



Australian  
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# **Australian General Practice Training Distribution**

**APHCRI / Robert Graham  
Center Visiting Fellowship  
Final Report**

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This report has been produced based on work I carried out while at the Robert Graham Center in Washington D.C. in October/November 2011, supported by a visiting fellowship grant from the Australian Primary Health Care Research Institute. The fellowship comprised of an immersion experience in a primary health care policy research centre for 4 weeks. In addition to what is presented in this document, I also attended two conferences, a policy briefing, a journal launch and the other activities undertaken by the Robert Graham Center.

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I deeply appreciate the flexibility given by my employers in Australia, who had the foresight to understand the growth that this experience would bring. Finally, the view expressed within the report are my own and do not necessarily reflect the view or policies of my employers and the organisations with which I am affiliated.

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## Overview

This report has been produced based on work I carried out while at the Robert Graham Center in Washington D.C. in October/November 2011, supported by a visiting fellowship grant from the Australian Primary Health Care Research Institute.

The fellowship comprised of an immersion experience in a primary health care policy research centre for 4 weeks. In addition to what is presented in this document, I also attended two conferences, a policy briefing, a journal launch and the other activities undertaken by the Robert Graham Center.

The topic I examined was general practice registrar distribution, exploring both the policies that drive distribution, as well as the distribution itself. The report is structured in several parts which present the result of the activities I undertook whilst at the Robert Graham Centre.

## Background

# THE AUSTRALIAN GENERAL PRACTICE TRAINING PROGRAM

At its inception a decade ago, General Practice Education and Training (GPET) presided over the regionalisation of General Practice Training in Australia. One of the key drivers to this model was strengthen the link between GP education and the needs and priorities of different regions in Australia.

General Practice Education and Training (GPET) was created in 2001 to establish the Australian General Practice Training (AGPT) program[1]. It aimed to implement a regionalised and vertically-integrated model of general practice training. Regionalisation was achieved by establishing providers linked to a geographic footprint. The aim of vertical integration was to achieve synergies between university education, prevocational training, general practice vocational training and continuing professional development[2].

Since its creation, the number of AGPT training places almost doubled and growth will continue for the next would of years (Figure 1). However, this has been matched by a similar increase in doctors graduating from medical school. In 2010, 2259 domestic graduates completed medical school, at 70% increase from 2006[3]. While there were initially 22 Regional Training Providers (RTPs) (Figure 2), this has been reduced in line with federal government policy to 17 RTPs (Figure 3).

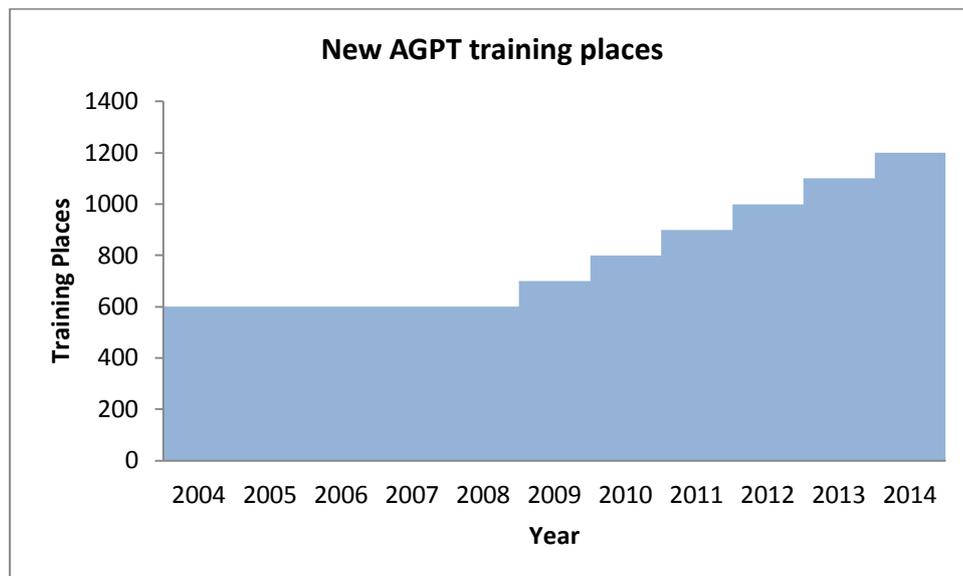


Figure 1 – New AGPT training places 2004- 2014 (Source: GPET Annual Reports [4-11])

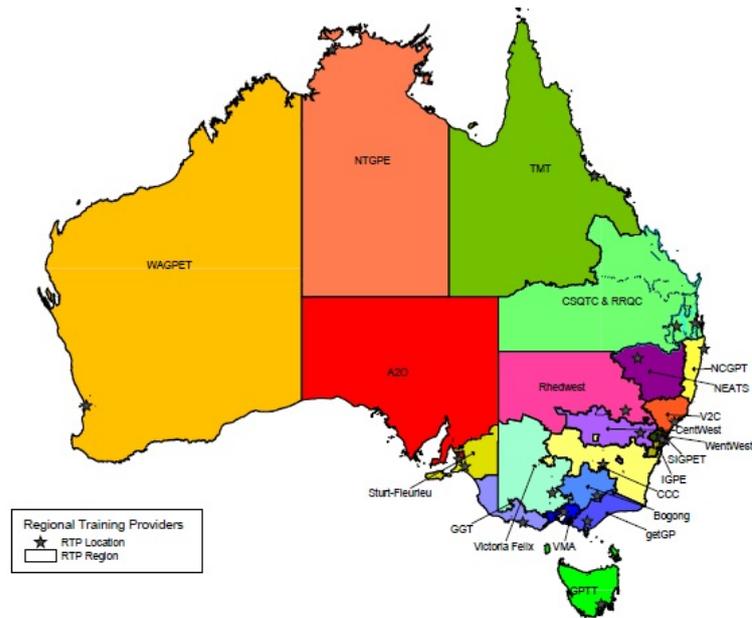


Figure 2 – Map of Regional Training Providers – 2005 (3)

In 2011, General practice training was delivered by 17 RTPs each with a geographic footprint (Figure 3). Some areas are shared (or in transition) between two RTPs, as outlined on the map. In 2010, approximately 2500 registrars were trained and the AGPT had more than 3500 accredited supervisors[11]. As the increased number of medical school places flows downstream, the demand for vocational training places in general practice has risen. For the 2011 intake, 1,235 doctors applied for 1100 positions and 1289 doctors applied for the 1200 positions in 2012[11].

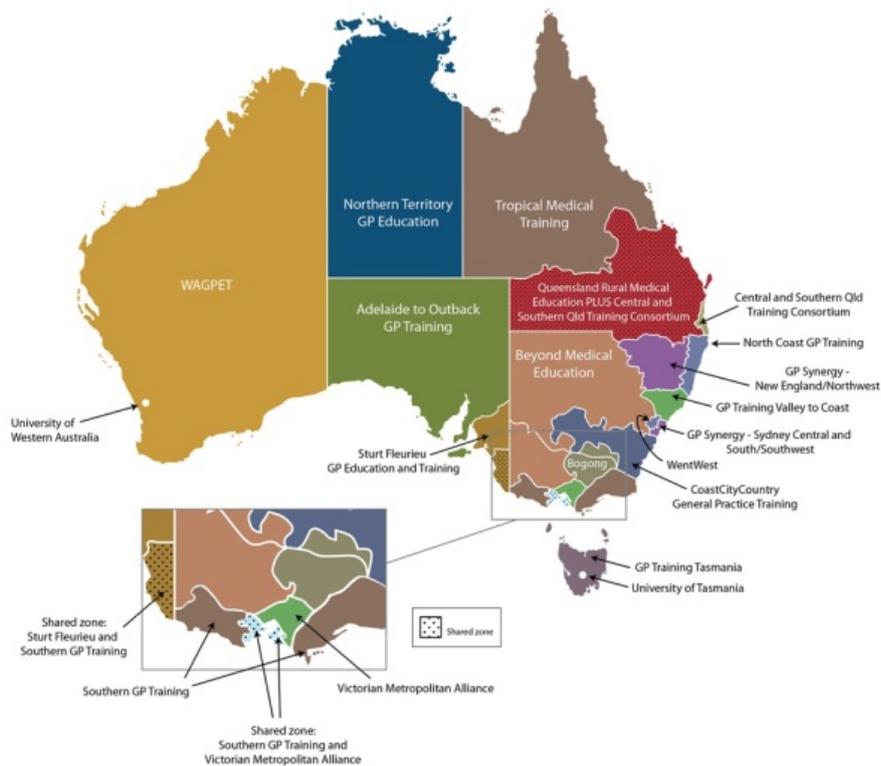


Figure 3 – Map of Regional Training Providers - 2011[12]

The growth in GP registrar funded places has been mirrored by a growth in junior doctors commencing GP training (Figure 4). The location of accredited practices and supervisors plays a significant role in registrar distribution. As a GP registrar must be trained by a supervisor, any change in the distribution of registrars is, at least partially, driven by the location of (new) supervisors. Over the past decade, growth in accredited practices and supervisors has kept pace with increasing registrar numbers[11]. However, there appears to be a trend towards practices with multiple supervisors, allowing a more flexible model of supervision, which can accommodate other learners such as medical students [13, 14].

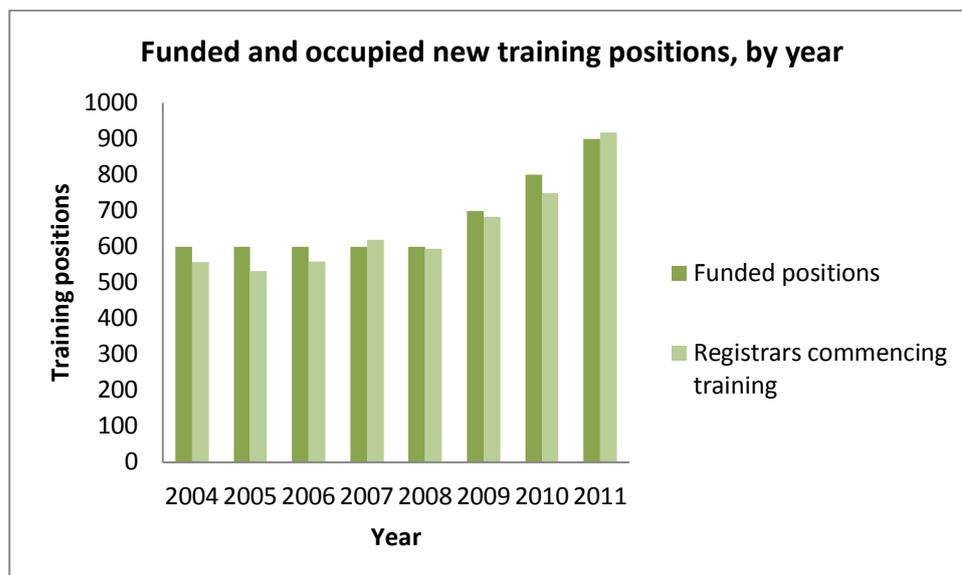


Figure 4 – Funded training places compared to registrars who commenced training (by year) [5-11, 15-19]

Summary point:

- In the past decade, the Australian General Practice Training Program, administered by GPET, has implemented a regionalized model of training. This period has been characterized by a significant increase in training places for GP registrars.

## THE POLICY CONTEXT

### Expanding Capacity within the Australian General Practice Training Program

The program for General Practice training in Australia is growing. Between 2009 and 2013, training places will increase by more than 10% per year (Figure 1). With expansion, there is a need to find additional GP practices who will employ and train registrars. While some current teaching practices could train additional registrars, to increase capacity more training practices must be recruited.

When placing registrars in general practices, RTPs face a set of competing demands and perspectives:

- Responsibility to the **registrar** - to provide a quality educational experience
- Responsibility to the **supervisors and practice** - to provide the necessary training and support to supervise and educate a registrar.

- Obligation to **GPET and the federal government** - to distribute and place registrars in outer-metropolitan and rural practices.

Overlaying these responsibilities, RTPs ultimately have a responsibility to their local communities. Registrars fulfill an immediate workforce need to resource high-quality general practice. In addition, RTPs must also produce graduates who are capable of meeting the needs of their patients wherever they choose to work in future, responding to the changing health needs of the community throughout their practising life. RTPs have an opportunity to model cultural competence to ensure their graduates are equipped to meet the needs of the public.

Summary point:

- As the General Practice Training Program expands, an opportunity exists to take a rational, purposeful approach to the distribution of training practices.

### Evidence for policy approaches to redistribute medical workforce

Maldistribution of the medical workforce is an almost universal problem, occurring in countries both small and large, rich and poor[20]. Strategies for redistributing the medical workforce have focused on financial incentives, compulsory service programs, and non-financial incentives (e.g. structured posts, training opportunities, and infrastructure) [21].

In a systematic review of interventions to address recruitment and retention of doctors into rural and remote areas, Wilson[22] classified interventions into five groups: selection, education, coercion, incentives and support. The review rated the evidence for strategies under each policy approach into one of five categories (absent, weak, moderate, strong and convincing). Overall, Wilson found that the evidence is stronger for policies focusing on selection strategies and incentives than support or coercion (Table 1).

Table 1 – Evidence for intervention strategies to promote rural/remote practice

(SOURCE: Adapted from Wilson, 2009[22])

Category	Intervention Strategy	Evidence rating				
		Absent	Weak	Moderate	Strong	Convincing
<b>Selection</b>	Geographic origin				X	
	Ethnicity		X			
	Gender				X	
	Career intent				X	
	Service orientation <sup>a</sup>		X			
<b>Training</b>	Rural curriculum content	X				
	Rural exposure in pre-vocational years			X		

<sup>a</sup> “Students who report involvement in volunteer activities are more likely to practice rural medicine” [22, p7]

	Rural fellowships of medical colleges				X	
	Rural location of training	Not stated <sup>b</sup>				
<b>Coersion</b>	Community service obligation for recent graduates		X			
	Prerequisite for specialisation <sup>c</sup>		X			
	International recruitment			X		
<b>Incentives</b>	Bursaries and scholarships			X		
	Financial compensation			X		
<b>Support</b>	Continuous professional development		X			
	Specialist outreach support		X			
	Time-off		X			
	Family and lifestyle issues		X			

A Cochrane Review reported that all studies examining interventions to increase health professionals working in rural and underserved areas were subject to a high risk of bias and error related to confounding[23]. Wilson also acknowledged that it was not possible to assess if the rural location of training independently impacted on future practice location, due to confounders such as selection strategies.

Summary points:

- Interventions to address medical workforce maldistribution can be categorised into five groups: selection, education, coercion, incentives and support.
- As limited high-quality evidence is available to support these interventions, policy makers and educational institutions should ensure workforce policies are implemented with a strong evaluation focus to measure the impact of policy initiatives.

### Measures of Medical Workforce Shortage – an Australian-US comparison

In Australia, geography has been the primary determinant of definitions of general practice workforce shortage. Policies and programs focused on redistributing GP workforce employ various measures of workforce shortage (Table 2). While the Area of Need (AoN) designation maintains flexibility, these measures do not systematically acknowledge the needs of specific populations within a geographic area or directly account for socioeconomic disadvantage.

<sup>b</sup> Rural location of training is not independent of other interventions such as selection strategies.

<sup>c</sup> The policy of a minimum time requirement in a rural area to qualify for specialty recognition / training.

Table 2 - Measures of Australian Medical Workforce Shortage

Measure	Definition	Programs using this measure
District of Workforce shortage (DWS)	A location that “falls below the national average for the provision of medical services” [24] based on Australian Bureau of Statistics data and Medicare Australia billing data.	10 year moratorium status - Overseas-trained doctors and foreign graduates of accredited medical schools must work in a DWS for 10 years to access Medicare benefits for their patients. (section 19AB of the Health Insurance Act 1973) [25]  Bonded Medical Places Scheme  Medical Rural Bonded Scholarships
Area of Need (AoN)	An area defined by the state or territory Minister for Health (or their delegate) under s 67 of the Health Practitioner Regulation National Law Act 2009[26].	Registration - Limited registration for area of need may be granted to individual health practitioners by AHPRA.
ASGC-RA classification system[27]	Developed by the Australian Bureau of Statistics and classifies locations into 5 categories: <ul style="list-style-type: none"> <li>• RA1 - Major Cities of Australia</li> <li>• RA2 - Inner Regional Australia</li> <li>• RA3 - Outer Regional Australia</li> <li>• RA4 - Remote Australia</li> <li>• RA5 - Very Remote Australia</li> </ul>	Medical Rural Bonded Scholarship Scheme  HECS Reimbursement Scheme  Scaling for overseas trained doctors  General Practice Rural Incentives Program (GPRIP)[28]
Outer metropolitan areas	Areas of the state capital city which falls “outside the 1991 Urban Centre UCL area of the capital city” [29].	More Doctors for Outer Metropolitan Areas[29]

In the USA, three main classifications are employed which designate populations and geographic areas which are underserved: Primary medical care HPSA (Health Professional Shortage Area), Medically Underserved Areas, Medically Underserved Populations (MUP) (Table 3). These measures extend beyond workforce ratios to include measures of disadvantage and acknowledge that specific populations may be underserved within an area that overall has enough doctors to service the population. They attempt to create consistency and transparency which the Australian measures of DWS and AoN struggle to achieve. However, applying nationally consistent formula is inherently reductionist. These approaches have been criticized for not being timely or accurate[30]. Ricketts proposed a new method which accounts for demographic factors, economic indicators, health provider ratios and markers of health status[30].

Table 3 - Measures of US primary medical care workforce shortage

Measure	Definition
Primary medical care HPSA (Health Professional Shortage Area)[31]	The definition of this category is divided into three different types: <ol style="list-style-type: none"> <li>1) <b>Geographic areas</b> with a full-time equivalent primary physician ratio of:               <ol style="list-style-type: none"> <li>a. Less than 1:3500</li> <li>b. Less than 1:3000 with unusually high care needs</li> </ol> </li> <li>2) <b>Populations groups</b> with access barriers to primary and a full-time equivalent primary physician ratio of less than 1:3000<sup>d</sup>. All Native American tribes have been granted this designation.</li> <li>3) <b>Facilities</b> <ol style="list-style-type: none"> <li>a. Correctional facilities (medium and maximum security)</li> <li>b. Public and/or not-for-profit medical facilities service a geographic area or population group designated in 1 or 2.</li> </ol> </li> </ol>
Medically Underserved Areas (MUA) [32]	Service areas with an Index of Medical Underservice (IMU) of less than 62. The IMU is calculated from ratio of primary medical care physicians per 1,000 population, infant mortality rate, percentage of the population with incomes below the poverty level, and percentage of the population age 65 or over.
Medically Underserved Populations (MUP) [32]	A MUP is defined using the same methodology as above to a population group within a geographic area.

Efforts to more evenly distribute the medical workforce are aimed at achieving equity of access to medical care for the population as a whole. However, workforce distribution is only one element of access. Other factors such as quality, cost and information play a significant role in accessibility[33].

Summary points:

- Australian designations of workforce shortage are largely focused around geographic areas. They do not systematically acknowledge that access to health care may be significantly variable for different populations within the one area.
- The AoN designation mitigates against this problem, but lacks transparency and consistency. Designations in the US have attempted to adjust for social disadvantage and needs of specific population groups with some success.

**Current programs and policies to encourage GP registrar workforce redistribution**

GP registrar workforce distribution programs and policies act at several levels. The national programs for GP workforce distribution (outlined in Table 2) all influence distribution at a registrar level. Policy at a GPET and RTP level reinforce and complement the national

policy strategies. At a local level, individual practices or health services may offer incentives, such as accommodation or bursaries, to attract GP registrars.

GPET policies are informed by the direction of the Minister for Health and Ageing. The Minister has outlined in her Statement of Expectations to GPET that GPET should “continue to focus on supporting communities that are experiencing workforce need” and that fifty percent of training should occur “in regional, rural and remote locations (ASGC-RA 2-5)”[34]. These objectives are achieved with a mix of financial incentives (GPRIPS, outer metropolitan payments) and non-financial incentives (conditions of training on the AGPT program).

Registrars selected on the rural pathway are obliged to spend the majority of their training in a rural area. When applying for the AGPT program, applicants must select a preferred pathway. Applicants electing the Rural Pathway agree to undertake their training in rural locations (RA 2-5 as designated by the ASGC-RA classification system (Table 2).

Within the AGPT program, the Training Location Obligations and Incentives Policy outlines registrars’ obligations to practice in rural, non-capital city, outer metropolitan and an Aboriginal Medical Service during training[35].

The overarching strategy for GP registrar distribution on a regional level is allocation of training places to each RTP. With each training intake, RTPs are allocated a specific number of places for registrars by GPET. Individual RTPs may supplement the GPET distribution programs and policies within their region. For example, WentWest and GPSynergy, which have extensive footprints within metropolitan NSW, have policies which further delineate training requirements within specific geographic zones[36, 37].

Summary point :

- GP registrar distribution policies and programs operate at both a GPET and individual RTP level. These policies and programs are informed by and complement the national policy direction.

## Fellowship Activities

### OVERARCHING LITERATURE REVIEW AND DATA SOURCES

The synthesis of information presented in the report is sourced from a variety of sources. I searched websites of government departments and committees, The Productivity Commission, Medical Training Review Panel reports, Health Workforce Australia, GPET, RTP websites and used internet search engines to locate published data and reports. Public health data was accessed from the Social Health Atlas of Australia [38].

In addition, to identify journal publications for the review of policy context and to identify the seminal articles for more in depth review, I conducted a Medline search of abstracts, using MeSH headings, to locate articles addressing general practice training and geography using a structured search strategy (Table 4).

*Table 4 - Search strategy*

<b>Search</b>	<b>Search terms</b>	<b>Results</b>
1	exp General Practice/	60749
2	exp Primary Health Care/	70844
3	1 or 2	125761
4	exp Geographic Information Systems/	3697
5	exp Medically Underserved Area/	5295
6	exp Professional Practice Location/	2318
7	exp Geography/	30930
8	4 or 5 or 6 or 7	41214
9	exp Education, Medical, Graduate/	20175
10	exp "internship and residency"/	32299
11	9 or 10	47619
12	3 and 8 and 11	197

This search strategy revealed 197 articles. The abstracts of these articles were reviewed for relevance, only English language publications were reviewed. In addition, I reviewed the contents of peer-reviewed journals (Australian Family Physician and the Medical Journal of Australia) for relevant articles from the past 5 years. I reviewed the Robert Graham Center repository of Center publications for relevant articles and had tutorials from Center staff in the UDS Mapper and Med School Mapper. Finally, the reference lists of relevant articles were review for additional publications.

# FELLOWSHIP ACTIVITY 1: LITERATURE SYNTHESIS – REFORMING HEALTH EDUCATION TO ALIGN WITH PUBLIC NEEDS

Although there were many relevant concepts identified in from the literature search above, three areas emerged as especially relevant to the problem of GP registrar distribution in Australia.

These themes are outlined below, together with some relevant case examples.

## **Theme 1: Social accountability in medical education movement – reforming health education to align with public needs**

Social accountability theory provides a framework for educational institutions to go beyond concentrating on producing good doctors in high enough volumes, toward producing graduates who are health system change agents [39].

[T]he right doctors to practice the right medicine with the right partners at the right time in the right place. [39, p 615]

The social accountability movement encourages meaningful engagement with the community, going beyond acknowledging the public's needs to partnering with the community.

For instance, the likelihood that graduates will settle in underserved areas is greater if the school works actively with health authorities on strategies for attracting them to such areas, compared to a school imposing a month supervised rotation in a poor community centre, and even more so to a school offering an optional course on health disparity. [39, p 617]

It is important to separate the social accountability of educational institutions from the social accountability of their graduates[40]. Medical educators have an obligation to select, educate and foster doctors who are socially responsible[40], but the accountability of the institution rests on reconciling the activities of a medical school (education, research and service) with the competing demands of relevance, quality, equity and cost-effectiveness (Figure 5).

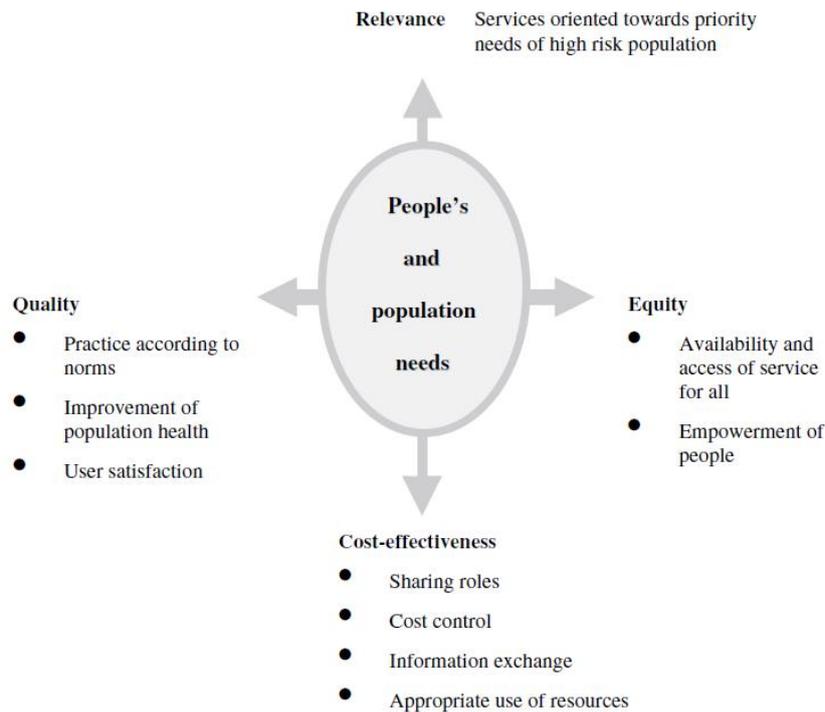


Figure 5 – Tension between values (Reproduced from Wollard, 2011, [40])

Thus far, the academic focus on social accountability has largely been the provenance of medical schools[41] rather than vocational training programs. However, the concept is generalisable to the post-graduate setting. A recent conference acknowledged this and examined the content and format of vocation medical education in the US[42]. The Conference Summary highlighted 14 recommendations focusing on strategies to reform medical vocational training to meet the public need.

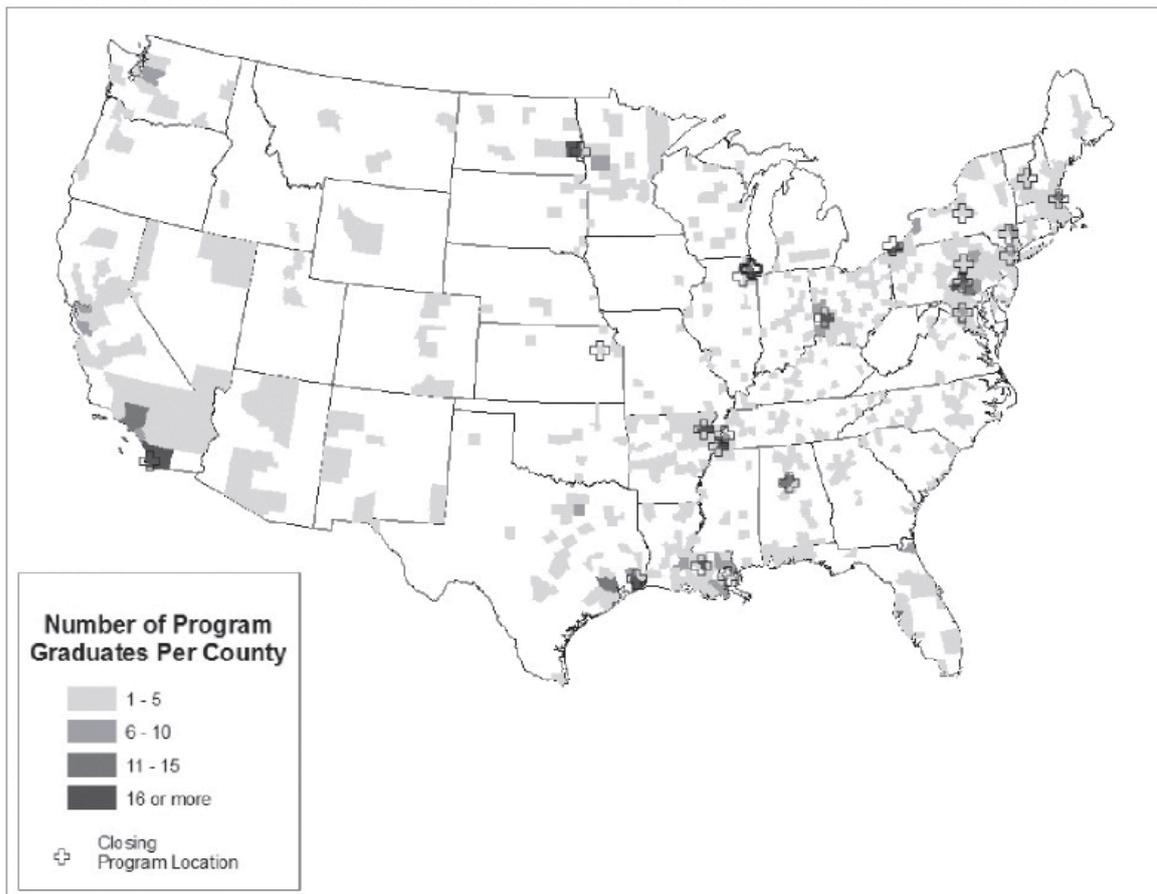
Summary point:

- Social Accountability provides a workable framework and language, which contextualises workforce and General Practice training issues.

**Theme 2: Geographic Information Systems and mapping of graduate location**

While Australia has no widely published evaluation or publicly available data on GP registrar graduate practice destination, several US publications address this topic. A Hawaiian study demonstrated the success of a family medicine training program in producing 73% of graduates who remained in Hawaii and 36% of graduates working in areas of health professional shortage[42]. The Family Medicine program at East Tennessee State University, a rurally based program, reported similar results. Most graduates (83%) chose to practise in medically underserved areas or areas of health professions shortage, and almost half (48%) of family physicians graduates worked in rural areas[43].

In the US, 37 family medicine training programs closed between 2002 and 2008. Reese examined the impact of these closures, by mapping the training footprint of 22 former programs[44]. The training footprint was defined as the distribution of graduate current practice, by location and Health Professional Shortage Areas (HPSAs). Graduates of the 22 programs were often practicing in areas of need (21% rural, 68% in HPSAs). Notably, removing the graduates of these programs, an additional 150 HPSAs were identified. Graduates were also likely to have continued to practise close to the location of the training program (Figure 6).



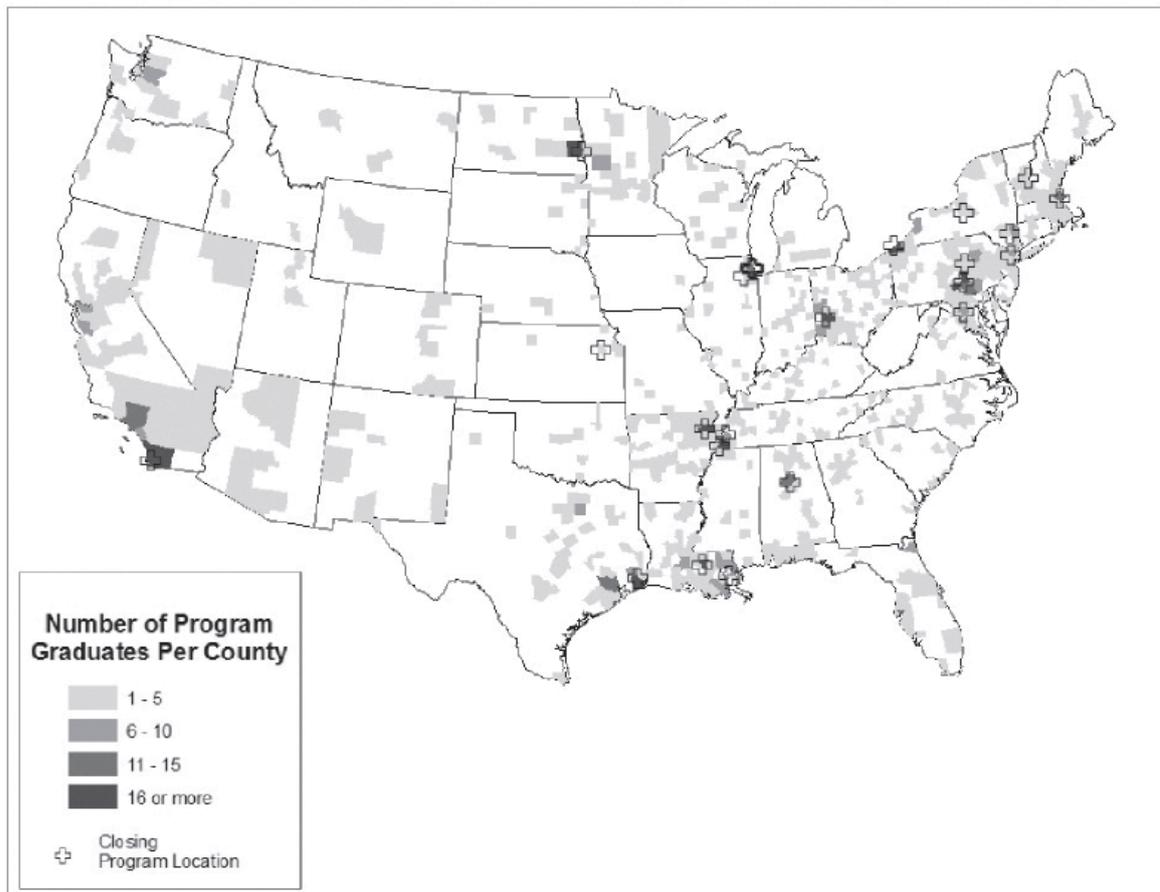


Figure 6 – Tension between values (Reproduced from Reese, 2008, [44])

Additional models can be found in the medical school domain. In Australia, the Medical Schools Outcomes Database & Longitudinal Tracking (MSOD) Project (<http://www.medicaldeans.org.au/medical-schools-outcomes-database>) began collecting data in 2005. This study tracks graduates from commencement of medical school to three years post graduation.

The Robert Graham Center has published an online tool which maps current US practice location of US medical school graduates[45], allowing a medical school footprint to be explored from the perspective of a school or a state. The tool, which is publicly available on the internet, collates information about practice in rural areas, specialty, practice type (e.g direct patient care or other), and HPSAs. By way of example, the three universities in the District of Columbia (DC) demonstrate that approximately one-third of medical school graduates from DC practice in underserved areas (33%) and in primary care specialties (31%) (Table 5).

Table 5 – Graduates of District of Columbia medical schools (1950 – 2012)

SOURCE: Med School Mapper[45]

	George Washington University	Georgetown University	Howard University	Overall
Rural area	7%	7%	6%	<b>7%</b>
Underserved area (HPSA / MUA)	31%	31%	40%	<b>33%</b>
Primary care specialties	32%	26%	40%	<b>31%</b>
Family Medicine	10%	8%	14%	<b>10%</b>

However, East Tennessee State University Graduates are more likely to practise in a rural area (17%), a shortage area (42%), in primary care (46%, and in family medicine (22%) than graduates from DC. The footprint containing 70% of graduates from George Washington University and East Tennessee State University medical schools is presented in Appendix C

A longitudinal mapping project of general practice registrars, similar to the Med School Mapper has the potential to inform, influence and assist with evaluating workforce policy. Such a project would involve linking several datasets which might include data from MDOS, AGPT, Medicare, Australian Health Practitioner Registration Medical Labour Force Survey, Medical Colleges (ACRRM and RACGP), MABEL (a national longitudinal survey of doctors <https://mabel.org.au/>) and the National Health Service Directory (<http://nhsd.com.au/>).

Summary points:

- A longitudinal mapping project of the AGPT, similar to the Med School Mapper has the potential to inform, influence and assist with evaluating general practice workforce policy.

**Theme 3: Geographic Information Systems and urban access to General Practice**

VMA, WentWest and GPSynergy are three RTPs, which have extensive urban footprints. The capital cities of the remaining states and territories are covered by RTPs with more extensive footprints. The current workforce distribution policy direction focuses on outer metropolitan areas. However, this strategy does not specifically address populations in well-served areas to struggle to access health care. Urban underserved populations are an increasing focus of research[46-48].

The issue of access to GPs for urban Australian populations has been explored using GIS methodology. In Adelaide, 16% of the population were living in areas with GP ratios higher than 1 GP to 1367 people[49]. Regression analysis demonstrated that poor GP ratios were associated with distance from the CBD, which targeted by the outer metropolitan strategy, but that it was also independently associated with socioeconomic status. This model suggests poor access to GPs is perhaps better targeted using a designation which combines GP ratios with markers of socioeconomic status than by outer metropolitan geography alone.

In Perth, Hyndman identified that while more GP practices and more bulk-billing practices were located in socially disadvantaged areas, other barriers to access were more likely to be found in these areas[50]. For example, difficulty in accessing a timely appointment, a female GP or an evening appointment was more likely in disadvantaged locations. In summary, GIS systems could inform RTPs in identifying areas of need within their footprint, going beyond geographic-based measures such as the RA classification, to more nuanced methods of identifying community need.

Summary points:

- GIS methodology can help to identify areas of workforce shortage that fall outside of current Australian definitions.
- Future expansion of registrar places could be targeted by using more sophisticated definitions of workforce shortage. This may be particularly applicable in urban settings.

# FELLOWSHIP ACTIVITY 2: GP TRAINING PLACE ALLOCATION (2005 – 2010)

## Research question

As program expansion occurred between 2005 and 2010, how did the distribution of registrar change within the program, by RA classification, on a state-by-state basis and a percentage of GP workforce?

## Methods

Data was collated from several sources:

- Medical Training Review Panel reports (2004 – 2010) [15-19, 51, 52]
- GPET annual reports (2003 – 2010) [4-10, 53]
- Primary and community health - Review of Government Service Provision report, Productivity Commission[54]
- Social Health Atlas of Australia [55]

The average duration of a GP registrar consultation is 17minutes similar to the length of general practitioners more broadly[56]. The average GP registrar works 7 sessions per week[57]. However due to RTP educational commitments and the National Minimum Terms and Conditions for GP Registrars, it is likely that the FTW of a GP registrar is approximately 0.5, Using this approximation and data gather from the above sources, it is possible to estimate the contribution that GP registrars make to the GP workforce by state.

## Results

New registrars increased from 557 in 2004, to 749 in 2010, taking the total cohort of registrars from 1569 to 2591 registrars. Between 2004 and 2010 when the new intakes grew by 25.6%, new registrars comprised a similar percentage of the total training cohort (27 – 30%) (Figure 7).

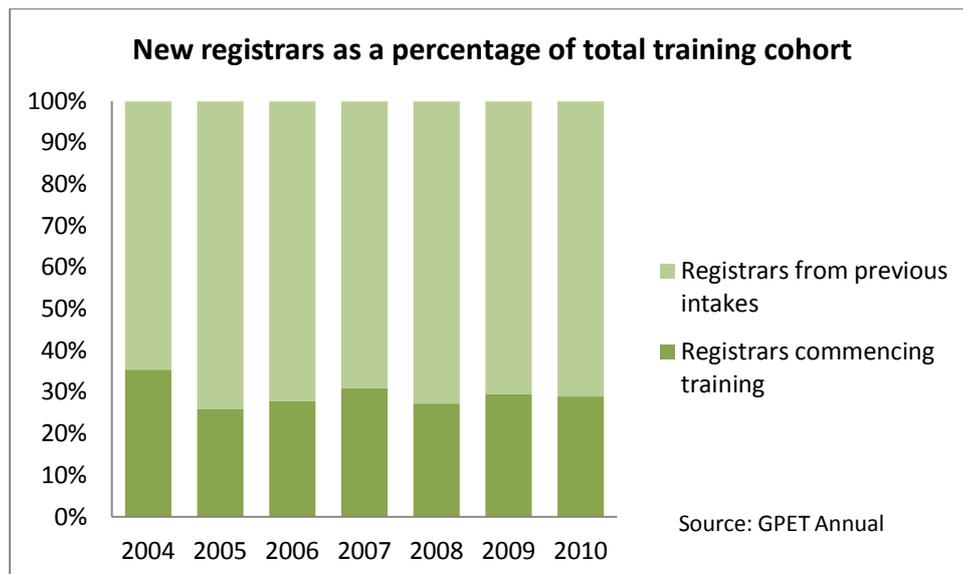


Figure 7 – Sources: GPET Annual Reports

Between 2003 and 2010, more than 50% of training time occurred in RA2-5 locations. There was no trend identified, with training time in non-urban settings (RA2-5), ranging from 52% to 56% (Figure 8).

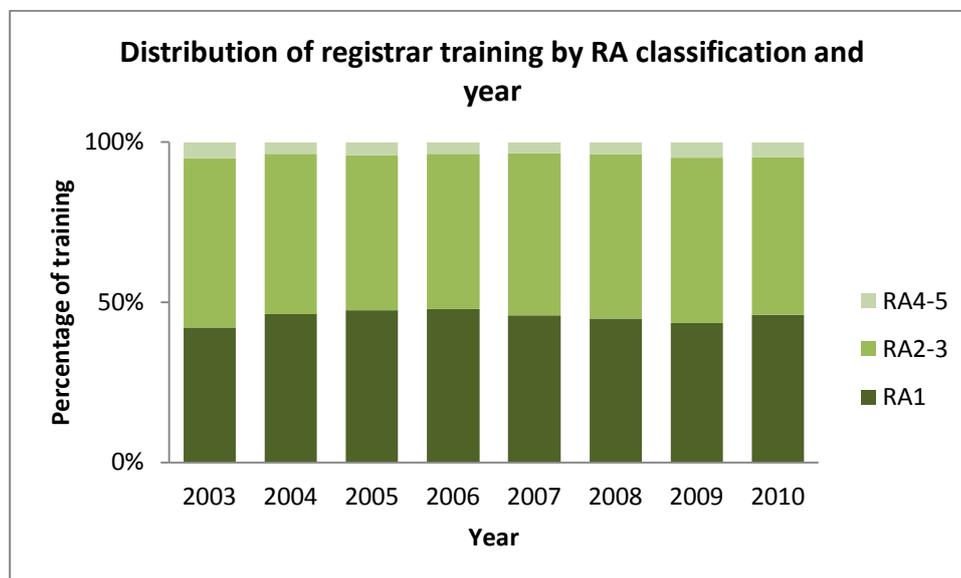


Figure 8 – Source: GPET Annual Reports

NSW and the ACT have the highest number of full-time work equivalent GPs per capita (91.7), approximately twice as many GPs per capita as the Northern Territory (47.2) (Table 6). The allocation of new registrars much more closely reflected the distribution of the Australian population by state. For example, NSW and ACT comprise 33.9% of the population and received 34.7% of new registrars in 2010.

Table 6 – GP (full-time work equivalents [FTW] per 100 000 people, population, and new AGPT registrars (2010), by state

	FTW GP per 100 000 people (2005) [54]	Australian Population (% - 2005) [58]	New registrars to AGPT (2010) [15-19, 51, 52]
NSW and ACT	91.7	33.9%	33.7%
VIC	82.8	25.1%	23.1%
QLD	85.6	19.8%	21.8%
SA	88.5	7.7%	7.2%
WA	72.3	10.1%	9.1%
Tas	77.9	2.4%	2.7%
NT	47.2	1.0%	2.4%

While the number of new training places increased by 25.6%, the allocation of new registrar places remained relatively constant by state (Figure 9). Therefore, despite the maldistribution of GPs by state, additional registrars were not being allocated to underserved areas. This reflects that demand for GPs is not the primary driver for

allocating GP registrar places. WA and the NT have the lowest number of GPs per capita, but they also have challenging geographies, which is likely to limit the ability to expand training capacity quickly.

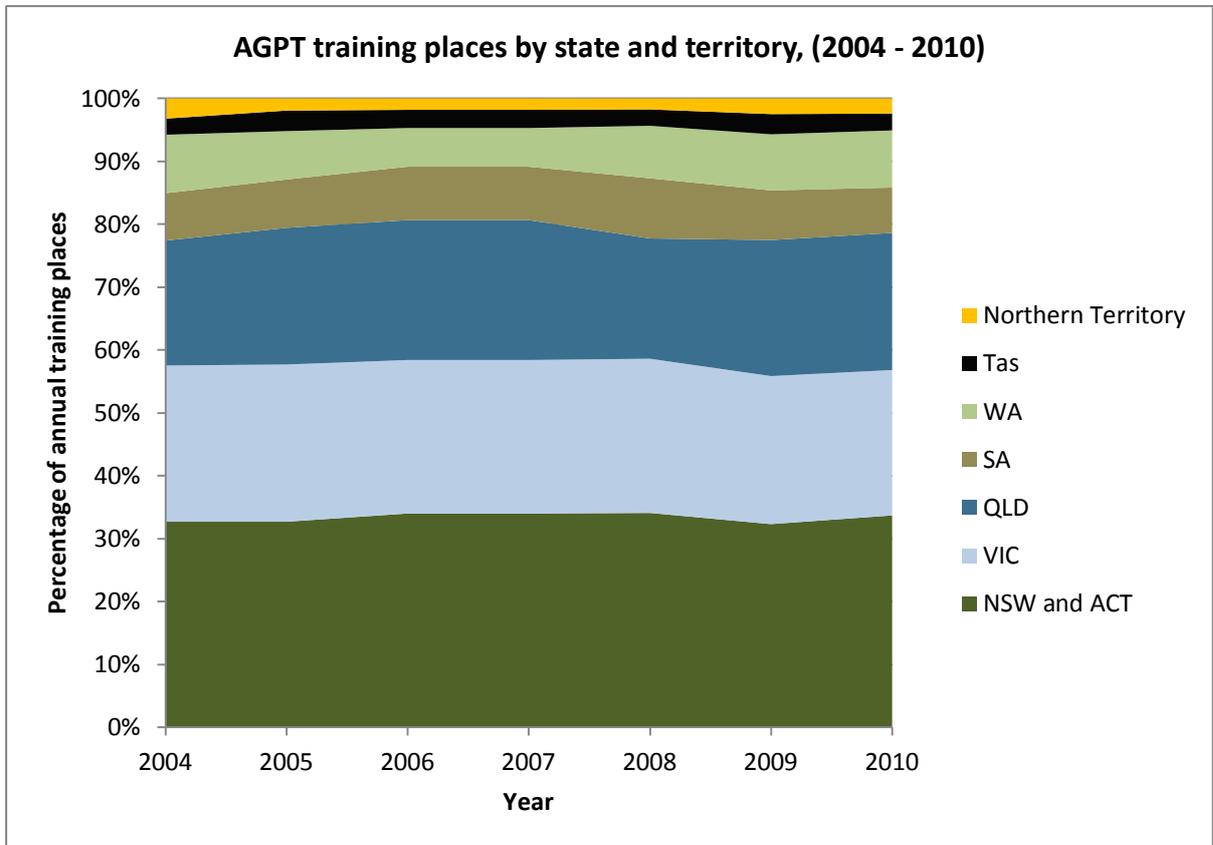


Figure 9 – Sources: MRTP reports [15-19, 51, 52]

While the distribution of training places by state or territory did not change significantly between 2005 and 2010, the contribution of GP registrars, by state, did alter over time (Figure 10). Registrar numbers in the Northern Territory went from 45 in 2005 to 80 in 2010. Consequently the ratio of GP registrars increased from 22.2 per 100 000 (2005) to 34.8 per 100 000 (2010). Tasmania experienced a similar change, with the other states experiencing minimal change.

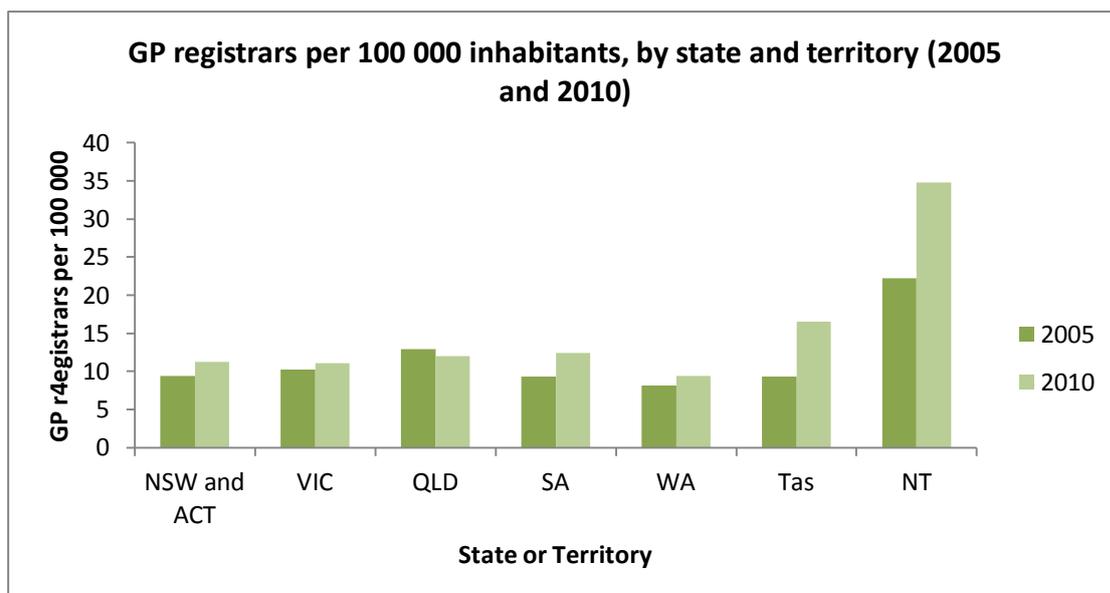


Figure 10 – Sources: MRTP reports [15-19, 51, 52] and Productivity Commission [54]

The contribution of GP registrars to the general practice workforce generally increased between 2005 and 2010 (Table 7). Overall, GP registrars comprised 5-6 percent of the FTW workforce.

Table 7 – GP registrar workforce as a percentage of GP workforce, 2005 and 2010

Source: MRTP reports [15-19, 51, 52] and Productivity Commission [54].

	Year	Percentage
NSW and ACT	2005	5.1%
	2010	5.9%
VIC	2005	6.2%
	2010	6.3%
QLD	2005	7.5%
	2010	6.8%
SA	2005	5.3%
	2010	6.6%
WA	2005	5.6%
	2010	6.7%
Tas	2005	6.0%
	2010	10.1%
NT	2005	23.5%
	2010	31.8%

Registrars in the Northern Territory made a significant contribution to the workforce (Figure 11), comprising 31.8% in 2010, where the increase in general practice workforce was largely accounted for by growth in GP registrar workforce.

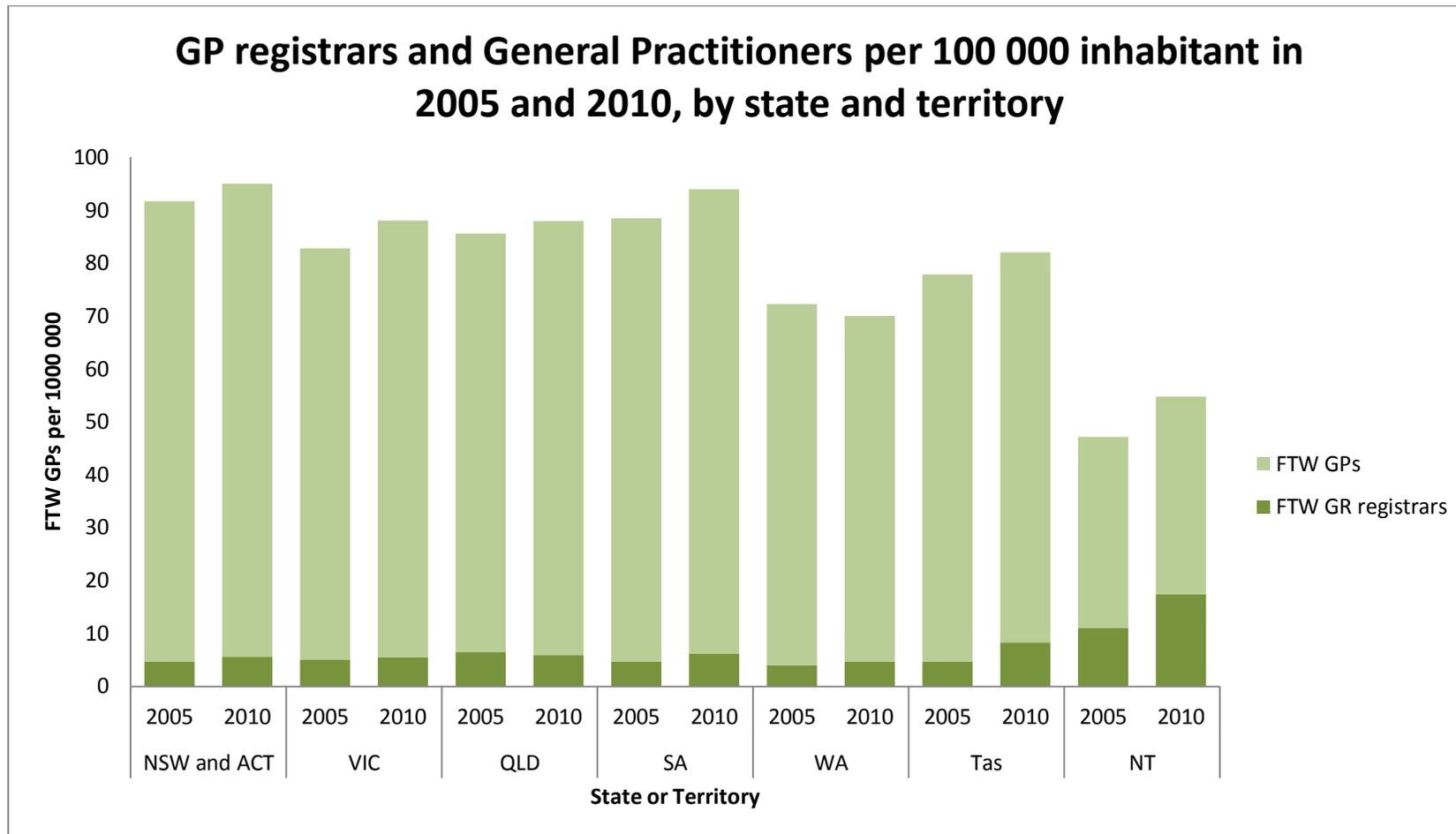


Figure 11 – Sources: MRTTP reports [15-19, 51, 52] and Productivity Commission [54]

## Limitations

The data presented in this analysis is limited in several ways. Firstly, the original data was not collected with the intent of combining it. Methodology and definitions are, therefore, likely to differ between the datasets. In addition, an approximation was used to estimate GP registrar contribution to the workforce, Medicare claims data against GP registrar provider numbers would provide a more accurate method of estimating GP registrar contribution.

### Summary Points:

- Between 2005 and 2010, the AGPT program grew by 25.8% of new registrars, and by almost 40% of the total cohort.
- The distribution of training in rural areas remained constant between 2005 and 2010, with 52 – 56% of training occurring locations designated as RA2-5.
- Distribution of new registrars remained constant by state/territory, and is more reflective of the percentage of the Australian population within the state than GP workforce ratios.
- Using an approximation of GP registrar FTW, the contribution of GP registrars to the GP workforce is estimated to have increased slightly between 2005 and 2010.
- Registrars in the Northern Territory are making a significant contribution to delivering GP services, comprising of more than 30% of the workforce, using the approximation method.
- General practice workforce is disproportionately concentrated in the most populated states. Preferential allocation of training places with lower GP ratios, together with investment in expanding training capacity, may assist with redistributing workforce.

# FELLOWSHIP ACTIVITY 3 – AUSTRALIAN GENERAL PRACTICE REGISTRAR TRAINING DISTRIBUTION IN QUEENSLAND

## Background

Whilst on my fellowship, I conducted the first stage of a research project with the assistance of the Robert Graham Center staff. This was a spatial audit, demonstrating how data from GPET and RTP websites, the GP Connect website[59], the Social Health Atlas of Australia[58] and the Australian Bureau of Statistics[60] could be used in the future to identify areas which could be targeted for future expansion of the GP training and areas that are in need of a general practice workforce.

I would like to acknowledge the Robert Graham Center staff who co-authored participated in the project: Dr Andrew Bazemore, Dr Stephen Petterson, and Sean Finnegan.

## Research questions

- 1) Where are registrars currently training in Queensland?
- 2) Can this distribution inform RTP, GPET and government policy about targets for registrar distribution?
- 3) When expanding into new geographical areas, how can public health data be used to inform this process?

## Aims for the spatial audit

- > To create a database of SLAs for each RTP footprint
- > To demonstrate how data on GP training location can be combined with other public health data to identify areas for future expansion

## Methods

RTP websites and GPET maps were used to construct a database of SLAs within each RTP footprint. The database accounts for shared territories as well as unique footprints. The DWS designation for each SLA was found on the Doctor Connect website ([www.doctorconnect.gov.au](http://www.doctorconnect.gov.au)).

A list of General Practice training locations in Queensland was constructed from the CSQTC ([www.csqtc.qld.edu.au](http://www.csqtc.qld.edu.au)), QMRE ([www.qrme.org.au/](http://www.qrme.org.au/)) and TMT ([www.medicaltraining.com.au/](http://www.medicaltraining.com.au/)) websites. The list was last updated in January 2013. A unique training location was defined by both the address and the RTP, such that if the same address was used by two RTPs, two training locations were recorded. This reflects that although the location may be the same, each RTP will offer a different training experience. It is also possible that different GP supervisors will be used at the same address for each RTP.

Each address was geocoded to an Statistical Local Area (SLA), according to the Australian Standard Geographical Classification system[61].

A database was constructed combining geocoded addresses with data for statistical local areas from Social Health Atlas of Australia, 2011[58] and the Australian Bureau of Statistics[60]. Descriptive statistics and comparison tables were constructed from this database. T-tests, chi squared tests, and Mann-Whitney Test were used to analyse the data, as appropriate. A p value of 0.05 was used to determine statistical significance. Data were uploaded to the interactive Mapping tool in the Social Health Atlas of Australia[58] to construct maps of training locations.

## Results

### GP training locations in Queensland (2013)

423 Training locations were identified from the three Queensland RTP websites (

Figure 12). Fourteen of the names and/or addresses for these training locations were the same, which represents the overlap in footprint and training locations which exists between CSQTC and QRME. These training locations mapped to 183 postcodes and 164 SLAs. The map of SLAs which contain training locations demonstrates that much of remote and very remote Queensland does not have any GP training locations (Figure 13).



Figure 12 – AGPT General Practice Training Locations, Queensland (2013)

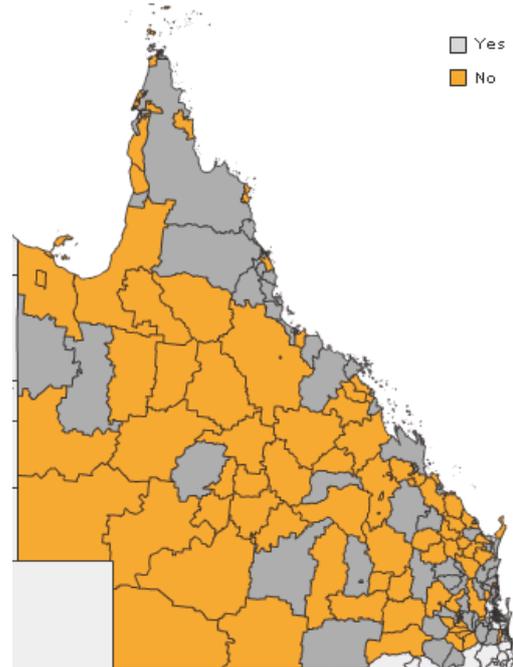


Figure 13 – Statistical Local Areas with AGPT General Practice Training Locations, Queensland (2013)

Most training locations are centred around major cities and major regional centres (Figure 14). Training locations which are remote and very remote were more likely to have fewer training locations, despite having larger geographic areas.

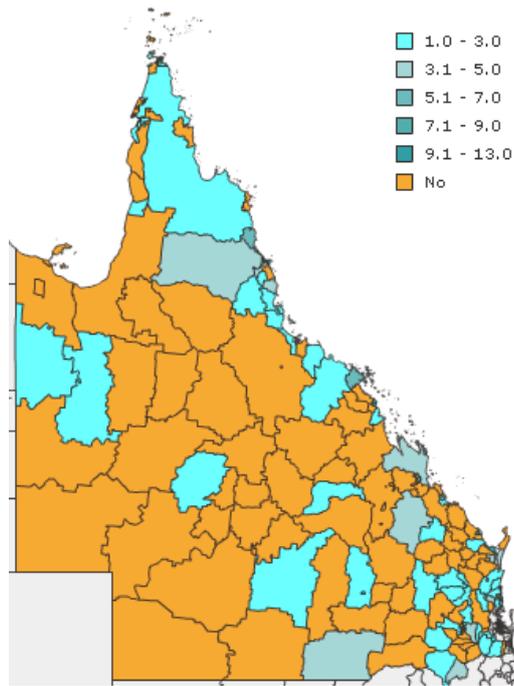


Figure 14 – Number of Training Locations, by SLA, Queensland (2013)

The Index of Relative Socio-economic Disadvantage, IRSD, has a standardized base score of 1000 for Australia. Scores above 1000 indicate relative advantage and scores below 1000 indicate relative disadvantage. The North Burnett region and surrounds of Queensland (Figure 15) is an area of Queensland where few GP training locations exist (Figure 14) and it is relatively disadvantaged compared to other areas of Queensland.

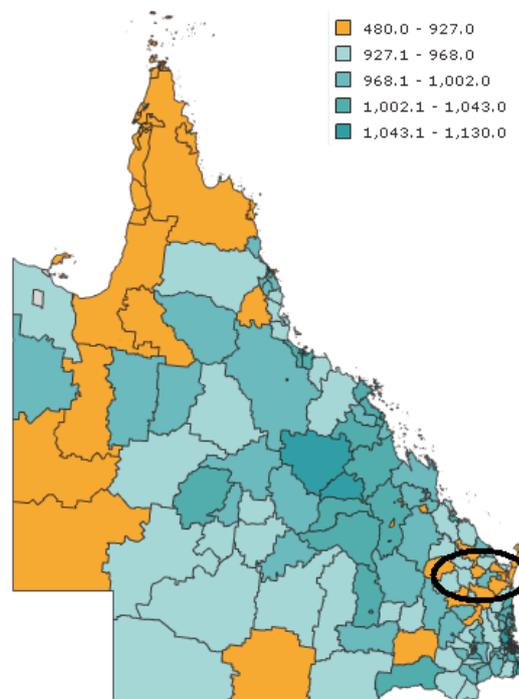


Figure 15 – Index of Relative Socio-economic Disadvantage, Queensland (2013)

Training was more likely to occur in locations which were not Districts of Workforce Shortage ( $p < 0.001$ ), with only 27.4% of SLAs with training being designated as a DWS, compared to 70.5% of SLAs without training (Table 8). All GP registrars require a GP supervisor. Therefore this finding is unsurprising, that SLAs with more GPs are more likely to have a registrar.

Table 8 – Training and Non-training SLAs by District of Workforce Shortage status

	DWS		Total
	Yes	No	
SLAs with training locations	45	119	164
SLAs without training locations	105	44	149
Total	30	92	313

### Training locations by Remoteness Area and District of Workforce Shortage for General Practice

Approximately one-third (37.4%) of training locations were located in RA1 (Major cities) and more than half (57.9%) were located in regional areas (RA 3/4) (Table 9). The remaining training locations were in remote areas (RA 4/5) (4.7%).

Table 9 – GP training locations by Remoteness Area (RA) and DWS for General Practice.

RA	Training locations	DWS
1	158 (37.4%)	32 (20.3%)
2	127 (30.0 %)	22 (17.3%)
3	118 (27.9%)	38 (32.2%)
4	15 (3.5%)	14 (93.3%)
5	5 (1.2%)	5 (100%)
Total	423 (100%)	111 (26.2%)

Most RA1 training locations were in metropolitan settings (77.2%). Of the metropolitan training locations, 56 (45.9%) were in outer metropolitan settings (Table 10). Less than half of outer metropolitan training locations were also gazetted as DWSs (46.4%).

Table 10 – Metropolitan GP training locations by outer metropolitan status and DWS status

	DWS		Total
	Yes	No	
Inner metropolitan	4	62	66
Outer metropolitan	26	30	56
Total	30	92	122

In Queensland, DWSs for General Practice cover most of the state away from the coastal major cities and regional centres (Figure 16). Training locations in RA1 areas were more likely to be located in a DWS (20.3%), than those in an inner regional location (17.3%). All very remote training locations were in designated districts of workforce shortage. One RA4 location, on Stradbroke Island, was not a DWS, while the remaining 14 RA4 locations were within DWSs.

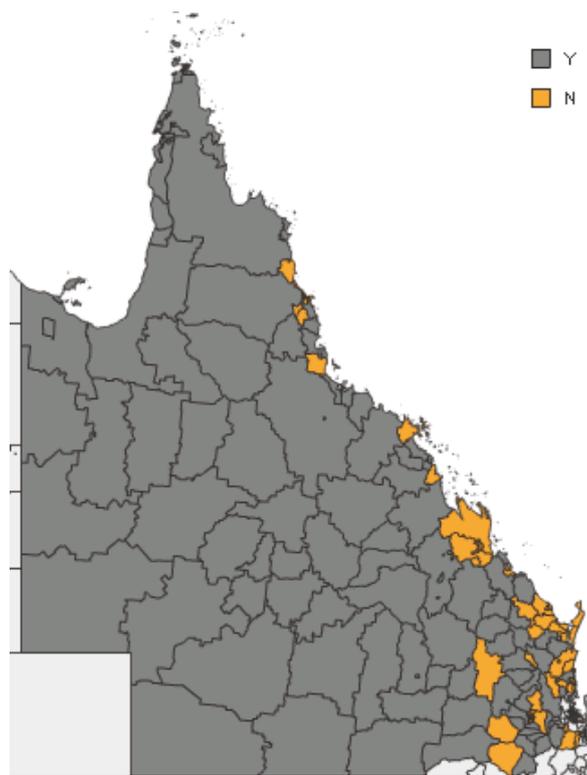


Figure 16 – Districts of Workforce Shortage for General Practice, Queensland, January 2013

### Comparison of SLAs with and without training using the Social Health Atlas of Australia

The Social Health Atlas of Australia (2010) identifies 313 SLAs within Queensland. Training locations are more likely have bigger populations ( $p < 0.001$ ), such that 78.7% of the Queensland population lives within an SLA where GP training occurs. Training is also more likely to occur in SLA with slightly lower Aboriginal and Torres Strait Islander populations and slightly more advantaged SLAs (Table 11). While these are statistically significant, the impact is likely to be minimal.

Table 11 – GP training locations by Remoteness Area (RA) and DWS for General Practice.

	SLA with training	SLA without training	
Median population of SLA	16, 710	3, 287	P <0.001
Median proportion of population identifying as Aboriginal / Torres Strait Islander	2.31%	2.86%	P = 0.008
Median IRSD	992	974	P = 0.003
Median percentage fully immunised (12 months)	91.3%	92.2%	NS
Mean total GP visits (per 100 000) (2009-10)	583 276 (SD 96 664)	483 542 (SD 142 859)	NS

### Limitations

This spatial audit is subject to several limitations. Training addresses may have been inaccurate and the RTP websites may have been incomplete or out of date. For example,

they may have been a mailing address rather than a practice location. However, it is likely that a mailing address would be within the same SLA as the practice. In addition, the list of training places may include capacity which has yet to be used, rather than active training locations.

The Social Health Atlas of Australia collates data from the census and other sources. As the census data becomes out of date, any planning based on this data could be made on false assumptions. In practice, the RTP footprints involve some ambiguity. Although our model allowed for shared territory between RTPs, in practice it is likely that has not been fully captured.

Finally, the Australian Standard Geographical Classification was revised in 2011. As a result, there are some inconsistencies in the geographical territories described on the Social Health Atlas of Australia and on the Doctor Connect website.

### Discussion and Policy Considerations

This spatial audit of GP training locations in Queensland demonstrates that the penetration of general practice training across Queensland is reflective of where the population resides. The current training program has achieved good penetration, with more than three-quarters of the population living in an SLA where GP training occurs.

#### Training in inner regional (RA2) areas

- Half of training locations in outer metropolitan settings were located in areas of DWS.
- GPET and RPTs should consider adopting policy and practices which target outer metropolitan practices which are also DWSs.

#### Training in outer metropolitan areas

- Half of training locations in outer metropolitan settings were located in areas of DWS.
- GPET and RPTs should consider adopting policy and practices which target outer metropolitan practices which are also DWSs.

#### Training in Districts of Workforce Shortage

- Registrars are more likely to train in an area which has sufficient GPs
- GP registrars contribute to GP services where they practice. Therefore, an area which was earmarked as a shortage area may no longer meet this criterion if a GP registrar is training in the area. When an RTP is looking to recruit and support outer metropolitan practices to train GP registrars, focusing on areas which are DWSs.
- As practice location after completion of training is, in part, dependent on training location, this may impact significantly on GP workforce distribution into the future

### Research recommendations

The methodology used in this review has potential applications to other projects. Some suggested projects are outlined below:

- > Broader study of training locations in the in the remaining states and territories would reveal if the Queensland findings are relevant across the country
- > A study using training data would allow for collection of FTW GP registrars by training locations could highlighting areas with current capacity which are being under-utilised. Overlaying the location and density of accredited GP supervisors would also assist in highlighting gaps and areas for potential expansion.

**Key research and policy recommendation - A national GP training capacity database and longitudinal footprinting tool.**

Data from GPET able to be combined with other data and databases to produce a powerful longitudinal tool for planning and evaluating the AGPT program, including graduate practice location and service profile.

A national GP training capacity database could combine information about training locating in medical schools, the prevocational setting and GP registrar training, assisting with identifying gaps and opportunities for training. This tool would also have the potential to use locations of GP supervisors and accredited training practices.

For use in evaluating the AGPT program, additional data sources should be considered:

- GPET data from application, selection and training in AGPT
- Medical Deans Outcomes Database
- Medicare data
- AHPRA data
- Data from General Practice Colleges
- MABEL data

## Conclusion

This APHCRI / Robert Graham Center Visiting Fellowship examined the issue of GP registrar workforce distribution and the policy which drives it.

US measures of workforce shortage offer some advantages over The US policy is more transparent, objective and accounts for populations which have access barriers despite being in a well serviced geography. One limitation of this approach is that it constrains the flexibility which Australia maintains with the DWS system.

Expansion of the AGPT program over the past decade has not been coupled with a redistribution of training places by states/territories. Allocation by state has reflected the proportion of the population in that state rather than GP ratios.

Australian GP workforce distribution policies are multi layered. However, the intersection of the current policies impacting GP registrar distribution is likely to reinforce maldistribution for inner regional and urban areas. GIS methodology can help to identify areas of workforce shortage that fall outside of current Australian definitions. Future expansion of registrar places could be targeted by using more sophisticated definitions of workforce shortage, particularly in urban and inner regional settings.

## Appendix A – Other Fellowship activities

My visiting fellowship was comprised of a one month policy research immersion in Washington DC and attendance at the North American Primary Care Research Group (NAPCRG) meeting in Banff, Canada.

Due to data for my initial research proposal not becoming available, I had the opportunity to explore the full spectrum of the research process while in the Center. Through attending the Center's research meetings, I was able to learn from how the RGC staff approached developing policy research questions and project ideas when dealing with large data sets. I also had one-on-one research consultations with both the Medical Director and the Research Director of the RGC. These experiences were invaluable when I refocused my own research project around a different dataset and content than I had initially planned. I look forward to providing details of my research outcomes in my final report.

The Fellowship afforded me many opportunities beyond the walls of the Robert Graham Center itself. These included:

- > Attending the inauguration of the Martin Luther King Jr. Memorial
- > Attending National Congress on Health Care Clinical Innovations, Quality Improvement and Cost Containment
- > Visiting Fairfax Family Practice
- > Presenting to residency education session at Fairfax Family Practice Residency Program
- > Attending National Policy Forum
- > Presenting Prepared Mind presentation to RGC and AAFP staff
- > Attending launch of November issue of Health Affairs
- > Attending the North American Primary Care Research Group conference

The economic downturn in the USA made Washington DC an interesting setting to be considering health policy that fosters a foundation in primary care and social accountability. On my first weekend in DC, I attended the inauguration of the Martin Luther King Jr Memorial. Many of the speakers, including President Obama, reflected on the social determinants of health, highlighting the parallels between the civil rights movement and ongoing struggles with health and economic inequalities.

During my second week in Washington DC, I attended the National Congress on Health Care Clinical Innovations, Quality Improvement and Cost Containment. In 2009, the US spent 17.6% of GDP on health care, which was more than any other developed nation and more than two-and-a-half times greater than the OECD average. This gap has consistently increased over the past two decades. By contrast, Australia's health care costs are moderate (mid-ranged for OECD nations). One strong theme from the Congress was the high cost of care within the final few years of life. I was surprised to learn that public discussions about futility of medical care in patients with palliative conditions appeared to be less advanced than in Australia. While no data was presented, one might hypothesise that discussions about palliative care are more easily progressed in a health system grounded in primary care, as is the case in the UK or Australia. Nevertheless, as the prospects for a US economic recovery look less likely, there will be an imperative for reform across the system. Creative solutions to these complex policy issues will be required and Australia may have something to learn from this in the future.

One of my initial goals was to gain a deeper understanding of the US health system and graduate medical education system. Reading prior to my visit went some way to decoding the complexity of these systems, but the most valuable experiences were my discussions

with the RGC Policy Fellow and visiting a primary care clinic. During this visit, I presented a brief outline of the Australian medical education system and GP training program to residents at the Fairfax Family Practice Residency Program. The discussion that ensued helped to crystallize the commonalities between our systems, particularly the challenges both Australia and the US have with distributing the medical workforce between rural and urban areas and the status of primary care within the medical profession. I also spent the morning observing a resident at the Fairfax Family Practice, allowing me to see the training program and health system in action.

## NAPCRG CONFERENCE

At the end of my month in Washington DC, I travelled to Banff for the NAPCRG Conference (12 – 16 November), which is an event I had been looking forward to, based on the many positive recommendations from people over the years. I was not disappointed. The conference brought together more than 700 delegates from around the world, giving it a distinctive international perspective. However, what I found interesting was the opportunity for me to focus on health care systems throughout the North American continent, with a special emphasis on the Canadian system. Given this context and such a range of people, the opportunity to discuss research career pathways at the breakfast roundtable was an enlightening experience. While all presentations and workshops were informative, three resonated with me. Firstly, the opening plenary, by the erudite and accomplished Trisha Greenhalgh, reflected on the limitations of Evidence Based Medicine and the pitfalls of being too reductionist. Another plenary on multimorbidity, by Martin Fortin, left me wondering how we communicate such complex messages to policy makers. Finally, the advice from a workshop about improving writing through deliberate practice has given me practical strategies, many of which I have already started to implement. In such a magical setting and with such passionate people, this conference was a rich learning experience and a valuable opportunity to extend professional networks.

Throughout my experience on this Fellowship, I arrived at a clearer understanding of the commonalities that exist between Australia and the United States: patients have similar concerns; our health systems face similar constraints and challenges; and the research process itself is based on similar understandings. Being at the Center exposed me to a professional working environment unlike anything I have previously experienced. I have worked in multidisciplinary teams clinically and in a health research centre before, but neither had the range of expertise of the RGC: health geographers, health economists, statisticians, and people with extensive policy, public health and editing experience. The wealth of publicly available data sets in the US was also surprising, as Australian data is not nearly as accessibly or diverse. The breadth of background and experience within one centre was a unique opportunity.

Overall, my intention in undertaking this Fellowship was to bring together two areas of my professional life. I wanted to understand the different paradigms, perspectives and methodologies about health economics and large data sets. While all of this was achieved, what made the experience most rewarding was the mentoring and generosity from the RGC staff, all of whom share a passion for the best standards of primary care.

## Appendix B – Glossary and abbreviations

<b>AGPT program</b>	Australian General Practice Training program
<b>AoN</b>	Area of Need, as defined under section 67 of the Health Practitioner Regulation National Law Act 2009[26]
<b>DWS</b>	District of Workforce Shortage – location that “falls below the national average for the provision of medical services” [24] based on Australian Bureau of Statistics data and Medicare Australia billing data
<b>GP</b>	general practitioner
<b>GP Registrar</b>	A qualified doctor training to become a general practitioner, who is enrolled in the AGPT program
<b>GPET</b>	General Practice Education and Training
<b>HPSA</b>	Health Professional Shortage Area – a US measure of medical workforce shortage[31]
<b>MUA</b>	Medically Underserved Area – a US measure of medical workforce shortage[31]
<b>RTP</b>	Regional Training Provider - a company contracted by GPET to deliver general practice training. Each RTP has a geographic footprint from which accredited hospitals, general practices and other facilities are selected to train GPs. Doctors are required to apply for a place in an RTP when they commence the 3-4 year AGPT program and remain within their selected RTP for the duration of the training program.

## Appendix C

### Med School Mapper Footprints for George Washington University and East Tennessee State University

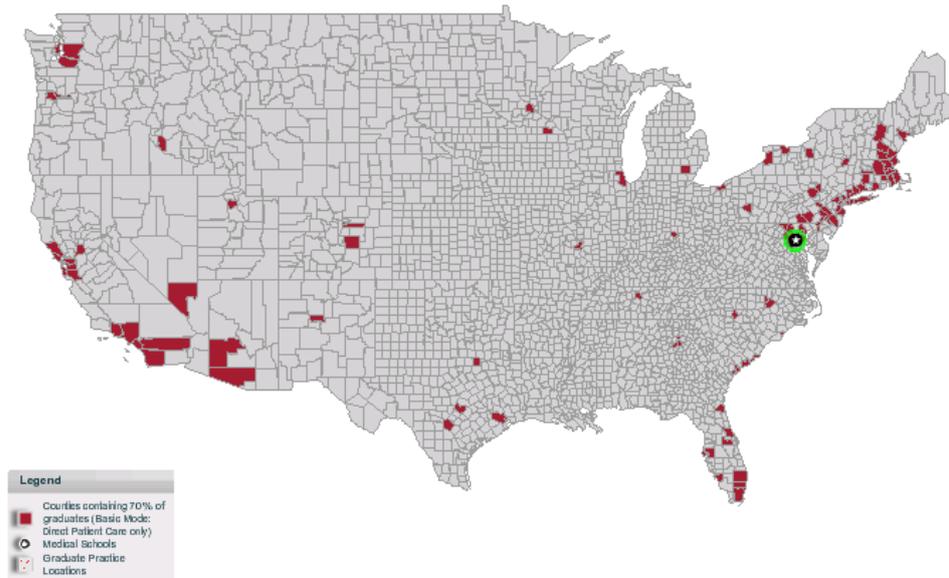


Figure 17 – George Washington University School of Medicine and Health Sciences footprint

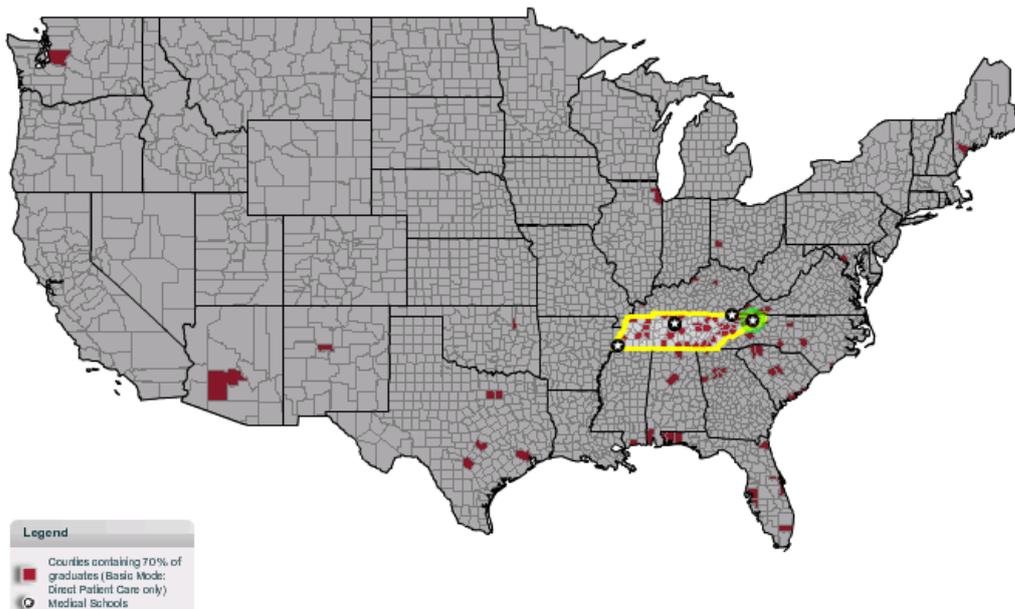


Figure 18 – East Tennessee State University Quillen College of Medicine footprint

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