

**PARTICIPATION STRATEGY**  
**SECURING AUSTRALIA'S**  
**MATHEMATICAL WORKFORCE**

**Progress Report**

Stage 2 | 2017/18

# Participation Strategy

## Securing Australia's Mathematical Workforce

### Progress Report

#### Stage 2 | 2017/18

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*“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: [www.education.gov.au/australian-mathematical-sciences-institute-project](http://www.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

- Male and female 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

- Male and female 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 2017: Symposium Inspiring Industry and Research Collaboration*
- *AMSI Winter School 2017: Computational Foundations of Data Science*
- *AMSI BioInfoSummer 2017: A Symposium in Bioinformatics*
- *AMSI Summer School 2018 in the Mathematical Sciences*
- *AMSI Vacation Research Scholarships (VRS) 2017/18: A Taste of Life as a Researcher*



# PARTICIPATION

The SAMW: 2016–2020 project aims to have at least 360 domestic participants across five project activities in 2017/18, including 30 per cent female student participation and the participation of one ATSI mathematical sciences student.

The overall participation target has been exceeded, with 564 attendees participating in the project’s activities. This follows the increase in the overall participation, with the addition of AMSI Optimise in the past year and 2012–2016 project over the previous four years.

**FIGURE 1: Total participation by project activity over the past 6 years**

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

The domestic participation target has been exceeded in two out of the five project activities and come close in the other three. AMSI Optimise 2017 and AMSI Winter School 2017 were well attended by domestic participants, easily meeting the project’s targets.

After receiving 65 applications, the final participation numbers in the VRS 2017/18 program suffered from a few students withdrawing from the program after the award of scholarships.

**FIGURE 2: Domestic participation target against actual participation in 2017/18 across the project’s activities.**

	Target	Actual
<b>Optimise</b>	40	54
<b>Winter School</b>	20	35
<b>BioInfoSummer</b>	130	118
<b>Summer School</b>	120	101
<b>VRS</b>	50	35
<b>TOTAL</b>	<b>360</b>	<b>343</b>

## 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 second year of the project, with 205 female participants (36 per cent of total participation) self-identifying as female.

**FIGURE 3: Percentage of female participation by project activity over the past 6 years.**

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

In 2017/18, 32 females attended AMSI Optimise, 23 females attended AMSI Winter School 2017, 90 females participated in AMSI BioInfoSummer 2017, 49 females attended AMSI Summer School 2017 and 11 females received an AMSI Vacation Research Scholarship.

**FIGURE 4: Total female participation target percentages against actual participation in 2017/18 across the project's activities.**

	Target	Actual
<b>Optimise</b>	30%	<b>29%</b>
<b>Winter School</b>	30%	<b>33%</b>
<b>BioInfoSummer</b>	30%	<b>51%</b>
<b>Summer School</b>	30%	<b>29%</b>
<b>VRS</b>	30%	<b>28%</b>

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 2017/18:

- Optimise — Eight females out of 39 speakers (20 per cent)
- Winter School — Two females out of eight lecturers (25 per cent)
- BioInfoSummer — Fifteen females out of 32 speakers (47 per cent)
- Summer School — Five females out of 14 lecturers (36 per cent)

## CHOOSEMATHS

The BHP Billiton Foundation and the Australian Mathematical Sciences Institute (AMSI) formed a partnership in April 2015 to deliver the CHOOSEMATHS 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 to careers and lifestyle, especially for women, is a program highlight.

The CHOOSEMATHS 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.

CHOOSEMATHS 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. In 2017/18, three events, open to all participants, were well-attended with over 70 attendees at each event. 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

The Women in Maths Networking event is an informal social event highlighting the contribution of women in the mathematical sciences. This year we had four dynamic speakers: Amy Hawke from Brisbane State High School and Olivia Hutchinson from Boeing (both QUT alumnae), Professor Kerrie Mengersen from ACEMS and Dr Linda Stals (AMSI Winter School 2017 Lecturer from ANU). The event was a great success, with over 70 guests enjoying the chance to learn more about these women and their mathematical journeys.

### BioInfoSummer — Diversity in STEM Lunch Event

A networking lunch was held at Monash University on day two of the conference with the theme of Celebrating Diversity in STEM. The Event Director opened discussions with a few short remarks about gender balance at the conference and the wider mathematical sciences community. Attendees were encouraged to think about and discuss the importance of diversity and how to encourage it in practice.

### Summer School — Diversity in the Mathematical Sciences Panel Event

The Diversity in STEM discussion was a lunchtime session hosted by Professor Ian Wanless, School of Mathematical Sciences. The discussion commenced with a talk by Dr Zuleyka Zevallos (most recently Program Manager of Science Australia Gender Equity) on barriers that hinder diversity in academia. This was followed by a lively panel discussion involving academics from a range of STEM disciplines. Approximately 100 people attended this event, of whom 70-80 were Summer School attendees.



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

- issues facing women in the mathematical sciences
- goals of the CHOOSEMATHS 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 with fellow 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 the first year of the project, with four participants (1.1 per cent of total participation) in 2017/18 self-identified as being of Aboriginal and Torres Strait Islander (ATSI) descent — one student attended AMSI Winter School 2017, and three students participated in AMSI Summer School 2018.

This follows the success in attracting ATSI participation in the Vacation Schools and Scholarships 2012-2016 project in the previous four years. However, it must be noted that the high number of students identified as ATSI in 2014/15 and 2015/16 were for the AMSI Summer School activity, which included international students who may not have fully understood the question upon registration. From 2016/17, the definition of ATSI status was clearly defined, and therefore more accurate data can be assumed to have been collected.

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

	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

*NB: Participants who have 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 need to build professional networks and research collaborations as being vital for a successful academic career in mathematics and cognate disciplines, two types of grants were offered: AMSI Travel Grants and CHOOSEMATHS Grants, dedicated to providing financial support in funding expenses associated with attending AMSI Flagship Events.

AMSI Travel Grants were offered to support AMSI Member University student travel and accommodation to attend AMSI Flagship Events. These grants are funded by this project, as well as the host university, and were awarded on a competitive basis.

**In 2017/18, AMSI Travel Grants were awarded to 75 males and 1 female, including 2 ATSI students across the project's activities.**

CHOOSEMATHS Grants, an initiative funded by the BHP Billiton Foundation as part of the CHOOSEMATHS 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.

**In 2017/18, CHOOSEMATHS Grants were awarded to 36 females across the project's activities.**

It should be highlighted that two of these grants included financial assistance towards the provision of alternative accommodation or travel support for the recipient and accompanying family members. One of these grants was towards caring responsibilities for young children, enabling the female student to fully participate in the program.



# OUTREACH & ENGAGEMENT

## SCHOOLS ENGAGEMENT

Through the CHOOSEMATHS 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 young females. 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 classroom-specific 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 2017/2018

“The presenters were inspirational and a number of our students are now considering a career in STEM. Many young women may be uncertain about a career in STEM due to its traditional male dominance. I think this program helps to allay that fear and encourage young women into this career pathway.”

“Well constructed professional development session with plenty of information and ideas.”

“Great organisation! Focus on just girls was great, it has allowed conversations to occur about ‘Why can't I do that, what's stopping me?’ at a much deeper level, really questioning a lot of preconceptions around confidence and gender, opening up new directions.”

“Finally, some Professional Development that actually relates directly to our syllabus. Thanks!”

“The CHOOSEMATHS Forum held at Hellyer College Burnie this week was like breath of fresh air! Sensational, motivated, passionate and articulate young women each describing from their personal perspective how maths works for and excites them in their working lives.”

## CHOOSEMATHS Awards

### STUDENT AWARDS

The CHOOSEMATHS 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

**St Monica's College (Queensland)**

*Maths is our future*

Best Intermediate Video

**Ferry Grove State High School (Queensland)**

*To the Maths Haters*

Best Junior Video

**Montagu Bay Primary School (Tasmania)**

*Triangles are our world*

To view the videos please see: [www.choosemathsawards.org.au/student-awards-past-winners-2017](http://www.choosemathsawards.org.au/student-awards-past-winners-2017)

### TEACHER AWARDS

The CHOOSEMATHS 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**

- Ashley Stewart, Newton Moore Senior High School (Western Australia)

#### **Outstanding Primary Teacher**

- Keith Barnett, Epping North Public High School (New South Wales)

#### **Outstanding Secondary Teacher**

- Patricia Hosking, St Aidan's Anglican Girls' School (Queensland)

To view all the award winners please see: [www.choosemathsawards.org.au/teacher-awards-past-winners-2017](http://www.choosemathsawards.org.au/teacher-awards-past-winners-2017)

## 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 females 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

Building on a successful 2017 Careers Awareness Campaign, the 2018 Careers Campaign is being expanded nationally to include 15 ambassador posters packs and national targeted advertising on billboards, public transport, radio, social media and gamification on phones. In addition, our careers ambassador network is being expanded to include new professions involving mathematics, and high-profile scientists such as Professor Alan Duffy.



This campaign targets young mathematicians, particularly young women, by presenting a diverse background of mathematically-capable professionals as role models. AMSI communicates to diverse CHOOSEMATHS stakeholders via the following online resources (as of 22 June 2018):

- Facebook: [@choosemaths](#) (568 Likes), [@amsischools](#) (228 Likes)
- Instagram: [@choosemaths1](#) (201 followers)
- Twitter: [@AMSIschools](#) (511 followers)
- CHOOSEMATHS Website ([www.choosemaths.org.au](http://www.choosemaths.org.au))
- Calculate Teacher Resource Portal ([www.calculate.org.au](http://www.calculate.org.au))

# PUBLIC LECTURES

In 2017/18, 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 2017 Public Lecture

### Models, Maths and the Revolution in Weather Forecasting

Dr Peter May, The Bureau of Meteorology

The Public Lecture, held on Monday 3 July in the Kindler Theatre at the QUT Gardens Point campus, was given by the Bureau of Meteorology's Dr Peter May. Dr May gave a very interesting talk on the quiet revolution in weather forecasting over the past few decades driven by big computers, big data and lots of maths. The event was well-attended and a light supper was served afterwards.



## AMSI BioInfoSummer 2017 Public Lecture

### Genomics, Big Data and the Future of Medical Research and Healthcare

Professor John Mattick AO, The Garvan Institute

Professor John Mattick AO from the Garvan Institute of Medical Research delivered this year's AMSI BioInfoSummer Public Lecture to over 130 attendees on Wednesday 6 December. BioInfoSummer registrants were joined by interested members of the general public to hear Professor Mattick present on "Genomics, Big Data and the Future

of Medical Research and Healthcare". This topic proved popular, with lots of insightful discussions going on well into the evening.



## AMSI Summer School 2018 Public Lecture

### Discrete or Continuous?

Professor Nick Trefethen FRS, University of Oxford

We were very fortunate to have the University of Oxford's Professor Nick Trefethen FRS deliver the Public Lecture for the 2018 Summer School. Professor Trefethen is a leading expert on Numerical Analysis and has published many popular textbooks on this topic. The Public Lecture was held at the Caulfield campus of Monash University. One hundred and nineteen people attended the public lecture, including 59 students from the Summer School. Professor Trefethen spoke on the topic of "Discrete or Continuous?". This exploration of the mathematical and scientific world was followed by a wide-ranging discussion with the speaker. Professor Trefethen also gave a seminar on the same day in the School of Mathematical Sciences, which was attended by approximately 20 Summer School participants.

# CAREER AWARENESS

## Careers Events

AMSI and the host universities continue to collaboratively deliver careers events within the project-activity programs. In 2017/18, three events were delivered and were well-attended, with over 50 attendees at each event. Although these events across the three project activities were unique in their format, each promoted career-awareness to attendees and encouraged attendees to network!



### BioInfoSummer COMBINE Careers Session

The COMBINE careers session was held at the Racecourse Hotel on Thursday 7 December. Organised in partnership with the Monash University COMBINE (the student-run Australian organisation for students in computational biology, bioinformatics, and related fields) representative, the evening showcased career opportunities in bioinformatics and provided a forum for discussion around the different careers pathways.

Audience members took the opportunity to ask plenty of questions of the diverse panel, which included:

- Dr Mark Cowley, Garvan Institute of Medical Research, Sydney
- Dr Tallulah Andrews, The Wellcome Trust Sanger Institute, UK
- Dr Michael Lawrence, Genentech, USA
- Dr Saravanan Dayalan, Metabolomics Australia, The University of Melbourne
- Dr Traude Beilharz, Monash University, Melbourne

The audience also heard from Fiona Druitt, AMSI Business Development Officer (VIC) on the opportunities available through the AMSI Intern (now APR.Intern) program.

### Summer School Careers Afternoon

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

- The APR.Intern Program
- Centre for Quantitative Finance, Monash University
- Australian Signals Directorate
- Commonwealth Bank of Australia



- AustMS
- Bureau of Meteorology
- Statistical Society of Australia (SSA)

This was followed by a panel discussion which additionally included staff from:

- Australian Bioinformatics and Computational Biology Society
- CSIRO's Data61
- GELI

The final part of the Careers Afternoon was an Expo where students were able to individually talk with the presenters. Ninety students participated in the Careers Afternoon, with very positive feedback from presenters and students alike.



## 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 student conference):

- Nigel Clay (RMIT University): Life as a PhD Student
- Associate Professor Andrew Robinson (Centre of Excellence for Biosecurity Risk Analysis, The University of Melbourne): Life as a Researcher
- Professor Geoff Prince (AMSI): Careers in Maths

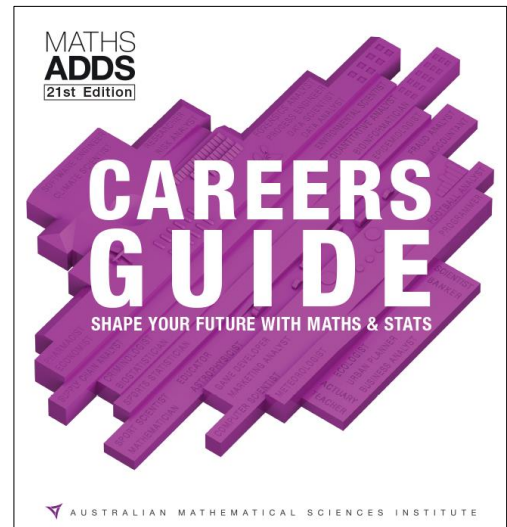
## Maths Adds

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 degree — which can only add 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. 17000 were distributed in 2017/18.

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 [www.mathsadds.amsi.org.au](http://www.mathsadds.amsi.org.au).



# CONNECTING WITH INDUSTRY

At two to three per cent, Australia has one of the lowest rates of industry-research engagement in the Organisation for Economic Co-operation and Development (OECD). AMSI sees this challenge as a call to action and an opportunity for reform to support Australia's elevation on the global innovation stage.

## Industry Advisory Committee

AMSI's Industry Advisory Committee partnered with industry to establish the Industry/Mathematical Sciences Engagement (IMSE) Task Force in 2015, significantly deepening AMSI's industry engagement.

Membership of the Task Force included eight industry leaders and eight senior mathematical scientists from AMSI Member Universities. The Task Force targets measures to grow and develop Australia's mathematical workforce at a time when skills are increasingly in high public- and private-sector demand.

The Task Force's findings to date indicate a shortage of industry-ready mathematics graduates in Australia, which has led businesses across a wide range of sectors to seek these skills overseas. The IMSE Task Force is leading urgent action to address:

- careers awareness in schools and the community
- industry engagement with the mathematical sciences
- supply of industry-ready mathematical sciences graduates

## APR.Intern

The Australian Postgraduate Research (APR) Intern program provides PhD students with opportunities to apply their research to complex real-world industry challenges. As Australia seeks to strengthen its STEM and innovation capacity, these short-term industry internships become a vital part of the Australian postgraduate experience. Supported by the Australian Government, the program's focus on placing PhD women in STEM is accelerating gender equity industry. For more information please see: [aprintern.org.au](http://aprintern.org.au)

### Mathematical Sciences Internship Placements — Contracts Executed in Financial Year 2017-18

Our Ref	Industry Partner	University	Student Type
INT - 0337	Westpac Banking Corporation	The University of Newcastle	Domestic
INT - 0403	UGL Unipart Rail Services Pty Ltd	University of Technology Sydney	International
INT - 0354	Healthier Delivery Pty Ltd	RMIT University	International
INT - 0381	Aurecon Group	RMIT University	Domestic
INT - 0389	Geoscience Australia	University of Wollongong	Domestic
INT - 0298	Australian Bureau of Statistics	The Australian National University	International
INT - 0390	Telstra Corporation Ltd	The University of Melbourne	Domestic
INT - 0373	Aurecon Group	Swinburne University of Technology	Domestic

# MEDIA

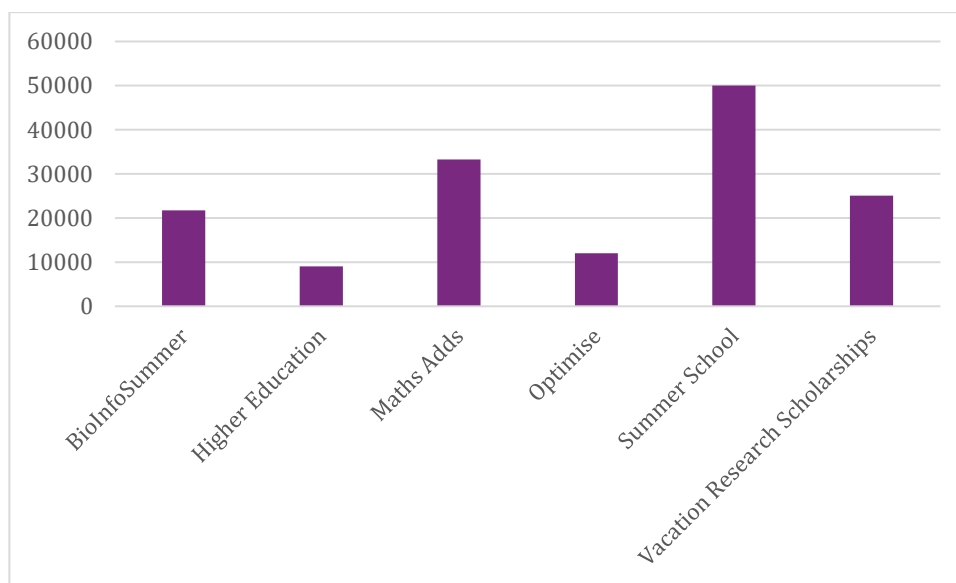
## AMSI in the Media

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

In 2017/18 AMSI's Research and Higher Education activities have featured strongly in the media, with 71 instances of coverage during the second stage of the SAMW 2016–2020 project. This success results in a wide reach, increased awareness, and 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: [www.amsi.org.au/category/amsi-in-the-news](http://www.amsi.org.au/category/amsi-in-the-news).

**FIGURE 6: AMSI website visits from July 2017 to June 2018**



*NB: Due to website upgrade, Winter School statistics are not available for this period.*

## 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.

**FIGURE 7: Research & Higher Education e-News subscriber numbers and unique open- and click-rate statistics from June 2017 to June 2018**

	Number of Subscribers	Open Rate (%)	Click Rate (%)
<b>Jun-17</b>	4775	26%	3%
<b>Jul-17</b>	4762	25%	4%
<b>Aug-17</b>	4831	26%	4%
<b>Sep-17</b>	4804	25%	3%
<b>Oct-17</b>	4789	25%	3%
<b>Nov-17</b>	4763	25%	3%
<b>Dec-17</b>	4666	26%	4%
<b>Jan-18</b>	N/A	N/A	N/A
<b>Feb-18</b>	4646	22%	2%
<b>Mar-18</b>	4579	22%	3%
<b>Apr-18</b>	4586	22%	3%
<b>May-18</b>	4542	25%	3%
<b>Jun-18</b>	4499	24%	2%

## Social Media

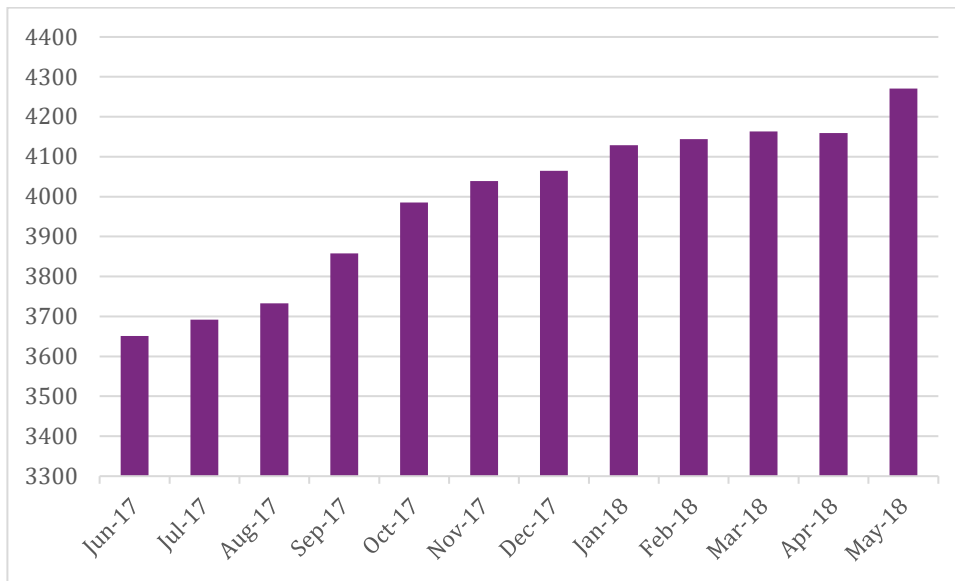
Social media is an important marketing tool for bringing greater awareness to the mathematical sciences and is an effective platform for promoting AMSI and its initiatives, including the SAMW project activities. AMSI’s social media following continues to expand, fostering a reach to both Australian and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

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.

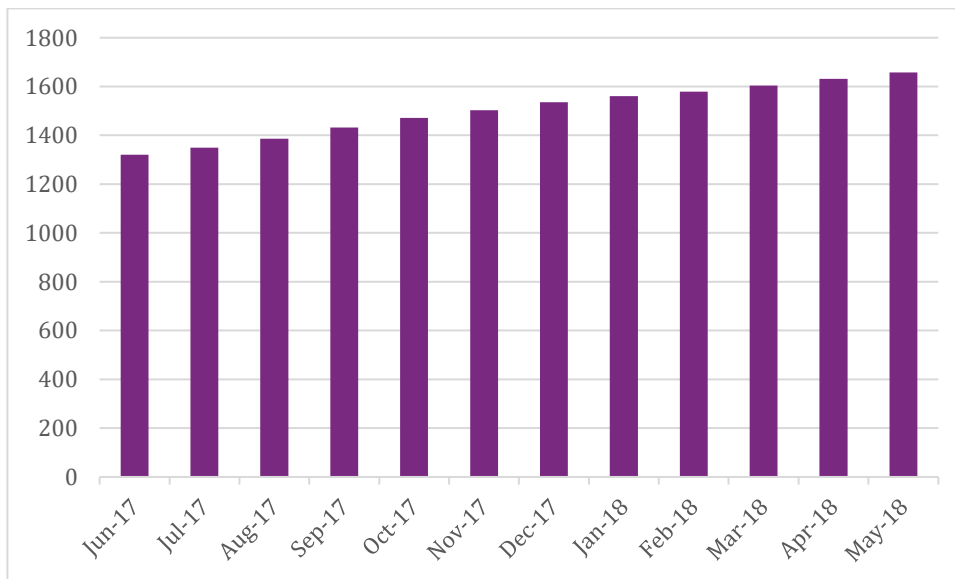
Twitter is an effective way to connect with audiences unable to attend AMSI events, spreading the message across the globe and maximising the virtual reach of programs.

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 8: @DiscoverAMSI Facebook page “likes” from 1 June 2017 to 31 May 2018**



**FIGURE 9: @DiscoverAMSI Twitter page “followers” from 1 June 2017 to 31 May 2018**



*NB: All statistics exclude June 2018 figures as report due date is 22 June 2018.*

## Details and performance of a May 2018 post on the Discover AMSI Facebook page

Post Details
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**Australian Mathematical Sciences Institute**

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Explore Uncertainty and Monetary Policy in Good and Bad Times with Dr Gabriela Nodari at AMSI Optimise 2018!

Gabriela will investigate the role played by systematic monetary policy in the United States in tackling the real effects of uncertainty shocks in recessions and expansions. Her session will model key indicators of the business cycle with a nonlinear vector autoregression model that allows for different dynamics in busts and booms.

Gabriela is an economist at the Macro... [See more](#)

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**Dr Gabriela Nodari - AMSI Optimise 2018**

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# ADVOCACY

The sixth edition of the Discipline Profile of the Mathematical Sciences was released in October 2017. This publication provides a detailed snapshot of the state of the discipline and its impact from the classroom and higher education to research development, workforce trends and industry innovation.

This year the profile includes preliminary data from AMSI's 2016 survey of Australian university mathematical sciences departments, as well as the 2015 results of both the PISA and TIMSS surveys.

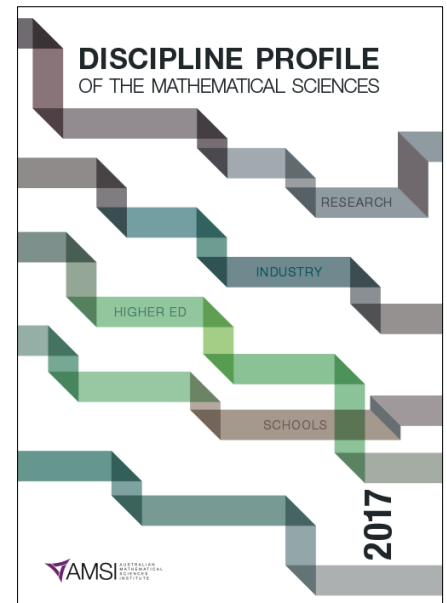
Each year, the discipline profile is accompanied by a publication of policy measures that identify key priorities for government intervention and actions for peak bodies (commercial, educational, scientific and technological) to undertake.

In 2017, AMSI identified five key priorities for intervention:

- **Our teachers** — support the unqualified teachers of secondary school mathematics; deal with widespread maths anxiety among primary school staff and secure the future supply of properly trained maths teachers
- **Cultural Change** c restore university maths prerequisites from their historic low and turn around declining school mathematics enrolments
- **An equitable future** — increase the rates of graduation in the mathematical sciences, especially among women and Aboriginal and Torres Strait Islanders, to grow and refresh the quantitative professions
- **World class** — Build and support world-quality infrastructure on a national scale in the mathematical sciences and increase our international research engagement
- **Innovation** — Boost the engagement of Australian business with mathematical sciences research and better equip our graduates with the coding and data skills for business careers

AMSI believes that these priorities must be addressed as the Commonwealth plans and implements National Innovation and Science Agenda.

AMSI publication documents, including the *Discipline Profile of the Mathematical Sciences*, can be downloaded from the AMSI website at [www.amsi.org.au/publications](http://www.amsi.org.au/publications).





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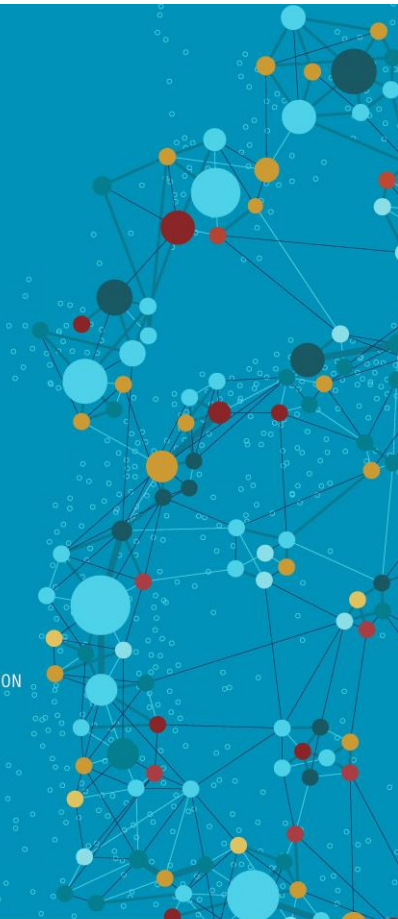
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