

# Factors influencing decisions about the state in which doctors plan to practise: additional results from the 2002 Australian Medical Workforce Advisory Committee national survey

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## Abstract

As a result of growing doctor shortages, postgraduate doctor recruitment and retention within Australian states and territories has become an issue of concern. Australia's policy of national self-sufficiency in health workforce supply implies that state medical schools will, at a minimum, enrol a sufficient number of locally born students to meet future medical workforce requirements. This article focuses on factors influencing the state or territory in which doctors plan to practise medicine, identified through a national survey. Independent variables of interest were birth place, medical school and vocational training location because of their importance to medical workforce policy. The study found that the career location plans of Australian-born and overseas-born doctors in vocational training were similar and that 5% of doctors planned to work overseas. Of Australian-born doctors who planned to work in Australia, 88% graduated from a medical school in the state in which they were born, while 78% and 65%, respectively, were undertaking vocational training in, and proposed to work in, the state in which they were born. The study concludes that trainee-doctor decisions about the state or territory in which they will practise medicine when they are fully qualified are more complex than location of birth.

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THIS PAPER ADDRESSES THE QUESTION “What factors influence doctor decisions about the state or territory in which they plan to practise medicine?” Independent variables of interest were location of birth, medical school and vocational training. Data for the preparation of the paper came from a national survey of Australian doctors (viz., Austral-

## What is known about the topic?

There is growing evidence to support the notion that medical students with a rural background are more likely to practise medicine in a rural location when they are fully qualified. Little is known about factors influencing the choices of doctors in vocational training as to the state in which they will practise, and increasing awareness of student–doctor mobility across state boundaries suggests a need to explore these factors.

## What does this paper add?

This article shows that trainee-doctor decisions about their state or territory location are more complex than location of birth. Location of medical school and vocational training experiences both exert a powerful, largely positive, influence on where doctors choose to practise medicine. Working conditions and career opportunities available in other states may override the loyalty to one's home state.

## What are the implications for practitioners?

This article suggests that some states or territories may need to review, with a view to improving, the relative attractiveness of the working conditions and training and employment opportunities available to postgraduate doctors in their jurisdiction if they are to attract and retain the number of doctors they require.

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ian citizens and permanent residents) in vocational training undertaken by the Australian Medical Workforce Advisory Committee (AMWAC) in cooperation with all medical college training programs. The broad objectives of the survey were to provide a snapshot of the views of doctors in vocational training and to enlist their support in a longitudinal study of factors that influence their career decisions.<sup>1</sup>

There is some evidence that medical students with a rural background are more likely to practise medicine in a rural location when they are fully qualified.<sup>2-4</sup> Review of the literature indicated that, while there was a considerable body of literature about factors influencing workforce participation and choice of occupation, including choice of specialty within medicine, little research had been published either nationally or internationally about factors influencing doctors' choice of state of future medical practice.<sup>5-10</sup> It would seem that until recently it has been assumed that the majority of doctors will choose to attend medical school, undertake vocational training, and practise medicine in the state in which they were born. However, there has been a growing awareness in Australia that this assumption may no longer be valid. For example, recent data about medical school enrolments throughout Australia show variation across states in the representation of locally born students commencing medical studies.<sup>11</sup>

In 2004, the Australian Health Ministers renewed their support for Australia's policy of national self-sufficiency in health workforce supply. At the same time they acknowledged that Australia was part of a global market.<sup>12</sup> An implication arising from this policy is that university-based medical schools within each state will, at a minimum, enrol a sufficient number of locally born students to meet the future medical workforce requirements of their respective state and, overall, the requirements of the nation. It should also be noted that in recent years Australia has actively recruited doctors from overseas to improve the supply of doctors to rural areas and address problems of workforce maldistribution.

Once graduated from medical school, the traditional career trajectory for doctors in Australia is to

undertake 1 to 2 years of experiential postgraduate studies in a teaching hospital and to then enrol in a vocational training program. The main providers of vocational training are the medical colleges in conjunction with the major teaching hospitals. The colleges set the curriculum, provide supervision and assess trainee progress, while the hospitals provide the experiential work setting. In the process, these postgraduate doctors provide largely state-funded hospitals with a medical workforce. In recent years, hospital demand for postgraduate doctors has outstripped the supply of local graduates. As a result, there has been growing competition among hospitals and state health departments for local medical graduates and an increasing reliance on the recruitment of overseas-trained doctors.<sup>13</sup>

The 2002 national survey of doctors in vocational training provided AMWAC with the opportunity to examine how many Australian-born trainees proposed to practise medicine in the state in which they were born, and how many went to medical school and undertook vocational training there. Similarly, it enabled AMWAC to examine the practice plans of trainees who were not Australian born.

## Method

The research design was a postal survey of all Australian doctors in vocational training. In September 2002, 7899 doctors met the criteria for inclusion in the study; namely, they were Australian citizens or permanent residents and registered with a medical college vocational training program.

Analyses undertaken for this paper first explored the background characteristics of Australian-born doctors and overseas-born doctors. Background characteristics of relevance included age, gender, marital status, location of medical school (Australia or overseas), and discipline. The 17 disciplines represented in the study were classified into three categories: general practice, procedural specialty (eg, surgery, ophthalmology, obstetrics and gynaecology) and cognitive specialty (eg, internal medicine, paediatric and child health medicine, occupational medicine).

Descriptive analyses were used to address questions about the proportion of doctors proposing to practise medicine in certain locations. Logistic regression modelling was used to explore the question “Which of the variables (ie, state of birth; graduation from medical school and vocational training) has the most influence on preferred location of future medical practice?” while controlling for sex, age, marital status, dependent children, rural/urban background and visa status (Australian citizen or permanent resident). The conclusions drawn from these analyses were limited by the cross-sectional nature of the findings.<sup>14</sup> Longitudinal research is required to provide more definitive conclusions.

## Results

Of the 7899 doctors included in the study, 4295 responded — a response rate of 54%. AMWAC considered that this level of response, while not ideal, was reasonable for this target group, given their mobility and the fact that they were invited to provide their personal details, thereby indicating their willingness to be part of a longitudinal study. Furthermore, the response was acceptable given that the age and gender profile and medical school

and medical college training program profile of respondents was consistent with that of the target population.

## Background characteristics

Of the 4273 doctors who indicated their place of birth, 2486 (58%) were Australian born and 1787 (42%) were overseas born. As indicated in Box 1, on average, overseas-born trainees were 2 years older than Australian-born trainees and, not unexpectedly, fewer of them graduated from an Australian medical school (66%, compared with 99% of Australian-born doctors). No other differences were observed between these two groups of postgraduate doctors with respect to the other background characteristics.

## Long-term career location plans

In total, 4117 doctors (96%) indicated their long-term location plans (ie, next 5–10 years), and of these doctors 191 (5%) proposed to work overseas. Not surprisingly, more overseas-born doctors (6%) than Australian-born doctors (3%) proposed to work overseas. The focus of the remainder of this paper is the 3932 doctors who planned to work in Australia.

### I Characteristics of Australian-born and overseas-born doctors in vocational training in 2002

Characteristic	Australian-born (n=2486)	Overseas-born (n=1787)	Total (n=4273)*
Average age (years) <sup>†</sup>	32	34	32.5
Male	52%	55%	54%
Married/partnered	69%	69%	69%
Married and partner professionally qualified	85%	83%	84%
Graduated from an Australian medical school <sup>†</sup>	99%	66%	85%
Discipline			
General practice	16%	19%	18%
Cognitive specialty	36%	36%	36%
Procedural specialty	48%	44%	46%

\* 22 doctors did not indicate their location of birth.

<sup>†</sup> Indicates statistically significant difference ( $P < 0.01$ )

Box 2 shows the long-term career location plans of Australian and overseas-born doctors. In total, 80% planned to practise in one of the eastern states when fully qualified (New South Wales, 33%; Victoria, 29%; and Queensland, 18%). The remaining 20% proposed to practise in one of the other five states and territories, or indicated several possible states depending on the availability of suitable work. No differences were observed between Australian-born trainees with an urban or rural background. On the other hand, a higher proportion of overseas-born trainees with a rural background (compared with trainees with an urban background) were undecided as to where they planned to practise once fully qualified. The long-term career location plans of this group of doctors in vocational training was reasonably consistent with the distribution of the Australian population as estimated by the Australian Bureau of Statistics in 2002<sup>15</sup> (Box 2).

### **Long-term career location plans of overseas-born doctors**

Box 3 examines the association between location of medical school and location of vocational training experiences and the future career-loc-

tion plans of the 1180 overseas-born doctors who graduated from an Australian medical school.

In total, 81% of overseas-born doctors were undertaking vocational training in the state in which they graduated from medical school. However, across states there was substantial variation, with only 55% and 21%, respectively, of South Australian and Tasmanian overseas-born medical school graduates undertaking vocational training in these states, compared with 90% of Victorian graduates and 88% of New South Wales graduates (Box 3).

Of the 1660 overseas-born doctors who planned to work in Australia, 75% proposed to work in the state in which they were undertaking vocational training. Once again, across states there was wide variation in the proportion of doctors who planned to work in the state in which they were undertaking vocational training. For example, while more than 70% of overseas-born doctors undertaking vocational training in one of the three eastern states and Western Australia planned to work in these states, less than 60% of doctors training in South Australia and Tasmania had similar plans (Box 3).

## **2 Career location plans of Australian-born and overseas-born doctors in vocational training in 2002, by state or territory, compared with Australian population distribution**

	State in which doctors plan to work once fully qualified									Total
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	AS*	
Born in Australia [ <i>n</i> (%)]	717 (31.1)	662 (28.7)	458 (19.9)	145 (6.3)	162 (7.0)	85 (3.7)	45 (2.0)	29 (1.3)	4 (0.2)	2307*
Born overseas [ <i>n</i> (%)]	583 (35.9)	484 (29.8)	253 (15.6)	83 (5.1)	152 (9.4)	33 (2.0)	22 (1.4)	12 (0.7)	3 (0.2)	1625 <sup>†</sup>
Total [ <i>n</i> (%)]	1300 (33.1)	1146 (29.1)	711 (18.1)	228 (5.8)	314 (8.0)	118 (3.0)	67 (1.7)	41 (1.0)	7 (0.2)	3932
Australian population [ <i>n</i> (%)] <sup>‡</sup>	6.6m (33.8)	4.9m (24.8)	3.7m (18.9)	1.5m (7.7)	1.9m (9.8)	0.5m (2.4)	0.2m (1.0)	0.3m (1.6)	–	19.6m (100.0)

\* Excludes 178 doctors: 77 who planned to work overseas and 101 who did not provide data re location plans.

<sup>†</sup> Excludes 160 doctors: 114 doctors who planned to work overseas and 46 who did not provide data re location plans.

<sup>‡</sup> Source: Australian Bureau of Statistics. Australian Social Trends: ABS Cat. no. 4102.0, 2002.<sup>15</sup> NSW = New South Wales. Vic = Victoria. Qld = Queensland. SA = South Australia. WA = Western Australia. Tas = Tasmania. NT = Northern Territory. ACT = Australian Capital Territory. AS = doctors planning to work somewhere in Australia depending on job opportunities. m = million.

### Long-term career location plans of Australian-born doctors

Box 4 shows that, in total, 88% of Australian-born doctors who plan to work in Australia graduated from medical school in their home state with little variation across states. On the other hand, some variation was observed across states with respect to state of birth and location of vocational training. For example, of doctors born in South Australia and Tasmania, 65% and 33%, respectively, undertook vocational training in their home state compared with the overall average of 78% (Box 4).

In total, 65% of Australian-born doctors who planned to work in Australia proposed to work in the state in which they were born. However, across states there was wide variation in the proportion of doctors who planned to work in the state in which they were born. For example, while more than 70% of doctors born in one of the three eastern states and 65% of doctors born in Western Australia planned to work in their home state, less

than 50% of doctors born in South Australia and Tasmania had similar plans (Box 4).

Logistic regression modelling was employed and statistically significant ( $P < 0.01$ ) associations were observed between place of birth, location of medical school and location of vocational training. All three factors apparently exert influence on where doctors propose to practise medicine. These analyses also suggested that for doctors born in some states, location of medical school and vocational training experiences exert greater influence than place of birth on where doctors propose to practise medicine when they have completed vocational training.

### Long-term career location plans of all doctors and location of vocational training experiences

In total, 76% of all survey respondents planned to work in the state or territory in which they were undertaking vocational training (Box 5). How-

## 3 Background and future plans of overseas-born doctors in vocational training in 2002

Characteristic	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Graduated from medical school ( <i>n</i> )	411	323	132	144	132	38	–	–	1180*
In vocational training in the state in which they graduated from medical school [ <i>n</i> (%)]	361 (87.8)	291 (90.0)	105 (79.5)	80 (55.5)	108 (81.8)	8 (21.0)	–	–	953 (80.8)
Planning to work in Australia ( <i>n</i> )	598	483	233	117	158	24	19	28	1660†
Planning to work in state/territory in which they were training [ <i>n</i> (%)]	484 (80.9)	380 (78.7)	170 (73.0)	68 (58.1)	120 (75.9)	10 (41.7)	8 (42.1)	6 (21.4)	1246 (75.1)

\*Excludes 607 overseas-born doctors who graduated from an overseas medical school.

†Excludes 114 overseas-born doctors who planned to work overseas and a further 13 for whom data were missing re location of vocational training.

## 4 Background and future plans of Australian-born doctors in vocational training in 2002

Characteristic	NSW	Vic	Qld	SA	WA	Tas	Total
Born in state and with plans to work in Australia ( <i>n</i> )	702	696	377	215	148	99	2237*
Graduated from medical school in home state [ <i>n</i> (%)]	605 (86.2)	610 (87.6)	353 (93.6)	194 (90.2)	123 (83.1)	87 (87.9)	1972 (88.2)
Undertaking vocational training in home state [ <i>n</i> (%)]	557 (79.3)	585 (84.1)	310 (82.2)	139 (64.6)	111 (75.0)	33 (33.3)	1740 (77.8)
Planning to work in home state [ <i>n</i> (%)]	511 (72.8)	503 (72.3)	278 (73.7)	104 (48.4)	96 (64.9)	48 (48.5)	1548 (64.7)

\* This total excludes 248 doctors: 77 who planned to work overseas; 101 who did not provide data re location plans; and 70 who were either born in the Australian Capital Territory or the Northern Territory. The latter are excluded because there were no medical schools in these locations in 2002.

ever, across states and territories there was considerable variation. For example, over 80% of doctors training in New South Wales and Victoria planned to work in these states, and over 70% of doctors training in Queensland and Western Australia planned to work in these states. Comparative figures for South Australia and Tasmania were, respectively, 60% and 63%, while between 30% and 40% of doctors training in the Northern Territory and the Australian Capital Territory planned to work in these locations (Box 5).

## Discussion

The findings of this study suggest that Australia can expect that about 5% of doctors in vocational training plan to work overseas once fully qualified and that states can expect that between 60% and 80% of all doctors undertaking vocational training in their state plan to work in the state.

The study findings support the proposition that place of birth, location of medical school and location of vocational training experiences all influence doctor decisions about where to practise medicine on completion of vocational training. Variations across states and territories suggest that choice of practice location is more complex than being only linked to birth place. For trainees in some states, it would appear that medical school and, particularly, vocational training experiences exert a greater influence than place of birth. No doubt trainees' work-experience observations play an important part in this decision-making process, and further research is required.

It would appear that, in Australia, there is an unequal application of the principle of "self-

sufficiency in workforce supply" state to state. For the states with relatively large populations, the notion of self-sufficiency in workforce supply appears to be working reasonably well. It would seem that most states in Australia with medical schools in 2002 could expect that 65% to 74% of doctors in vocational training who were born in the state would practise medicine in the state. However, this was not the case for South Australia and Tasmania. This finding raises several questions. For example, what factors are influencing doctors born in these states to choose to move away from their home state? Is this phenomenon due to broad secular trends or to some other factor? It could be that postgraduate doctors in South Australia and Tasmania are reflecting the general drift of the working-age population to the states with larger and faster growing populations. On the other hand, it might be that postgraduate training and employment opportunities or conditions of employment are perceived as being less attractive in these states, by both Australian-born and overseas-born doctors in vocational training. Further research is required to monitor these trends and clarify reasons for doctors born in these two states preferring to practise medicine elsewhere.

## Conclusions

Trainee-doctor decisions about the state or territory in which they will practise medicine when fully qualified are more complex than location of birth. While place of birth obviously exerts influence, it would seem that other factors may override loyalty to one's home state — for example, a

### 5 Doctors in vocational training in 2002, by state

Characteristic	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Doctors in vocational training in state ( <i>n</i> )	1382	1255	712	327	355	82	66	65	4244*
Doctors planing to work overseas [ <i>n</i> (%)]	61 (4.4)	49 (3.9)	33 (4.6)	10 (3.0)	23 (6.5)	—	5 (7.6)	—	183† (4.3)
Doctors planing to work in the same state [ <i>n</i> (%)]	1051 (81.4)	939 (80.3)	509 (77.1)	187 (59.9)	245 (74.0)	50 (63.3)	22 (40.0)	18 (30.5)	3021 (76.3)

\* This total excludes 51 doctors for whom data were missing re this variable.

† This total excludes 8 doctors for whom data were missing re location of vocational training.

perception that working conditions and career opportunities in other states are more closely aligned with the doctor's professional and personal career aspirations.

Location of medical school and location of vocational training experiences both exert a powerful influence on where doctors choose to practise medicine. In the main, these influences appear to be positive. Some states may need to work harder than others to attract and retain doctors. This would include attention to working conditions and career opportunities available to postgraduate doctors.

## Competing interests

The study was funded by the Australian Government Department of Health and Ageing. The Department had no role in the study design or conclusions drawn.

## References

- 1 Australian Medical Workforce Advisory Committee. Career Decision Making by Doctors in Vocational Training. Sydney: AMWAC, 2003. (AMWAC Report 2003.2.)
- 2 Ward AM, Kamien M, Lopez DG. Medical career choice and practice location: early factors predicting course completion, career choice and practice location. *Med Educ* 2004; 1-10.
- 3 Laven G, Wilkinson D. Rural doctors and rural backgrounds: how strong is the evidence? A systematic review. *Aust J Rural Health* 2003; 11: 277-84.
- 4 Australian Medical Workforce Advisory Committee. Doctors in vocational training: rural background and rural practice intentions. *Aust J Rural Health* 2005; 13: 14-20.
- 5 Australian Medical Workforce Advisory Committee. Career decision making by doctors in their postgraduate years — a literature review. Sydney: AMWAC, 2002. (AMWAC Report 2002.1.)
- 6 Davidson JM, Lambert TW, Goldacre MJ. Career pathways and destinations 18 years on among doctors who qualified in the United Kingdom in 1977: postal questionnaire survey. *BMJ* 1998; 317: 1425-8.
- 7 Shanley BC, Schulte KM, Chant D, et al. Factors influencing career development of Australian general practitioners. *Aust Fam Physician* 2002; 31: 49-54.
- 8 Australian Medical Association. Opportunities and impediments to flexibility. Canberra: AMA, 2003.
- 9 Goldacre MJ, Turner G, Lambert TW. Variation by medical school in career choices of UK graduates of 1999 and 2000. *Med Educ* 2004; 38: 249-58.
- 10 Tolhurst HM, Stephen MS. Balancing work, family and other lifestyle aspects: a qualitative study of Australian medical students' attitudes. *Med J Aust* 2004; 181: 361-4.
- 11 Australian Institute of Health and Welfare. Medical Labour Force 2001. Canberra: AIHW, 2004. (National Health Labour Force Series No. 28.)
- 12 Australian Health Ministers' Conference. National health workforce strategic framework May 2004. Sydney: National Health Workforce Secretariat, 2004.
- 13 Prideaux D, editor. Country report: Australia. *Med Educ* 2001; 35: 495-504.
- 14 Bryman A. Social research methods. London: Oxford University Press, 2001.
- 15 Australian Bureau of Statistics. Australian social trends. ABS, 2002. (Cat. no. 4102.0.)

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