

# Bonded Medical Schemes

## Research Outcomes Report

*the future of rural health*

## About us

### National Rural Health Student Network

The National Rural Health Student Network (NRHSN) represents the future of rural health in Australia. It has more than 9,000 members who belong to 28 university Rural Health Clubs from all states and territories.

It is Australia's only multi-disciplinary student health network, bringing together people studying medicine, nursing and allied health, encouraging them to pursue rural health careers.

The NRHSN has two aims:

- ▶ to provide a voice for students who are interested in improving health outcomes for rural and remote Australians
- ▶ to promote rural health careers to students and encourage students who are interested in practising in rural health care.

The NRHSN and its Rural Health Clubs offer rural experience weekends, career information sessions and professional development activities as well as providing a social base for students at university and when on rural placement.

The student network leaders also advocate on behalf of health students of all disciplines - including opportunities for more rural placements and training support.

The NRHSN is managed by Rural Health Workforce Australia (RHWA) with funding from the Federal Department of Health.

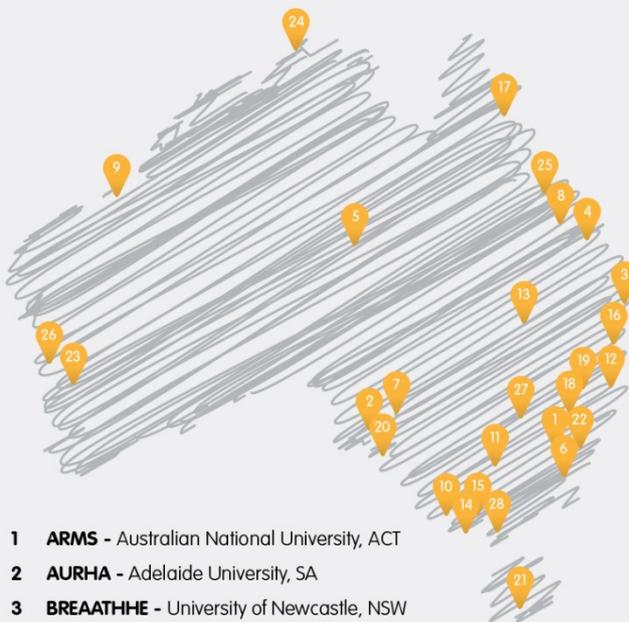
### Rural Health Workforce Australia

Rural Health Workforce Australia is the national body for the seven states and territory Rural Workforce Agencies. Our not-for-profit Network is dedicated to making primary health care more accessible by attracting, recruiting and supporting health professionals needed in rural and remote communities. RHWA is also committed to the future workforce through our support of the National Rural Health Student Network.

### Contact us

National Rural Health Student Network  
Suite 2, Level 5, 10 Queens Road  
Melbourne VIC 3004  
03 9860 4700  
info@nrhsn.org.au  
www.nrhsn.org.au

## Rural Health Clubs



- 1 **ARMS** - Australian National University, ACT
- 2 **AURHA** - Adelaide University, SA
- 3 **BREAATHE** - University of Newcastle, NSW
- 4 **BUSHFIRE** - Bond University, QLD
- 5 **CARAH** - Charles Darwin University, NT in assoc with Flinders University, SA
- 6 **CRANC** - University of Canberra, ACT
- 7 **FURHS** - Flinders University, SA
- 8 **HOPE4HEALTH** - Griffith University, QLD
- 9 **KRASH** - Notre Dame University, Broome, WA
- 10 **LARHC** - La Trobe University, Bendigo, VIC
- 11 **MARHS** - Charles Sturt University, Albury, NSW including La Trobe University Wodonga campus
- 12 **MIRAGE** - University of Sydney, NSW
- 13 **NERCHA** - University of New England, NSW
- 14 **NOMAD** - Deakin University, VIC
- 15 **OUTLOOK** - University of Melbourne, VIC
- 16 **RAHMS** - University of New South Wales, NSW
- 17 **RHINO** - James Cook University, QLD
- 18 **RHUUWS** - University of Western Sydney, NSW
- 19 **ROUNDS** - Notre Dame University, Sydney campus, NSW
- 20 **ROUSTAH** - University of South Australia, SA
- 21 **RUSTICA** - University of Tasmania, TAS
- 22 **SHARP** - University of Wollongong, NSW
- 23 **SPINRPHX** - Combined Universities of Western Australia, WA
- 24 **StARRH** - Charles Darwin University, NT including Flinders University, SA
- 25 **TROHIQ** - University of Queensland, QLD
- 26 **WAALHIIBE** - Combined Universities of Western Australia, WA
- 27 **WARRIAHS** - Charles Sturt University, Wagga Wagga, NSW
- 28 **WILDFIRE** - Monash University, VIC

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# 1. Introduction

## 1.1 Context

Imbalances in the geographical distribution of health workers remain a challenge for many countries.[1] Around 50% of the world’s population live outside of urban centres; however less than 25% of doctors and 40% of nursing and other health workers service these areas.[2] Within Australia, issues regarding health workforce maldistribution hinder equitable access to health services for Australians living in rural and remote locations.[4]

Poorer access to quality healthcare providers has been cited as one of the primary causes of health inequity and poorer health outcomes.[5] In Australia, for example:

- ▶ life expectancy is up to 7 years less in rural and remote areas than in cities.[6]
- ▶ survival rates of Australians diagnosed with cancer decrease with increased rurality.[7] and
- ▶ suicide rates in rural and remote areas are significantly higher than in cities.[7]

## 1.2 Bonded Medical Schemes

A number of policy initiatives [8] have been implemented by the Australian government to address this geographical imbalance in the health workforce, including the establishment of the Bonded Medical Places (BMP) [9] and Medical Rural Bonded Scholarship (MRBS) [10] schemes. The BMP and MRBS schemes commenced in 2004 and 2001 respectively; with the intention of increasing the number of medical practitioners working in Districts of Workforce Shortage (DWS) and regional, rural and remote areas.

From 2016, the BMP will provide 800 Commonwealth Supported Places (CSPs) for medicine; with participants contractually agreeing to complete a 12 month Return of Service Obligation (RSO) in a DWS or Modified Monash Model (MMM) 4-7 location at some time between internship (or Postgraduate Year 1) and 5 years after attainment of specialist fellowship (or vocational registration). Prior to 2016, the BMP provided 700 CSPs per year attached to an RSO in a DWS with a duration equivalent to the length of the participant’s medical degree; with this RSO taking effect after obtaining specialisation (although up to half can be undertaken during prevocational or vocational training).

As of 2016, the MRBS scheme is closed to new applicants but has previously provided 100 CSPs per year for medicine. MRBS participants receive a scholarship of approximately \$26,000 per annum, in exchange for completing a continuous 6 year RSO in an RA 2-5 area after obtaining fellowship. Tables 1 and 2 provide a full summary of the BMP and MRBS schemes and the changes announced in the 2015-16 Federal budget.

**Table 1: Comparison of MRBS scheme contracts prior to 2015 and from 2016 onwards [10,11]**

MRBS components	2001-2015 Contracts	2016+ Contracts
<b>Number of places</b>	100 CSPs/year	MRBS closed to new entrants
<b>RSO location</b>	In chosen RA 2-5	
<b>RSO duration</b>	6 continuous years, subject to scaling	
<b>RSO timing</b>	Start ≤12 months after obtaining fellowship	
<b>Financial support</b>	>\$26000 per annum, indexed annually	

**Table 2: Comparison of BMP scheme contracts prior to 2015 and from 2016 onwards [12,13]**

BMP components	2004-2015 Contracts	2016+ Contracts
<b>Number of places</b>	Up to 700 CSPs/year (25% of all CSPs)	800 CSPs/year (28.5% of all CSPs)
<b>RSO location</b>	In chosen DWS or previously RA 2-5	Prior to commencing vocational training: MMM 2-7 After commencing vocational training: in chosen DWS (except inner metro) or MMM 4-7
<b>RSO duration</b>	Equal to length of degree, subject to scaling	12 months full-time in ≥ 12 week blocks, without opportunity for scaling
<b>RSO timing</b>	Start ≤ 12 months after obtaining fellowship, although up to half can be during prevocational or vocational training	Complete between start of internship and 5 years after obtaining fellowship, inclusive
<b>Financial support</b>	Nil	Nil

### 1.3 Bonded Support Program

Between 2007 and 2015, both BMP and MRBS participants were eligible to join the Bonded Support Program (BSP), administered by the Australian College of Rural and Remote Medicine (ACRRM) on behalf of the Department of Health (DoH).[14] The BSP provided:

- ▶ networking and careers events;
- ▶ educational support including online medical education modules; and
- ▶ financial support to attend conferences.

Funding for the BSP ceased as of 30 June 2015.[14]

### 1.4 Breach of Scheme contract

The following provisions are set out if participants breach their BMP or MRBS contract and thus withdraw from the scheme [11,12]:

- ▶ If the participant withdraws before completing their medical studies, they will forfeit their medical school place and either be prevented from studying as a CSP student in a medical course for 5 years or else be required to repay the scholarship amount paid to them in the case of the MRBS or Commonwealth Contribution Amount paid to the university in the case of the BMP.
- ▶ If the participant withdraws after obtaining registration as a medical practitioner, they will be required to repay the scholarship amount paid to them in the case of the MRBS or Commonwealth Contribution Amount paid to the university in the case of the BMP, less any amount calculated from time already completed towards their RSO.
- ▶ In the case of the MRBS, the amount repayable is halved if the participant is deemed to be a Country-resident Medical Student (i.e. if they spent 5 out of the 12 years preceding their entry to medicine living in a rural or remote area).

- ▶ In the case of the MRBS, participants who breach their contracts will have their Medicare provider number restricted, making them unable to claim any Medicare benefits for a period of 12 years.

### 1.5 Impact of Schemes to date

In Australia there is a significant time period between commencing medical studies and obtaining fellowship of a specialist college. Subsequently, only a relatively small percentage of BMP and MRBS participants have to date reached the point where they can commence their RSO.[3] This makes evaluation of the schemes in terms of their effectiveness in addressing rural health workforce maldistribution difficult at this time. Some authors and organisations have cited data regarding the number of participants who have breached their contracts as evidence of the schemes' failure [8,15], yet these numbers constitute only 5% of the total number of participants (Figure 1).[3]

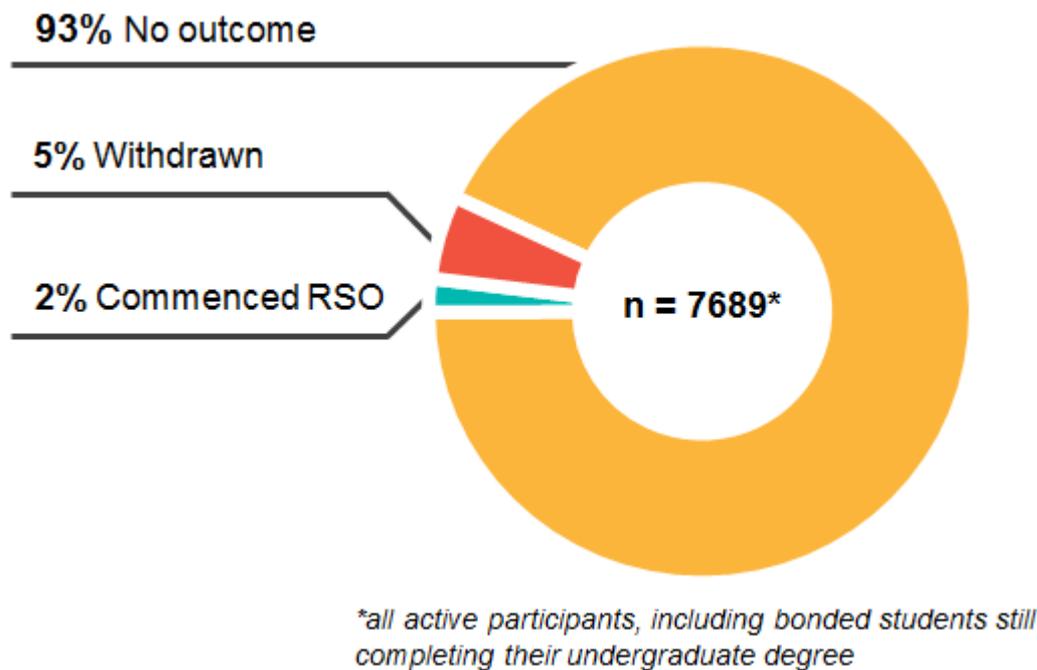


Figure 1: Outcomes for MRBS and BMP scheme participants as at 11th May 2015 [3]

Criticism has been directed at the BMP and MRBS schemes based on anecdotal reports that students are unhappy with the schemes and that large numbers of participants are intending to withdraw from the schemes.[8] Despite these claims and the relatively high level of investment in these schemes, a literature review revealed no formal research on students' attitudes or intentions regarding the BMP or MRBS schemes. Literature on overseas compulsory service schemes is similarly lacking, with only one South African article from 1991 mentioning the impact of a proposed, universal compulsory rural community service requirement on students' intentions to emigrate.[16]

The deficiency of such research is particularly relevant in light of the 2015 announcement that a 12 month RSO will be attached to four existing Australian scholarships under the Health Workforce Scholarship Programme (HWSP), including two scholarships available to nursing, allied health and diagnostic imaging students.[3] In light of these criticisms, the recent scheme changes and the dearth of published research, the National Rural Health Student Network (NRHSN) felt it important to survey their membership regarding attitudes towards the BMP and MRBS schemes and bonded undergraduate university places more broadly.

## 2. Aims

The purpose of this research was to assess the views of multidisciplinary student members of the NRHSN towards the BMP and MRBS schemes and the option of introducing similar bonded schemes for nursing and allied health students. For those students who are participants under the schemes, this study further aimed to assess intentions with regards to their contractual obligations under the schemes. The findings from this research will enable the NRHSN to reflect the views of its membership in advocacy, policy submissions and stakeholder engagement activities.

## 3. Methods

A cross-sectional study of the NRHSN's membership using an online survey was undertaken. NRHSN members who were currently studying a recognised health degree in Australia were eligible for inclusion. A total of 9,957 members were sent an invite, with 564 of these returned as an invalid email address, yielding a valid sample of 9,393.

The online survey was developed through consultation between the NRHSN's national Executive Committee and Rural Health Workforce Australia. The survey instrument is appended as Attachment A.

NRHSN members were invited to complete the survey via email. No incentives were provided for completing the survey, participation was voluntary and no identifying respondent information was collected. Participants were required to read a Participant Information Statement (Attachment B) and a Participant Consent Form (Attachment C) prior to proceeding to the survey.

Levels of support of the BMP and MRBS schemes were compared between medicine and non-medicine students, bonded (BMP or MRBS) and non-bonded medicine students, and BMP and MRBS students using chi-squared analysis. Intentions regarding bonded students' RSOs were compared between BMP and MRBS students using chi-squared analysis. Factors affecting levels of support for the schemes amongst bonded students were explored using a multiple logistic regression model. Discrete variables were dummy-coded for inclusion (with 1 denoting the presence of a factor and 0 denoting its absence). Cofactors included in the multiple logistic regression model were those which met an alpha-to-include p-value of 0.15 on individual regression analysis.[17]

## 4. Results

### 4.1 Respondent characteristics

A total of 890 valid responses were received, comprising 307 bonded (BMP or MRBS) medical students, 316 non-bonded medical students and 267 non-medicine health students (Table 3). The median age group was 21-25 for all student groups, and the median year of study was 3. There was a higher percentage of female students amongst the non-medicine group (85%) than the non-bonded medicine and bonded medicine groups (72% and 66% respectively). Over half of respondents in all groups were regarded as being from a rural background, defined as having lived in a regional, rural or remote area for 5 or more years (53% of non-bonded medical students, 59% of non-medicine students and 63% of bonded medical students). Given that only 29% of the broader Australian population live outside of Major Cities [18], this highlights the significantly greater proportion of NRHSN members from a non-urban background.

**Table 3: Respondent characteristics**

	AH/dentistry/ nursing/midwifery	Bonded medicine	Non-bonded medicine
<b>n</b>	267	307	316

<b>Age (median)</b>	21-25	21-25	21-25
<b>Gender</b>			
<b>Male</b>	39 [15%]	105 [34%]	89 [28%]
<b>Female</b>	225 [85%]	201 [66%]	224 [72%]
<b>Year of study (median)</b>	3 <sup>rd</sup>	3 <sup>rd</sup>	3 <sup>rd</sup>
<b>Rural background*</b>	141 [59%]	192 [63%]	166 [53%]

## 4.2 Level of support for bonded schemes

Amongst all survey respondents, 66% were supportive of the BMP and MRBS schemes as means of addressing shortages in areas of Australia experiencing insufficient doctor numbers, with 14% opposed to the schemes (20% undecided).

Chi-squared tests were used to compare rates of support and opposition to the BMP and MRBS schemes between student groups (Figure 2). BMP medical students were significantly more likely to be opposed to the BMP/MRBS schemes than MRBS medical students (24% vs. 3% respectively;  $p < 0.001$ ). Levels of support for and opposition to the schemes were not significantly different between bonded medical students and non-bonded medical students ( $p = 0.756$ ).

When asked whether they would support the implementation of bonded schemes similar to the BMP/MRBS for their own degrees, non-medicine students were significantly less likely to be opposed than medicine students were regarding the then current BMP and MRBS schemes (1% vs. 18% respectively;  $p < 0.001$ ).

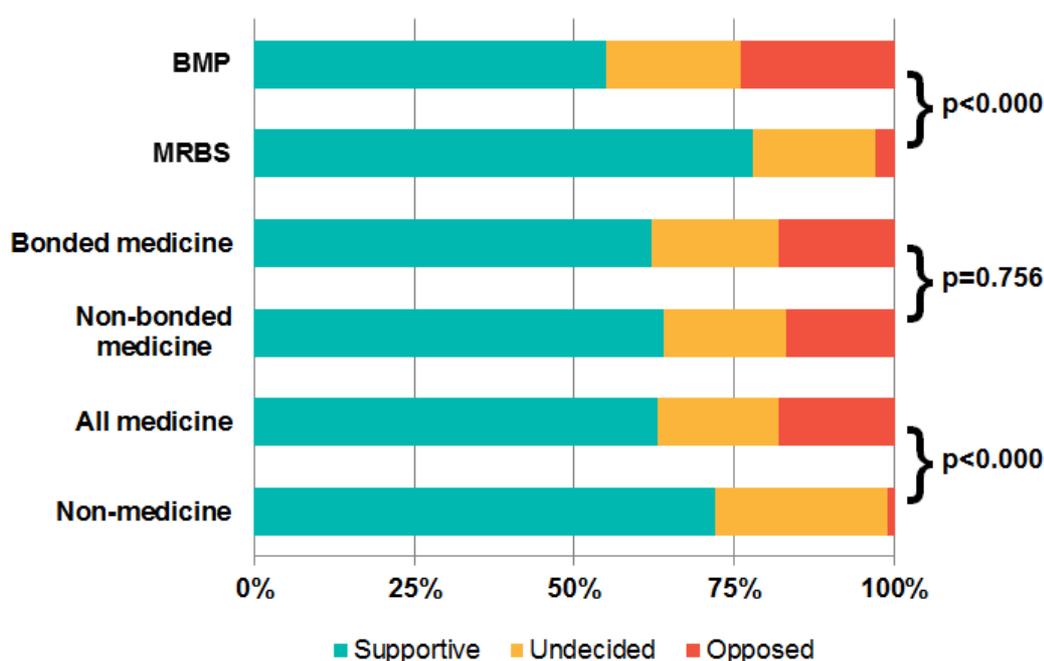


Figure 2: Rates of support and opposition for bonded schemes. Medical students were asked for their position in regards to the BMP and MRBS schemes. Non-medicine students were asked whether they would support similar bonded schemes for health degrees other than medicine. P-values obtained from chi-squared analysis.

### 4.3 Factors associated with opposition to Bonded Medical Schemes

Multiple logistic regression analysis was used to explore the factors affecting bonded medical students' opposition to the BMP and MRBS schemes, taking into account interactions between factors (Table 4).

Female bonded medical students were marginally less likely to oppose the MRBS/BMP schemes than their male counterparts, with an odds ratio of 0.53 (95% CI 0.28-1.00; p=0.049). Estimated marginal means for the percentage of students opposed to the schemes were 10% for female students and 17% for male students.

Medical students under the BMP scheme were significantly more likely than students under the MRBS scheme to be opposed to the MRBS/BMP schemes, with an odds ratio of 6.05 (95% CI 1.91-19.19; p=0.002). Estimated marginal means for the percentage of students opposed to the schemes were 6% for MRBS students and 27% for BMP students.

Medical students who were not planning to work in rural or remote Australia after completing their studies if they had not received a bonded place were significantly more likely to be opposed to the BMP/MRBS schemes than students who were planning this, with an odds ratio of 3.75 (95% CI 1.59-8.85; p=0.005). In other words, there is higher opposition to bonded schemes amongst bonded students who were not planning to work rurally unless they received a bonded place.

Estimated marginal means for the percentage of students opposed to the schemes were 9% for students who were planning or not sure if they were planning to work in these areas for at least 6 months and 27% for students who were not planning to work in these areas for at least 6 months.

**Table 4: Multiple logistic regression analysis for variables predicting the percentage of bonded medical students opposed to the BMP and MRBS schemes**

Predictor	B [SE]	Odds ratio [95% CI]	Wald Chi-Square	p-value	Estimated opposed (%)
<b>Gender</b>					
Female	-0.64 [0.33]	0.53 [0.28 – 1.00]	3.86	0.049	10
Male					17
<b>Type of bonded position</b>					
BMP	1.80 [0.59]	6.05 [1.91 – 19.19]	9.35	0.002	27
MRBS					6
<b>Planned to work rurally if not bonded</b>					
Unsure/can't say	-0.01 [0.43]	0.99 [0.43 – 2.29]	0.01	0.923	9

<b>No</b>	1.32 [0.44]	3.75 [1.59 – 8.85]	10.51	0.005	27
<b>Yes</b>	0	-	-	-	9
<b>Utilised any BSP resources</b>					
<b>No</b>	0.47 [0.35]	1.59 [0.80 – 3.18]	1.74	0.187	16
<b>Yes</b>					11
<b>Year of study</b>	0.29 [0.12]	1.33 [1.06 – 1.67]	6.04	0.014	-
<b>Years living rural/remote</b>	-0.01 [0.08]	0.97 [0.83 – 1.15]	0.11	0.746	-
<b>Model fit: Chi-square = 48.98; df = 7; p-value &lt; 0.001</b>					
<b>% opposed to BMP/MRBS schemes = 18.4</b>					

*Note: The dependant variable is whether or not the students opposed to the BMP and MRBS schemes as a means of addressing shortages in areas of Australia experiencing insufficient doctor numbers coded as 1 = not opposed to the schemes and 2 = opposed to the schemes. 'Male' is the reference category for 'gender'. 'MRBS' is the reference category for 'type of bonded position'. 'Yes' is the reference category for 'planned to work rurally if not bonded'. 'Yes' is the reference category for 'utilised any BSP resources'. 'Year of study' and 'years living rural/remote' are continuous. Variables included in the model were those that met a 0.15 significance level on individual regression analysis.*

Bonded medical students in higher years of university study were significantly more likely to be opposed to the MRBS/BMP schemes than students in lower years, with an odds ratio of 1.33 for every unit increase in year (95% CI 1.06-1.67; p=0.014). The estimated marginal means for the percentage of students opposed to the schemes for each year of study are shown in Figure 3. This demonstrates a clear increase in the percentage of opposed students over time from 6% in year 1 to over 30% by year 6 and above.

**% opposed to BMP/MRBS**

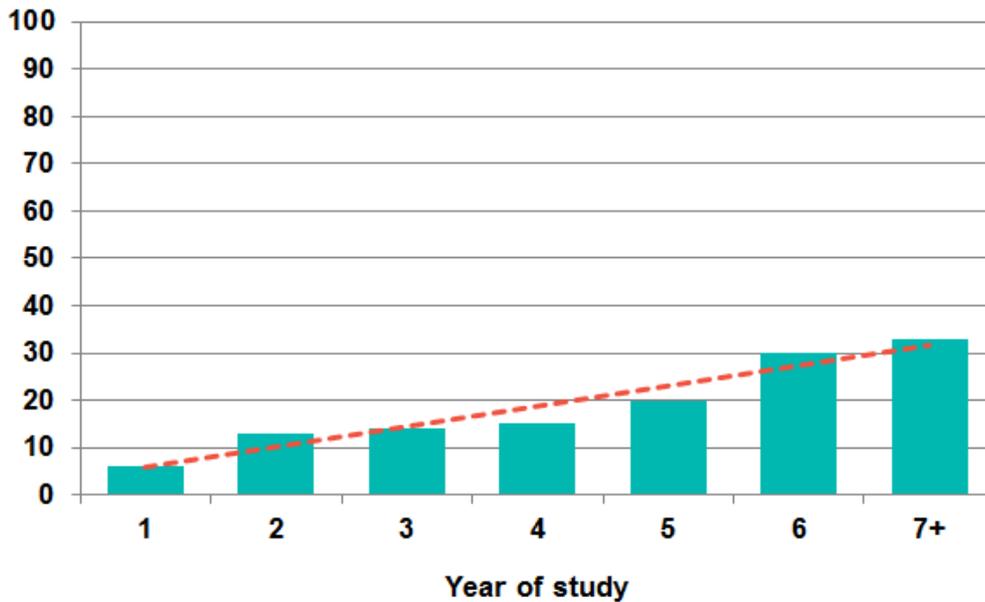


Figure 3: Percentage of bonded medical students opposing the Bonded Medical Place (BMP) and Medical Rural Bonded Scholarship (MRBS) schemes by year of university study (percentages are confounder-corrected estimated marginal means from multiple logistic regression analysis)

#### 4.4 Intentions of bonded students regarding Return of Service Obligations

Most bonded medical students (82%) indicated they would be likely to fulfil their return of service obligations (RSO); with only 8% indicating they would be unlikely to do so (10% undecided, Figure 4).

BMP students were significantly more likely to indicate an intention not to fulfil their RSO when compared with MRBS students (11% vs. 2% respectively;  $p=0.004$ ).

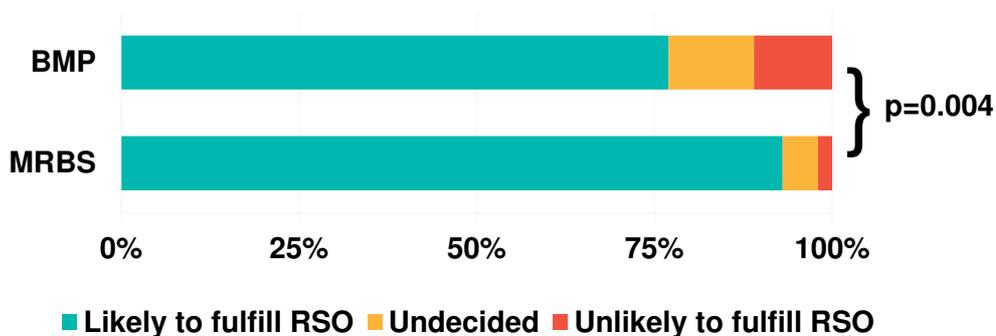


Figure 4: Intentions of bonded students regarding their Return of Service Obligations (RSO)

#### 4.5 Bonded students' understanding and utilisation of scheme components

The vast majority of bonded students (93%) indicated they were aware of the RSO attached to the BMP and MRBS schemes when they applied for medicine. By the time they signed their contract this figure rose to 99% of bonded students being aware of the RSO.

Regarding the now ceased Bonded Support Program (BSP), 69% of bonded students indicated that they had accessed at least one resource provided by the BSP. The most commonly accessed BSP resources were networking dinners (49% of bonded students), followed by the BSP newsletter (44%), Rural and Remote Medical Education Online (RRMEO) resources (31%), funding to attend conferences (19%), online seminars (11%) and careers events (11%).

#### 4.6 Impact of Schemes on views of working in rural and remote Australia

One quarter of bonded students (26%) indicated that the bonded programs had had a positive impact on their views of working in a regional, rural or remote location; with 8% indicating that the programs had had a negative impact on the same (with the balance claiming the bonded program had not changed their views of working in rural or remote Australia).

## 5. Discussion

### 5.1 The student perspective on bonded schemes

Overall this research highlights that NRHSN members broadly support bonded schemes, both in the forms of the BMP and MRBS and in the capacity of bonded programs for non-medicine health degrees. Importantly there was no significant difference in support between bonded and non-bonded medical students, suggesting that opinions were not influenced by being personally affected by the schemes.

We found that MRBS students were significantly more likely to support bonded schemes than BMP students. This suggests that the support offered by the MRBS, in this case financial, had a positive impact on students' perceptions of the schemes.

In our sample, bonded students who indicated they would have worked rurally regardless of their bonded status had lower rates of opposition to the schemes than those who would not have worked rurally if not for bonding. This seems to indicate that a percentage of students have negative feelings towards bonded schemes because their contracts are requiring them to work in areas they would not have otherwise intended to work. While the goals of bonded schemes inevitably include increasing the number of health professionals working in rural areas who would not have otherwise done so, support strategies need to be explored to ensure that the schemes and the prospect of working rurally are seen as having a positive contribution to the careers and lives of all participants.

Attitudes towards bonded schemes appear to change over time; with a significant trend of decreasing support amongst bonded students as year of study increases. This indicates that students change their opinions as their careers progress and lifestyle circumstances change. If bonded schemes are to continue, it is therefore important that support, marketing and career guidance strategies are put into place which foster positive experiences, learning opportunities and perceptions and thus guard students from becoming disillusioned with the schemes over time.

The vast majority of bonded NRHSN members indicate they are likely to fulfil their RSO, which is in opposition to previous anecdotal reports that large numbers of students were intending to 'buy their way out' of the schemes.[8] Further, virtually all bonded students claim to have been aware of these RSO requirements when signing their contract at the start of their degree.

## 5.2 Consideration of bonded scheme effectiveness

While the focus of this study was to assess NRHSN student perceptions and intentions regarding bonded schemes, a discussion of schemes is incomplete without consideration of whether they are likely to be effective in reducing health workforce maldistribution in Australia. As discussed earlier, Australian outcomes data is inconclusive at this point in time; and no formal research into Australian bonded programs has been undertaken. There is therefore a need to look at research into bonded programs in other countries.

A review of the literature revealed 7 systematic reviews which have evaluated reports on health workforce programs with attached RSO agreements (Table 5).[1,19-24] None of these reviews were able to find sufficient evidence to draw concrete conclusions as to the effectiveness or otherwise of bonded schemes in addressing health workforce maldistribution.

A number of reviews report some evidence that bonded schemes have increased workforce recruitment in underserved areas.[1,20,21,23] However, while one review found that bonded scheme participants were more likely to work in underserved areas long-term than non-participants [20], two found that a lack of long-term retention was an issue.[21,23] Given that the compulsory RSO attached to Australian bonded schemes has been reduced to 12 months, it is particularly important that longer-term retention strategies be investigated.

Only one review reported buy-out rates for bonded programs, which was found to be 33% of participants in the studies examined.[20] However, the rate at which participants withdrew from the programs varied significantly between studies. The findings from our study indicate that intended withdrawal rates amongst bonded medical student NRHSN members in Australia are significantly lower than this (8%). This highlights the difficulties in comparing bonded schemes with differing parameters across different countries, healthcare systems and populations of health professionals.

A number of reviews reported that bonded schemes were more likely to be successful if participants were supported through the programs.[1,19,23] Key areas of support identified included educational support, professional development, networking and mentoring.[19] This has important implications for program development in Australia in light of the current lack of a formal support system for bonded students.

**Table 5: Systematic reviews evaluating health workforce programs with attached RSO agreements [1,19-24]**

Author	Nature of RSO programs evaluated	Findings
<b>Wilson et al.[24]</b>	Scholarships or bursaries with rural RSO agreements	- Very limited studies into the efficacy of such interventions exist; with highly variable outcomes.
<b>Grobler et al. [22]</b>	No studies into RSO programs were found which met Cochrane requirements for inclusion	
<b>Barnighausen et al. [20]</b>	Scholarships or educational loans with RSO agreements	- An average of 33% of participants did not fulfil their RSO across the studies. - RSO programs have placed significant numbers of health workers in underserved areas. - Participants are more likely to work in underserved areas long-term than non-

		<p>participants.</p> <ul style="list-style-type: none"> <li>- Cause-effect relationships are unable to be established.</li> </ul>
<b>Sempowski [23]</b>	Financial incentives with rural and underserved area RSO agreements	<ul style="list-style-type: none"> <li>- There is a low level of evidence regarding such programs.</li> <li>- Goals of short-term recruitment are achieved, but long-term retention is less successful.</li> <li>- Multidimensional bonded programs which prepare and support students and practitioners are more successful.</li> </ul>
<b>Buykx et al. [21]</b>	Financial incentives with RSO agreements	<ul style="list-style-type: none"> <li>- There is insufficient evidence to draw conclusions</li> <li>- RSO programs might assist with short-term retention but less likely for long-term retention.</li> </ul>
<b>Frehywot et al. [1]</b>	Incentives, financial or otherwise, attached to an RSO agreement	<ul style="list-style-type: none"> <li>- No studies into the full long-term impact and effectiveness of such programs exist.</li> <li>- Bonded programs appear to have increased health worker numbers in underserved areas in a number of countries.</li> <li>- Transparency and support for participants during their RSO impact significantly on the success of such programs.</li> </ul>
<b>Barnighausen et al. [19]</b>	Financial incentives with underserved area RSO agreements	<ul style="list-style-type: none"> <li>- No comment on outcomes</li> <li>- Bonded programmes should provide professional, education, personal and/or financial support to prepare participants for their RSO.</li> </ul>

### 5.3 Study limitations

The results of this study reflect the opinions of student members of the NRHSN, which may or may not correlate with the broader health student population. By virtue of their membership, NRHSN members can be expected to be more positively disposed towards rural practice, and significantly more likely to be of rural origin than the broader student population. Nevertheless, it could be argued that a student signing up to a bonded medical scheme would not do so if they felt strongly that they did not wish to ever practice rurally; and thus the populations of bonded students who are and are not NRHSN members may in fact be comparable in this regard. Bonded students in this research were almost unanimous that they understood the terms of their contract at the time of signing (ie “they knew what they were getting into”).

### 5.4 Directions for future research

In light of the 2015-16 Federal budget announcement of alterations to the Bonded Medical Schemes (and in particular the reduction of the BMP RSO to 12 months) it would be valuable to repeat this research to examine



how, if at all, attitudes towards bonded schemes have changed. Similarly, given that some non-medicine students scholarships will now have a 12 month RSO attached it will be of merit to revisit nursing and allied health student perceptions of these schemes as a mechanism to address workforce maldistribution in Australia.

Replicating this study amongst a representative national sample of Australian health students would be instructional, although beyond the resources and remit of the NRHSN.

Finally, given the lack of definitive outcomes-based evidence regarding the effectiveness of bonded schemes, either in Australia or overseas, there is a continuing need for ongoing formal evaluation and research into the long-term impact of these schemes in addressing health workforce maldistribution. A distinction between short-term and long-term rural retention is particularly relevant given the recent reduction of the RSO duration to 12 months. To this end, the NRHSN will continue to monitor the workplace outcomes of its alumni over time.

## 6. Conclusions

The majority of NRHSN members have been found to be in support of bonded schemes as a means of addressing health workforce maldistribution in Australia, both for medicine and for non-medicine health degrees. The vast majority of bonded medical student members of the NRHSN intend to fulfil their RSO. Further, virtually all of these students were aware of their obligations when they signed their bonded scheme contracts.

However, we found that students who received financial support under the MRBS were more likely to support bonded schemes than BMP students and that support for the schemes decreased as degree progression increased. It is therefore important that bonded students be supported throughout their careers in order to maintain positive attitudes towards the schemes and eventual rural practice – a fact which is supported by a number of international systematic reviews. Due to the significant time lag between when a student enters into a bonded contract and when they are required to complete their RSO, there is as yet insufficient data to evaluate the longer term impact of these schemes in ameliorating the geographic maldistribution of health workers in Australia.

## 7. References

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