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Demographics and distribution of australia's medical immigrant workforce

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ABSTRACT

Background: International medical graduates (IMGs) have made important contributions to Australian health-care since colonization. Recent published data have documented source countries and characteristics of IMGs undertaking the examinations of the Australian Medical Council. However, information about those currently practicing in Australia is limited.

Objective: To analyze a cross section of IMGs currently practicing in Australia to determine patterns of change in donor countries, other demographic characteristics, geographical locations, and their areas of specialization.

Methods: A random sample of all practitioners on a national database was interrogated for their country of first medical qualification. Those who qualified outside Australia were then analyzed for demographic variables such as age, gender, country of origin, and years of graduation and immigration. Their practice locations were matched to the Australian Bureau of Statistics geographical framework, and their specialties compared with those of a random sample of graduates from Australian medical schools.

Results: Over the approximately 60 years since those surveyed arrived in Australia, IMGs' countries/regions of origin have changed from mainly the UK and Ireland to Southern Asia, in line with demographic changes in Australia as a whole. Most arrived soon after graduation, and IMGs are twice as likely as local graduates to be working in a rural area of workforce shortage. Compared with local graduates, significantly more IMGs are working in general practice.

Conclusions: IMGs currently practicing in Australia make up a substantial proportion of the workforce and are more likely than local graduates to provide health services in regional and remote areas.

1. Introduction

Throughout its post-colonization history, Australia has relied to varying extents on overseas trained doctors for its medical workforce. During the nineteenth century, in an era when medical practitioners helped expand the perimeters of the British empire, most of Australia's immigrants received their medical training in Britain, with just a sprinkling of graduates coming from other European and North American medical schools. As the country became self-sufficient in medical training, after the opening of medical schools in most states, immigration of doctors became much less important during the first part of the twentieth century (Pensabene, 1980). Up till the 1950s, Australia limited the entry of many foreign nationals by the device of a dictation test administered by immigration officials at the port of entry (Jupp, 2018). This was often referred to as 'The White Australia Policy', and while the dictation test was abolished by legislation in 1956 (Migration Act 1956), it took about another decade for the gradual unwinding of this restrictive immigration policy (Immigration Restriction Act 1901; Tavan, 2005).

The Medical Boards of the Australian states, and pressure groups such as the British Medical Association, went further by actively obstructing the registration of certain groups who had managed to arrive despite the immigration barrier – particularly Jewish and other refugee doctors before and during WWII (Winterton, 2005; Wolf, 2019; Kunz, 1975).

But workforce shortages, especially in rural areas, continued to drive medical immigration; by the latter part of the twentieth century the contributing countries had become much more numerous and varied, with an increasing proportion of IMGs coming from Southern Asia (Hawthorne and Birrell, 2002; Yeomans, 2018). Policy settings waxed and waned between the view that there was a doctor oversupply in the 1990s (Doherty, 1988; The Future of General Practice 1992; Australian Workforce Advisory Committee 2000) and an undersupply in the 2000s – the latter leading to a concerted effort to increase overseas recruitment. A text-analysis of over 600 press articles between 1996 and 2003 found 'drought', 'chronic' and 'doctor-starved' widely used in reference to medical workforce in rural communities (Han, 2010). At present, underserved communities are designated 'areas of need' to al-

Abbreviations: IMG, international medical graduates; AMC, Australian Medical Council; MDA, Medical Directory of Australia; AHPRA, Australian Health Practitioner Regulation Agency; MBA, Medical Board of Australia.

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low faster-track routes to registration for practitioners willing to work in them (Medical Board of Australia 2018). Despite ethical concerns about wealthy countries ‘stealing’ medical graduates from poorer ones (Bradby, 2014), the reluctance of local doctors to work in rural and remote areas is one reason Australia is likely to rely on immigrant doctors for the foreseeable future (Hawthorne, 2012).

Currently, in line with the terminology in similar countries (Mullan et al., 1995; Eapen and Varghese, 2006), overseas-trained doctors in Australia are referred to as international medical graduates (IMGs), and this is what will be used in this paper. During the last thirty years, there have been several controversies about the treatment of IMGs. A hunger strike took place in 1997 in front of the New South Wales and Victorian Parliaments because the number of IMGs who could sit the registration examinations had been capped (Birrell, 1997). Fairer and less discriminatory treatment for IMGs was called for in a Human Rights and Equal Opportunities Commission report in 1991 (Human Rights and Equal Opportunity Commission 1991). In 2005, the Australian Competition and Consumer Commission inquired into how the specialist medical colleges dealt with applications by IMGs, focusing particularly on transparency and accountability (Australian Competition and Consumer Commission and Australian Health Workforce Officials’ Committee 2005). It found both wanting and recommended improvements. Then in 2012, a standing committee of the Australian Government published the “Lost in the Labyrinth” report, which also criticized the processes for registration and support of IMGs (House of Representatives Standing Committee on Health and Ageing 2012).

IMGs currently practicing in Australia have negotiated different processes to achieve medical registration depending on when they arrived. Currently, most IMGs who seek registration in Australia are assessed via the Standard Pathway, administered by the Australian Medical Council (AMC), which requires them to pass two examinations then spend a year (sometimes more) in a supervised practice role. However, those seeking general (non-specialist) registration whose primary medical qualification was obtained in one of five countries with similar training and registration systems to Australia can apply via the Competent Authority Pathway, which exempts them from the AMC exams – sometimes a source of dissatisfaction for IMGs not thus exempted. Finally, those who were considered specialists in their home country can apply for registration by the Specialist Pathway, in which case their application will be dealt with by the relevant Australian specialist college (Australian Medical Council Limited 2021).

These political and cultural factors, plus oscillating workforce supply and demand, have acted to both attract and suppress medical immigration, as well as influence the pattern of donor countries over the last half century. The aim of this paper is to examine the current composition of the IMG workforce practicing in Australia and how and where it is distributed.

2. Methods

2.1. Research questions

This study asks, what is the composition of the immigrant medical workforce currently in Australia? Where did these practitioners come from, when did they arrive, and in what specialties and geographical locations are they working?

2.2. Statistical and demographic data

The data were obtained from the Medical Directory of Australia (MDA) – an online database that lists registered medical practitioners at no cost to them, but is accessible by subscription to other interested parties such as companies marketing pharmaceutical or other medical products (Medical Directory of Australia 2021). On 23 April 2020, the entire MDA dataset of 60,082 practitioners was downloaded into an Excel spreadsheet after entering in the last-name field the wildcard ‘*’.

Using the Excel function ‘= RAND()’, a random sample of 5926 (9.9%) was obtained. Each entry was then examined to determine where the practitioner’s initial medical qualification was obtained, to categorize them as either an IMG or a graduate of an Australian or New Zealand medical school (the Australian Medical Council accredits the medical schools of both countries; thus, IMGs are graduates from elsewhere).

The entry was cross-checked from the website of the Medical Board to ensure the practitioner still had a current registration and sometimes to correct missing information about the country of their primary medical degree (Medical Board of Australia 2021). The Medical Board site could not be used as the primary source since it is not searchable without knowing a practitioner’s last name. The checks led to the removal of 36 from the MDA sample because they were no longer registered. Thus, the final sample for analysis comprised 5890 medical practitioners who held a current licence to practice in April 2020.

The information extracted for each IMG in the sample included name, gender, year and country of graduation, and year they were first registered to practice in Australia. In addition, the specialty in which they were authorised to practice in Australia and their postal code of practice were recorded. The practice locations were then matched to one of the five geographical areas in the most recent Australian Bureau of Statistics classification: major cities, inner regional, outer regional, remote, and very remote (Australian Bureau of Statistics 2016). For comparison with the IMGs, a separate random sample of 1701 Australian graduates (matched to the number of IMGs in the primary sample) was drawn from the database, and their current postcodes and specialties recorded.

Medians and Interquartile Ranges (IQR) were used since data were often not Gaussian. The statistical significance of differences in frequencies was assessed using the chi square test, and differences in medians with the Mann-Whitney test. The level of significance was taken as $p \leq 0.05$.

2.3. Ethics approval

No individuals are identified in this paper; when numbers in any subsets were very small, the subset was omitted or amalgamated with others to preserve anonymity. The database the author constructed for this paper may be made available to other researchers on request. The research was approved by the University of Melbourne Human Research Ethics Committee (ID: 1,750,338.3).

3. Results

In this sample of just under ten percent of the practitioners in the MDA database, 1704 (28.8%; 95% confidence interval (CI) 27.6–30.0%) obtained their medical degree outside Australia. Of these, 36.0% were women, a slightly smaller proportion ($p < 0.001$) than the 39.9% of females in the random sample of Australian graduates from the MDA. Fig. 1 shows the time that has elapsed since their medical graduation for women and men separately. The mode was 16–20 years for both, with medians (IQR) 25 (18–33) and 28 (20–36) years for women and men respectively ($p < 0.001$). Fifty (2.9% of the sample) practicing in 2020 had graduated more than 50 years earlier. IMGs had usually migrated to Australia early in their careers, with most arriving and being licenced within ten years of their overseas qualification: for women, the median (IQR) interval between medical graduation and registration in Australia was 9 (5–14) years, minimally shorter than 10 (6–15) years for men ($p = 0.032$). (I discuss in Section 4.3 why the total numbers for IMGs who arrived within the last ten years are likely to be artificially low).

3.1. Countries of overseas medical qualification

The IMGs obtained their medical degree in a total of 82 countries. Those that contributed at least 0.5% each of the sample are listed

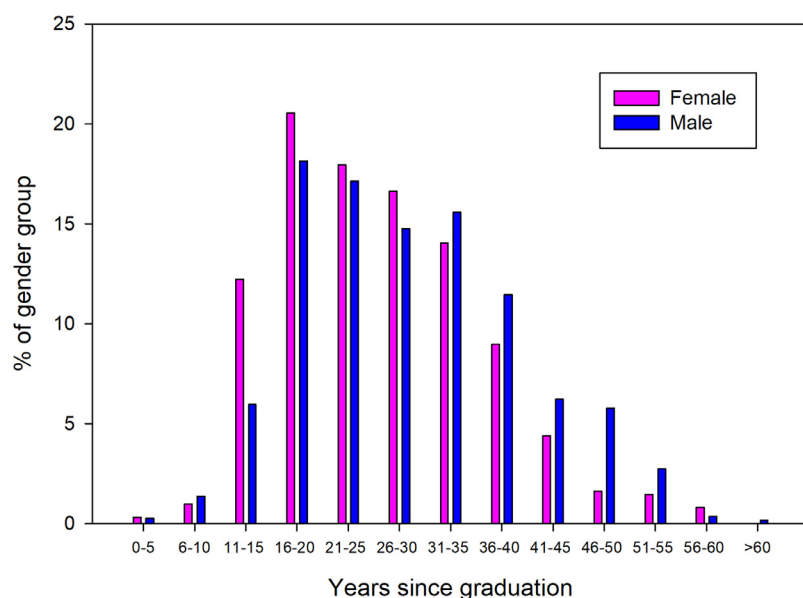


Fig. 1. Percent of each gender, currently practicing in 2020, by years since medical graduation. The low number in the 0–10 years interval is partly artefactual due to those who recently arrived and are still under supervision being under-represented in the MDA database. Medians: female 25 (18–33) y; male 28 (20–36 y); $p < 0.001$ (Mann-Whitney test).

Table 1
Countries of training of IMGs practicing in Australia in 2020^a.

Country	N	%
India	363	21.30
UK	326	19.13
S. Africa	140	8.22
Sri Lanka	94	5.52
Bangladesh	67	3.93
Egypt	59	3.46
Pakistan	56	3.29
Ireland	50	2.93
Iran	46	2.70
Philippines	44	2.58
Iraq	41	2.41
China	39	2.29
Myanmar	36	2.11
Russia	28	1.64
Germany	27	1.58
Nigeria	20	1.17
Romania	16	0.94
Malaysia	15	0.88
Zimbabwe	14	0.82
Hong Kong	13	0.76
Poland	13	0.76
Serbia	12	0.70
Ukraine	12	0.70
Netherlands	11	0.65
Canada	9	0.53
Singapore	9	0.53

^a From random sample of 10% of all IMGs listed in Medical Directory of Australia at April 2020. Table excludes countries contributing < 0.5% of the total sample of 1704 practitioners.

in Table 1. The major donor countries for those currently practicing in Australia are India, the United Kingdom and South Africa. When classified into United Nations (UN) geographic regions (Division UNS 2021), the main contributors are UK & Ireland, Southern Asia, Sub-Saharan Africa, South-eastern Asia and Eastern Europe. UK & Ireland are actually part of the UN Northern Europe division, but separated out here because of the preferential treatment now given to their graduates by the AMC and previously by State and Territory medical boards. Fig. 2 demonstrates how their relative contributions have changed over time. For those still practicing who were registered in Australia prior to 2000, the largest contribution came from UK & Ireland. But among IMGs who

were first registered in the 2000s, Southern Asia is now the dominant source.

3.2. Geographical distribution of IMGs and local graduates

Compared with the random sub-sample of 1701 Australian graduates, the IMGs are nearly twice as likely to be practicing in outer regional and remote areas (8.7% of IMGs vs 5.2% of local graduates), and 2.5 times as likely to be in remote and very remote areas (1.5% vs 0.6%), though much the largest number are in major cities (Fig. 3). A marginally higher proportion of females than males are in the cities, but the gender differences were not statistically significant. Those practicing outside the major cities are more likely to be recent graduates. Fig. 4 shows the distribution of IMGs in the five geographical regions versus time since registration in Australia: 38.5% of those registered since 2010 are practicing in the regions compared with only 15.3% of those who were registered prior to 2000 ($p < 0.001$).

3.3. Areas of specialization

A much larger proportion of IMGs are in general practice compared with the local graduates: 56% versus 37% (Table 2). In nine of the other specialty areas shown in the table, immigrants are significantly under-represented, often by a factor of more than two. Of the larger specialties, one where the difference (though still significant) is less marked is Internal Medicine, where 14.2% of the Australian graduates in the sample are in that specialty compared with 11.5% of IMGs.

4. Discussion

4.1. The demographics of the immigrant workforce

This random sample of IMGs practicing in Australia in 2020 reflects the waves of medical immigration to the country over the last 60 years. The shift in countries of origin, from mainly UK and Ireland in those who arrived before 1990, to mainly Southern Asia in the last twenty years, has been striking. But these changes in the countries of origin of IMGs reflect major changes in the composition of Australia's migrants generally over that period. Immigration policies that were widely criticized as racist have become more inclusive, perhaps in part as Australia has come to recognize that its social and economic destiny is linked more to its geographic region

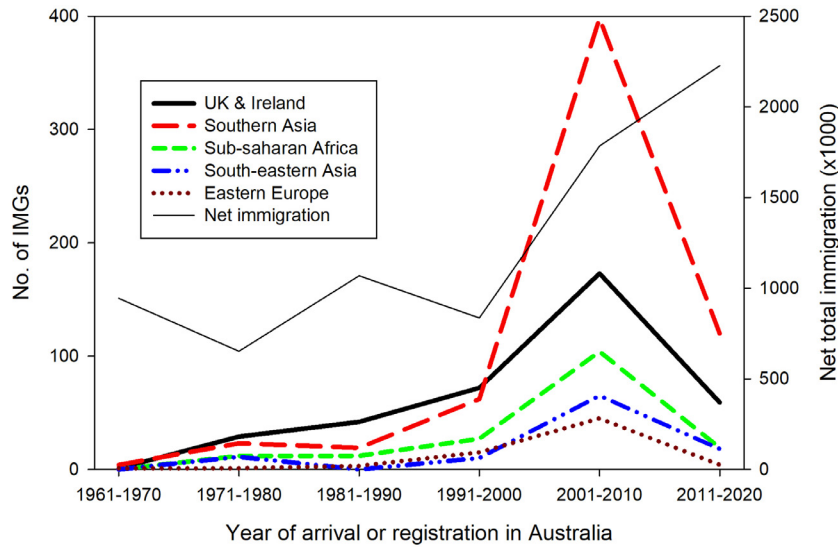


Fig. 2. UN geographic regions of origin of the IMGs practicing in 2020 versus year of registration. UK and Ireland are in the Northern Europe region, but plotted here by themselves because of the favoured registration status they have enjoyed from the Australian Medical Council and historical medical boards. See legend to Fig. 1 for explanation of the smaller totals in 2011–20. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

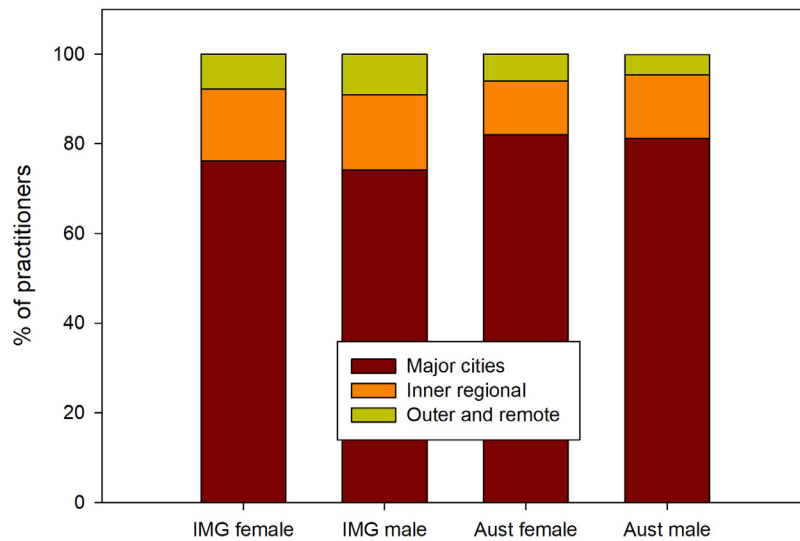


Fig. 3. Geographic place of practice of IMGs and local graduates in Australia in 2020, by Australian Bureau of Statistics (ABS) geographical regions. ‘Outer’ is sum of ‘outer regional’ plus ‘remote’ plus ‘very remote’ areas. IMGs vs Australian graduates, $p < 0.001$ (chi square).

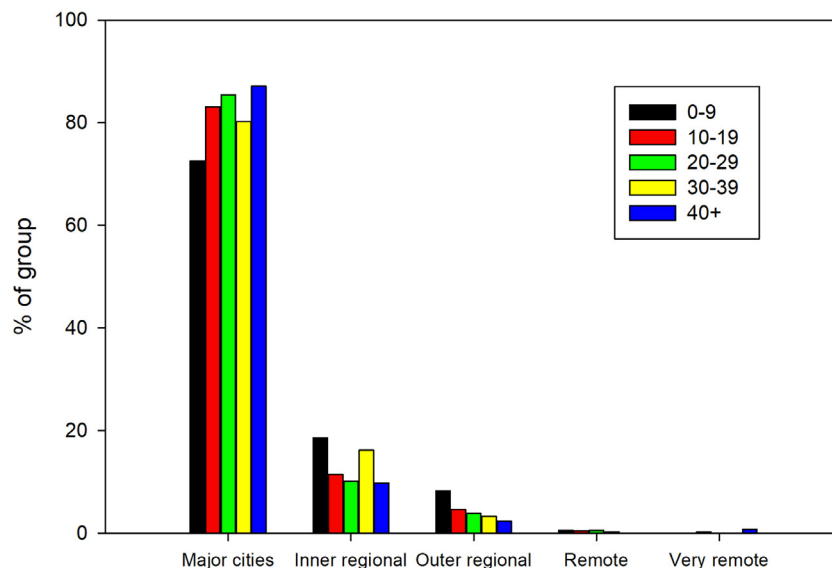


Fig. 4. Geographic place of practice of IMGs in Australia in 2020, by ABS geographical regions and time since first registered in Australia. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Table 2

Numbers of IMGs and Australian Graduates practicing in each medical specialization or category in Australia in 2020.

Discipline	Number (%) in discipline		P value ^a
	IMGs	Aust. Grads.	
Alcohol & Drug Dependency	0	1 (0.1)	NA
Anaesthesia	65 (3.8)	123 (7.8)	<0.001
Dermatology	6 (0.4)	25 (1.6)	0.001
Diagnostic Radiology	30 (1.8)	50 (3.2)	0.031
Emergency Medicine	64 (3.8)	48 (3.0)	0.152
General Practice	953 (56.2)	587 (37.2)	<0.001
Genetics	1 (0.1)	1 (0.1)	NA
Intensive Care	30 (1.8)	24 (1.5)	0.497
Internal Medicine	196 (11.6)	241 (15.3)	0.023
Medical Administration	4 (0.2)	7 (0.4)	0.544
Medical Education & Research	4 (0.2)	12 (0.8)	0.079
Medical Officer	44 (2.6)	77 (4.9)	0.003
Medico-Legal Consulting	1 (0.1)	1 (0.1)	NA
Microbiology	2 (0.1)	3 (0.2)	NA
Obstetrics & Gynaecology	36 (2.1)	34 (2.2)	0.910
Occupational Medicine	3 (0.2)	4 (0.3)	NA
Ophthalmology	15 (0.9)	29 (1.8)	0.048
Paediatric Medicine	42 (2.5)	40 (2.5)	0.917
Palliative Medicine	3 (0.2)	3 (0.2)	NA
Pathology	10 (0.6)	28 (1.8)	0.005
Physical Medicine	1 (0.1)	0	NA
Psychiatry	83 (4.9)	65 (4.1)	0.156
Public Health	1 (0.1)	5 (0.3)	NA
Radiation Oncology	6 (0.4)	8 (0.5)	0.786
Rehabilitation	16 (0.9)	7 (0.4)	0.095
Sexual Health	3 (0.2)	0	NA
Sports Medicine	4 (0.2)	3 (0.2)	NA
Surgery	73 (4.3)	153 (9.7)	<0.001
Totals	1696	1579	

^achi square test; significant differences shaded; NA= not applicable due low numbers of expected frequencies in some cells.

Derived from random samples of each category of graduate in Medical Directory of Australia at April 2020. Doctors listed as 'in training' in the database have been omitted from this table (8 IMGs and 122 Australian graduates).

than to the 'old world' of its colonial origins. The proportion of Australia's population born overseas has increased from 10% at the end of WWII to 30% in 2019 (Australian Bureau of Statistics 2020). And in 2018–19,¹ the countries that made the largest contribution to the 160,323 new permanent migrants were India (21%), China (15%) and UK (9%). (Australian Government Department of Home Affairs 2019)² It is no surprise that Indian doctors are now the major contributor of IMGs to Australia. India has a large population, a robust medical education system, and many links with its diaspora in Australia that facilitate chain migration (Yeomans, 2018). India is also the biggest exporter of medical practitioners to USA and Britain (Kaushik et al., 2008).

However, it is perhaps surprising that only 2% of Australian IMGs were trained in China since, as mentioned, it is now the second largest migrant source overall. However, the number of Chinese medical migrants is beginning to increase: excluding Hong Kong, almost a thousand Chinese-trained doctors sat the AMC clinical exam between 2000 and 2018 (Yeomans et al., 2021). By contrast South Africa, which ranks third overall as country of origin for those IMGs currently practicing, provided only 2% of migrants in all categories in 2019. Medical migration from that country was prominent during the Apartheid period and up till about 2010 (Arnold, 2011), but seems to be now slowing.

¹ Data are available for 2019–20, but that period was impacted by the Australian border closure due to the COVID-19 pandemic.

² New Zealand is excluded here because the two countries have a freedom of movement agreement between them.

4.2. Practice locations and specialties of the immigrants

The finding that IMGs were more likely to be practicing in a rural or remote area of the country than the local graduates is no surprise. Indeed, as mentioned already, it is government policy. Visas and registration are more likely to be obtained if the immigrant goes to an area of need (Iredale, 2009). Another factor since 1997 has been a requirement for most IMGs to work in an area of workforce shortage for ten years before they can bill patients under the universal medical insurance (Medicare) scheme (Department of Health [Cth] 2009). Our findings are similar to those of O'Sullivan et al., who surveyed almost 20% of the practicing medical workforce in the period 2008–2013. Sixteen percent of their respondents were IMGs. And they found those practicing in small rural and remote areas in that period were about twice as likely to be IMGs compared with local graduates (O'Sullivan et al., 2019).

That those in the rural areas are younger is also not surprising. Some older IMGs would have started there then moved to a city, sometimes motivated by better opportunities for their children's education or work for a spouse, after having 'served their time' in a more remote area. The other notable aspect of the IMGs compared with the local graduates is the smaller proportion of them registered as specialists and their over-representation among general practitioners. A likely reason is the difficulty many who were specialists in their home country have in persuading the Australian specialist colleges to recognize their credentials.

4.3. Limitations of the data

The number of IMGs in the medical directory sample who were registered after 2011 is quite small. This is very likely to be artefactual, since many IMGs continued to sit and pass the AMC examinations during that final decade (Yeomans et al., 2021), although their number has fallen by about a half since 2009. The other reason for the lower numbers of IMGs in 2011–20 in the MDA database is probably that many are still in supervised positions – with the relevant specialty colleges, in mandated hospital medical officer positions after passing the AMC examinations, or in supervised general practice positions where they are not yet permitted to bill patients for private services in their own right. Thus, this paper concerns the distribution of the established medical workforce, not the total workforce that includes doctors still in supervised positions. A further limitation is that a small number of doctors who work solely in hospitals, without private practice, do not get listed in the MDA.

5. Conclusions and implications for policy

This paper provides up-to-date information about the demography of the immigrant doctors who are currently practicing in Australia, which will be of some value to health planners and likely to be of interest to prospective medical immigrants. These data confirm that IMGs are more likely than local graduates to provide medical services in rural and remote areas, though the cities continue to be a magnet for the majority. Australia is not alone in using IMGs to plug these healthcare gaps: Canada and New Zealand have relied on them for years (Pinsky, 2017; Dove, 2009; Lawrenson et al., 2016).

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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