

# Full medical program fees and medical student career intention

*Domestic FFP graduates are less likely to prefer careers in rural locations and in lower-paid and in-need specialties*

Admission to Australian medical schools is highly competitive, despite an increase in capacity from about 1200 places in 1999 to 3500 places in 2013.<sup>1</sup> Most of these places are Commonwealth supported; in 2013, students paid A\$9450 for each of the 4–6 years of medical tuition via the HECS-HELP scheme (Higher Education Contribution Scheme, Higher Education Loan Program).<sup>2</sup>

Tuition fees can be paid in advance or deferred until an annual income threshold is reached (A\$51 309 in the 2013–14 financial year); deferred payments are interest-free but adjusted according to the consumer price index.<sup>3</sup> In 2011, 56% of medical school entrants had a prior degree that may have also generated HECS-HELP debt.<sup>4</sup>

Medical students enrolled in a Commonwealth-supported place (CSP) may accrue a debt of A\$36 000 to A\$63 000, depending on course structure and prior degrees (4–7 years of fees), plus living expenses (about A\$15 000 per year if away from home<sup>2</sup>). Concerns have been raised about the potential inequity of pricing medical education beyond the range that is practical for students from lower socioeconomic backgrounds.<sup>5,6</sup>

Subsidies for tuition fees are available through Bonded Medical Places (18.8% of students), Medical Rural Bonded Scholarships (3.0%), Australian Defence Force (ADF) scholarships (0.2%),<sup>4</sup> and state-based rural scholarships, all of which require return of service in areas of need (usually non-metropolitan communities or the ADF). CSP students can also reduce HECS-HELP debts by one year's fees for each year of work in an area of need.

Between 2005 and 2009, some universities introduced additional places that required payment of the full cost of medical education.<sup>7</sup> Bond University commenced a full-fee paying (FFP) undergraduate medical course<sup>7</sup> and some other medical

## Abstract

**Objective:** To explore the future career preferences of Commonwealth-supported place (CSP) and full-fee paying (FFP) medical students in Australia.

**Design, setting and participants:** Data from the Medical Schools Outcomes Database and Longitudinal Tracking (MSOD) Project exit questionnaire for CSP and FFP students who graduated between 2008 and 2011 were analysed using logistic regression. The influence of age, sex, marital status, rural background and fee-paying status on future career preference were explored.

**Main outcome measure:** Future career preference (location and specialty) at graduation.

**Results:** Compared with CSP students, domestic FFP students were more likely to nominate as their first preference both urban locations (odds ratio [OR], 5.58; 95% CI, 2.04–15.26;  $P < 0.001$ ) and higher-income specialties (OR, 1.37; 95% CI, 1.07–1.75;  $P < 0.05$ ), and less likely to nominate as their first preference in-need specialties (OR, 0.72; 95% CI, 0.52–1.00;  $P < 0.05$ ), specifically general practice (OR, 0.71; 95% CI, 0.52–0.99;  $P < 0.05$ ). There was a significant domestic FFP student by marital status interaction effect, such that domestic FFP students who were married or partnered on exit from medical school were more likely to prefer a rural location (OR, 0.64; 95% CI, 0.44–0.95;  $P < 0.05$ ). Also, students who were married or partnered were less likely to select a one of the higher-income specialties as their first preference (OR, 0.77; 95% CI, 0.64–0.92;  $P < 0.01$ ). A rural background increased preferences for rural location (OR, 0.18; 95% CI, 0.15–0.22;  $P < 0.001$ ) and in-need specialties (OR, 1.28; 95% CI, 1.04–1.57;  $P < 0.05$ ), and being older on entry to medical school also increased preferences for rural location (OR, 0.96; 95% CI, 0.95–0.98;  $P < 0.001$ ) and in-need specialties (OR, 1.03; 95% CI, 1.01–1.04;  $P < 0.01$ ). International FFP students were more likely to prefer urban practice (OR, 1.79; 95% CI, 1.19–2.72;  $P < 0.01$ ).

**Conclusion:** Domestic FFP graduates are less likely to prefer careers in rural locations and in lower-paid and in-need specialties, particularly general practice. Current workforce implications might be minor, but if fees for CSP students increase or more FFP places become available, potential impacts on workforce distribution will need to be considered.

schools offered small numbers of domestic FFP places to cater for surplus student demand.

Most medical schools also offer FFP courses for international students, providing a valuable source of income and contributing to export of higher education.<sup>8</sup> About 700 international places were available annually until recent competition for intern places reduced this to about 550 places.

While fees for international FFP students vary (A\$30 000 to A\$60 000 per year), the financial investment by graduation by these students is much higher than that for domestic FFP students. Domestic FFP students may access partial loans under the

FEE-HELP loan scheme (a lifetime maximum of A\$116 507 in 2013)<sup>9</sup> and may apply for ADF scholarships and state-based rural scholarships. International FFP students do not have these options.

FFP students (domestic and international) can therefore graduate with substantial debts, raising concerns about workforce outcomes. The debts can be comparable to those in the United States, where a private education system is well established.<sup>10–12</sup> In 2012, 86% of US medical graduates reported substantial debts, 30% as high as US\$200 000.<sup>11</sup> Follow-up studies show a clear association between debt, anticipated income, personal

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value placed on money and choice of higher paid specialties.<sup>11,13,14</sup>

Choice of specialty is a complex decision, influenced by extrinsic and intrinsic factors.<sup>15</sup> Extrinsic factors include work culture, postgraduate work experience, opportunities for flexible hours and perceived prestige of certain specialties.<sup>15</sup> Prestige is characterised by longer and more intensive training periods, more competitive selection, higher income, and perceived greater societal status.<sup>16</sup> These perceptions remain constant from undergraduate training through to early postgraduate training, although they may be challenged by clinical experiences during clerkships and residency.<sup>16</sup>

Intrinsic factors include student demographics, personal attributes and preferences, and the clinical work environment. Student demographic profiles have significant influences on specialty choice.<sup>17</sup> Socioeconomic status and background appear to be important; students from less wealthy families place greater weight on debt and pursuing higher incomes. Students from a rural background are more likely to pursue a rural career.<sup>12,18</sup> Sex is associated with differences in motivation for particular career choices, with women more likely to pursue general practice careers because of shorter, more flexible training and better working conditions.<sup>15</sup> Men who place added value on personal lifestyle factors also prefer general practice.<sup>19</sup>

The three most influential personal determinants of specialty choice appear to be “appraisal of own skills and aptitudes”, “intellectual content of the specialty”, and “interest in helping people”.<sup>15</sup> Lifestyle and finances are increasingly reported as major considerations by graduates.<sup>10-12,18</sup> While debt load may influence students towards a preference for higher-paying careers, this may be more significant only for students who place greater importance on socioeconomic status as overall career preferences between FFP students and their publicly subsidised counterparts are similar.<sup>12</sup>

Although privately funded medical education continues to grow

overseas, the influence of financial burden on career choice in Australia (where the geographic and specialty distribution of graduates is of greater concern than total numbers) has not been studied in depth. We compared the geographic and specialty career intentions of CSP and FFP medical students, domestic and international.

## Methods

Data were accessed from the Medical Schools Outcomes Database and Longitudinal Tracking (MSOD) Project, a project of Medical Deans Australia and New Zealand that is funded by Health Workforce Australia as a means of evaluating rural medical education initiatives.<sup>19</sup> Questionnaires are administered to all medical students on entry to and graduation from Australian medical schools. We collected data from these questionnaires for the period 2008 (when the MSOD Project commenced, with four participating medical schools) to 2011 (when 18 medical schools participated).

## Dependent variables

Work location preference data were collected in five categories: small community; smaller town; regional city or large town; major urban centre; and capital city. The first three and last two categories were collapsed to create a binary variable for preference for rural practice versus urban practice.

Preferences for future medical specialty were analysed according to:

- first choice selection of one of the five highest paid specialties in Australia — identified by the 2010 Medicine in Australia: Balancing Employment and Life study<sup>20</sup> of specialty income (emergency medicine; surgery; radiology; obstetrics and gynaecology; intensive care medicine)<sup>21</sup>
- selection of any of the top six in-need specialties — those predicted by Health Workforce Australia to be in short supply in 2025 (general practice; psychiatry; obstetrics and gynaecology; pathology; ophthalmology; radiology)<sup>22</sup>

- first choice selection of any of the top six in-need specialties
- first, second or third choice selection of any of the top six in-need specialties.

## Independent variables

A binary variable was created to represent whether each student was a domestic FFP student or a CSP student (the latter was defined as a student receiving Commonwealth, state or university support). This variable excluded international FFP students, and a second binary variable was created to contrast international FFP students with CSP students. Additional binary variables were created for sex, marital status (single versus married or living with a partner) and rural background. Age at entry to medical school, in whole years, was also included.

## Statistical analysis

Logistic regression models were run initially to analyse (i) rural future practice intentions, (ii) preferences for the top five income specialties and (iii) preferences for the top six in-need specialties. Two models were run for each: for domestic FFP students versus CSP students, and for international FFP students versus CSP students. Another six logistic regression models were then run to further analyse preferences for the top six in-need specialties, for domestic FFP students versus CSP students only.

Sex, age, marital status and rural background were initially included in all regression models together with the independent variable of whether students were domestic FFP or international FFP. Two-way interaction terms were included for interactions between the control variables and the independent variable of interest, and then removed using a backwards stepwise approach until the model contained only statistically significant interaction effects (those contributing a significant improvement in the model [a 2 log likelihood]).

## Results

Data were available for 5688 students who graduated from 2008 to 2011: 262

**1 Descriptive statistics for study variables for students who completed the Medical Schools Outcomes Database and Longitudinal Tracking Project exit questionnaire, 2008–2011\***

	Domestic FFP students (n = 408)	International FFP students (n = 655)	CSP students (n = 3398)
Age in years at entry to medical school, mean (range; SD)	22 (16–53; 4.6)	21 (15–36; 3.0)	22 (15–68; 5.0)
Women	219/408 (53.7%)	371/654 (56.7%)	1924/3398 (56.6%)
Marital status single	318/408 (77.9%)	527/655 (80.5%)	2325/3229 (72.0%)
Urban background	371/408 (90.9%)	596/655 (91.0%)	2650/3398 (78.0%)
Preference for urban future practice	364/390 (93.3%)	481/521 (92.3%)	2686/3258 (82.4%)
First preference for any of the top five income specialties	153/322 (47.5%)	235/552 (42.6%)	1115/2929 (38.1%)
First preference for any of the top six in-need specialties†	54/322 (16.8%)	129/552 (23.4%)	737/2929 (25.2%)
First to third preference for any of the top six in-need specialties†	151/322 (46.9%)	243/552 (44.0%)	1377/2929 (47.0%)

\*Data are number/denominator (%) unless otherwise indicated. † Top six specialties predicted to be in need in 2025. ◆

**2 Logistic regression analysis of preference on exit from medical school for rural versus urban future practice (n = 3314)\***

	Odds ratio (95% CI)†	P
Age at entry to medical school	0.96 (0.95–0.98)	< 0.001
Sex	1.24 (1.01–1.53)	< 0.05
Marital status	1.91 (0.70–5.23)	Not significant
Rural background	0.18 (0.15–0.22)	< 0.001
Domestic FFP student by marital status interaction	0.35 (0.14–0.90)	< 0.05
Domestic FFP student	3.36 (1.75–6.46)	< 0.001
International FFP student‡	1.79 (1.19–2.72)	< 0.01

CSP = Commonwealth-supported place. FFP = full fee-paying. \*Independent variable: CSP students versus domestic FFP students (CSP = 0, FFP = 1). Control variables: age at entry to medical school, sex (female = 1, male = 2), marital status (unmarried = 0, married = 1) and rural background of the student (no = 0, yes = 1). † Higher odds ratio indicates preference for urban future practice. ‡ International students were entered into a separate model with the control variables. ◆

in 2008; 894 in 2009; 1978 in 2010; and 2554 in 2011. The overall response rate was 83% (4704/5688) for those who completed the entrance questionnaire and 80% (4461/5568) for those who completed both entrance and exit questionnaires, although there were missing data for each of the variables, in particular specialty preferences.

A summary of the data collected from the exit questionnaires is shown in Box 1. A majority of students were young (mean age, 22 years), female, single and from urban backgrounds, and a minority were domestic FFP students (9.1%) and international FFP students (14.7%).

**Preference for rural versus urban future practice**

Domestic FFP students were significantly more likely than CSP students to prefer an urban future practice location (OR, 5.58; 95% CI, 2.04–15.26; *P* < 0.001). However, there was a significant domestic FFP student by marital status interaction effect, such that domestic FFP students who were

married or partnered on exit from medical school were more likely to prefer a rural location (OR, 0.64; 95% CI, 0.44–0.95; *P* < 0.05).

Having a rural background had a strong effect on preference for a rural future practice (OR, 0.18), as did being older on entry to medical school (OR, 0.96). International FFP students were more likely to state a preference for urban practice (OR, 1.79). These data are shown in Box 2.

**Preferences for medical specialty**

Students who were married or partnered were less likely to select one of the top five income specialties as their first preference (OR, 0.77) and domestic FFP students were more likely to select one of the top five income specialties as their first preference (OR, 1.37). International FFP students were not more likely to select one of the top five income specialties as their first preference (OR, 1.18). These data are summarised in Box 3.

Domestic FFP students, but not international FFP students, were less likely than CSP students to have a first preference for an in-need specialty (OR, 0.72; 95% CI, 0.52–1.00; *P* < 0.05). All of the control variables were significant in the models as main effects: men were less likely to select an in-need specialty (OR, 0.44; 95% CI, 0.37–0.53; *P* < 0.001), while older (OR, 1.03; 95% CI, 1.01–1.04; *P* < 0.01), married or partnered (OR, 1.23; 95% CI, 1.14–1.34; *P* < 0.001) and rural background (OR, 1.28; 95% CI, 1.04–1.57; *P* < 0.05) graduates were more likely to select one of the in-need specialties.

Analyses of each of the predicted top six in-need specialties for 2025 were performed separately and focused on first preferences. Domestic FFP students were less likely than CSP students to select general practice (OR, 0.71), but domestic FFP students were no more or less likely than CSP students to select the remaining five in-need specialties. The results of the analysis of preference for general practice are shown in Box 4.

However, there was no significant difference between domestic FFP students and CSP students in terms of including any of the top six in-need specialties in their first three preferences (OR, 0.89; 95% CI, 0.71–1.11).

**Discussion**

We found that Australian domestic FFP students as a whole were more likely to state a preference for higher-paid specialties in urban locations, and were less likely to state a first choice preference for one of the six

specialties predicted to be in need in 2025. However, the only specialty that was less popular was general practice; other associations were not uniform throughout the cohort.

Domestic FFP students who were married or partnered were notably different in that they were more likely to prefer rural practice settings. Further, when students' first three specialisation preferences were analysed, there were no significant differences between domestic FFP and CSP students in preference for a top six in-need specialty.

These differences might be partly explained by student demographics and medical school locations. A higher proportion of FFP students, both domestic and international, are from urban backgrounds and most medical schools are in metropolitan areas or large urban centres. The outcomes may, therefore, be similar to those for other urban background students in urban medical schools.

On the other hand, rural clinical school experience in one metropolitan medical school program has been shown to be at least as influential as rural background,<sup>23</sup> suggesting that rural initiatives may be effective for FFP students.

The implications of our findings for Australia's medical workforce planning could be relatively minor. Domestic FFP students currently comprise a small minority of Australia's medical students. For international students, a majority of whom want to stay in Australia for at least some postgraduate experience and training, encouragement can be drawn from the finding that specialty choice is similar to that for CSP students. If the number of FFP student places is increased through changes in government policy or establishment of more private medical schools, strategies to increase the focus on rural and other underserved populations might be needed. Unless rural initiatives are extended across public and private medical schools, FFP student places (domestic or international) are unlikely to address the current rural and regional medical workforce shortages or affect the

### 3 Logistic regression analysis of first preference on exit from medical school for any of top five income specialties (*n* = 2945)\*

	Odds ratio (95% CI) <sup>†</sup>	<i>P</i>
Age at entry to medical school	1.00 (0.98–1.02)	Not significant
Sex	1.55 (1.33–1.80)	< 0.001
Marital status	0.77 (0.64–0.92)	< 0.01
Rural background	0.93 (0.77–1.12)	Not significant
Domestic FFP student	1.37 (1.07–1.75)	< 0.05
International FFP student <sup>‡</sup>	1.18 (0.96–1.47)	Not significant

CSP = Commonwealth-supported place. FFP = full fee-paying. \*Independent variable: CSP students versus domestic FFP students (CSP = 0, FFP = 1). Control variables: age at entry to medical school, sex (female = 1, male = 2), marital status (unmarried = 0, married = 1) and rural background of the student (no = 0, yes = 1). <sup>†</sup>Higher odds ratio indicates greater likelihood of choosing high-income specialty. <sup>‡</sup>International students were entered into a separate model with the control variables. ◆

### 4 Logistic regression analysis of first preference on exit from medical school for working in general practice (*n* = 2945)\*

	Odds ratio (95% CI) <sup>†</sup>	<i>P</i>
Age at entry to medical school	1.03 (1.01–1.05)	< 0.01
Sex	0.44 (0.37–0.53)	< 0.001
Marital status	1.55 (1.28–1.89)	< 0.001
Rural background	1.28 (1.04–1.57)	< 0.05
Domestic FFP student	0.71 (0.52–0.99)	< 0.05
International FFP student <sup>‡</sup>	0.99 (0.76–1.26)	Not significant

CSP = Commonwealth-supported place. FFP = full fee-paying. \*Independent variable: CSP students versus domestic FFP students (CSP = 0, FFP = 1). Control variables: age at entry to medical school, sex (female = 1, male = 2), marital status (unmarried = 0, married = 1) and rural background of the student (no = 0, yes = 1). <sup>†</sup>Higher odds ratio indicates greater likelihood of choosing general practice. <sup>‡</sup>International students were entered into a separate model with the control variables. ◆

intention to further develop primary care medicine.

The possibility of increased fees for CSP students, and therefore increased debt levels, begs consideration of the potential impact on career preferences. Higher fees might drive interest towards higher-paid, metropolitan specialties. Such an effect might, however, be mitigated by continuing the apparently successful rural medical education initiatives that, although costly, are effective in promoting rural recruitment.<sup>23,24</sup>

Our study has some limitations. Several initiatives may influence choice of rural locations in the early graduate period. For example, CSP students with rural scholarships are required to work at least initially in non-metropolitan communities, and may also reduce HECS-HELP debt by working in a defined area of need, usually non-metropolitan. Hence it is difficult to be confident that any changes in career preference relate to fee levels or to the existence of fewer rural medical education initiatives for FFP students. Also, we were not able

to collect data on debt, and it is possible that students paying high fees could graduate with no debt. Finally, career preference takes several years to become final, so longer follow-up (at least 10 years) is required to produce a more robust analysis based on final career outcomes.

Our data show differences in specialty and location preferences between domestic FFP and CSP students. Consideration should be given to extending rural medical education initiatives across public and private medical school places to ensure that all medical students are exposed to rural and more generalist career attractions.

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**Competing interests:** Janie Smith and David Waynforth are Associate Professors in the Faculty of Health Sciences and Medicine at Bond University. Kathleen Lockhart and Edward Teo were medical students at Bond University, and Richard Hays was a Professor in the Faculty of Health Sciences and Medicine at Bond University until April 2014.

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