com/DiscoverAMSI</u>) and Twitter (<u>twitter.com/DiscoverAMSI</u>).

Facebook groups and events contribute to increased engagement and provide a networking channel for students participating in AMSI's Research and Higher Education events, fostering a collaborative and social environment.

Twitter is an effective way to connect with audiences unable to attend AMSI events, spreading the message across the globe and maximising the virtual reach of programs.

Promoting Flagship events such as AMSI Optimise 2018 and AMSI Winter School 2018 has been an excellent way of showcasing news and connecting with our many Facebook readers. These posts have reached over 8500 people on Facebook.



FIGURE 10: @DiscoverAMSI Facebook page 'likes' from 1 June 2018 to 31 May 2019

FIGURE 11: @DiscoverAMSI Twitter page 'followers' from 1 June 2018 to 31 May 2019



NB: All statistics exclude June 2019 figures as report due date is 21 June 2019

#### Details and performance of a May 2019 post on the Discover AMSI Facebook page

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#### Post Details

#### Australian Mathematical Sciences Institute MAMSI Published by Fran HR [?] - 7 May - @

From one generation to another: the importance of building girls' confidence, and the value of studying maths.

An interview with Nicolette Rubinsztein (President of the Actuaries Institute and advocate for women in STEM and flexible work) and her daughter Zara.

https://www.afr.com/.../love-actuary-unlocking-the-power-of-n..



Get more likes, concerning the second sec	omments and shares \$200 to reach up to 26,000 p	people.	
6,915	261		Desident
People reached	Engagements		BOOSI POSI
🕕 🗘 Helena Cunha, Ar	dy Tran and 22 others		14 shares
ரீ் Like	C Comment	A Share	The T

#### Performance for your post

#### 6,915 People Reached

#### 53 Reactions, comments & shares 1 22 33 11 🔂 Like On post On shares 2 On post 1 On shares 3 C Love 3 0 3 Comments On Post On Shares 14 14 0 Shares On Post On Shares 208 Post Clicks

#### 92 Other Clicks (1) 116 0 Photo views Link clicks i NEGATIVE FEEDBACK 1 Hide post 0 Hide all posts

0 Unlike Page

Reported stats may be delayed from what appears on posts

