

**Australian Primary Health Care Research Institute &  
Robert Graham Centre  
Visiting Fellowship**

**Defining and Targeting Areas of Primary Care  
Workforce Need**

**A Five-Country Comparison**

**Research Report  
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## Executive Summary

Medical workforce shortage and maldistribution are critical factors in healthcare access. Many countries have complex regulatory and incentive frameworks to address these factors yet no single country seems to have ‘got it right’. “Virtually all OECD countries suffer from a geographical maldistribution of their health workforce between rural, remote or poor areas and urban, central and rich localities” [1]p43. In primary care workforce shortages are further exacerbated by dwindling trainee numbers in general practice.

Given the importance of these redistributive policies they warrant the further scrutiny provided in this report. The universality of these issues naturally accommodates a comparative approach – in this case looking at **Australia, Canada, New Zealand, the United Kingdom** and the **United States of America**.

These countries face different workforce challenges –in broad terms, in the USA and UK the inner urban slums have the scarcest workforce whereas in Australia and Canada the rural and remote areas have been the main focus for workforce policy rather than socio-economic drivers. New Zealand sits in the middle with policy that addresses both rural and socio-economic deficits.

The United States of America is the only study country to consistently and explicitly define areas of primary care workforce shortage by direct reference to workforce data. Some US definitions also incorporate simple measures of poverty and deprivation. Although not comprehensive, these do encapsulate key socioeconomic measures. However, these definitions have not been rigorously explored as the USA has a relatively passive approach to workforce planning. Elegant shortage definitions are coupled with comparatively small workforce incentives and minimal regulatory requirements for family physicians to work in these defined areas.

The United Kingdom and New Zealand eschew strict workforce shortage definitions. Rather they use the overall payment mechanisms for general practitioners to reflect their workforce priorities. They both include higher payments for GPs working in socio-economically deprived areas and some cost offsets for rural areas.

Australia has the most complex (and perhaps most generous) approach to workforce incentives with increasing rewards for more remote work. It also uses the strictest regulatory approach – requiring service in areas of shortage by both international medical graduates and general practice trainees. However, Australia bases these policies almost entirely on geography alone with no consideration of existing workforce, population need or socio-economic factors.

Canada’s varied provincial and territory-determined responses are generally most similar to Australia’s approach but with innovative blended and salaried payment strategies for remote doctors.

All five countries have a range of policy incentives and interventions along the entire course of the general practice production pathway. These can be broadly considered incentives, regulatory requirements or ‘other’ approaches. Examples include providing debt repayment or scholarship for agreed service in rural or disadvantaged areas, requiring trainees to undertake posts in rural areas and increasing student exposure to rural, disadvantaged and primary care medicine. Although specific policies differ, the overall approach is similar, hence comparative analysis reveals minor innovations rather than significant lessons.

Evidence for the effectiveness of any particular approach is generally lacking. However, a comprehensive strategy to recruit students with a keen interest in primary care coupled with opportunities for experiences, mentoring and support during their training does show promise.

There was also a clear temporal relationship in the UK between its one-off considerable increase in remuneration and flexibility for general practitioners and a subsequent increase in applications for training. This serves as a stark reminder that over-arching ‘pull’ factors such as pay, status and academic standing differentials between general practice and other specialties may easily overwhelm minor tinkering and incentives along the training pathway.

**Summary table of study countries’ primary care workforce shortage definition and policy**

Country	Positive aspect of approach	Negative aspect of approach	Pressing policy Need	Relevance to Australia
<b>Australia</b>	Financial commitment to achieve workforce priorities	Geographical definitions of workforce shortage miss socioeconomic and other drivers	Accurate workforce shortage definitions	Quality workforce and socioeconomic data available
<b>Canada</b>	Innovative approaches such as blended payment strategies	Fragmented, provincial geographical approach	Centralised planning	Blended payments viable for remote areas
<b>New Zealand</b>	Comprehensive socioeconomic measures	Incentives will be eroded by bringing non-deprived area payments in line	Rapid changes in health systems make evaluation very difficult	On call payment strategies
<b>UK</b>	Direct policies cleverly target real workforce shortages but peripheral to core policy	Precise socioeconomic payments adjustments undermined by historical payment floor.	Use of list size, vacancy rates in workforce policy	Direct policy options
<b>USA</b>	Simple, consistent measures of workforce and socioeconomic measures	Passive approach to workforce planning and shortage definitions	Central regulation and stronger incentives	Comparable data available in Australia

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## Introduction and Background

My experience as a general practice trainee in Australia sparked my initial interest in workforce planning and priorities. Trainees in Australia are required to complete part of their training in areas of workforce priority. For urban trainees this translates to 6-months in a rural community and 6 months in an outer metropolitan area. I was fascinated that although patients in these areas certainly had difficulty accessing primary care services, my patients in an inner urban area with no workforce incentives had far poorer services. Indeed my inner urban patients were almost all from marginalised groups and faced socioeconomic rather than geographical barriers to accessing care. The urban medical centre struggled to recruit general practitioners and I found myself wondering how are Australian workforce priorities and policies determined? Had I stumbled across an anomalous gap in the workforce policies or were there more fundamental problems with the way Australia managed its general practice workforce?

It's worth noting that **my interest in workforce policy was sparked because of its enabling role in health care access for marginalised population groups**. These two concepts are intertwined and the language and frameworks used overlap. For example the WHO defines four dimensions of workforce – availability, competence, responsiveness and productivity. [2] These intercept with Chapman's key aspects of access - availability, utilization, relevance/effectiveness and equity. [3]<sup>1</sup> However, workforce is only one aspect of access and must not become the panacea for all access and equity problems – other strategies are still essential.

Investigating the **mismatch between my experience and workforce priorities** further I was struck by **three key factors** about the primary health care workforce.

Firstly, **maldistribution** of the medical workforce was not a uniquely Australian phenomenon; it seemed **almost universal** and each country struggled with policies to redistribute their workforce.

“Virtually all OECD countries suffer from a geographical maldistribution of their health workforce between rural, remote or poor areas and urban, central and rich localities” [1]p43.

Secondly, the widespread rhetoric of the importance of primary health care contrasted with the increasing sub-specialisation of the medical workforce and the remuneration and prestige of these hyper-specialists. Combined with other trends such as the feminisation of the workforce the **primary health care workforce** appeared to be **shrinking**.

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<sup>1</sup> There is also overlap with Aday's framework for access that includes characteristics of the health system and of the population at risk, utilization of these health services and consumer satisfaction.[4] Aday LAA, R. A Framework for the Study of Access to Medical Care. Health Services Research 1974;Fall:2008.

“Workforce projections from many of the developed countries of the world suggest an absolute fall in the number of full-time equivalent general practitioners/family physicians over the next decade unless more doctors choose general practice/family medicine as a career.” [5]

This can be conceptualized as another form of maldistribution between general practice and secondary specialties. Simply increasing the production of health workers, a common policy response does little to address either of these forms of maldistribution (although it may increase absolute numbers.) More targeted policies appear warranted.

Thirdly, there seemed **no cohesive and scientific approach** to these issues, rather a proliferation of numerous adhoc policy responses.

“Rather than improving their response capacity and anticipating new challenges, health systems seem to be drifting from one short-term priority to another, increasingly fragmented and without a clear sense of direction.” [2]

Faced with the universality of maldistribution, the shrinking primary care workforce and Australia’s imperfect approach to these issues it seemed logical to take stock of how other countries are tackling these issues.

**Personal Note**

The Australian Primary Health Care Research Institute and Robert Graham Center visiting fellowship provided a unique opportunity to explore these workforce issues further and this report is a product of my visit. As recipient of this prestigious scholarship I had the opportunity to travel to Washington D.C in the United States and spend 6 weeks researching at the Robert Graham Center (RGC). The RGC is a primary health policy research unit with excellent collaborative relationships both within and beyond the USA. The 6 weeks were spent compiling this research but also becoming involved in the RGC’s work, immersing myself in the US health system and gaining a cross-national policy perspective.

## Research Questions

This report compares the approaches of five English-speaking developed countries (alphabetically) Australia, Canada, New Zealand, the United Kingdom and the United States of America. Although the health systems, political environments and particular challenges in these countries are diverse there are commonalities and, by comparing the various approaches there may be room to learn from each other. The focus is on the medical primary care workforce, particularly general practitioners and family physicians. The emphasis on primary care is critical as there is growing evidence that primary health care is the most efficient, equitable and responsive method to meet population health needs.

The specific **research questions** addressed in this report are:

- How do different countries define populations of workforce need?
- How do they use these definitions in policy making?
- What policies do the five countries use to increase the uptake of primary care along various points of the physician production pathway?
- Which policies attempt to redistribute the general practice or family physician workforce?

## Outline of this report

There are four main sections to this report.

The *first* section presents an expanded framework for considering workforce policy. This section provides the broader context in which policies that address the numbers and distribution of primary care physicians operate. It also identifies common problems and tensions encountered with workforce research, planning and data collection.

The *second* comprises a brief country comparison of the socio-political context and health system organization to help the unfamiliar reader make sense the subsequent research. It also relays the varying strategies for workforce planning and the country-specific data sources.

The *third* section explores the different definitions used for areas of workforce need and how these definitions are used to shape workforce policies. Each of the study countries is presented in turn along with maps and figures that demonstrate the distribution of the general practice workforce.

The *fourth* section concerns itself with the policy interventions used by the five countries to encourage doctors to work in primary care and in areas of workforce shortage. The levers and interventions are considered along the entire length of the general practice or family physician production pathway. Although high-level evidence of effectiveness is scarce in the published literature, this section briefly identifies some of what is known

about the effectiveness of different interventions. Two issues are considered in slightly more details – the treatment of IMGs and one of the larger ‘pull’ factors that may well overwhelm minor pathway tinkering – pay differential.

The final section draws together some of the key points from the report with potential lessons for workforce planners and policy makers with a particular emphasis on the Australian context.

**Note on Terminology**

The five study countries use different terminology to refer to practitioners, training and policies. In an attempt to simplify this ‘general practitioner’ (often abbreviated to GP), ‘family physician’ (also abbreviated to FP) and ‘medical primary health care practitioner’ are used interchangeably in their different country contexts.

The American classifications are different to the other countries – frequently including pediatricians and general internists (similar to general physicians) in their definition of ‘primary care’. This is largely because general practitioners do not have a gatekeeper role as in many other systems so these other doctors are frequently the first point of care.

The generic term ‘trainee’ is used whenever possible rather than registrar or resident to indicate doctors training in general practice or family medicine. The term ‘student’ is used in a generic way to indicate all those pre-medical graduation (including college students, high school and at times primary school level.) The term ‘medical workforce’ is used throughout the report rather than the alternative ‘human resources for health’. Please note the difference between ‘Medicare’ in Australia which is a form of universal health insurance and ‘Medicare’ in the USA which is an insurance safety net limited to the very low income population.

The main acronyms used in this report are; NZ for New Zealand, UK for the United Kingdom, USA for the United States of America and IMG for International Medical Graduate. FTE is used to indicate Full-Time Equivalents (that is an expected full-time workload.)



## Methodology

The research questions addressed in this report do not lend themselves to neat research methodology and the intention of this report is to be primarily explorative and descriptive. Much of this material is grey literature so a systematic approach was tempered by pragmatism.

### *Information Gathering and Search Strategies*

Several literature searches were conducted using the Pubmed and Medline databases using different combination of relevant terms. Examples of the search strategy include; “workforce” OR “human resources” AND “health”, “primary care”, “general practi\*” OR “family physician” AND “definition”, “area of need”, “shortage”, “redistribution” OR “disadvantage”. “Index of deprivation”, “Deprivation Index” OR “socioeconomic” were also used for sub-searches.

Inclusion criteria were broad – workforce, workforce planning or training policy, maldistribution, shortage and redistribution and socioeconomic factors in workforce planning.

References were excluded if they did not pertain to primary care, were clinical rather than policy focused, were not available in English or were from countries other than Australia, Canada, New Zealand, the UK or the USA. Comparative pieces that pertained to at least one of the study countries were included.

Websites of relevant organisations were searched using a similar strategy or single key terms. These websites included- the Commonwealth Fund, the Organisation for Economic Development, the World Health Organization, Health Policy Monitor, the McMaster University Centre for Health Economics and Policy Analysis, the European Observatory on Health Systems and Policies, the International Medical Workforce Collaborative conference records and the Human Resources for Health Global Resource Centre database.

References of relevant reports and articles were hand-checked and yielded additional papers. Country-specific workforce, health department and statistic websites were also searched particularly for policy information, evaluations, workforce data and maps. Due to the breadth and nature of the material expert informants were contacted from each country to check accuracy and identify other measures. These representatives were invited based on their contribution to the literature or their involvement in workforce groups.

Wherever possible confirmation of the policy, statistics and other data were confirmed with a second source. Variations between sources are identified in the report and whenever possible the same source of data was used for comparisons. However, many of the figures are from different sources so comparisons must be treated with caution.

## Section 1

### ***Broader framework for workforce consideration***

In comparing workforce policy across nations it is important to establish a structural basis of comparison, lest one become lost in a particular subset of policies and loose sight of the bigger picture. Therefore prior to focusing in on these particular research questions I first constructed a conceptual framework for primary care workforce planning. Although there are several other diagrams [6, 7] and constructs none of them appeared complete. This new framework (demonstrated in Figure 1 on the following page) highlights that there are many other potential policy solutions to inadequate supply of traditional general practice services other than simply increasing production or redistributing the GP workforce. These are not merely theoretical – each of these potential policy levers have been used in at least one of the study countries.

### ***Tensions in workforce planning and research***

Workforce research and planning is a politically charged field with many inherent tensions and complexities. Some of the most critical are outlined briefly below to assist readers who are new to the field.

#### **i) Workforce planning for services**

Most broadly, some literature (and stakeholders) overlook that workforce planning is not an end in itself – that the ultimate goal is to provide health services to a specified population with the assumption that these services improve health outcomes.

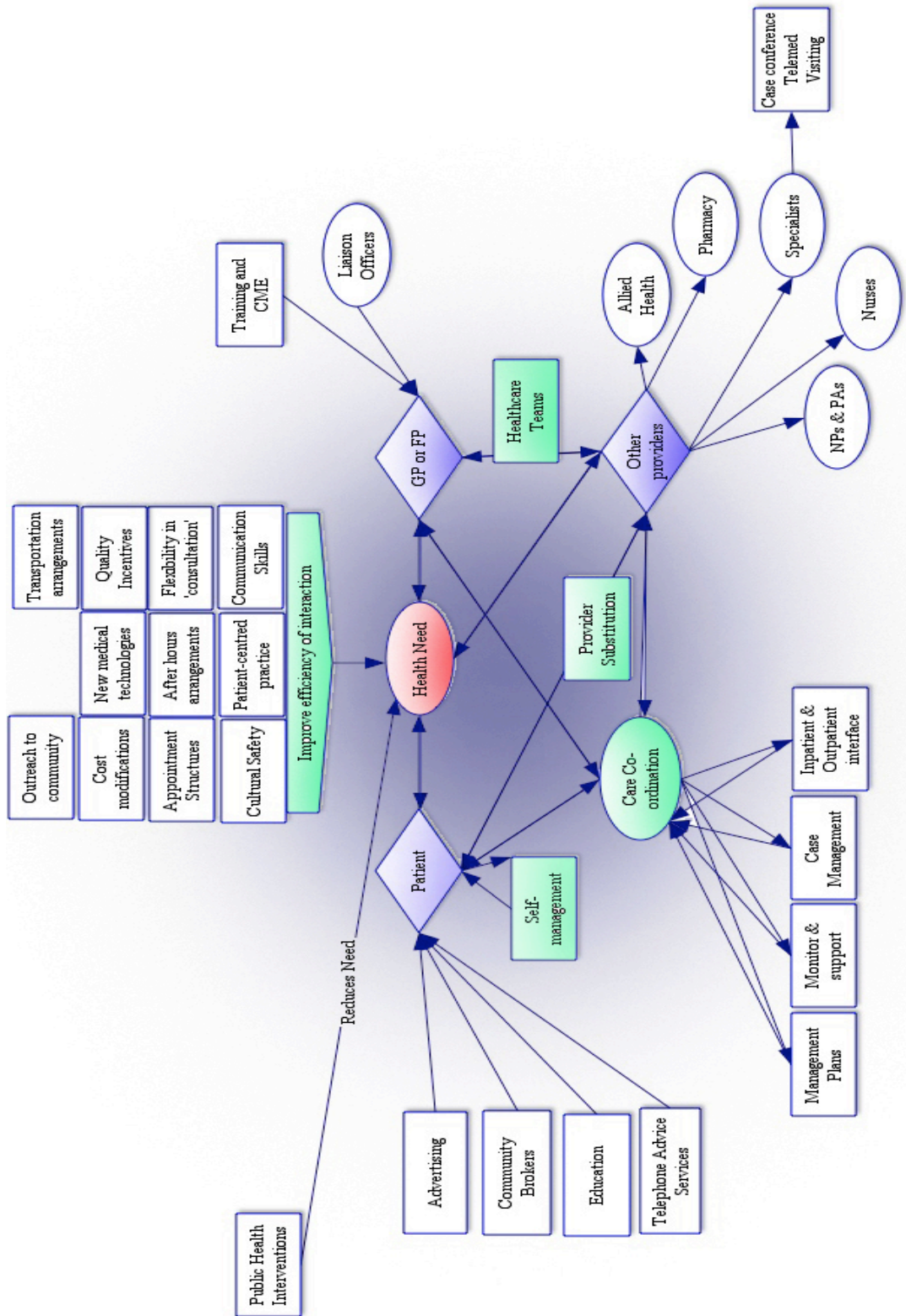
#### **ii) Tradeoff between equity and efficiency**

Policy interventions that encourage service provision to underserved populations increase the equity of access to health. These typically occur at the expense of efficiency and distort the ‘market’ for healthcare. The different approaches of the study countries can partly be explained by their different concept of equity and their different philosophical approach. Countries maintain a difficult balance between three polarities of freedom or responsibility, the individual or the community and healthcare as a right or privilege.

#### **iii) Long-term plans conflict with short-term needs**

Workforce planning is a dynamic process that requires a long-term perspective. There can be long lag times– particularly in production but also in redistributive policies.[8] This long-term timeframe frequently conflicts with both the urgent healthcare needs of the population and the political pressures to rapidly resolve workforce problems.

Figure 1 – Health systems framework for workforce policy studies



**iv) Whole-workforce approach or professional silos?**

The health workforce needs to be considered as a whole rather than pursuing a fragmented approach with planning of discrete service providers in isolation. Particularly in the current climate of teamwork, role redefinition and emphasis on skill mix rather than provider. However, the silo approach to planning is frequently reinforced by rigid funding structures, different requirements and anxieties about turf protection. The uncertainties that contribute to difficulties in modeling supply and demand[8] may also be compounded by a whole-of-workforce approach.

**v) National or local needs?**

As health professionals become increasingly mobile, health workforce planning needs central direction.<sup>2</sup> However, local issues vary considerably and the diversity of policy approaches within countries often reflects this requirement to be responsive to local needs.

**vi) Training or health needs?**

There are obvious potential conflicts between the requirements for quality training posts for providers and the health needs of the population. However, these spheres do need to be planned at least in parallel to facilitate overlap whenever possible.

**vii) Inconsistent data and definitions**

Finally, there are the difficulties around definitions, data collection, reporting and measuring outcomes. This limits the ability to compare across contexts but also creates difficulties within defined areas as planners are forced to cobble together old data to plan for the future.[8] An obvious example is the increasingly important difference between head counts and full-time equivalents. However many data sets and sources still use head counts or do not use a consistent definition of full-time. More fundamentally though is the different scopes, patterns and quality of practice between providers. Some systems have begun to address this by collecting more measures of quality[9] and services provided [10]rather than simply recording doctor consulting hours.

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<sup>2</sup> In a globalised health workforce market it is not unreasonable to argue that workforce planning should, at least in part, be undertaken at an international level. [1] Organisation for Economic Co-operation and Development. The Looming Crisis in the Health Workforce; How Can OECD Countries Respond?; 2008.

## Section 2

### ***The study countries in brief***

The five study countries are all comparatively wealthy developed democracies that predominantly speak English. However, there are many important socio-cultural and historico-political differences between them— particularly in the development of their health systems and the relationships between government and health practitioners. The UK NHS evolved in the 1940s influenced by wartime ‘big’ government, solidarity and cost-saving and doctors retained clinical autonomy by agreeing to operate within state budgetary allocations.[11] The New Zealand health system also emerged in the 40s when higher taxes funded hospital and GP services.[12] Subsequent conservative governments grew the private sector[13] until the 1990’s which saw major health reform after each election finally settling on the current system. [14] Canadian Medicare developed in the 1960’s influenced by economic growth, idealism and government expansion. Canadian practitioners retained great authority. The government essentially underwrote the existing system but did not become a direct employer.[11] The US Medicare and Medicaid were also born in the 60’s but in the context of failed previous attempts to adopt universal health insurance hence the piecemeal approach with private insurance with minimal safety netting. Public and private financing were initially passive and only switched to more active cost-containment later. [11] Australia was influenced by post WWII ‘welfare state’ ideas but relied heavily on charity and private funding until the 1970’s when universal insurance had its stuttering start. [15] The last 1-2 decades has seen increased emphasis on private insurance and the private sector but the universal system remains largely intact.

Table 1 briefly compares health-system factors in the five countries that are most relevant to the way that primary care workforce is managed. A slightly expanded version is available in appendix A. The ‘Primary Health Care Score’ in row 3 of the table is an estimate of the contribution and importance of primary care in the country’s health system.<sup>3</sup> Please note that all ratios are according to headcounts rather than FTEs.

There are several points of note. In geographical terms the UK stands out as having very little true rural areas and no remote areas whereas NZ is unique in its small, compact population. The USA is an outlier in several points – it has no universal health insurance, spends almost double the other countries of its GDP on health and has a far higher proportion of private spending. Australia has a higher number of doctors per 1000 population at 2.8 although this is still lower than the OECD average of 3.0. [1] The specialist to generalist ratio divides roughly into two with Australia, Canada and New Zealand having approximately equal numbers and the UK and USA having twice as many specialists.

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<sup>3</sup> The score was calculated by Macinko et al and incorporates variables such as funding mechanisms, gatekeeper function, regulatory policies and co-ordination. The mean for the 18 OECD countries considered was 9.65. New Zealand was not included in this study but would likely score similar to the UK. Unfortunately no updated figures are available.

**Table 1 - Comparative features of the five health systems**

	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
<b>Population</b>	21,589,482[16]	33,441,277[17]	4,297,315 [18]	61,612,255 [19]	305,804,897 [20]
<b>Geography</b>	Costal, Eastern and urban concentration, remote areas	Southern and urban concentration, remote areas	Northern Island concentration Geographical barriers	Urban concentration , urban slums	Urban/ coastal concentration , urban slums
<b>Insurance [21]</b>	Centralized public	Devolved public	Devolved public	Devolved public	Competitive private & safety net
<b>PHC score in 1995 [22]</b>	13	11.5	N/A – likely similar to UK	19	3
<b>% GDP on health 2005[23]</b>	8.8	9.9	8.9	8.2	15.2
<b>% health spending public 2005[23]</b>	67.0	70.2	77.4	86.9	45.1
<b>Physicians per 1000[23]</b>	2.8	2.1	2.1	2.4	2.4
<b>Primary Care physician /100,000 pop</b>	111[24]	97.7[25] (Derived)	75 2003.[26]	66[9]	36.2 #[27]
<b>Specialist /100,000 pop</b>	98 PLUS 37 *. [24]	87.8 [25] (Derived) OR 92[28]	71.5 2003[26]	140 (in 2002)[8]	174.2 #[27]
<b>GPs as % of specialists OECD 2002 data[8]</b>	117% (By above 2007 figures is around 82%) [24]	90% Increased 2007 [25]	100% Similar 2007[29]	42%	53% OR 21% by above figures

\* Australian data includes GP trainees but not specialist trainees. This greatly underestimates the predominance of specialists [24] so they are here included as indicated by the 'PLUS'.

# This US data from 2004 includes trainees in both specialist and generalist counts.

### ***Approaches to Workforce Planning and Data***

The five countries have different approaches to medical workforce regulation, planning and data collection. These are summarised in table 2 and explained in further detail here. Australia,[24] New Zealand[29] and the UK[30] all have workforce groups with relevant stakeholders who estimate workforce projections and advise government of appropriate medical school intake and specialty numbers. The UK has the most tightly regulated arrangement with specialty numbers also government-determined. Interestingly it does not consider the private workforce in planning although this is a very small proportion of the workload. Australia regulates general practice numbers but other specialty colleges are largely self-regulated.

In 2003 Canada moved toward more national-level planning and subsequently created the Advisory Committee on Health Delivery and Health Human Resources Planning. [31] Practically the provinces and territories are still responsible for the bulk of health training and delivery.

In contrast to the other study countries, the USA does not regulate medical school numbers relying instead on market mechanisms. The government receives advice from several bodies [32] but exercises minimal control over training. Although around 60% of places attract some state funding[1] there is a thriving private sector. The federal government initially capped the dollar amount per trainee then the number of funded places available for hospitals to provide postgraduate training. Without more direct control trainee numbers have continued to expand by 8.0% between 1997 when the second cap was introduced and 2007.[33]. Furthermore, there is no regulation of the specialty mix despite the starkly different profitability of different trainees.<sup>4</sup> The number of training places is approximately 25% higher than the production of local graduates creating opportunities for IMGs.[1]

Workforce planning in the five countries mainly mirrors the regulation of medical school places although in the USA several states have taken more active roles in planning their medical workforce.[34]

The simplest monitoring of the workforce location, specialty and workload is by their individual provider numbers. In Australia this captures all medical work (except cosmetic surgery) and provides some details about the type of service provided. In New Zealand and the UK this captures most work although specifics of the services may be obscured by capitation and contract arrangements. In Canada this captures fee-for-service provision and some quality-incentive services but doesn't provide much detail about the work of blended-payment or salaried doctors who are often located in remote areas. In

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<sup>4</sup> Consequently “the percentage of residents in training who will potentially practice in primary care decreased from 28.1% to 23.8%” over the same study period. [33] Salsberg ER, P.H, Rivers, K.L. US Residency Training Before and After the 1997 Balanced Budget Act. JAMA 2008;300(10):1174-80.

the USA national provider numbers are relatively new and only capture Medicare and Medicaid work.

Four of the countries conduct a medical workforce survey of some sort [24, 25, 35] [29]– usually sent with the annual registration renewal and with variable response rates. There are alternative data sources too – in Australia the national population census is often used.[8] In Canada ‘Scott’s Medical Database’ is a comprehensive compilation of survey, specialty college registrations, medical school graduation lists and provincial and territory registration details[28]. UK NHS databases capture all public work. In the USA the American Medical Associations ‘Masterfile’ is a comprehensive database of all doctors although there are information gaps particularly about specialty choice. These databases are variably available to researchers.

**Table 2 -Workforce Regulation, planning and datasets**

	<b>Australia [24]</b>	<b>Canada [31]</b>	<b>NZ [29]</b>	<b>UK [30]</b>	<b>USA</b>
<b>Medical School places &amp; locations</b>	National regulation	Province determined	National regulation	National regulation	Market Driven (State funds some)
<b>Post graduate training numbers</b>	National regulation by specialty	Province determined	National regulation for some specialties	National regulation (some regionalised)[35]	Indirect – capped funding to hospitals
<b>Workforce planning</b>	Government & advisory body[8]p186	National trend but ongoing provincial	Government & advisory body	Government & advisory body	Ad hoc with some state-based
<b>Provider numbers</b>	National – location and service type	Provincial organization – captures fee for service.	National – location and service type	National but local contract	National newly introduced – captures Medicare only
<b>Workforce surveys</b>	70.2% response rate 2006.[36]	32.1% response rate 2007[25]	84% response rate 2007[29]	National Health Service NHS (public)	Nil
<b>Other sources</b>	5 yearly census	Scott’s database [28]	Primary Health Organisations	NHS database	AMA Masterfile



## Section 3

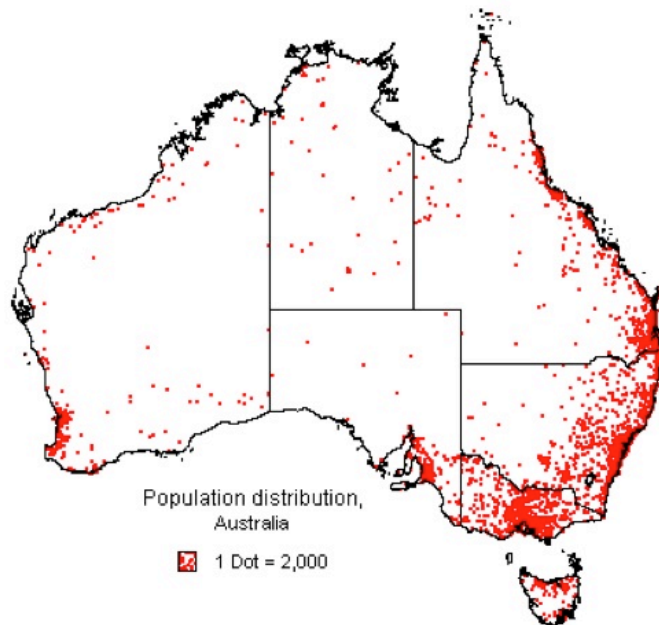
### *Defining Areas of Workforce Shortage*

#### **Australia**

Australia uses a primarily geographical approach to define areas of workforce shortage - targeting populations in rural and remote areas with recent emphasis on outer metropolitan areas. Incentives essentially form a unidirectional vector from inner city to remote partly explained by the population concentration along the east coast with many remote, sparsely populated areas as demonstrated in figure 2. The increased needs of non-geographically defined population groups are partly offset by population and disease-specific Medicare item numbers<sup>5</sup>. Despite appalling health outcomes, Aboriginal and Torres Strait Islander (ATSI) populations are not specifically targeted in mainstream workforce policy. However, they do make up higher proportions of the remote population.

**Figure 2 – The population distribution of Australia in 2001 [38]**

The following map shows the population density for Australia in 2001.



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<sup>5</sup> For example there are item numbers for Aboriginal and Torres Strait Islander annual health checks, annual checks for people with disabilities, items to encourage the creation of a health plan for people with complex chronic health problems and items for mental health consultations. See the summary from the Osborne Department of General Practice for further details.[37] Osborne Division of General Practice. Enhanced Primary Care - Item Summary 2007. 2007 [cited 2/1/2009]; Available from: <http://www.ogpn.com.au/projects/EPC/downloads/EPCItemNumbersJune2006.pdf>

Two main geographical definitions are used – the Rural, Remote and Metropolitan Area (RRMA) classification which comprises 7 categories according to settlement population and, for more remote areas, the straight-line distance to a centre of more than 10,000 people[39]. This measure is used for regulatory policies concerning International Medical Graduates (IMGs), GP rural trainee training places and required rural rotations. [40] RRMA areas are also used to access training-related debt repayment for trainees[40] and is used to provide some incentives for qualified GPs.[41] The second is the Accessibility/Remoteness Index of Australia (AIRA)[42] and subsets of this such as the “General Practice ARIA plus”. These use a combination of township population and, for smaller centres average road distances from larger centres or (in the case of GPARIA) medical support services such as other GPs, hospitals and specialists.[43] This measure is used for rural retention payments for GPs.[44] It also determines incentives for GP trainees to work in rural areas that can be up to \$90,000 per annum for the final year or training in the most remote areas.[40] The outstanding health needs of the population, the existing workforce in the area and the natural appeal of the area are not used in either of these definitions.

A newer geographic definition is the ‘Outer Metropolitan’ areas. There is no specific definition of these areas – they are determined and listed by the Australian Government.[45] They do not correspond to a census category or other statistics listed by the Australian Bureau of Statistics[46] so there is no publicly available data about the medical workforce in these areas. They are a touted response to the growing urban sprawl and are largely confined to the outer suburbs of major cities as shown in figure 3. The initial requirement that the area must have a ‘workforce shortage’ has given way to a purely geographical definition. This definition is used for regulation and incentives for GP trainees, regulatory policies for some IMGs and once-off relocation incentives of up to \$40,000 for GPs.[41]

IMG regulatory policy and some bonded medical places use more specific shortage definitions. ‘District of Workforce Shortage’ are areas where there is less access to medical services than the national average determined centrally using ABS population data and Medicare billing data.[47] The exact calculation is not disclosed – rather eligible areas are listed. ‘Area of Need’ is a state or territory definition variably calculated where there is a ‘lack of specific medical practitioners’ despite recruitment efforts over time.[48] These two IMG-specific definitions account for 3.2% of total medical registrations. [24]

The main geographical unit is usually the Statistical Local Area (SLA) which are based on local government boundaries or other meaningful boundaries where possible[49]. There are 1,415 SLAs that cover the whole of Australia; size and population density varies widely.

Australia is the only country studied that embeds workforce policy explicitly within training policy. 42% of GP training places are rurally-bound for the majority of their training (although they can also receive incentive payments during their training.) [40]

The remaining ‘general’ trainees are required to complete 6-months of their training in a rural general practice and 6-months in an outer metropolitan practice. [40]

**Table 3 – Australian workforce definitions and their use in policy**

<b>Name</b>	<b>Definition</b>	<b>Trainees</b>	<b>GPs</b>	<b>IMGs*</b>
<b>RRMA</b> Rural, Remote and Metropolitan Area	Population and straight line distance	Rural pathway training places. Required rotation Debt repayment	Locum and education support	Licensure restriction Training restriction Medicare payments
<b>GPARIA+</b> General Practice Accessibility/ Remoteness Index of Australia	Population and road distance from services	Rural incentives	Rural Retention payments	N/A
<b>Outer Metro</b>	Published by government.	Required rotation 6 mths Small incentive	Relocation incentive payment	Limited Licensure facilitation.
<b>DWS</b> District of Workforce Shortage	Medicare and population data	Bonded medical student places	N/A	Licensure restriction
<b>AON</b> Area of Need	Variable – state based. ‘Hard to recruit’	N/A	N/A	Licensure facilitation.

\* Note that IMGs are able to access the same incentives as trainees or GPs as Australian trained doctors – this table highlights the use in license restriction.

Figures 3 – 6 explore the outer metropolitan definition for the city of Melbourne in map format. Figure 3 shows the areas defined as ‘Outer Metropolitan’ (and therefore qualifying for obligatory trainee postings and relocation incentives.) Figure 4 demonstrates the percentage of low-income households. Clearly isolated ‘Outer Metropolitan’ areas accommodate many low-income families but overall the inner city holds a greater concentration of poor households. Figure 5 shows the ratio of GPs to population and demonstrates larger list sizes in the west and very high numbers of GPs per population in the east. Despite this Figure 6 highlights that the GPs in the western areas are providing more services per resident, possibly because of greater health needs in these areas. Weighing all this information the ‘more doctors for outer metropolitan’ areas policy seems poorly targeted for Melbourne. GPs can access up to \$40,000 bonus to work in the outer west with poor populations, high workloads and doctor shortage or to work in the outer east with wealthier populations, low workloads and an apparent doctor surplus.

**Figure 3 - The Outer Metropolitan areas of Melbourne (green) [50]**

**Melbourne outer metro areas**

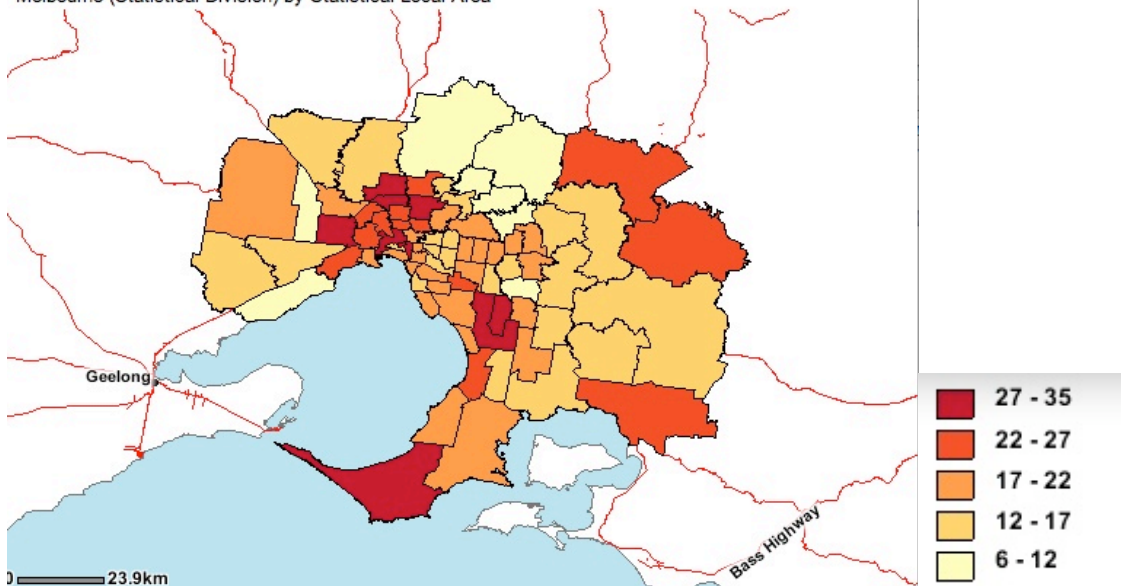
Relocation Incentive Grant and Outer Metro  
Other Medical Practitioners programs



**Figure 4 – Percentage of Low income Households in Melbourne area [51]**

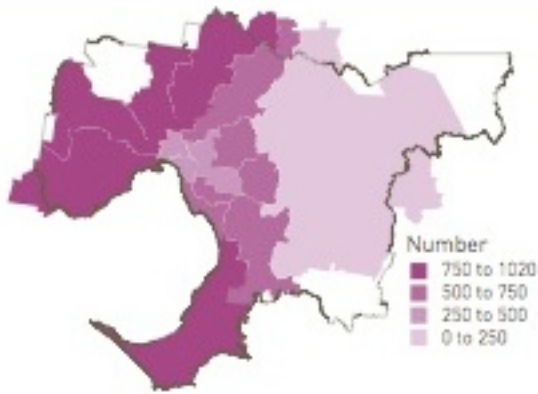
**Low Income Households**

Households with gross weekly income of less than 500 dollars  
As a percentage of all households  
Based on Place of Usual Residence, 2006  
Melbourne (Statistical Division) by Statistical Local Area



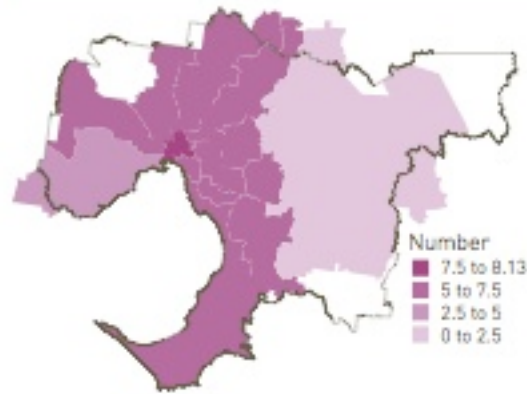
**Figure 5 – Residents per GP [52]**

**4 Number of residents per GP**  
General Practice divisions, Melbourne, 2003



**Figure 6 – GP services per resident [52]**

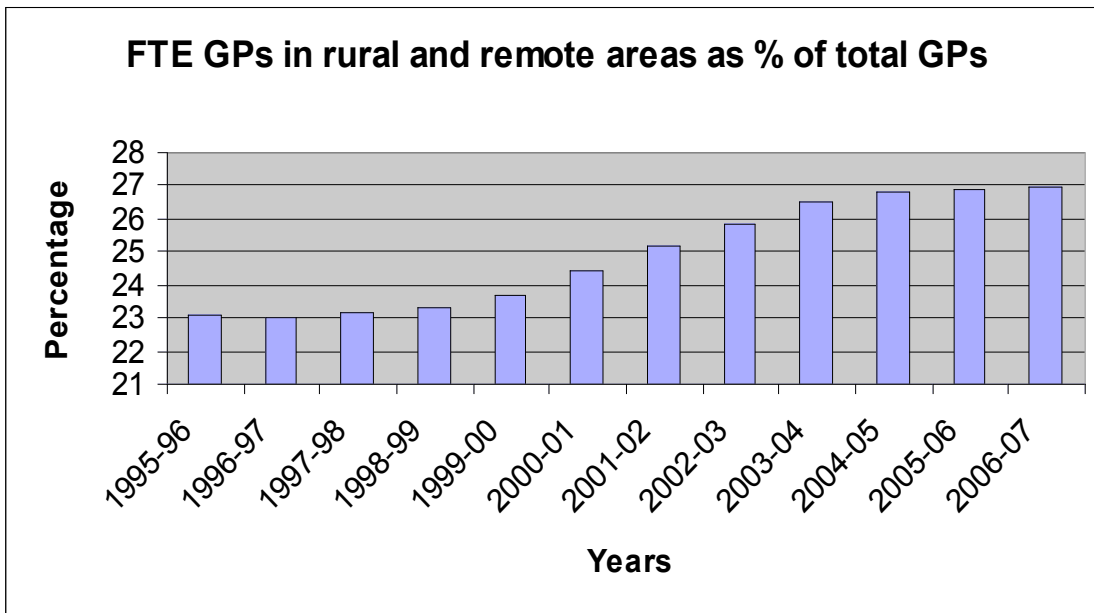
**2 GP services provided per resident**  
General Practice divisions, Melbourne, 2003



Australia has multiple policies (both regulatory and incentive) to boost the rural and remote general practice workforce. These are explored in further detail in section five of this report. Figure 7 graphs the proportion of full-time-equivalent GPs in rural and remote areas over time. For reference approximately 31% of the total Australian population lives in rural and remote areas compared to 27% of the GPs. The graph demonstrates a clear rise over the past 10 years although it unclear which policies have been the drivers of this.

**Figure 7 - Rural and Remote GPs as a percentage of total GPs (by full time equivalents) in Australia over the past decade.**

Data obtained from Australian Bureau of Statistics[53]



***Key Points – Australia***

- \* Primarily geographical approach to shortage definitions
- \* Several different national definitions used
- \* Generous incentives for increasingly remote areas of work
- \* Workforce priorities used explicitly in trainee regulation
- \* Minimal data to support 'outer metropolitan' recruitment policies
- \* Increase in FTE GPs in rural and remote areas over past 10 years

## **Canada**

There is no national definition of workforce shortage areas and no national redistributive policies in Canada. The provincial and territorial governments are responsible for health and workforce incentives and the definitions and programs vary widely across the country.

Many provinces do not specifically define target areas and several more provide lists or maps presumably based on provider numbers and other data or political imperatives rather than specific listed criteria. The provinces and territories that provide sufficient publicly available details about their approach are listed in table 4.

Ontario has a complex definition that involves physician to population ratios, areas with recruitment difficulties and discretionary factors. Communities self-nominate and are considered for inclusion in an annual list. In designated areas trainees can access scholarships, FPs can access practice support and relocation incentives and IMGs may have their visas facilitated. [54]

British Columbia has a unique approach to both the definition and its use in policy. Similar to the Australian GPARIA their definition uses a combination of the distance to medical backup (in the form of other FPs and specialists), the latitude (favouring more northern areas) and the size of the community. These are then published as lists. FPs in these areas can access relocation incentive grants and educational support. More interestingly FPs in these areas can choose blended payment systems in small communities with an insufficient list-size to sustain a purely fee-for-service doctor. That is they may elect to receive a base salary supplemented by fee-for-service payments. Doctors in these areas also receive higher payments for equivalent service provision. [55]

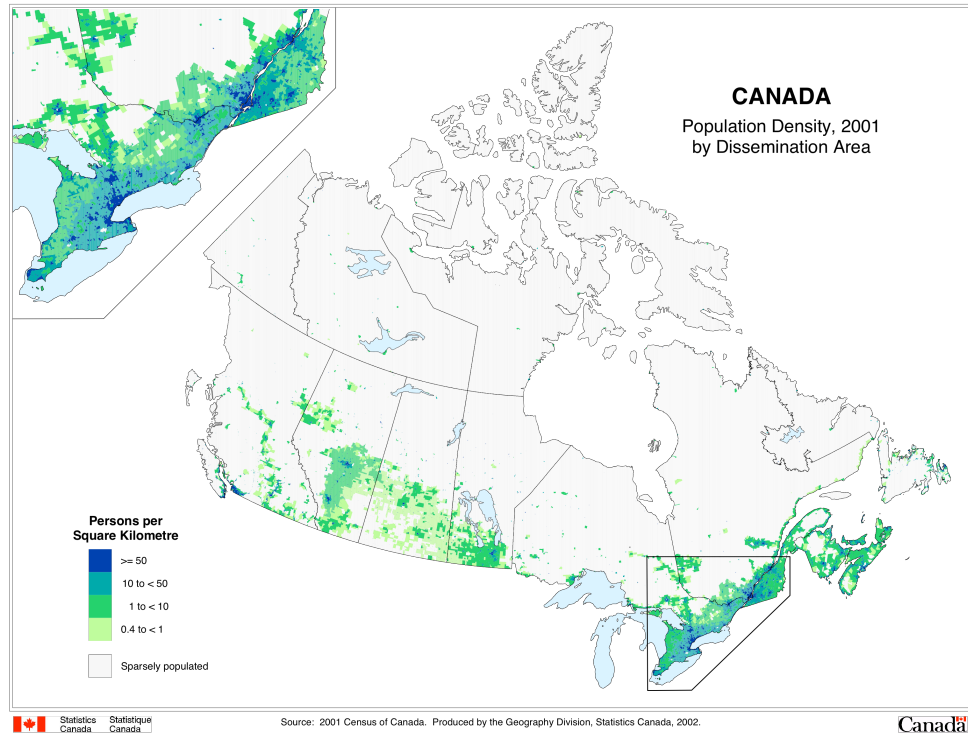
Examining a series of maps demonstrates the origins and effects of some of these policies. Figures 8-10 are Canada-wide. Figure 8 shows the population density, which like Australia exhibits a southeastern concentration. The indigenous peoples (Métis, First Nation and Inuit) are similarly concentrated but with comparatively greater numbers in more remote areas as demonstrated in Figure 9. Figure 10 shows contract with a doctor in the previous year as compared to the national average. Although much data is missing it shows the populations of some provinces such as Quebec are significantly less likely to access services.

**Table 4 – Canadian workforce shortage definitions and their use in policy.**

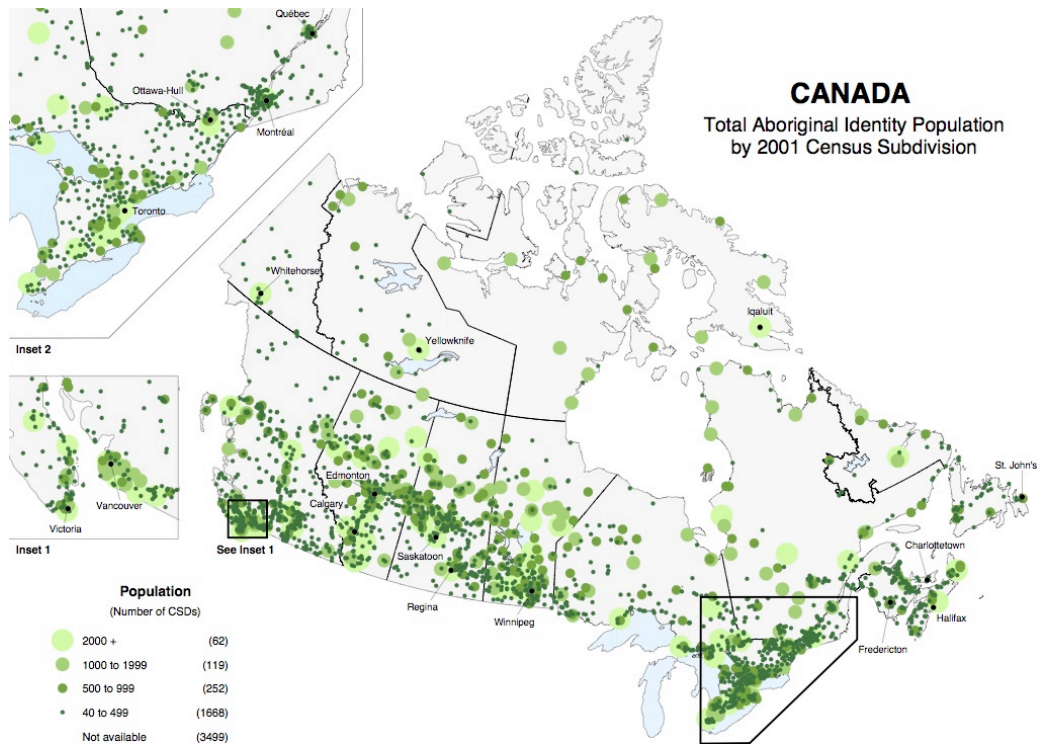
<b>Province</b>	<b>Definition</b>	<b>Trainees</b>	<b>FPs</b>	<b>IMGs</b>
Ontario - Underserviced Area Programs. [54]	Physician ratios, poor recruitment and others. Community self-nominates.	Tuition in exchange for service	Relocation incentives. Practice support	Visa support
Alberta Rural Physician Action Plan [56]	‘Rural’ areas criteria not specifically defined.	Tuition for service	Incentives, support	Visa support
British Columbia – Rural Subsidy Agreements. [55]	Lists based on distance to FPs, specialists, latitude, size of community.	N/A	Grants, blended payments, higher payment, education support	N/A
Saskatchewan [57]	More than 60km from city, northern region or ‘hard to recruit’.	N/A	Relocation incentive grants.	N/A
Nova Scotia [58]	‘Small communities’	N/A	Incentives, debt repayment, relocation	N/A
North West Territories	‘Northern’ areas	N/A	‘Northern allowance’ in pay contract	N/A



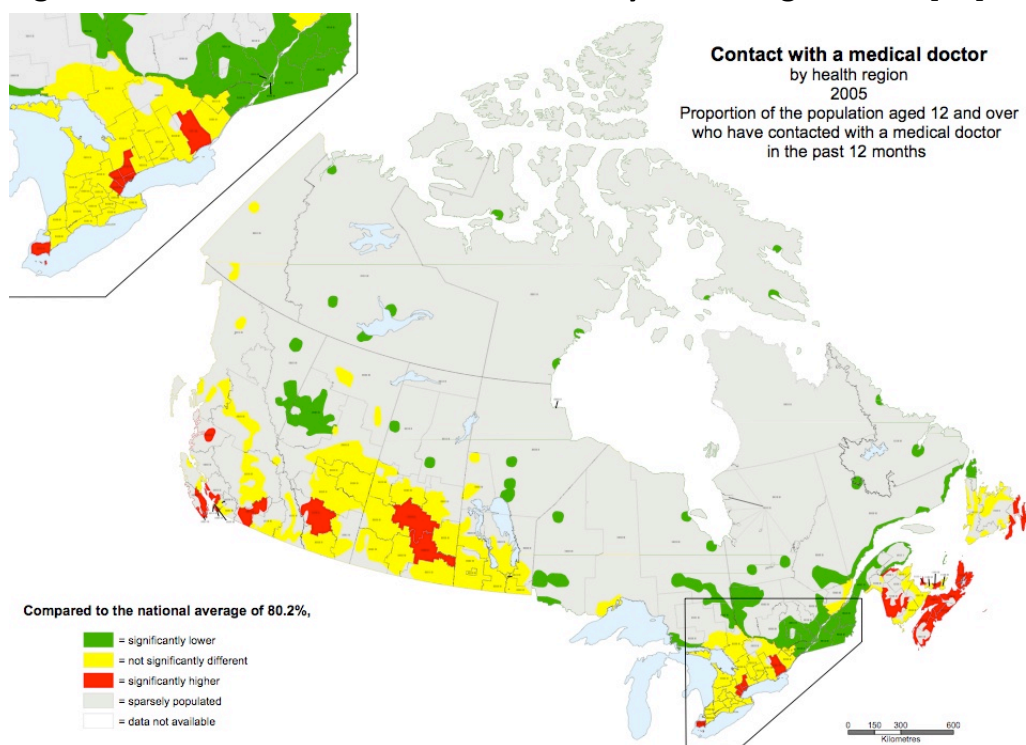
**Figure 8 – The population Density Map of Canada 2001[59]**



**Figure 9- Total Aboriginal Identity Population Distribution of Canada in 2001[60]**

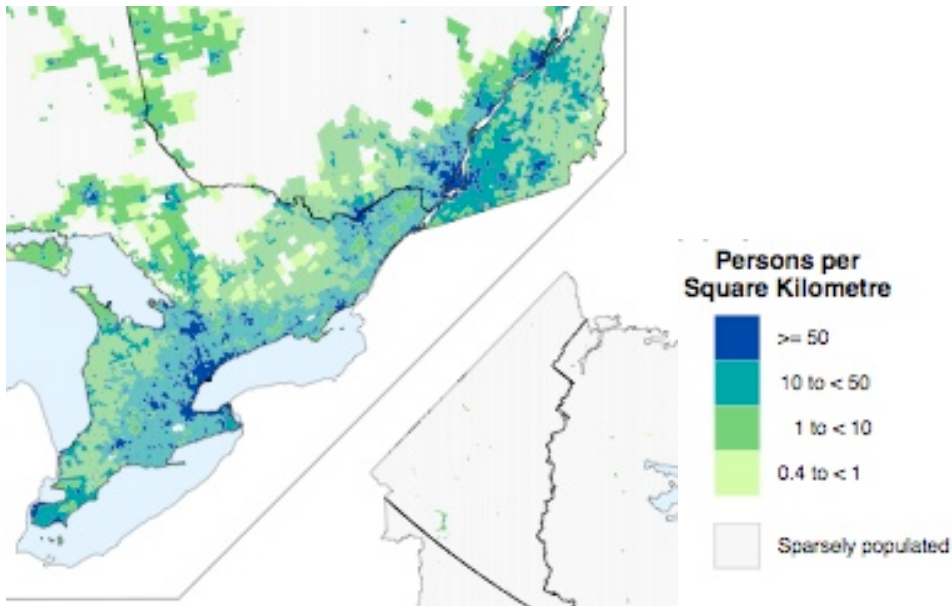


**Figure 10 - Contact with a medical doctor by health region 2005 [61]**

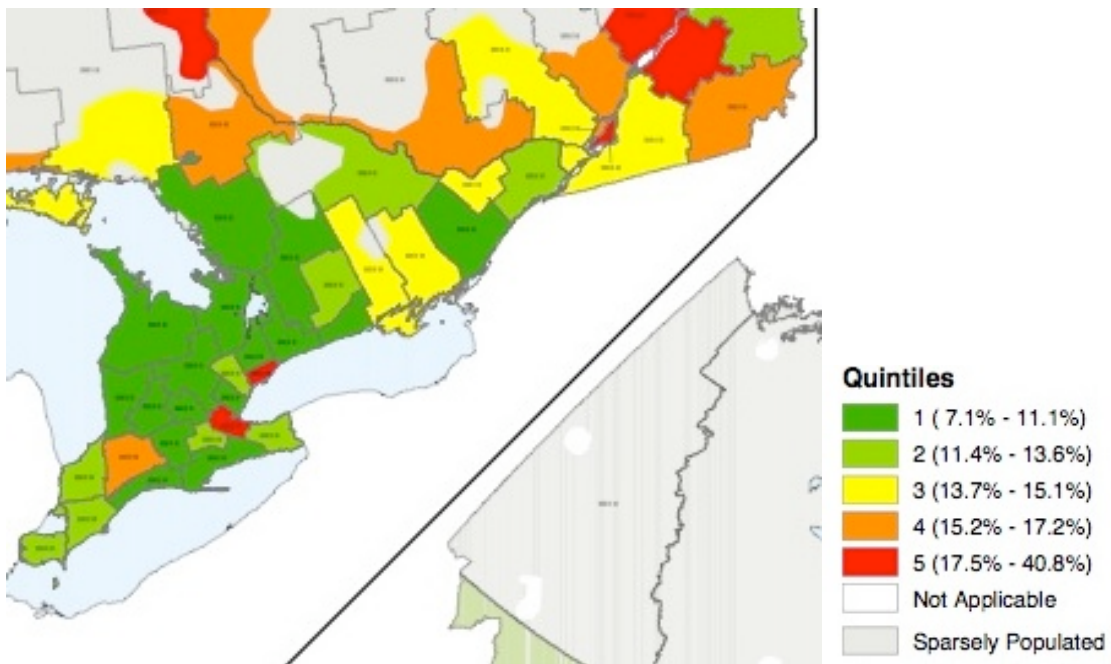


Figures 11 to 13 focus down on just the southeast provinces of Canada to allow appreciation of the finer detail that can't readily be appreciated when looking at the whole country. Figure 11 shows a relatively concentrated population density. Figure 12 demonstrates a considerable income difference across the areas with far higher proportions of low-income households in Quebec compared to the more southern British Columbia. Figure 13 is the most striking and demonstrates a clear difference in the likelihood of being able to nominate a regular family physician. In lower income Quebec this is significantly lower than the general population, whereas higher-income British Columbians are significantly more likely to have a regular source of care. This demonstrates two important access differences that are not reflected in Canadian workforce policies. Firstly, urban areas also have access problems and these appear to be worse in low-income areas. Secondly, there are stark differences between provinces (figure 13 neatly outlines the inter-province border) that cannot be addressed by a purely provincial approach to health service provision. The growing emphasis on national planning is therefore a welcome development.

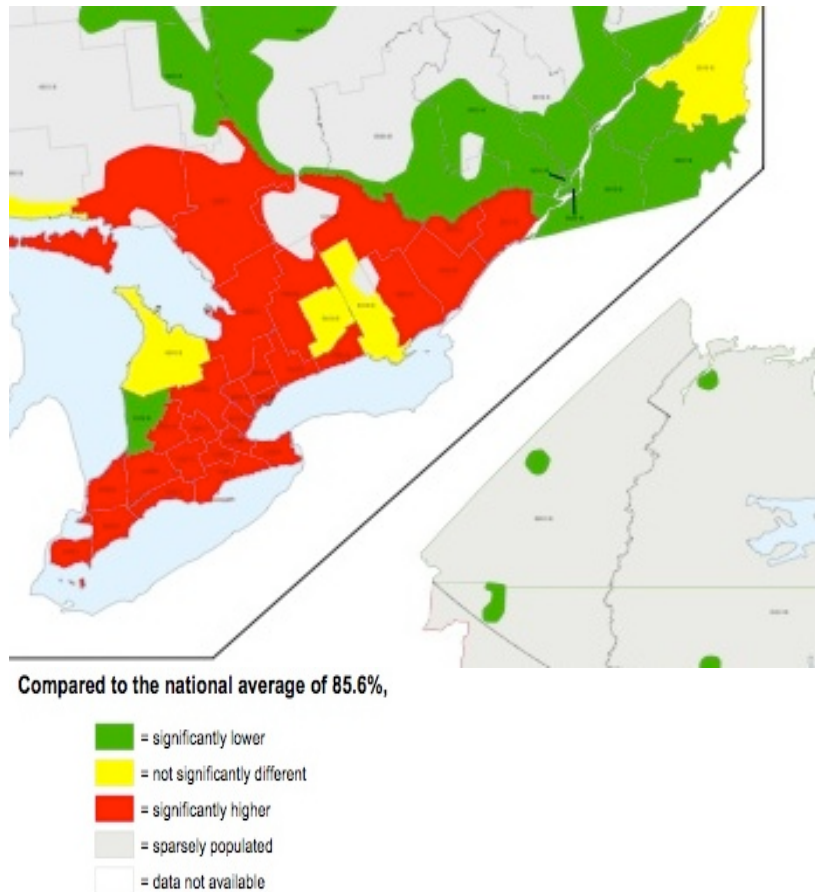
**Figure 11 – The population density of southeast Canada [59]**



**Figure 12 – Percentage of low income families in southeast Canada[61]**



**Figure 13 – southeast Canada - able to nominate a regular family physician compared to the national average [61]**



**Key Points – Canada**

- \* Provincial and varied approach to shortage definitions
- \* Primarily geographical – progressively remote incentives
- \* Innovative blended payment schemes for remote areas
- \* Provincial approach highlights interprovincial workforce differences
- \* Socioeconomic barriers to access largely ignored in workforce policies

## ***New Zealand***

New Zealand does not explicitly define areas of general practice workforce shortage and it has minimal separate workforce incentive policies. However, New Zealand has recently redesigned its mainstream primary health care with an explicit focus on health inequalities as a guiding principle.[62] This rearrangement has embedded workforce and access priorities within the core funding arrangements. This has involved two fundamental shifts in the way primary care is funded. The first provided higher funding for GPs and other providers who grouped into Primary Health Organisations (PHOs). The second involved a shift toward a blended payment system with adjusted capitation payments. In exchange providers agreed to reduce fee-for-service co-payments particularly for low socioeconomic groups.

The capitation funding is adjusted for age and gender and 5% of the highest service users attract an additional payment to partially compensate providers.[63] Examining how the capitation payments are calculated reveals the different workforce definitions and targets used in New Zealand.

Incentives to work in rural areas are provided in two ways. The “Reasonable Roster Funding” is a direct incentive to GPs for on-call demands in excess of 1 in 3 nights for practices too isolated to share on call. In contrast, the ‘Rural Workforce Retention Funding’ is used by the PHOs in different ways to provide incentives to their GPs for rural work. This funding is graduated in four bands for GPs beyond a threshold on the Rural Ranking Scale (RRS).[63] The RRS is determined by travel times to hospital, a GP colleague and practice boundaries plus the degree of on-call, peripheral clinic duties and an undisclosed ‘discretionary’ score.[63]

Incentives to work with lower-socioeconomic groups are provided using the deprivation index recalculated each census since 1991. The index incorporates nine weighted census variables (some adjusted for household composition) as listed in table 4.

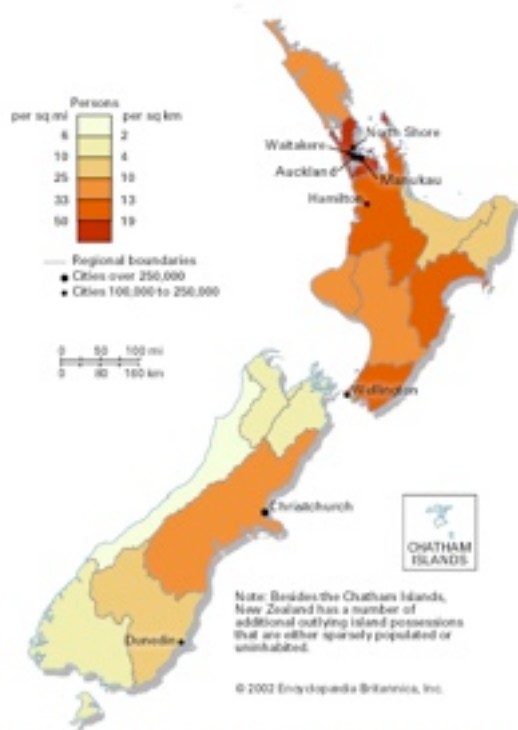
The geographical unit is meshblocks (median 90 people) or combinations of meshblocks such that the unit has more than 100 inhabitants. [64] The index is then converted into deciles. Maori or Pacific Islander ethnicity is considered an independent risk factor. In the initial phase Primary Health Organisations with more than 50% of their patients from Maori/Pacific Islander origin or the two most deprived deciles received greater capitation funding. [64] The intention was to bring payments for other PHOs in line with the deprived areas over time, although the exact time frame is unclear. This would obviously remove any financial incentive to work in deprived areas and potentially undo any interim gains. New Zealand also assigns payment for quality indicators – at this stage primarily risk factor and disease data collection and improvements on these. Quality payments tend to be lower in disadvantaged areas because of the numerous barriers to best medical care, poorer health status and lower health literacy.

Workforce definitions are not used for training or IMG licensure restrictions. IMGs do have to work with appropriate supervision for a period after arrival (usually at least 1-2 years) but this is ostensibly more of a quality control measure rather than a workforce measure.[65]

New Zealand does not have incentives or requirements for trainees although during the 2008 election campaign the new Prime Minister John Keys promised a program of debt repayment for return of service in ‘hard-to-staff’ areas. [66]

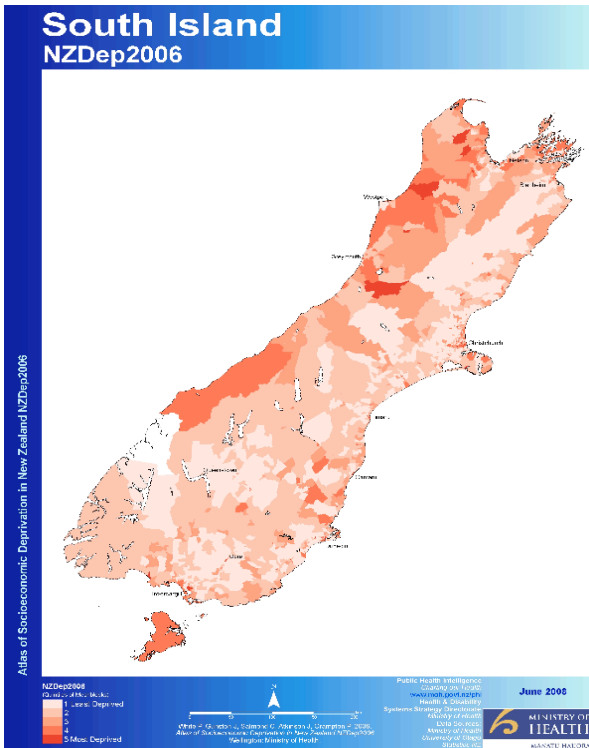
Figures 14 to 16 are relevant to understanding New Zealand’s workforce priorities. Figure 14 is a crude population density of New Zealand demonstrating that much of the population lives in the North Island and that areas such as the west coast of the South Island are sparsely populated. Figure 15 maps the 2006 deprivation index for the South Island. The darker shading represents more deprived areas hence the west coast is clearly the more deprived area of the South Island. Figure 16 is a crude breakdown of the GPs per population. This map is not colour coded, but the west coast of the South Island has the lowest GP ratios with 55.3 compared to an average of 75 GPs per 100,000. These maps explain New Zealand’s dual priorities of low-income areas and rural regions.

**Figure 14 Population Density of New Zealand [67]**



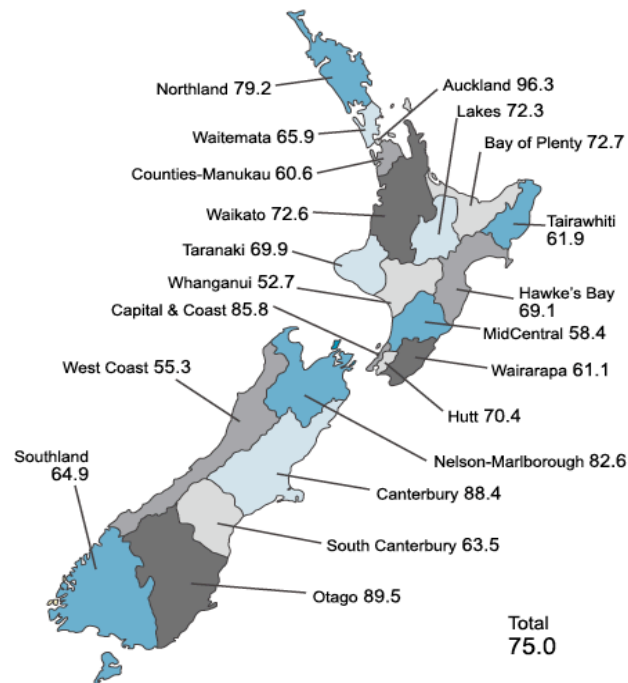
**Population density of New Zealand.**  
*Encyclopædia Britannica, Inc.*

**Figure 15 New Zealand South Island Deprivation Index 2006 [68]**



**Figure 16 - GPs per 100,000 population in 2003 by District Health Board Region. [69]**

District Health Board regions of active general practitioners, per 100,000 population, 2003.  
Source: New Zealand Medical Council. Rates have been calculated using the estimated resident population as at 30 June 2003.



For further information or details please e-mail [workforce@moh.govt.nz](mailto:workforce@moh.govt.nz).

***Key Points – New Zealand***

- \* No explicit definitions of workforce shortage
- \* Twin priorities of rurality and socioeconomic disadvantage reflected in overall payment scheme and incentives
- \* Intention to remove socioeconomic incentive by bringing all payment in line
- \* Unclear if additional payment merely cost offsets or true incentive
- \* Decade of rapid change in systems – difficult to assess effect



### ***The United Kingdom***

The UK also has no national definition of workforce shortage areas and limited direct policy to address maldistribution of GPs. Historically there was far tighter regulation of the GP workforce – for example in England the Medical Practices Committee determined ‘fully’ and ‘under’ served areas and refused new NHS GP contracts in ‘fully doctored’ areas. After devolving to a more regionalized system this function is far less strictly managed by the Primary Care Trusts (PCTs.)

The UK also attempts to embed access and workforce priorities within the overall funding structure. Payment of GPs in the UK is complex and a full discussion is beyond the scope of this report. In brief, government funding is allocated to Primary Care Trusts (PCTs) who provide or purchase health services. PCTs enter agreements with general practices and with individual GPs to provide these services. Hence there are three levels of funding – the PCT, the practice and the GP. GP work agreements may be either contract (small business model with greater responsibilities) or salaried (employee style) GPs. GPs may elect to be either 'general medical service' providers with a set of nationally defined services, 'primary medical services' providers with more individual negotiation and specialization or 'alternative medical' providers similar to a locum basis. [70]

The Index of Multiple Deprivation is used in resource allocation for both PCTs and practices. The Index formula varies in the different countries of the UK – the English Index is listed in table 4. The geographical unit is the enumeration district which have average populations of 450 people.[71]

Practice payment from the PCTs is divided into several components. The global sum covers staff, locum and essential service provision and is adjusted by the Carr-Hill Formula. This weights for patient need (patient population, basic demographics, morbidity, mortality and nursing home status) and geographic cost (unavoidable rurality, cost of living adjustments, Market Forces Factor.) The Market Forces Factor includes an additional 7.5% of average salary for GPs in the most deprived PCT deciles.[72] There is debate about whether the higher pay for low socioeconomic areas merely offsets some of the increased costs of caring for these populations rather than providing a true incentive. Furthermore, the British Medical Association successfully negotiated a Minimum Practice Income Guarantee that has forced PCTs to abide by historical funding rates. This has prevented the introduction of higher payments in deprived areas as this measure was contingent on pay reduction in affluent areas.[9]

The UK also has a well-developed and well remunerated quality and outcomes framework[9] and there are separate after hours payments.

An ‘administrative’ category can be used creatively by the practice to provide incentives to GPs [73] and replaces a number of different previous workforce incentives. These historical incentives included seniority payments aimed at delaying retirement, re-entry payments to attract back GPs on leave, flexibility payments to encourage part-timers and lump incentives (the ‘Golden Hello’) to attract GPs to areas of workforce shortage. [73]

The UK has developed some separate, more direct workforce policies as outlined in the next three paragraphs. The 100 practices policy announced in 2007 provides funding to establish 100 new practices in 38 PCT areas that correlate to the 25% most ‘under-doctored’ areas in England [74](calculation method is not disclosed.)

The UK Primary Care Development Scheme provides 13 million pounds per annum to be used at local discretion for areas that meet defined criteria. The criteria are highly selective for workforce shortage and include GPs per 100,000 (weighted with Carr Hill formula) historically difficult to recruit areas according to the annual National Vacancy Survey, the proportion of GPs over 55 years and other local factors as negotiated. [75]

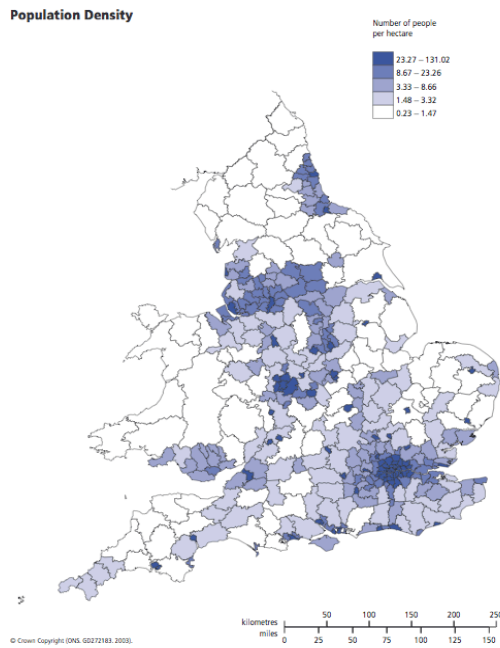
The Local Improvement Finance Trusts are temporary companies to build and refurbish primary care premises in 42 “deprived inner city areas” which are listed but no specific criteria are provided.[76] This policy was introduced on the basis that inadequate infrastructure is a critical deterrent to working in deprived areas.

Workforce concepts and definitions are not used explicitly in UK training policy or for the regulation of licensure of IMGs. However, immigration policy for IMGs is very restrictive for primary care such that non-European union IMGs are essentially prohibited from entering general practice.

The UK has two workforce measures that are not readily available in the other countries. The first is the list-size or the number of patients enrolled for care with each GP, often reported at the practice level. There are problems with this measure as list-size inflation is not unheard of in a capitation payment system – estimated at 7.1% in the UK.[77] However, it does offer potential as a clear component of workload (and therefore workforce shortage.) The other measure is the ‘vacancy rates’. These are derived from a yearly survey of a random sample of practices regarding any unfilled vacancies for GPs in the last 3 months. This provides a neat measure of shortage although again this is not absolute as practices may have different thresholds for recruitment.

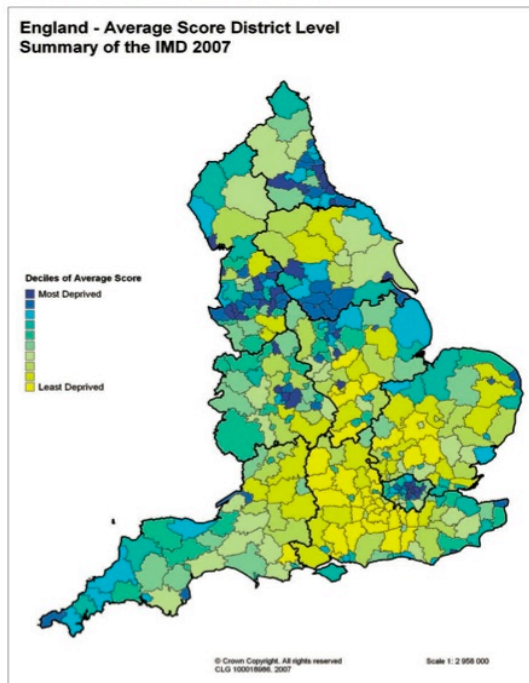
Maps of England shown in figure 17 to 19 highlight how inner urban areas, socio-economically deprived areas and areas of workforce shortage coalesce. Figure 17 is the population density of England logically showing higher density in the urban areas. Figure 18 is the latest index of multiple deprivation revealing the wealth of Southern England and the strong correlation between urban areas and the most deprived neighbourhoods shaded in dark blue. Figure 19 is the reported vacancy rates for GP practices in England and Wales. The inset is London, which has high vacancy rates in most sectors, and the other dark areas map fairly closely to the deprived inner urban areas.

**Figure 17 Population Density of England 2001 [78]**

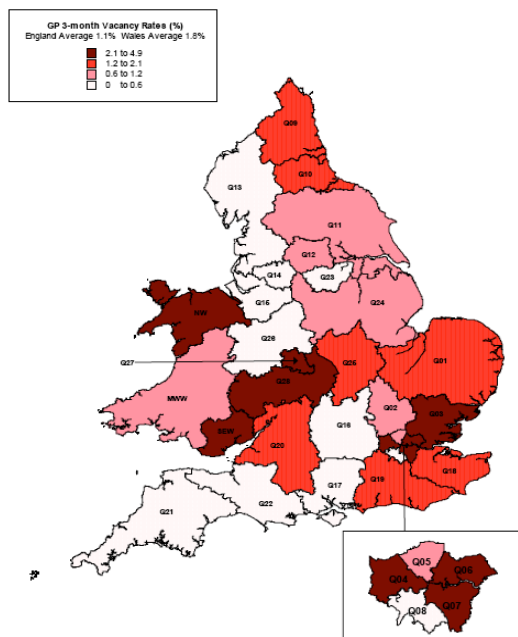


**Figure 18 Map of the Index of Multiple Deprivation 2007 [79]**

Average Score and Average Rank



**Figure 19 - Estimated GP 3-month Vacancy Rates by English Strategic Health Authority and Welsh Government Office Region 2006 [80]**



**Table 5 Comparison of New Zealand and UK capitation payments**

Factor	NZ[68]	England [81]
<b>Deprivation Index</b>	Income, crowding, education, unemployment, sole parenting and ownership of car and home [64]	38 indicators spread across several domains to capture deprivation in; Income, employment, health, education, housing, living environment and crime [81]
<b>Use in payment</b>	PHOs – passed on to GPs	PCTs and practice pay
<b>Ethnicity</b>	Considered as separate risk factor – not part of index	Only refugee/asylum seeker included specifically.
<b>Age and gender adjustment</b>	Yes	Yes
<b>Quality Indicators</b>	Primarily data collection	Data collection and ‘guideline’ services and preventative health penetration
<b>Rural payment</b>	Travel times to hospital, GP colleague, practice boundaries, frequency of on-call, peripheral clinic duties & ‘discretionary’ score	Costs of unavoidable rurality (e.g. small practice size) are included

***Key Points – United Kingdom***

- \* No explicit definitions of workforce shortage
- \* Twin priorities of rurality and socioeconomic disadvantage reflected in overall payment scheme and incentives
- \* Intended incentives undermined by negotiated historical payments
- \* Small-scale explicit policies target slums and underserved areas with creation of GP practices and infrastructure development
- \* Potentially powerful workforce measures such as list-size and vacancy rate poorly used in policy

### ***United States of America***

The USA target populations are inner urban areas, rural areas and specific disadvantaged populations. The vector is similar to the UK- drawing doctors out of the suburbs and into inner urban slums and rural areas. Like Australia the USA geographical designations are based on the location of service rather than the patient address as is used in the UK and NZ. The definitions used in the USA are outlined below and summarised in table 5.

A Health Professional Shortage Area (HPSA) is a rational service area with a population to FTE primary care physician ratio of at least 3,500:1 (or 3,000:1 if ‘high needs’ or demonstrable poor access to surrounding areas.) There are also HPSAs for population groups and not-for-profit or public services that use similar definitions. [82] HPSAs are designated via a complex application process rather than automatically except for Native America tribal areas. Debt repayment schemes and service scholarships such as the National Health Service Corps are limited to HPSAs designation. [83] There is a 10% quarterly bonus payment for Medicare services rendered in HPSA areas but this does not apply to population or not-for-profit HPSAs [84]

The Physician Scarcity Areas (PSA) are now historic but involved a bonus payment of 5% of Medicare payments for services rendered in eligible areas. PSAs applied to areas with the lowest 20% of ratios of primary care physician to Medicare beneficiaries. [84] They are included here for consideration as they were a very simple concept and calculation but a relatively direct measure of workforce and access difficulty.

Medically Underserved Areas (MUA) and Medical Underserved Populations operate in a similar way to HPSAs – either based on a geographical area or a specific disadvantaged population within a given area. These are designated according to a calculated index from 0 (most underserved) to 100 (best serviced). 62 is the cutoff for qualifying as a MUA or MUP and their primary function is to determine eligibility for federally funded Community Health Centers. [85] The index involves four weighted variables; the ratio of primary care physicians to population, the infant mortality rate, the percentage of population with incomes below the poverty level and the percentage of population over 65 years. Eligibility does not directly translate to the establishment of health centers – merely that centers may apply for funding,

States also designate areas of workforce shortage for state-based programs and incentives but these vary widely and are not specifically addressed in this report.<sup>6</sup>

There are no specific direct rural incentives available for Family physicians, although many rural areas qualify as HPSAs or MUAs. There are higher hospital payment schemes

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<sup>6</sup> For a thorough comparison of health workforce policy in 10 states please see the 2001 report by Henderson “The Health Workforce in Ten States: Education, Practice and Policy” available at <http://www.ncsl.org/programs/health/forum/workforceprofiles/workforceprofiles.htm>

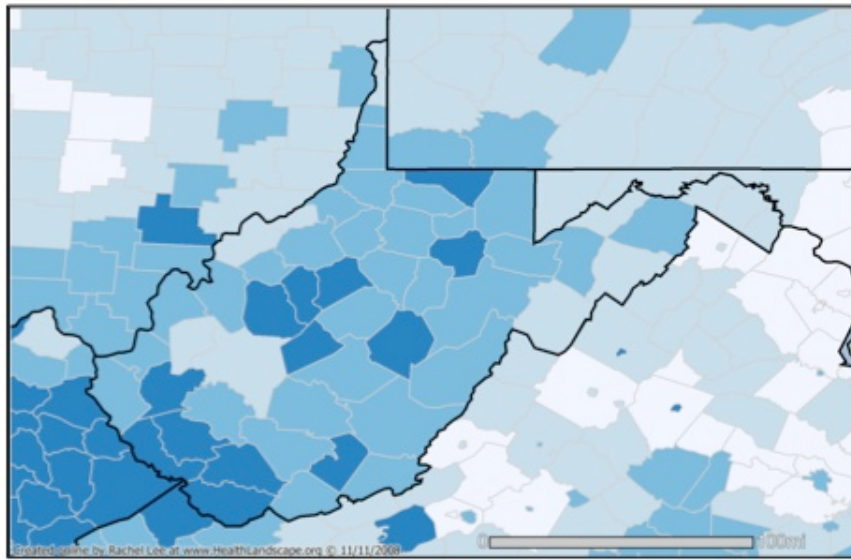
available in rural areas applicable to the inpatient family physician work. However, clinic work is remunerated at lower rates in rural areas due to an adjustment in the Medicare payment formula known as GPCI. GPCI or Geographic Practice Cost Indices is an attempt to adjust for the differential costs of practicing in different areas. Although there is currently an agreed 'floor' urban FPs are usually paid more to compensate for higher overheads and staffing costs. [86] This may act as a potential disincentive to rural work.

**Table 5 Definitions of shortage areas in the USA [85]**

<b>Name</b>	<b>Definition</b>	<b>Trainees</b>	<b>FPs</b>	<b>IMGs</b>
<b>HPSA (geographic, population or facility)</b>	Primary care physician ratio 3,500:1 or 3,000:1 high needs	Debt repayment Scholarships with required service	10% Bonus payment of Medicare (geographic only)	Visa waiver programs
<b>(PSA Historic)</b>	(20% worst Physician to Medicare patient ratios)	N/A	(5% Bonus payment)	N/A
<b>MUA (geographic or population)</b>	Physician ratio, infant mortality, % poverty, % >65yrs	N/A	N/A	Visa waiver programs

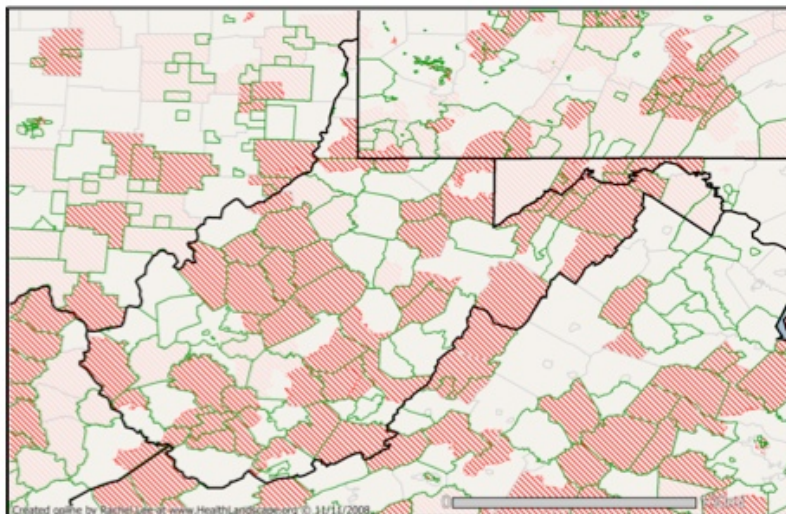
Figures 20-23 demonstrate the differences between the USA definitions using the example of the state of West Virginia. Figure 20 shows the percentage of the population living below the poverty level; in dark blue areas this is over 22%. In figure 21 it is obvious that most of the state qualifies as an MUA and the HPSA areas correlate reasonably with the low-income areas. In contrast, figure 22 shows higher physician to population ratios along the South East border and in other counties with less poverty. Figure 23 is a composite map and again highlights the areas with high physician concentrations are away from the designated areas of workforce shortage.

**Figure 20 – West Virginia Percentage of Population living below the 100% poverty level[87]**



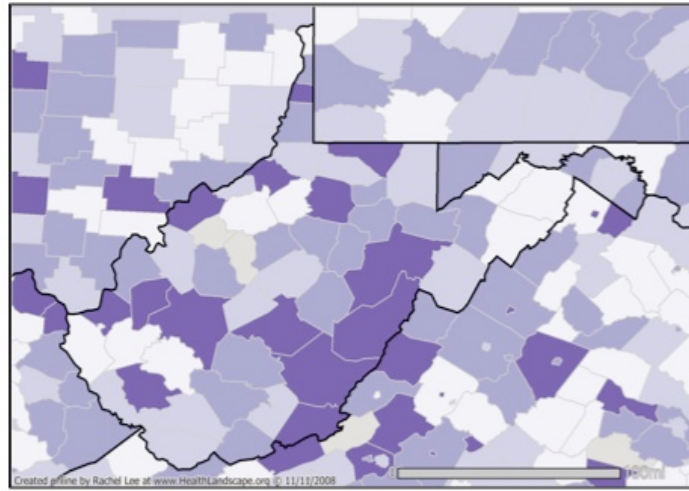
Legend:  
Poverty & Income -- % Pop < 100% of Poverty  
0—7.5  
7.5—15  
15—22.5  
22.5—40

**Figure 21 – West Virginia – HPSA designations in red hatching and MUA areas outlined in green.[87]**



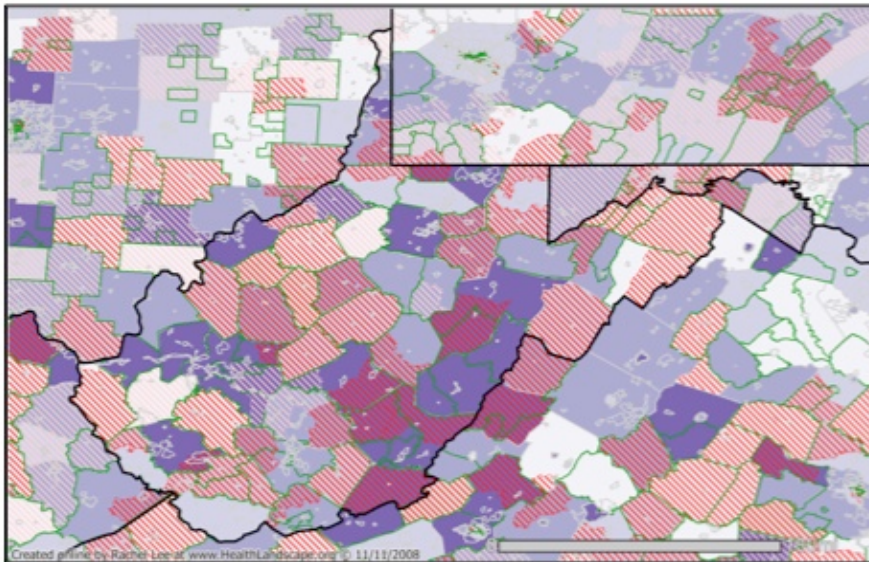


**Figure 22 – West Virginia Primary care physicians in 2007 per 10,000 population [87]**



Legend:  
Physician Distribution -- 2007 Physician Specialty Distribution (normalized by population) (per 10,000 persons)  
□ 0.28—2.41  
□ 2.41—3.43  
□ 3.43—4.76  
□ 4.76—32.27

**Figure 23 – West Virginia Primary care physicians per 10,000 population compared to the MUA and HPSA designated areas. [87]**



Legend:  
Physician Distribution -- 2007 Physician Specialty Distribution (normalized by population) (per 10,000 persons)  
□ 0.28—2.41  
□ 2.41—3.43  
□ 3.43—4.76  
□ 4.76—32.27

***Key Points – United States of America***

- \* Explicit, national definitions of workforce shortage anchored in data
- \* Some shortage measures adjust for socioeconomic factors using readily available data
- \* Despite simple, readily implemented definitions rely on communities to apply and prove status
- \* Passive approach to workforce planning
- \* Minimal incentives to work in shortage areas

## Section Four

### ***Primary Health Care Production Pathway interventions***

The World Health Organization 2008 report[2] and other publications stress the importance of the primary health care sector. However, the OECD reports that GPs numbers increased by 20% between 1990 and 2005 compared to a 50% growth in specialists over the same period. [88] There appears to be a widespread reduction in interest in primary care from medical students and junior doctors. [89] [90, 91] This leads to the second couplet of research questions for this report –

#### **Research Questions – Second Section**

\*How are the study countries attempting to encourage doctors to enter careers in primary care?

\*How do they attempt to redistribute the emerging and existing primary care workforce into areas of need?

Figure 25 (on the following page) provides an outline of the general practice or family physician production pathway and demonstrates the potential intervention points. Each policy lever has been used by at least one of the study countries and many of them are common to several of the countries.

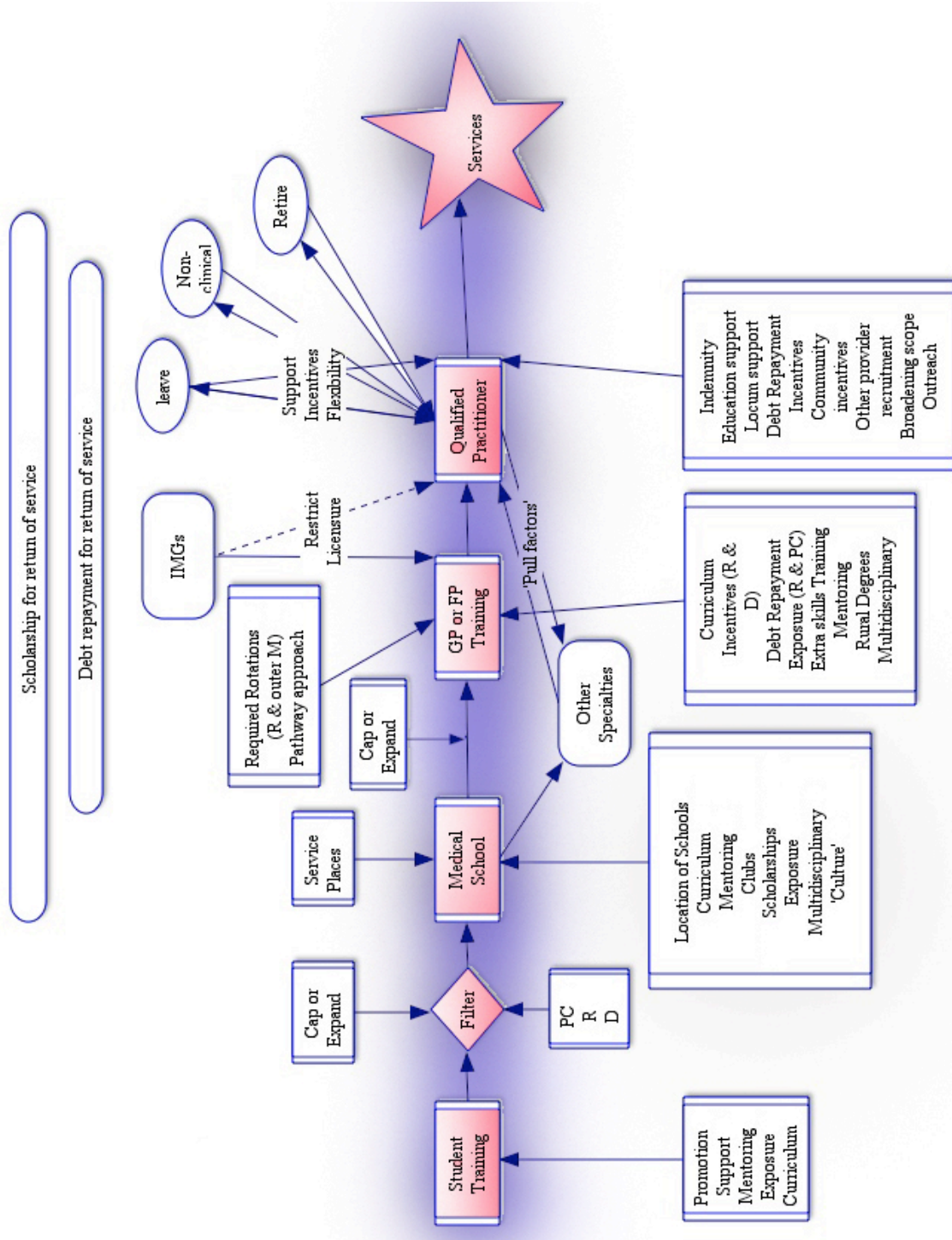
This diagram covers the breadth of options schematically. Details of these policy approaches, categorized chronologically along the production pathway can be found in the tables in appendix B, C, D and E. These detail the policy approaches prior to entry to medicine, during medical school, during general practice training and qualified GPs. The key findings are discussed in this section.

The striking features of Appendix B are that all of the countries have similar policies to attract disadvantaged, rural and indigenous students into medicine. Many of these are focused in high school, although some extend to primary school. Most of them use selection criteria designed to select for rural or other students. **Australia alone offers additional reserved places for students bonded to work in rural areas.**

Appendix C outlines the interventions during medical training. Interestingly, NZ and the UK have no debt relief or scholarship for return-of-service programs. Several countries have tried opening new medical schools in rural areas or increasing student exposure to areas of workforce priority.

Appendix D presents the interventions during postgraduate training. Australia, New Zealand and the UK are successfully rotating junior doctors through rural general practice posts. Limiting specialist training posts is an obvious and simple intervention used by Australia, the UK and Canada while New Zealand and Australia have increased the number of GP training positions. As previously discussed, Australia is unique in offering entirely rural training positions, requiring rotation to ‘areas of shortage’ and offering incentives during training.

Figure 25 – The General Practice Production Pathway



Appendix E paints the picture for after training. Similar strategies are used with various incentives or support such as indemnity or education grants. The lump relocation grants or debt relief are also common approaches. None of the countries now actively restrict new provider locations although this was used in the past. Higher payments for services in priority areas is used everywhere but Australia, primarily for disadvantaged populations. Addressing the broader ‘pull factors’ such as the prestige of general practice is a less defined but interesting approach. This is further explored in regards to remuneration later in this report.

### ***Summary of Primary Care Production Pathway***

Each study country employs a variety of policies to attract medical students and junior doctors into primary care and to redistribute students, trainees and GPs into areas of need. The overall approaches are similar across the countries. Unlike the other countries, New Zealand and the United Kingdom do not provide debt forgiveness or scholarship in exchange for agreed service in priority areas. Australia is the only country to strictly regulate the location of practice of trainees. Aside from these key differences lessons for each country are more incremental and minor innovations rather than major differences.

### ***Evidence of effectiveness?***

Despite the intense policy activity in this area there is limited evidence about the effectiveness of the various policy interventions and most reviews call for higher quality research and more evaluation. The majority of studies in this area focus on rural workforce, although some look at deprived areas or general practice as a whole.

The evidence for policies to recruit in rural areas is mixed. A high-quality systematic review in February 2008 found “no reliable evidence to support (training and regulatory) policies that have been introduced to address the urban-rural gap” and little evidence for scholarships or other return-of-service arrangements. 32 studies were included in this section of the review. In the same review 10 poor quality studies did demonstrate that financial incentives were effective. [92] The review was intended to inform developing countries but the majority of the studies were from developed nations.

In contrast, another systematic review from 2002 identified some indirect evidence that the training environment of medical school was critical and called for additional research.[93] On balance these authors, like many others, advocate a multipronged attack.

There is suggestion that multi-faceted programs may be a fruitful approach from a 2008 evaluation of 206 graduates of a Physician Shortage Area Program. This program involves many of the policies options listed – preferential selection, mentoring and increased exposure during the training experience. There was no compulsory service component to this program. The graduates had a ‘Relative Risk’ of 19.1 of working in rural and underserved as family physicians when compared to other graduates from the state. They also had a ‘Relative Risk’ of 4 of working in family medicine. The effect appeared to endure over time.[94]

A 2004 systematic review of ‘return-of-service’ arrangements found 10 quality studies and reports mixed evidence about these programs in the USA. Although overall those who voluntarily worked rurally were more likely to stay, there was evidence that many National Health Service Corps trainees stayed well beyond their service commitment. [95]

Finally, a high quality Australian literature review considers Australian and international studies about general practice career choice. [96]The review identifies variable quality evidence for many factors and points toward concrete policy options to address these. Of particular relevance, this review finds remuneration and the flexibility of both training and working environments essential. It also finds that exposure to general practice during training has powerful effects on students and emerging evidence that rotations in general practice for junior doctors is a successful recruitment strategy.

### ***International Medical Graduates***

International Medical Graduates (IMGs) are an important part of the medical workforce in all of the study countries. IMGs are also of international importance, particularly in regard to ethical concerns about the effect of ‘brain drain’ on the workforce in developing nations.[1] As an integral, controversial part of the workforce they merit particular consideration. IMGs are welcomed into the study countries to fill workforce gaps and all countries regulate where and when they can work to some degree. Australia has the harshest regulatory policies for IMGs. There is a moratorium where IMGs who wish to work privately must do so in a rural area for 10 years. They are eligible for financial and other incentives offered. However, Australia also has the most facilitatory policies – allowing IMGs to work in public hospitals while sitting their equivalence exams, permitting work in areas of workforce shortage without equivalent college training and allowing access to a lower tier Medicare payment scheme for GPs who haven’t completed the training pathway.

**Table 10 – Comparison of IMG workforce in different areas. IMGs as percentage of total FPs/GPs**

	Australia	Canada[10]	NZ[29]	UK	USA[97]
Overall	22.8%[8]	22.6%	38.4%	20.5%	38.7%
Rural	>30% [98]	26.9%	48.8%	N/A	More than USMG
Remote	?N/A	Up to 50%	? N/A	N/A	More than USGM

\* Using the same data 25.7% of all US physicians are IMGs

These crude numbers do not tell the whole story. For example, dividing the NZ local authority areas into those with more than 60 FTE GPs per 100,000 (47 areas with average FTE GPs of 80) and those with less than 60 (16 areas with mean FTE of 49) the IMG rate is fairly equal across both groups; respectively 46% and 49% of the total GPs in these areas. [29] This suggests that IMG GPs are not necessarily filling areas of workforce shortage.

In Canada IMGs are concentrated in the more populated states - 40.9% of Canadian IMGs work in Ontario, 17% BC, 11% Quebec and 7.5% Alberta with only 23.6% scattered amongst the other provinces and territories.[28] This suggests that on the whole the IMGs are not really fulfilling Canada’s remote workforce gaps. Some provinces of Canada have now restricted IMG licensure to specialties of need or area of need for a variable period of time. For example the Quebec program facilitates Restricted Practice Certificate for IMGs to work in “insufficiently served” areas.[99]

The UK claims to have now achieved self-sufficiency in producing sufficient medical graduates to meet workforce needs. [70] It is no longer actively centrally recruiting IMGs and doctors from outside the European Economic Area are only able to fill a training place if there is no suitable local applicant. However, there will be considerable lag time with this decision such that approximately 40% of current trainees obtained their medical degree outside the UK. [70]

In the USA the percentage of IMGs varies widely according to state. From New Jersey and New York where 45% and 42% of all physicians are IMGs to North Carolina and Tennessee 13% and 16% where of all physicians are IMGs. [97] 13.7% of trainees are on J1 or J2 visas and these groups are significantly more likely to work in areas of workforce shortage. [97]

***Pay differentials between general practitioners and specialists***

Although pathway interventions may be effective, major differences between general practice and other specialty income, status and academic rigor may overwhelm the pathway effects.

This report considers only one of these factors – the income differential between GPs and specialists. The data in table 10 is derived from a World Bank-sponsored report and compares the income of specialists and GPs. Although GP income has no doubt increased with access to the Enhanced Primary Care Medicare item numbers, the striking feature for Australian policy makers is how poorly Australian GPs are paid in comparison to their specialist colleagues and how much greater this gap is than in the other study countries. Indeed the ‘architect’ of Medicare in Australia John Deeble has stated that this income differential was not intended and “The gap is far too wide”. [100]

**Table 11- Physician income reported as a ratio of GDP per capita in 2005 [88]**

	Australia	Can	NZ	UK	US Salary*	US (self-employed)
GP or FP	2.1	3.3	4.0	3.8	3.8	4.4
Specialist	5.3	4.9	3.7	4.8	4.8	6.5
GP income as % of specialist	39.6	67.3	108.1	79.2	79.2	67.7

\*In the US general internists and pediatricians are considered primary care and receive similar pay to GPs. Using this grouping income primary care physicians are paid 61.2% of specialist income. For certain specialties primary care income is equivalent to 43%.[101]

The United Kingdom responded to poor general practice morale and recruitment by increasing the flexibility of employment contracts and a one-off increase in GP remuneration. There was a 35% increase in GP incomes in real terms between 2003/4 and 2007/8 compared to a 15% for specialists. [70] Table 12 demonstrates this and compares the salary trend for UK GPs to 4 other countries.

**Table 12 – Average Remuneration of Self Employed GPs between 2001 and 2004 in 5 countries. [70]**

Average Remuneration of Self Employed GPs (OECD data) US \$ exchange rate				
	2001	2002	2003	2004
Canada	80,066	79,876	91,475	101,271
Germany	82,143	88,460	108,639	122,020
Switzerland	117,242	132,211	160,206	180,442
United Kingdom	81,899	91,967	109,453	151,959
United States	135,036	141,923	147,458	150,702

Several GP workforce measures improved over a similar time period- for example, 3-month vacancy rates decreased from 2.4% in 2005 to 0.8% in 2007. [70] Although measured with a slightly longer time frame GP registrar numbers increased by 69.6% between 1997 and 2006 and the ratio of GPs per 100,000 population increased from 54.5 in 1995 to 62.1 in 2006. Perhaps most critically GP training positions were filled – indeed in 2007 approximately 9,000 doctors applied for 3,862 GP training posts. [70] Although this ratio is still far lower than the most popular UK specialty cardiothoracic surgery, which saw 14.8 applicants per position [70], it is still an enviable position from an Australian point of view and indicates that general practice is a valued career option. The UK also pays a higher supplement to GP trainees to ensure they are not economically disadvantaged during training compared to their hospital colleagues. [70]

It is difficult to make definite causal connections between these parameters given the multitude of factors associated with career choice. However, it is not unreasonable to suppose that increased flexibility in contracts and working conditions, combined with a reduction in the gap between GP and specialist incomes has increased trainee interest in general practice as a career pathway and improved GP retention. This clearly presents a viable policy option for Australia and the other countries to improve GP recruitment. Payment and conditions are clearly not the only factor - there is considerable ambiguity in reports about GP morale and it appears that even in 2007 only 52% of UK GPs would recommend general practice to a graduate. [70]



## Summary and Discussion

### Definitions of Workforce Shortage and use in policy

This five-country comparison identifies many contrasts and similarities in the approach to the general practice workforce.

Australia's current general practice workforce priorities are a progressive vector from inner urban through to remote areas. Australia offers the most lucrative incentives, particularly to trainees. Australia also has the most regulated approach – with 10 years of rural service required from IMGs, rurally mandated training places and a year of workforce service requirements from 'general' stream trainees. These intense policy directives for general practice workforce are undermined by loose, imprecise definitions of workforce shortage. Australia has intricate definitions of rurality but does not consider existing workforce, recruitment difficulties, socioeconomic factors or area appeal. This creates considerable inefficiencies and may in fact increase maldistribution of the workforce. For example a trainee compelled to complete a rural term may be faced with identical incentives to work in an attractive coastal town with 10 GPs as a rough inland mining town with 1 GP. (Provided the towns have similar populations and degrees of 'remoteness'.)

Canada's policies highlight the importance of a centralised approach to workforce planning. Local health provision and responsibility results in considerable inter-provincial variation in access to family physician care. However, the localised approach encourages innovation and has provided a unique and promising solution for remote areas – blended payment schemes.

New Zealand and the UK, unlike the other countries, have embedded their workforce priorities in the overall payment structure. They each utilise advanced measurements of socioeconomic disadvantage although it is unclear if they sufficiently incentivize work in these areas. The elegance of a comprehensive approach may be undermined by competing priorities 'canceling each other out' and the reduced visibility of the workforce priorities for GPs. In the UK intensions were undermined by political negotiations and New Zealand plans to equalize funding, thereby dissolving the elaborate incentives to work in deprived areas. New Zealand's Rural Ranking Scale effectively captures concepts of remoteness familiar to Australian scales but importantly incorporates other practicalities such as the amount of on call.

The USA is the only country to consistently use true measures of workforce shortage (such as physician to population ratios) in their workforce policy. However, the definitions require an organised community to apply for recognition in a resource-intensive process that potentially discriminates against the most disadvantaged areas. In contrast to Australia the USA uses tight definitions of workforce shortage areas but a very passive approach to workforce planning and regulation. The USA is not only unique

among the study countries but one of the few OECD countries not to control either medical school places or specialty training opportunities.[1]

### **Workforce situations in the countries – are the interventions working?**

Obviously given the complexity of workforce policies and the numerous other factors that impact on workforce it is difficult to conclusively comment on the effects of each country's approach. Throughout section 2 of this report, maps and other data were used to demonstrate some of these effects. From this it is clear that none of the countries have solved the problem of maldistribution and from the basic data in table 1 it is clear many of the countries have a predominance of specialists. The next few paragraphs consider the effects from two other angles.

Firstly, table 13 below demonstrates the general practice workforce in the country's areas of workforce priority. Caution is required in interpreting these as despite the rhetoric of access concerns data is rarely expressed in these categories requiring the use of several data sources. The table does demonstrate relative parity across Australian geographical areas, less in New Zealand and Canada. Unfortunately data about socioeconomic differences are not available for these countries (unsurprising for Australia and Canada that do not prioritise this in workforce planning.) Additional patient load per family physician is most alarming in US inner urban areas where it is over 60%.

**Table 13- Population per GP/FP in different areas (head count unless indicated)**

Group	Australia[36]*	Canada[102]	NZ[29]*+	UK	USA[103]
Average	1031 (FTE)	1020[28]	1389 (FTE)	1613[104]	1127
Urban	1021 (FTE)	896	1299 (FTE)		1070 #
Rural	1156 (FTE)	1214	1613 (FTE)		1522
Remote	926 (FTE) OR 1176 very remote headcount 2003[8]	1163 (2004 NW territories )[8]	Not available	Not applicable	Not available
Disadvantaged	Not available	Not available	Not available	Not available.	1661
Greatest Disparity (additional patient load) ^	13.2%	35.5%	24.2%	>10% higher [9]	62.9% urban HPSA/non HSPA 42.2% urban/ rural

\* Converted from physicians per 100,000 data

# Note this average collapses two very different groups with urban HPSA ratios of 1590:1 but urban non-HPSAs of 976:1

+ In NZ the rural-urban is highly variable; for example half of the eight areas with the highest FTE (above 90 GPs per 100,000) are rural.

^ The additional average patients in the least served areas as a percentage of the best-served areas

The second way to approach the impact of workforce policies is by bringing attention back to access issues and health outcomes – the ultimate goals of workforce planning. For this table 12 based on a 2007 Commonwealth comparative report is revealing. The report uses multiple data sources and assesses the health systems on a number of features. Most telling for this report is the access dimension (drawing on cost and time barriers to appropriate care) and the equity measure (based on the discrepancy between access measures for below average and above average income groups.) Although the Commonwealth fund includes the whole health system, many of the measures pertain to primary care. The USA's poor ranking correlates with a poorer life expectancy and infant mortality rate. Movements in the overall ranking overtime are interesting – both New Zealand and Australia falling behind the UK with the USA and Canada remaining stable.

**Table 12 – Comparative Health System Features. [105]**

	Australia	Canada	NZ	UK	USA
Per capital health expenditure 2004	\$2,876	\$3,165	\$2,083	\$2,546	\$6,102
Infant mortality 2005[23]	5.0	5.4	5.0	5.1	6.9
Life expectancy at birth 2005 [23]	80.9	80.4	79.9	79.1	77.8
Access ranking*	2	4	1	3	5
Equity ranking*	2	4	3	1	5
Overall rank 2007*	2.5	4	2.5	1	5
Overall rank 2004*	2	4	1	3	5

\* Rankings adjusted as they originally included Germany.

### **Primary Care Production Pathway**

Comparison of the primary care production pathway policies was less illuminating. There is less potential for policy exchange in this arena because of the similarity of the study countries' frameworks and the paucity of evidence for any particular approach. All employ a combination of regulatory and incentive policies at different chronological points along the production pathway. Multifaceted programs appear to have the most potential – utilizing varying combinations of selective entry, mentoring, exposure and support.

Innovative scholarship programs for disadvantaged, rural and indigenous students are widespread but on very small scales. Other countries may choose to implement Australia's workforce-influenced approach to trainees by more explicit inclusion of workforce directives in training requirements or by adopting incentives to attract trainee workforce. In the UK and New Zealand, student debt is an increasing factor in work

choices hence debt-forgiveness programs or scholarships for service in priority areas may provide at least a short-term solution. Early career exposure to general practice environments show promise in the Australia, New Zealand and the UK but has not been rolled out nationally or made compulsory in these countries. It has less relevance in North America where residence programs are selected during medical school. Capping numbers in each training stream is an obvious way to control specialty output and improve matching between physicians and workforce requirements but is not widely employed.

Beyond these minor pathway interventions the bigger picture differences between primary and specialty careers are clearly important. Working conditions, flexibility, academic rigor, status and pay differentials between general practice and other specialties are important to career choice and job satisfaction. In this regard the income differential between specialists and general practitioners is obviously important. The UK's example of more flexible contracts combined with a reduction in the income gap was associated with at least a transient increase in applicants for GP training and other workforce parameters such as vacancy rate.

### **Future Research**

Descriptive and exploratory in nature this report clearly doesn't provide high-level evidence for policy-makers. It does provide a wealth of ideas and highlights areas ripe for further research. Detailed analysis of workforce and clinical datasets would better evaluate each country's policies and their impact over time. Research exploring the impact of different shortage definitions within a single area and data set would allow a better understanding of the advantages and disadvantages of the different approaches. This strategy could be used with a mapping tool to model the optimum approach for different countries.

Pathway policies are difficult to assess because of the multi-factorial nature of career decision-making and the considerable lag time between intervention and effect (particularly for interventions prior to medical school.) High quality longer-term evaluations are required to interpret these effects coupled with greater research about career decision-making.

Research that compares income disparity to primary care trainee applications over time and across settings would further illuminate the potential effect of remuneration reform on the primary care workforce.

## **Key Lessons for Australia**

There are many observations and potential lessons for Australian policy makers in both the way we define areas of workforce shortage and the policy attempts to influence the general practitioner production pathway.

### **Time to move on from purely geographical definitions of workforce shortage**

The Australian geographical definitions of workforce shortage provide strong incentives to work remotely. Although carefully constructed to capture nuances of rurality they ignore other critical factors such as existing GP workforce and the natural appeal of the area. Given the extreme access difficulties in some rural and remote areas of Australia and the large incentives on offer, it is imperative that we get these definitions correct and target GPs to where they are truly needed.

In metropolitan areas, although there are sufficient GPs overall, the problem is one of maldistribution. The only current incentives and regulations in the urban setting are directed at outer metropolitan areas. Again this is a purely geographical definition that does not accurately capture the real workforce shortages and may create perverse incentives – moving GPs out of shortage areas and into well-supplied outer metropolitan settings. Socioeconomic measures, GP workforce and health outcome measures would be far more powerful tools to redistribute the general practice workforce. Furthermore, specific areas of workforce shortage that correlate with Australia's health objectives may need specific prioritizations. For example, urban Aboriginal and Torres Strait Islander health centres, community health centres and drug and alcohol centres are frequently located in wealthy inner suburbs but have significant recruitment difficulties that are not assisted by current policy.

From the study countries there are several possible options to include these priorities in workforce policy. The New Zealand and UK approach initially appears complex. However, the Australian Bureau of Statistics already constructs a similar index that could be adapted for this purpose. This approach would be different and more complex in a non-capitated system such as ours. Payment adjustment options would include per service according to patient post-code, per practice based on location or in line with the 'average' predicted patient for a particular practice.

A simpler approach may be to adapt the American shortage definitions to our needs. A few key evidence-based socioeconomic and health predictors that are routinely available could be selected to construct a simple ranking scale or used as threshold variables. (In the US context the percentage of the population living in poverty, the percentage of over 65 year olds and the infant mortality rate are used.) Population-to-GP ratios could be incorporated in this measure. In contrast to the USA, these could be nationally calculated and used to direct current incentive payments and for trainee service requirements.

## **Rural Innovations**

In addition to restructuring the rural incentives as outlined above, this report offers two innovative ideas for rural settings.

British Columbia's Rural Subsidy Agreements may prove a useful payment model for GPs in remote Australia. To encourage GPs into remote areas where the community size is insufficient to sustain a typical fee-for-service practice we could make blended payments possible in these areas. Current RRMA or GPARIA+ definitions could be used to define the areas and these doctors could choose to have a base salary supplemented by a fee-for-service arrangement.

The New Zealand approach to rural payments may also be usefully applied to the Australian context. On call duties can be particularly onerous in rural areas and are not well remunerated in the current Medicare payment system. An on-call allowance or incentives according to the frequency of on call may be a viable option to sustain on-call work in some areas.

## **Pathway interventions**

Australia has less to learn from a comparison of the pathway interventions, as the Australian approach is fairly innovative and comprehensive. In light of the limited evidence for bonded return-of-service schemes we may wish to reconsider offering additional medical school places for bonded scholars. Like the other study countries, further evaluation is required to clarify which of the numerous policies are effective.

The importance of the overall 'pull' factors between general practice and other specialties should be of greater priority. The UK experience provides a viable policy option for Australian policy makers. Reducing the income differential between GPs and specialists would be a likely way to attract more junior doctors and students to a career in general practice and may well improve retention rates as it appeared to in the UK. By demonstrating the value of GP services to the government and community, such a policy may also increase the status of general practice and combat the 'just a GP' phenomenon. This is critical to a sustainable primary care sector that facilitates equitable, efficient and accessible care.

### **Broader Lessons and Ideas from the visiting fellowship experience**

In addition to these specific options for Australia generated by this research there are ideas and opportunities springing from the exchange experience itself.

- \* **The Robert Graham Center model of multidisciplinary policy research centre**
- \* **'Internship' model for development of general practice researchers**
- \* **Integrated workforce data collection and co-ordination**
- \* **Enhanced relationships between researchers, workforce planning and policy makers**
- \* **Ongoing collaborations and exchange between APHCRI and RGC.**

The Australian Primary Health Care Research Institute clearly performs a critical function in promoting and commissioning high quality primary care research to inform

the Australian policy environment. One of the main differences between APHCRI and the Robert Graham Center is that the **RCG conducts its own research**, rather than commissioning. The RGC is also has a higher degree of independence from its primary funder – the American Academy of Family Physicians. This allows the RGC to hold access to large American datasets and to conduct policy analysis using this data. It also allows continuity with previous projects, an established multidisciplinary team approach and the development of considerable expertise. This approach (in parallel to the commissioning approach) could certainly be of enormous benefit to Australia, particularly as our Medicare and training data are far more complete than the US versions.

The RGC **internship program** is also of potential relevance to Australia. As part of this program each year approximately ten residents (equivalent to Australian general practice registrars) spend a month at the center working on a policy project. This has created a large cohort of skilled, passionate primary health care researchers, many of whom have gone on to other projects and continue collaborative research with the center, each other and related organisations.

This research also highlighted the silo approach to Australian data collection and management and revealed the potential benefit from **strategic collation** and use of data to improve workforce planning and hence population health outcomes.

Like many previous reports, this too points toward the enormous advantages of closer **relationships between researchers, workforce planners and policy makers.**

As the second visiting fellow this was an extremely productive learning experience and it is exciting that a third fellowship will be funded in 2009. There remain many areas of potential overlap and collaboration between the Australian Primary Health Care Research Institute and the Robert Graham Centre as well as other Australian and U.S primary care organizations.

On a personal note this experience will allow for ongoing collaborations and relationships that will greatly enrich my academic practice and I am very grateful for the opportunity.

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### Appendix A – Expanded comparative features of the five health systems

	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
<b>Geography</b>	Costal, Eastern and urban concentration, remote areas	Southern and urban concentration, remote areas	Northern Island concentration Geographical barriers	Urban concentration , urban slums	Urban/ coastal concentration, urban slums
<b>Insurance [21]</b>	Centralized public	Devolved public	Devolved public	Devolved public	Competitive private & safety net
<b>PHC score in 1995 [22]</b>	13	11.5	N/A – likely to be high	19	3
<b>Organisation of PC</b>	Mostly private, some government		Mixed private, gov. & NFP	Government Predominates	Mixed; mostly private, gov. & NFP
<b>Organisational units</b>	Practices	Practices	Primary Health Organisations	Primary Care Trusts	Practices
<b>Planning</b>	Centralised with local	Provinces trend central	Local PHOs	PCT level with central input	State with central
<b>% GDP on health 2005[23]</b>	8.8	9.9	8.9	8.2	15.2
<b>% health spending public 2005[23]</b>	67.0	70.2	77.4	86.9	45.1
<b>Physician per 1000[23]</b>	2.8	2.1	2.1	2.4	2.4 <sup>7</sup>

<sup>7</sup> Note these are all lower than the OECD average of 3.0 physicians per 1000 population



<b>Primary Care physician/100,000 pop Head count</b>	111[24]	97.7[25] (Derived) OR 98 2006 (bookmark)	75 2003.[26]	62.1 England [70] OR 66[9]	
<b>Primary Care physician/100,000 FTE</b>	97 FTE (in 2006) INCLUDES trainees.[24]		72 FTE 2007[29]	54.7 England [9]	36.2 #[27]
	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
<b>Specialist/100,000 pop Head Count</b>	98 PLUS 37 head count.[24]	87.8 [25] (Derived) OR 92[28] OR 93 2006 bookmark	71.5 Head count 2003[26]	140 (in 2002)[8]	174.2 #[27]
<b>Specialist/100,000 FTE</b>	98 FTE in 2006 PLUS 41 FTE trainees. [24]	N/A	N/A	N/A	N/A
<b>GP numbers as % of specialists headcount OECD 2002 data[8]</b>	117% Decreased 2007 .[24]	90% Increased 2007 [25]	100% Similar 2007[29]	42%	53% OR 21% by above figures

Note- FTE uses 45-hour week in Australia, 40-hour week in NZ and the UK, Fee-for-service billing of 80% in Canada, USA typically uses headcounts rather than FTEs. Australian data includes GP registrars within the GP ratios but treats the 13.1% of all doctors who are specialty registrars separately. This greatly underestimates the predominance of specialists[24]

**Appendix B – Primary Care pathway interventions – Prior to Medicine**

**Reference for Appendices B, C, D and E**

The next series of tables chronologically provides a broad overview of the different policy types and lever points. There is some overlap with the previous sections considering definitions of workforce shortage. For the next series of tables the following abbreviations are used;

PC – indicates policies to increase primary care uptake

R – indicates policies to encourage work in rural areas

D – indicates policies to encourage work in disadvantaged areas

I – indicates policies to encourage an indigenous workforce.

\* - Indicates that the policy is a local or state policy rather than a national program

M – applies only to Australia and relates to policies to encourage outer metro work.

**Appendix B – Primary Care pathway interventions – Prior to Medicine**

<b>Prior to Medicine</b>	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
Promotion/mentoring to target groups during schooling or community	R I [106]	I[107]	I[108]	D R[109]P C [110]	D
<b>Entry to Medicine</b>					
Preferential entry for students from particular backgrounds	R[111, 112] I[113]e.g. but most medical schools		I	D[109] although not workforce driven	D I
Reserved places for service agreement in particular areas	R[114]	NO	NO	NO	NO

**Appendix C - Primary Care pathway interventions – During Medical School**

<b>During Medical School</b>	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
Tuition/scholarship for service agreement in target areas	R	R	NO	NO	D PC[115]
Scholarships for students from particular backgrounds	R [116]I	I[107]	I[108]		D
Increased exposure to areas of practice including prolonged rotations	R[112, 117] PC	R [118]	R[119, 120]	NO	R PC
Mentoring/clubs/promotion	R [116, 121]PC I				PC
New medical schools located in target areas or with greater focus	R[117] PC [111]	R[118]		R[109]	NO
Curriculum review and modification	R PC [111]I[122]	R[123]			

**Appendix D - Primary Care pathway interventions – During Training**

<b>During early hospital training #</b>	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
GP/FP rotation options	PC[124]		R[125]	PC [126]	# N/A
GP liaison/input into early medical education programs	PC				# N/A
<b>GP/FP Training Entry</b>					
Cap specialist positions	[127]	[118]		[128]	NO
Increase GP/FP training positions	[129]		[130]		
Rural only training positions	[129]	NO	NO	NO	NO
<b>During GP/FP Training</b>					
Required service rotations	R M[41]	NO	NO	NO	NO
Curriculum review and modification	R I	R[123]			
Incentives for rotations in target areas	R M[41]			NO	
Debt repayment for rotations during training in target areas	R[41]			NO	NO
Mentoring/support			I[125]		[115]

# - Does not apply to US trainees who select a training program from medical school.

**Appendix E - Primary Care pathway interventions – After training**

<b>Qualified Practitioners</b>	<b>Australia</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
IMG provider restriction	R M*[41]	Informal	R*[99]	No	N/A
IMG visa waiver					R & D [85]
Restriction of location for new fellows	No	Historic	Historic	No	No
Higher payment for target areas		R*[55]	R D I [131]	D [81]	D[85]
Support incentives (indemnity, education, locum)	R[41]	R*[132]		NO	
Debt repayment policies	R [41]		No	No	D [115]
Lump/grant incentives	M[41]			Historic [9]	
Incentives for particular services – Obstetrics, Nursing home, Minor Surgery, innovative	R		I[108]		
Retention/Seniority Payments	R[44]	N/A		Historic [9]	
<b>Other</b>	<b>Aus</b>	<b>Canada</b>	<b>NZ</b>	<b>UK</b>	<b>USA</b>
Increase academic prestige of primary care	[133]				
Increase prestige and training for rural medicine	[134]			[128]	
Infrastructure or clinic start up support	M[45]			D [76]	

