Chapter 5
Geographic imbalances in the distribution of doctors and health care services in OECD countries

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The uneven geographic distribution of doctors is one of the most common health workforce policy challenges OECD countries currently face. This chapter provides an overview of this distribution challenge by presenting data on the number of doctors across different regions in OECD countries. It examines the reasons why doctors choose to take up practice in some places, but not in others, and analyses policy responses intended to tackle uneven distribution of doctors. Countries can use three types of strategies, possibly in combination: first, they can aim to select and train future doctors in such a way that they will hopefully distribute more evenly; second, they can try to influence the choice of practice location of new doctors through regulation and financial incentives; and third, they can reform health care delivery in order to be able to provide needed services with fewer doctors by extending the scope of practice of nurses, pharmacists or other providers. Telemedicine is also seen as another increasingly feasible and potentially more efficient option to connect patients and physicians at a distance. While the broad characteristics of these potentially useful interventions can be identified, more robust and regular evaluations are required to determine what policies work to tackle imbalances in physician supply in each context.

5.1. Introduction

Geographic maldistribution of physicians has been a recurring phenomenon and part of health policy discussion for many decades. Nevertheless, the mismatch of physicians to population health in different geographic regions remains one of the most commonly named health workforce policy concerns across OECD countries. According to the *2012-13 OECD Health System Characteristics Survey* most OECD countries consider the maldistribution of doctors to be a key issue to be solved.

The supply of physicians in different localities is most commonly measured in terms of the number of doctors per population (physician density, or physician to population ratio). While the overall physician density has increased substantially in most OECD countries over recent decades, disparities in the density of physicians between different regions still exist in all OECD countries. Typically, rural regions and socio-economically challenged urban regions have lower staffing than more affluent and/or urban ones, and a relatively high level of health worker availability is often observed in capital regions.

Many doctors are reluctant to practise in rural and socio-economically disadvantaged urban regions due to various concerns regarding their career, family and lifestyle. Many countries have tried a variety of incentives or regulations to influence or direct the choice of practice location of physicians. Such policies include medical education, financial incentives, regulation or service delivery reorganisation. While there have been several recent reviews of these policies (Dolea et al., 2010; Bärninghausen and Bloom, 2009), a general lack of follow-up evaluation of their implementation makes it difficult to reach any conclusions about their cost-effectiveness.

The geographic location of physicians will likely continue to be at the forefront of health workforce policy concerns as the population ages. For example, 6% of people over the age of 65 who reported unmet health needs in 2013 indicated that the travel distance and transportation limitations were the main reasons for these unmet care needs in the 28 EU countries. This is expected to be a particular challenge in countries where elderly populations are more concentrated in underserved regions.

This chapter examines factors known to influence physicians' decisions on practice location, and presents a review of policies that have been implemented to address these factors and to improve access to health services in underserved areas. It documents policies with specific attention to characteristics of locality, physicians and the health system.

The chapter begins with a description of the geography of distribution of physician supply (Section 5.2), examining the characteristics of localities of concern. It then turns to investigating factors known to influence physicians' decisions on practice locations (Section 5.3). Section 5.4 proposes a framework for analysis of policy responses. Following this, the chapter details policy responses OECD countries have chosen to tackle maldistribution by focusing on future doctors (Section 5.5), current physicians (Section 5.6) and in doing with less physicians (Section 5.7). Section 5.8 concludes.

5.2. The geography of physician distribution

In many countries, rural regions and socio-economically challenged urban areas are less well-staffed in general and by doctors in particular than other regions, and this may pose a significant barrier for access to health services. OECD countries display very different levels in the total number of practising physicians in the country, ranging from

two physicians per 1 000 population or less in Chile and Turkey, to four or more in Austria, Greece and Norway (OECD, 2015). Whatever the overall density of physicians, in all OECD countries, it varies across regions (Figure 5.1).

Figure 5.1. Physician density, by Territorial Level 2 regions, 2013 (or nearest year)

Note: Each observation (point) represents a territorial level 2 region (for example, *region* in France, *Länder* in Germany or *State* in the United States) in each country. The data for Chile relate to 2009 and do not reflect the increase in the number of physicians since then.

Source: OECD (2015), *Health at a Glance 2015: OECD Indicators,* OECD Publishing, Paris, http://dx.doi.org/10.1787/health_glance-2015-en.

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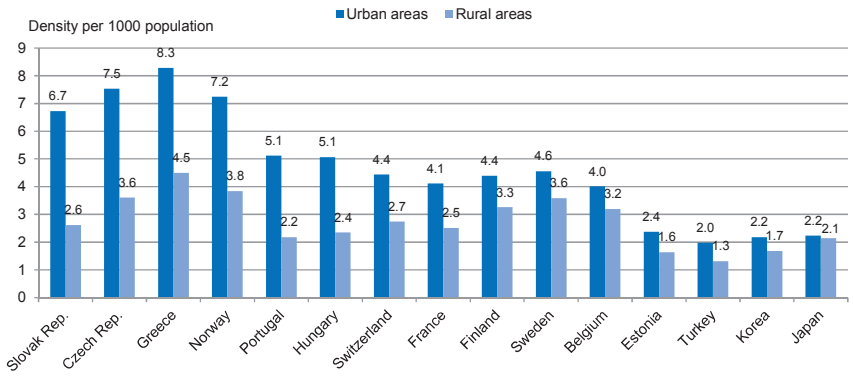
Rural regions

Across OECD countries, the number of physicians per capita (i.e. density of physicians) is consistently greater in urban regions, reflecting the concentration of specialist and tertiary services such as surgery, and the preference of specialised practitioners and physicians to practise in urban settings. However, the extent of divergence of density between urban and rural areas varies between countries. Differences in physician density between predominantly urban and rural regions are highest in the Slovak Republic, the Czech Republic and Greece, while the gap is less pronounced in Japan, Korea and Turkey (Figure 5.2).

Figure 5.2. Physicians density in predominantly urban and rural regions, selected countries, 2011 (or nearest year)



Source: OECD (2015), *Health at a Glance 2015: OECD Indicators,* OECD Publishing, Paris, http://dx.doi.org/10.1787/health_glance-2015-en.

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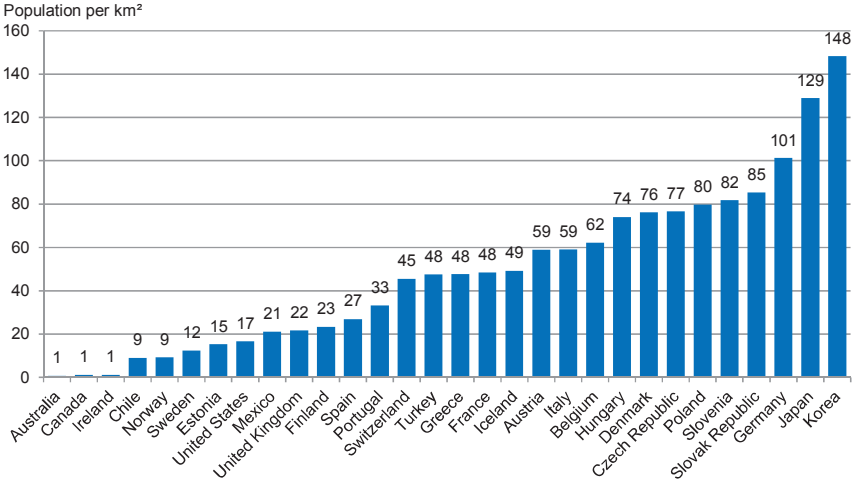
By definition, rural regions have relatively few inhabitants who are widely dispersed. Nevertheless, rural regions significantly differ across OECD countries in population density. The *OECD Regional Database* shows that in Australia and Canada, population density of predominantly rural regions[2] is less than ten inhabitants per km^2 while predominantly rural regions in Germany, Japan and Korea have at least 100 inhabitants per km^2 (Figure 5.3). Hence, whilst lower population density is a universal characteristic of rural areas, it is important to keep in mind that the extent and characteristics of "rurality" can vary markedly across countries, which may limit the transferability of policy options.

Figure 5.3. Population density in predominantly rural areas, inhabitants per km², 2012 (or nearest year)



Source: Based on OECD Regional Database (2013), http://dx.doi.org/10.1787/region-data-en.

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Low population density makes rural regions a challenging environment for health service provision, as for any other service industries requiring direct "face-to-face" contact with consumers. There are several elements to this impact of rurality.

- First, because populations are dispersed and transport infrastructures often limited, the distance and travel time to the nearest point of service are usually much longer than in urban areas.
- Second, low density rural populations often lack the critical mass and concentration required for efficient location of specialist services.
- Third, because low population density also often means low number of health care providers, this small number of local providers also implies that staffing mix options may be limited, and there may also be staffing constraints over 24/7 service provision.
- Fourth, there is a requirement in many small rural and remote communities for general practitioners to have an additional skill set, such as obstetrics, emergency care and surgery.

Some countries also make a distinction between "rural" and "remote" in terms of service provision and workforce availability. For example, in Australia, "it needs to be emphasised that whilst the rural and remote sectors have some issues in common, there are also some stark differences. The biggest, for example, is the relative absence of medical practitioners in remote areas. Remote health is predominantly reliant on the core workforce of Aboriginal and Torres Strait Islander health workers, and practitioners and remote area nurses (RANs) with support from a range of multi-disciplinary health professionals across the fly-in/fly-out (FIFO) and drive-in/drive-out (DIDO) allied health and medical professions" (Health Workforce Australia, 2013). In Scotland, "rural and remote" covers low density populations in the mainland highlands, where transport infrastructure is limited, but also includes population clusters on many small islands only accessible by boat or plane. In Japan, the designation of "isolated rural areas (*hekichi*)" also takes into account natural terrain and climate (islands and mountainous areas with heavy snow) that create a hindrance to accessing necessary services.

Disadvantaged urban and suburban regions

While the distance to a physician's location of work is a dominant factor determining access to health services in rural areas, the factors creating barriers to access in urban disadvantaged areas can be less obvious, and perhaps more complex. People who live in disadvantaged urban and suburban regions may have distinctly different educational, economic, cultural, and demographic backgrounds from their more affluent neighbours. Inhabitants of disadvantaged urban areas tend to have a worse health status and thus potentially higher demand for health services. Moreover, their life circumstances require health care providers who understand their health needs and social conditions and can provide appropriate care.

As the first point of access to health care, it is ideal for a GP-based service or family health practice to be in their community and understand their needs and health condition. However, socio-economically disadvantaged urban areas often have difficulties attracting physicians. For example, in Paris, the density of GPs ranged in 2009 from 3.2 per 1 000 population in the (wealthy) 8th *arrondissement* (city district) to 0.8 GPs per 1 000 population in the (poor) 20th *arrondissement*. Differences in densities are even more pronounced if compared to the surrounding *départements* (districts). In socio-

economically disadvantaged areas in Seine-Saint-Denis, the general density is much lower, with only 0.4 GPs per 1 000 population (URPS Médecins IDF, 2013). In the United States as well, there are shortages of GPs in socio-economically disadvantaged urban areas (Heisler, 2013). In German cities, the share of long-term unemployed people correlates with a lower density of doctors (Greß and Stegemüller, 2011).

5.3. Influences on location choice of doctors

Many different factors play a role in a physician's decision to practise in a certain region: 1) the general *attractiveness of the location environment*, including educational options for children, career opportunities for spouses as well as personal safety concerns, housing and access to cultural activities; 2) the *mode of employment*, determining the options physicians have when they enter the labour market or wish to take up a new position; 3) the *income potential*, which is likely to be influenced by payment schemes and volume of activities; 4) their *working conditions*, including working hours, access to appropriate medical equipment and support services, and career and professional development opportunities; 5) *prestige and recognition*, as many medical students and physicians appear to value less general medicine and rural medicine; and 6) medical students' *background and expectations* of work and life in underserved regions and their capacity to adjust to rural or socio-economically challenged regions.

General environment

Socio-economically disadvantaged urban areas and rural regions are often considered to be less attractive environments to live in. In rural areas, less developed infrastructure, limited children's educational opportunities or limited spouses' career opportunities can reduce attractiveness.

In qualitative surveys of family medicine graduates in Canada, lifestyle issues and family obligations were listed as some of the main reasons for not practising in rural areas, along with other work concerns (Lu et al., 2008). Similarly, a study in Germany cites that few leisure facilities are a negative aspect of rural practice (Natanzon et al., 2010). However, this is also a matter of physicians' personal preferences, and the type of "leisure facility" that matters may vary significantly. For some physicians, the rurality of a location may be an attraction in itself. For example, a survey from Colorado (United States) reports that 70% of rural physicians respond that recreational or leisure activity was one of the very important factors in keeping them in rural settings (Colorado Health Institute, 2012).

Mode of employment

The mode of employment of doctors may also influence greatly their choice of practice location. For example, where doctors are salaried employees, such as in Finland, their choice of practice location is determined to a large extent by the availability of job vacancies in any given region. Financial incentives can also be added to influence practice location. Where physicians are predominantly publicly employed, the government may have the scope to directly pay bonuses or vary salaries according to location. Where physicians are predominantly self-employed and capitation agreements or fee-for-service schedules are the basis of remuneration, these mechanisms can be regionally diversified or weighted, or additional incentives may need to be offered in order to provide sufficient financial incentives to recruit and retain staff in rural/underserved areas (see Section 5.6).

The *2012-13 OECD Health System Characteristics Survey* provides an overview of the predominant mode of employment of doctors in various OECD countries. In 19 countries that reported this information, general practitioners (GPs) are self-employed or privately employed. However, in Finland, Israel, Portugal, Slovenia, Spain and Sweden, general practitioners are publicly employed. For specialists working in ambulatory care, the picture is similar, although there are more countries where they are publicly employed (Tables 5.1 and 5.2).

Table 5.1. General practitioners: Predominant mode of employment, OECD countries

Self-employed	Privately employed	Publicly employed
Austria	Australia	Finland
Belgium	Poland	Israel
Canada	United States	Portugal
Czech Republic		Slovenia
Denmark		Spain
France		Sweden
Germany		
Greece		
Ireland		
Italy		
Korea		
Netherlands		
New Zealand		
Norway		
Switzerland		
United Kingdom		

Source: 2012-13 OECD Health System Characteristics Survey, http://www.oecd.org/els/health-systems/characteristics.htm.

Table 5.2. Specialists in ambulatory care: Predominant mode of employment, OECD countries

Self-employed	Privately employed	Publicly employed
Austria	Australia	Denmark
Belgium		Finland
Canada		Ireland
Czech Republic		Israel
France		Italy
Germany		New Zealand
Greece		Norway
Iceland		Portugal
Korea		Slovenia
Netherlands		Spain
Poland		Sweden
Switzerland		United Kingdom
United States		

Source: 2012-13 OECD Health System Characteristics Survey, http://www.oecd.org/els/health-systems/characteristics.htm.

Opportunities for "dual practice", where doctors hold two jobs, in many cases in the public and private sector, may also influence their geographic distribution. Significant private sector earning opportunities are more likely to be available in higher-density urban areas than in rural areas, thereby possibly influencing the choice of practice location. As such, perceptions of limited dual practice opportunities may be another factor in deterring doctors to locate to areas of low population density or with relatively

poor populations. The impact of dual practice varies among countries, based on its extent and the presence or absence of regulatory policies (Table 5.3). There are three main categories of dual practice regulation mechanisms that have been used across OECD countries: 1) total banning of dual practice; 2) allowing dual practice with restrictions; and 3) allowing dual practice without restrictions.

Table 5.3. Reported dual practice regulation in OECD countries

Always allowed	Allowed in certain cases	Not allowed
Austria	Canada	Germany
Belgium	Greece	Hungary
Chile	Iceland	Ireland
Czech Republic	Italy	Korea
Denmark	Japan	Luxembourg
Finland	Poland	Sweden
France	Portugal	
Israel	Slovenia	
Mexico	Spain	
Netherlands	United States	
New Zealand		
Norway		
Switzerland		
United Kingdom		

Source: 2012-13 OECD Health System Characteristics Survey, http://www.oecd.org/els/health-systems/characteristics.htm.

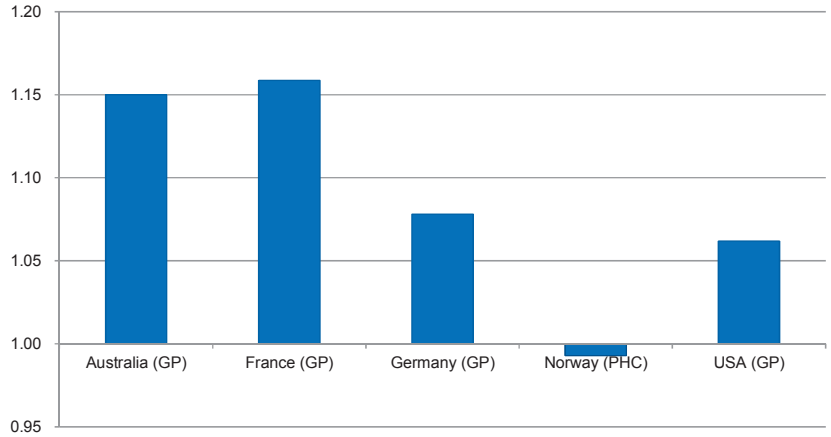
Income potential

In fee-for-service systems or capitation systems, the number of services a doctor provides or the number of patients a physician has on his/her patient list directly impacts income. Without financial adjustments in the payment scheme, physicians in rural and disadvantaged areas may in theory earn less than colleagues who practise elsewhere because they might provide a lower volume of services or have a lower number of patients.

However, in practice, available data from five countries show that the unadjusted (for workload or working hours) income of GPs or primary care physicians was at least similar or higher in rural areas compared to those working in urban areas. In Australia, France and Germany, work-related incomes of rural physicians were about 10% to 15% higher than those in urban regions, and in the United States the difference was about 6% higher. In Norway, the incomes were roughly equal (Figure 5.4).

Still, any slight advantage in terms of income may not be sufficient to compensate for other perceived disadvantages of GPs and other primary care physicians to work in rural areas. This may therefore not be sufficient to address the issue of maldistribution.

Figure 5.4. Average annual income of GPs or primary care physicians, rural/urban ratios, selected OECD countries



Source: Australia: Cheng et al. (2010), income, major cities vs. outer regional, rural and remote; France: DREES (2013), income, predominantly urban area vs. predominantly rural using OECD definition, data provided to the OECD; Germany: von Stillfried (2012), revenue major cities vs. rural areas. Norway: Deloitte (2011), income, cities with more than 50 000 inhabitants vs. the rest of the country; United States: Weeks and Wallace (2008), income, metropolitan areas vs. non-metropolitan areas.

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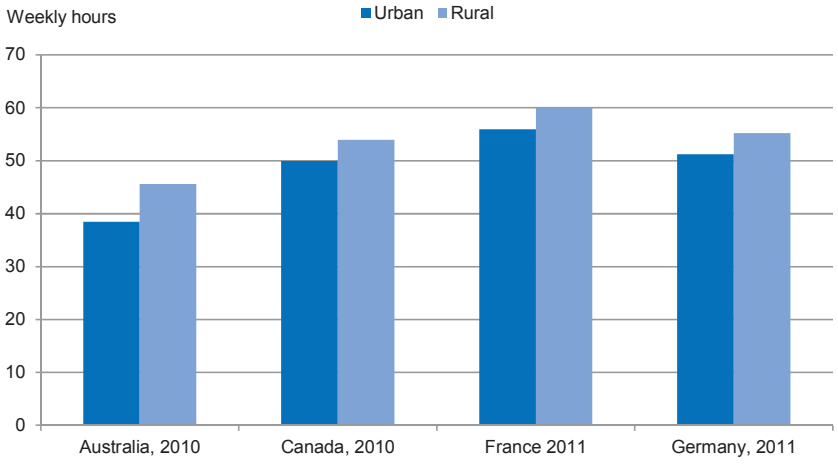
Working conditions

Rural GPs in some countries work significantly more hours than their urban colleagues (Figure 5.5).

Figure 5.5. Average weekly hours worked by GPs/Family physicians, urban vs. rural regions, selected OECD countries



Source: Australia: McGrail et al. (2012), major cities vs. outer regional, rural, and remote; Canada: Buske (2012), urban area vs. rural area which include small town, rural and geographically isolated/remote area; France: Jakoubovitch et al. (2012), urban vs. rural areas based on INSEE definition; Germany: Steinhäuser et al. (2011), urban vs. rural area based on the level of rurality rated by physicians.

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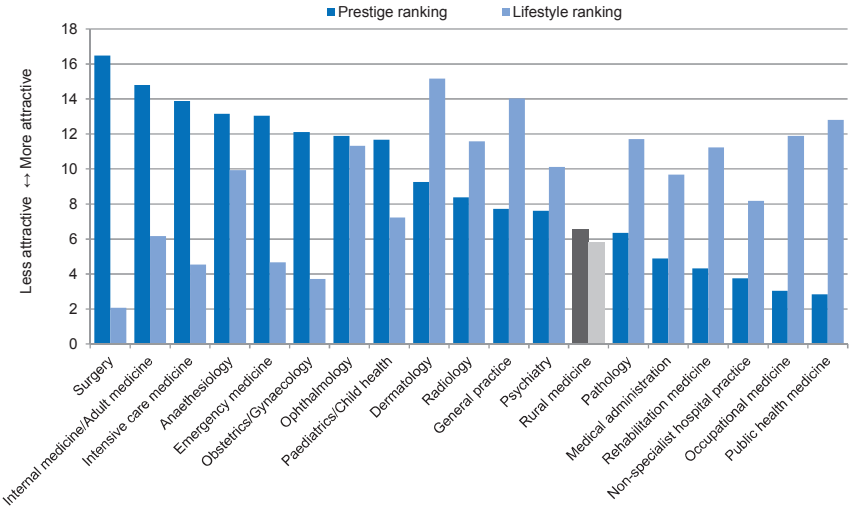
The traditional view of "one physician, alone, always at work, always on call" (Elliott, 2012) summarises doctors' concerns about rural conditions. Doctors in solo practices may have no other physician in near proximity, facing significant time on call (Elliott, 2012; Natanzon et al., 2010). The inability to have uninterrupted time away from work may cause significant stress (Sim, 2011). In Australia, McGrail et al. (2012) found that combined working and on-call time for doctors in medium-sized, small and very small rural communities was on average a third to double of that of metropolitan doctors in 2010.

Other aspects of working conditions also play a role in decisions to practice in disadvantaged urban areas. In France, physicians working in such areas report language problems, difficulties in interacting with patients from different cultural backgrounds and security concerns as some of the day-to-day issues they are facing (ONM, 2012).

Prestige and recognition

The relative prestige and status of medical jobs, specialties and work locations can also influence physicians' choice of practice location. Rural practice has relatively low prestige in some countries. In Australia, Creed, Searle and Rogers (2010) found that while many specialties rank high in lifestyle or prestige (e.g., high prestige but bad lifestyle for surgery; low prestige and good lifestyle for public health medicine), rural medicine is ranked low for prestige and lifestyle among medical students (Figure 5.6). Other studies have indicated that Australian medical students and physicians who place less value on prestige and status are more likely to have worked in rural areas or intend to do so (Conomos et al., 2013).

Figure 5.6. Ranking of prestige and lifestyle of physician specialty, Australian medical students



Source: Based on data presented in Creed, P.A., J. Searle and M.E. Rogers (2010), "Medical Specialty Prestige and Lifestyle Preferences for Medical Students", *Social Science and Medicine*, Vol. 71, No. 6, pp. 1084-1088, September.

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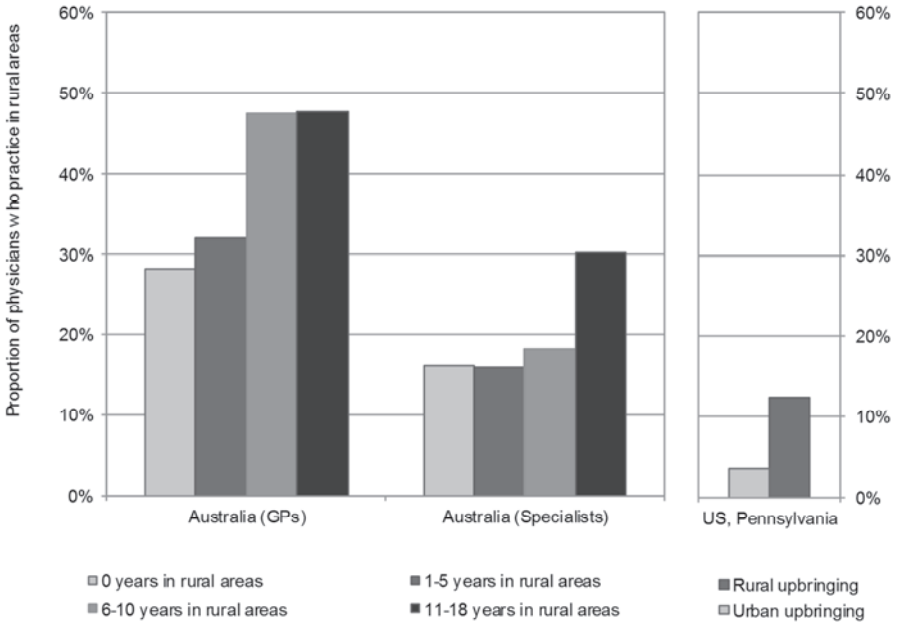
But physicians' career choice may also be influenced by the recognition of their work contribution from peers and the community they serve. In a US survey of osteopathic students and residents, 70% of medical students and 78% of residents considered rural practice to have greater community impact (Colegrove and Whitacre, 2009).

Origin and experience

The background of doctors and to what extent their expectations of practice in an underserved region match the reality may also influence their location choice. If work experiences in specific locations during their training period were positive or negative, this may alter of course their decisions. A German study found that medical students' expectations of work in rural settings are much worse than the reality. Unsurprisingly, this coincides with a clear preference for practice in urban areas among medical graduates (Gibis et al., 2012).

Several studies have considered the link between a physician's origin and the likelihood of choosing rural practice (Laven and Wilkinson, 2003; Wilson et al., 2009). A physician's rural origin is often reported as a determinant of future choice to practice in rural areas (Hancock et al., 2009). In the United States, Rabinowitz et al. (2011) examined why the Physicians Shortage Area Program (PSAP) of Jefferson Medical College in Pennsylvania (a programme targeted to produce rural family practice physicians) has been effective and demonstrated that rural upbringing and interest for family practice in the first year explain its success. Similarly, a study in Australia demonstrated that the number of years spent in a rural area prior to entering a medical school is a good predictor for practising in a rural area for GPs and specialists (McGrail et al., 2011; Figure 5.7). The strength of a rural background as a factor in determining rural practice for physicians was also supported in studies in Canada, Japan and South Africa (Laven and Wilkinson, 2003; Wilson et al., 2009; Matsumoto et al., 2008; Feldman et al., 2008). Consequently, training physicians with a rural background has been advocated as a solution to filling vacancies in underserved rural regions (see Section 5.5).

Figure 5.7. Differential effect of physician background on the probability of working in rural areas, Australia and the United States



Source: Australia: McGrail et al. (2011); United States: Rabinowitz et al. (2011).

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5.4. Policy strategies and areas for action

Following Bennett and Philips (2010), at any point during their training and career, physicians can be grouped into: 1) those committed to practise in underserved regions; 2) those who may be interested, with the right incentives; and 3) those who are not interested. Physicians' preferences may change throughout their career. Policy makers may have multiple points of intervention across a doctor's professional lifespan to influence their decision. In addition, health service delivery may also be re-designed to serve local communities with fewer physicians on site.

Based on the classifications proposed in a number of international literature reviews (Jones et al., 2012; Dolea et al., 2010; Wilson et al., 2009; Bourgueil et al., 2006), policies can be grouped in four distinct areas of action, which are not mutually exclusive and can complement each other:

- First, through interventions at different points in the **medical education** process, policies may influence the choice of practice location at the end of the training period. These include the selection of students in *entry to medical schools* and the design and geographic distribution of *post-graduate clinical training* programmes.
- Second, countries can offer various types of **financial incentives** to attract more physicians in underserved areas, starting from providing special scholarship at *entry to medical schools* and/or *post-graduate clinical training* (possibly combined with return-of-service obligation), to *one-off payments* to doctors to support their installation in underserved areas, to recurrent payments and bonuses to recruit and retain them in underserved areas.
- Third, countries may **regulate** which type of physicians is allowed to work where. Regulation can be put in place at the time of *entry to post-graduate clinical training* (e.g. in the form of return-of-service agreements) or in restricting the choice of practice location when *new doctors want to set up a first practice*.
- Fourth, a **re-design in health service delivery** may help to improve the working conditions of doctors in underserved areas (e.g., by creating group practices to overcome the isolation of solo practice) and/or promote the use of innovative health service delivery to provide adequate level of access with fewer physicians (e.g. through telemedicine or shifting some health service provision from physicians to other local health care providers).

5.5. Targeting future doctors: Medical education policies

A number of policies can help attract more medical students who will end up working in underserved regions. These policies generally aim to encourage more people from rural and underserved communities to pursue medical careers and/or reduce or remove barriers created by negative expectations of practice in rural or disadvantaged urban areas.

The extent to which countries control access to medical education influences the policy space governments have to design incentives for medical students to work in underserved areas. Nearly all OECD countries restrict in one way or the other entry into initial medical education and/or entry into post-graduate specialty training (see Chapter 3 for more information).

The way in which the costs of medical education are shared between public and private payers is another factor influencing the potential use and effectiveness of this policy lever. Where students bear a higher share of the costs, targeted scholarship or debt subsidy programmes may be more effective in influencing their practice location than in countries where there are no tuition fees.

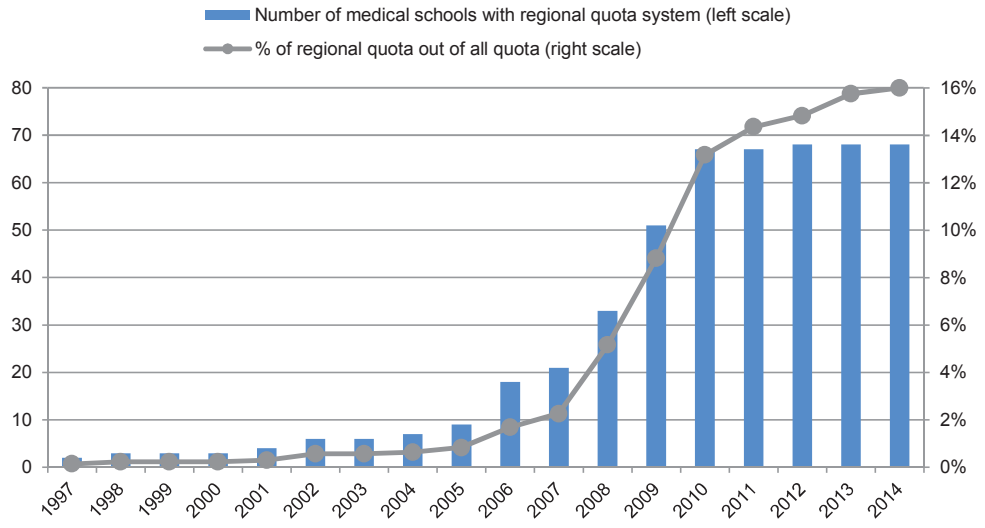
Policies aimed at student selection

In Australia, the federal government offers three medical school placement schemes, although the third one (the MRBS) has been closed to new entrants in 2016. Under the commonwealth-supported places scheme, students pay part of the medical degree and the remainder is subsidised by the government, with no conditions attached. Both the Bonded Medical Places (BMP) scheme and the Medical Rural Bonded Scholarship (MRBS) scheme require students to repay the cost to the government of their place (BMP) or their scholarship (MRBS) if they break the contract. In the case of the MRBS scheme, physicians may not be able to have access to the Medicare schedule for up to 12 years.

Under the BMP scheme, the Australian Government offers an additional 700 medical training placements per year (rising to 800 from 2017). Students have to sign a deed of agreement with the government to work in a district of physician shortage for a period equal to the length of training. A 2013 review (Mason, 2013) noted that more than 4 500 participants had such an agreement at that time, but only one had commenced his/her return-of-service obligation and three had chosen to repay the cost of their education. In contrast, students offered the MRBS scheme received substantial financial aid and signed a contract with the government to work in a rural or remote area for six years after completing specialist training. There were 100 placements available each year. Since 2001, more than 1 200 students participated in this programme but only 50 have started the return-of-service obligation period. The MRBS scheme was closed to new from 2016, with these 100 medical places being transferred to the MRBS scheme (Department of Health, 2015).

Japanese medical schools have a regional quota system of student selection to increase the number of doctors within each prefecture. Under the "one prefecture, one medical school" policy of 1973, the 47 prefectures have each had at least one medical school since 1981. While the numbers of medical schools and training spots are centrally controlled and have barely changed in the last three decades, each university can create its own student selection criteria and give recruitment incentives. The regional quota systems mainly involve offering a scholarship with a term-defined practice requirement (6-9 years), through: selection for medical school entry from within the same prefectures in which the school is located, or selection of students willing to serve in regional services, regardless of their origin, or the offer of a conditional scholarship for those already in medical school. In 1997, only two medical schools had a regional quota system covering 11 students. By 2014, 68 of 79 schools offered regional quota spots, for 1 452 students (16% of the total intake, see Figure 5.8).

Figure 5.8. Regional quota in Japan, 1997-2014



Source: Medical Education Division, Ministry of Education, Culture, Sports, Science and Technology (MEXT), 2015.

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A 2011 Ministry of Education, Culture, Sports, Science and Technology (MEXT) study covering six medical schools with regional-quota medical graduates showed that 89% of regional-quota graduates have remained within their prefecture, compared with 54% only of normal-entry graduates.

Policies aimed at training institutions

Some countries have used two often complementary options to re-design the supply of medical education and training places to achieve a better geographic distribution of doctors: 1) setting up medical schools to train students specifically in underserved (rural) regions; and 2) increasing the number of specialty training places outside universities and hospitals and into ambulatory settings in underserved areas.

In Norway, the University of Tromsø's school of medicine was established in 1972 in northern Norway to address a chronic shortage of physicians. When the school was established, a quota of 25% was reserved for students from northern Norway in the belief that a greater percentage of these students would remain there after graduation; this share was increased to 50% in 1979 and 60% in 1998 (Alexandersen et al., 2004). As a result, the number of medical graduates with a north-Norwegian origin increased from 41% in the period from 1979 to 1988, to 57% in the period from 1996 to 2001. Research has shown that most medical graduates from the University of Tromsø do remain in northern Norway. Of the medical students who graduated between 1979 and 1988, 56% continued to work in northern Norway, though this fell to 51% for graduates from 1996 to 2001. There is also evidence that the likelihood of graduates remaining in northern Norway is particularly high if they are of northern Norwegian origin. Among the University of Tromsø graduates from 1996 to 2001, 75% of physicians with northern Norwegian origin chose to practise there, while only 19% of physicians with a southern Norwegian origin remained after graduation (Alexandersen et al., 2004).

Japan's Jichi Medical University was also established in 1972 with the sole purpose of training physicians for areas with insufficient doctors. The university is technically private, but is managed by an educational foundation, and co-funded by 47 prefectural governments and the national government. Each prefecture chooses local high school graduates for admission, and the university undertakes a second screening, with eventually two or three students entering the university each year. After six years of medical training, students are obliged to return to their prefecture of origin for practice. Students are exempt from repaying the loans they receive in medical school if they work in public hospitals, designated by the prefectural governor, for a period equivalent to two-thirds of the period during which they receive a student loan (this is called the "obligatory period"). By 2015, 96% of graduate physicians (a total of 3 910) had completed or were completing their obligatory period. The retention rate of graduates in their home prefectures beyond the time of their service obligation was around 70%. Graduates that fulfil their service requirement are more likely to practise in a rural area than graduates from other medical schools. Inoue, Matsumoto and Sawada (2007) have shown that even after completion of their service obligation, the share of Jichi graduates practising in rural areas is significantly higher.

In Canada, the Northern Ontario School of Medicine (NOSM), a joint initiative of two rural universities more than 1 000 km apart, welcomed its first medical students in 2005. This School actively seeks to recruit local students or those from similar northern, rural, remote, Aboriginal, or francophone backgrounds. Clinical education takes place in local communities and health service settings, with 70 teaching and research sites. Students who choose a rural area to practise after their training are eligible for funding from a loan-repayment programme. While it is too early to assess the long-term impacts of this initiative, about 70% of graduates are training in family medicine, mostly in rural regions.

5.6. Targeting current doctors: Carrots and sticks

Another strategy is to target current doctors to increase the number of physicians in underserved regions. This may include "carrots and sticks" – financial incentives and suitable regulatory measures.

Financial incentives

Many countries have introduced financial incentives, as shown in Table 5.4, to encourage more physicians to practice in rural or socio-economically disadvantaged urban areas.

Financial incentives can compensate for longer working hours or a less advantageous "business environment" for doctors in underserved areas. The evaluation of the effect of financial incentives is difficult, as they are often part of a package with various incentives, and physicians may receive multiple financial incentives from different sources at the same time. It is difficult (and unadvisable) to design financial incentives that target only those willing to move to underserved areas because of financial incentives. It may incur "wastage" by providing incentives to those who would have practised in underserved areas regardless of government intervention (Bärninghausen and Bloom, 2009; Dolea et al., 2010).

Table 5.4. Reported financial incentives to foster a better geographic distribution of physicians

Incentives in place	No incentives reported
Australia	Austria
Belgium	Czech Republic
Canada	Iceland
Chile	Ireland
Denmark (Regions)	Italy
Finland	Japan
France	Luxembourg
Germany	Netherlands
Greece	Poland
Hungary	Spain
Israel	
Korea	
Mexico	
New Zealand	
Norway	
Portugal	
Slovenia	
Sweden	
Switzerland	
United States	
United Kingdom (England and Wales)	

Source: 2012-13 OECD Health System Characteristics Survey; National Audit Office, United Kingdom (2008).

Non-wage-related payments (one-off payment)

Non-wage-related payments are used to encourage physicians to move to or stay in underserved areas. These are often "up-front payments" intended to help facilitate a location choice, or are conditional on the criteria being met, which may be based on practice size or volume of activity.

Several countries have implemented non-wage-related incentives targeting various stages of physicians' careers. Many policies target physicians opening their practice for the first time. In Germany, 11 out of 16 states (*Länder*) offer financial incentives for GPs opening their practice for the first time. GPs can receive a payment for opening a practice in underserved areas. Subsidies range from EUR 15 000 to EUR 60 000 depending on the state, degree of shortage, municipality size, and types of services provided. Costs are either shared between the state government, the association of statutory health insurance physicians and insurance companies, or borne entirely by one of these stakeholders. In some states, the one-time payment comes with a return-of-service obligation of five to ten years. There is no evaluation as to whether it has helped recruitment.

Similar policies exist in Canadian provinces. In Ontario, the Northern and Rural Recruitment and Retention Initiative offers grants of between CAD 80 000 and CAD 117 600 for a practice opening in a rural area (HPM, 2008).

Wage-related financial incentives (recurrent payment)

Physicians in underserved areas sometimes receive financial incentives linked to income. Some target particular life stages where critical decisions for practice location are made. These payments aim to compensate rural GPs for a smaller number of patients and/or longer working hours.

Across OECD countries, a variety of payment mechanisms exist across a range of institutional arrangements (Table 5.5). Physicians work in different settings, such as solo or group practices or health centres, where they may be salaried or self-employed. Payments may be directed to institutions, in the case of health centres or group practices, or directly to physicians providing services, or both.

Financial incentives can be arranged along with the existing payment structure to target specific physicians and their performance. Payments to institutions comprise global budgets that define a maximum expenditure in a given time period (and often region), capitation agreements that pay providers in function of the number of patients enrolled in their practice, independent of service provision, fee-for-service arrangements that pay for each service provided, or pay-for–performance (P4P) arrangements that make at least part of a payment conditional on reaching certain objectives. Payments to individual physicians comprise salaries, capitation agreements, fee-for-service schedules and other arrangements including P4P schemes.

In countries where physicians work predominantly in solo and group practices, there is almost always an element of fee-for-service payments and some capitation-based payments. In countries where physicians work in health centres, salaries play a much more important role.

Table 5.5. Summary of payment mechanisms for primary care physicians and institutions

Type of predominant institution of primary care	Countries	Payment of institutions					Payment of physicians			
		Global budget	Capitation	Fee-for-service	Pay-for-performance	Other	Salaried	Capitation	Fee-for-service	Other (incl. P4P)
Doctors in solo practice	Germany*	Non applicable							X	
	Austria*								X	
	Belgium*							X	X	
	Korea*								X	X
	France*								X	X
	Greece*								X	
	Czech Rep.							X	X	X
	Switzerland*							X	X	
Public centres	Spain		X		X		X	X		X
	Finland	X					X		X	
	Iceland	X					X			
	Portugal	X	X		X		X			
	Sweden		X	X	X		X			
Group practice with doctors and other health professionals	Australia			X	X				X	X
	Denmark		X	X				X	X	
	Ireland		X					X		
	Netherlands*	X	X	X	X			X	X	X
	New Zealand		X	X	X		X	X	X	
	Norway		X	X				X	X	
	United Kingdom		X	X	X	X		X	X	X
	Poland*		X					X		
Group practices with only doctors	Canada		X	X		X	X	X	X	
	Italy		X						X	X

* Social insurance systems.

Source: 2012-13 OECD Health System Characteristics Survey.

Basic income guarantees may work as an incentive for physicians at the point in time when they set up a practice in an underserved region. In France, some recently qualified GPs benefit from a guaranteed annual income of EUR 82 800. This measure was introduced in 2013 and is available annually to 500 GPs and time-limited to the first two years of practice (Ministère des Affaires sociales et de la Santé, 2015). In Denmark, similar revenue guarantees are in place in Northern Jutland and the Capital Region based on a fixed list size. If GPs have not enlisted 1 600 patients, the government provides DKK 1 500 per "missing" patient for two years until 1 600 patients are reached. In the Capital region, this policy is linked with a five-year return-of-service obligation. GPs are also compensated for taking over patients who have lost their GP due to closures. In Northern Jutland, GPs receive a higher remuneration if they sign up more than 1 760 patients. The revenue for additional patients is doubled (PLO, 2013).

Other financial incentives can compensate for challenging work conditions. In the Canadian province of British Columbia, the Rural Retention Programme grants physicians an annual bonus based on "isolation points" determined by the existence of other physicians in surrounding areas and the community's geographic characteristics. In 2008, 144 communities were entitled to grant physicians an allowance and 1 568 physicians benefitted in 2007-08 (Ministry of Health of British Columbia, 2012).

Financial incentives can aim to encourage doctors to postpone retirement. In Canada's rural areas in Alberta, annual bonuses range from CAD 4 000 after five years of practice, rising to CAD 10 000 after 26 years (HPM, 2008). In Denmark's Northern Jutland, GPs receive DKK 55 000 per quarter between the ages of 62 and 65 (PLO, 2013). In the German state of Thuringia, GPs aged 65 and above can receive EUR 1 500 per quarter, in addition to their normal revenues, for working in underserved rural areas (AOK, 2011).

In summary, financial incentives may compensate for some of the disadvantages of service in less attractive regions, rendering it more economically attractive. While they may be necessary to level the playing field, they are no "game changer" for location choice. While doctors in underserved regions can receive higher payments, staff levels in these regions generally have remained lower. Financial incentives may be more effective in channelling money to physicians in underserved regions but less effective at attracting new recruits. Investment in financial incentives should be considered carefully on merit.

Regulatory policies

Regulatory measures can foster a better distribution of physicians and restrict or direct the choice of practice location. There are two main ways countries may set up such regulations:

- *Regulations of practice location*: there may be *de-facto* limitations using system features to limit location choice, or inducing a better distribution through legislation, for example by allowing new practices to open only where the physician density is below a certain threshold.
- *Targeting international medical graduates*: countries can make the immigration of foreign-trained doctors, and/or their entry into specialty training, conditional on practice in designated areas.

About 70 countries have experience with some form of regulatory approach, mostly low and middle-income countries (Frehywot et al., 2010). Most OECD countries,

however, do not constrain location choice for physicians who want to set up an ambulatory care practice.

In the *2012-13 OECD Health System Characteristics Survey*, four countries reported some de-facto limitations in practice location choice. In Austria, contracts physicians make with social insurance for reimbursement are regionally limited. In the Czech Republic, doctors need to engage in a reimbursement agreement whose availability may be easier in some regions than others. In Finland, health care delivery is organised at the municipal level, so the availability of job vacancies determines a physician's location choice. In the United Kingdom, commissioning arrangements may influence the availability of posts. Denmark, Germany, Norway and Slovenia restrict the choice of location, as do two Canadian provinces (Table 5.6).

One advantage of regulatory approaches is that the direct financial cost is generally limited to administrative costs. Only a few regulatory approaches have been evaluated. Evidence is particularly lacking on the regulatory framework on the basis of some benchmarks, such as a density threshold, to improve physician geographic distribution. Available evidence on the impact of return-of-service agreements, which in some countries target foreign-trained physicians, indicates some placements are effective in the short term, but such policies do not necessarily provide long-term staffing stability to underserved regions (Dywili et al., 2012; Wilson et al., 2009; Han and Humphreys, 2006).

Table 5.6. Reported limitations to the choice of practice location

No restriction of choice of practice location	De facto limitation of choice of practice location	Restricted choice of practice location
Belgium	Austria	Canada (New Brunswick, Quebec)
Canada (except two provinces)	Czech Republic	Denmark
France	Finland	Germany
Greece	United Kingdom	Norway
Ireland		Slovenia
Israel		
Japan		
Korea		
Netherlands		
New Zealand		
Poland		
Portugal		
Spain		
Sweden		
Switzerland		
United States		

Source: 2012-13 OECD Health System Characteristics Survey.

Regulation of practice location

In Germany, the number of practice permits for ambulatory care physicians in a specific region is limited, based on a national service delivery quota. Physicians need to obtain a practice permit to be reimbursed by the statutory health insurance. The number of these permits is controlled by the National Association of Statutory Health Insurance Physicians (NASHIP) through its 17 state associations. The NASHIP is the self-regulated organisation of about 120 000 physicians practising under the statutory health insurance.

It is mandated by the government to guarantee medical service coverage of the population based on a quota agreed within the self-administration of the German health care system. The service coverage is measured based on the ratio between physicians and inhabitants in each of the 395 planning regions. For GPs, 100% coverage is achieved when the ratio of GP to inhabitant reaches 1:1 617. If the coverage of a region exceeds 110%, no further permits are issued (Federal Joint Committee, 2013).

In Denmark, the geographic distribution of physicians is regulated through the access to "provider numbers" in each region (Capital region, Central Jutland, Northern Jutland, Zealand and Southern Denmark). The provider number identifies physicians permitted to be reimbursed by the public tax-based health system. Only these GPs have patients assigned to their lists. The number of provider numbers is set by the regions to guarantee medical service coverage and efficient use of resources. Decisions about provider numbers are based on the number of patients under the gatekeeping scheme (which is the vast majority) in the local area, the individual GP's wish for staff, turnover and list size and the geographical distance of the patient to the practices. The agreed aim is for all patients throughout the country to have a free choice between at least two practices in a 15 km-distance. A GP has the right to close the list if it has reached 1 600 patients. The list is re-opened if the number of patients falls below 1 475 and is closed if it reaches 1 700 patients. Changes in the medical service delivery structure, such as practice relocation, merger with another practice or opening satellite practices, must be in accordance with the regional health plan. If there is a lack of patient capacity within the practices, more provider numbers are issued. The regions can also enter into agreements with GPs to temporarily enlist more patients or to relocate or extend their practice into shortage regions. Since 2011, regions have been allowed to set up their own GP clinics to take care of patients left without a regular doctor, in areas where no qualified physicians are willing to accept a provider number under normal conditions.

Policies targeting international medical graduates

Some countries try to steer physicians into underserved areas by regulating the practice location of international medical graduates (IMGs). These regulations can either attach conditions to immigration for foreign-trained physicians or be part of requirements to obtain full practice rights in the country.

In Australia, a "10-year moratorium" policy on IMGs or "overseas-trained physicians" has been used to tackle a persistent physician shortage in rural and remote locations. The Health Insurance Act Section 19AB restricts IMGs access to Medicare provider numbers, and requires IMGs to work in a district of workforce shortage (DWS) for at least ten years. The aim is to distribute medical services across Australia, and encourage IMGs to work in a DWS to access Medicare benefits by exempting them from the restrictions under Section 19AB.

Physicians can reduce the 10-year period by completing the *Five Year Overseas Trained Doctors Scheme* and work in designated locations where recruitment and retention have been particularly difficult (Australian House of Representatives' Standing Committee on Health and Ageing, 2012). An IMG can also establish a private practice in an eligible location and reduce the ten-year requirement through a "scaling mechanism" depending on remoteness. The growth in GPs (measured in FTE) was 59% in major cities, 42% in regional and 39% in remote areas before the moratorium (between 1984 and 1997). In the period after the moratorium (1997-2011), the growth rates drastically changed with a 20% growth in major cities, 47% in regional and 52% in remote areas

(Cameron and Kosmina, 2013), indicating a relative increase in GP-based rural service provision. In this period, the number of Australian-educated GPs remained broadly constant, while the number of IMGs increased by 240% in major cities, 156% in regional areas and 169% in remote locations.

In Canada, IMGs with no previous North American postgraduate medical training are required to go through a residency programme. A separate matching stream for IMGs for most provinces was established and matching services for clinical training in Canada were managed by the *Canadian Resident Matching Services* (CaRMS, 2010). For IMGs, clinical training in most provinces comes with a return-of-service requirement in an underserved area. They are usually required to provide services for the same duration of time they took to receive their clinical training. Those who do not fulfil the requirement are obliged to repay the full funding with interest. So far no evaluation has been done on this scheme. While it appears effective in placing physicians in the short term, a recent study shows 70% of physicians with a specially funded return-of-service agreement in the province of Newfoundland and Labrador do not fulfil service time or the repayment requirement. One reason for this high default rate is the high proportion of IMGs (74%) who participate in the programme (Mathews et al., 2013).

Depending on their specificities, policies directing IMGs to specific areas could conflict with the WHO Global Code of Practice on the International Recruitment of Health Personnel, adopted by the World Health Assembly in 2010. This voluntary code requires recruiters to give equal treatment and career opportunities to internationally recruited health workers as to those domestically trained (WHO, 2010).

5.7. Doing with less doctors: Service delivery re-orientation

Provider-centred reforms

Provider-centred service re-orientation may comprise fostering group practices of physicians, or of doctors and non-medical health workers, creating networks servicing certain regions and/or introducing new roles. Co-locating services may improve physicians' working conditions by making exchanges with colleagues possible and reducing on-call commitments, and by improving the business case for rural practice as costs may be shared. Another strategy can be sharing responsibilities to serve in certain areas across a network of salaried or self-employed doctors rotating in and out of very remote regions.

Group practices and service co-location

In Germany, 90% of medical students want to work in group practices and community health centres (Hartmannbund, 2012). Results are similar in Canada (Saarma et al., 2012) and Switzerland (Buddeberg-Fischer et al., 2008). Group practices may lead to reduced workload, better resource-sharing and better co-operation with other physicians.

In France, the Maisons de Santé Pluridisciplinaires (MSP) were introduced in 2007. They differ from other forms of group practices because they allow physicians and other health professionals to jointly run group practices while remaining self-employed. MSPs are either entirely financed by the health professionals, or receive subsidies from various sources, such as the European Union, governments and the French health insurance. By 2012, 235 MSPs had been set up in France and another 450 were planned, with 80% of them located in rural areas (Ministère des Affaires sociales et de la Santé, 2012c).

MSPs lead to better work conditions and greater accessibility for patients. In a survey in Franche-Comté and Bourgogne (Bourgueil et al., 2009), 71 GPs in nine MSPs reported a weekly workload of 46 hours compared to 52-60 hours in other practices. MSP opening hours were better with an average of 5.5 opening days/week, and 11.5 opening hours per day. The quality of follow-up care for diabetes patients was also improved.

In Germany, community health centres (MVZ) were established in 2004 through changes to the remuneration scheme of the statutory health insurance system. The aim was to improve physicians' working conditions by reducing their workload, better interaction with other specialties and higher earnings through resource-sharing. MVZ are generally owned by a physician (or groups of physicians) or a hospital and comprise at least two medical specialties. Physicians can be salaried or self-employed. In 2011, there were 1 750 community health centres with a total of 9 571 physicians, mostly GPs and internists. In 2011, 6% of physicians paid by the statutory health insurance worked in MVZ compared to 37% working in other forms of group practice and 57% working in solo practice (KBV, 2011a).

According to a survey by the National Association of Statutory Health Insurance Physicians, 58% of 414 MVZ reported that founding or joining a MVZ was a good decision and 78% said the co-operation among specialties had improved (KBV, 2011b). While 14.6% of MVZs were in rural areas, the rest were in urban areas. Nevertheless, MVZ are considered to hold potential for further expansion in rural areas because the advantages of establishing or joining an MVZ were more pronounced than in urban areas. A 2011 comparison of workload shows that in rural areas, physicians in group practices work on average 4.5 hours less than their colleagues in solo practices, while this difference is only two hours per week in urban areas (Steinhäuser et al., 2011). Work in MVZ in rural regions is also considered economically attractive, as 32% of physicians in rural MVZ reported a strong economic improvement due to resource-sharing compared to 20% in urban areas. Rural MVZ also tend to co-operate more with other medical providers and patients report high degrees of satisfaction (KBV, 2011b).

Network of employed physicians and shared responsibility

In countries where employment rather than self-employment is more common, a network of physicians can support each other. In Japan, most physicians serving isolated rural areas are employed by local government or other public entities and belong in a network providing resources for rural health services. The typical approach to fill vacancies in such areas is a rotation of 2-3 years: if nobody wants to go there permanently, physicians in the region have to share the burden. Patients may not have physicians who know them for their entire life, but they have continued care through the rotation of doctors. Each isolated rural clinic has a corresponding medium-sized hospital providing support for specialist and emergency care. They tend to be a hub of physicians who take turns to rotate so patients may see their previous clinic physicians in a hospital. If it is well organised in a network, continuous care from primary to tertiary care can be provided.

In Scotland, the NHS promoted "obligated networks" in 2009, to improve services through "a formalised arrangement between two or more health care organisations securing access to sustainable services for the whole population served by these organisations". The primary focus is on designated clinical services, ensuring clear pathways of care, visiting service support, and possibly joint staff appointments. A 2010 report cited progress in developing such networks in services such as mental health and learning disabilities (NHS Scotland, 2010).

Introduction or expansion of new provider roles

In areas underserved by doctors, there is potential for role expansion of "mid-level" providers with a more even distribution, such as nurse practitioners or physician assistants. While this is not a new phenomenon (Delamaire and Lafortune, 2010), such roles are increasingly a response to health human resource concerns. Eleven countries indicated in response to the *2012-13 OECD Health System Characteristics Survey* that they had recently introduced such roles or expanded existing roles to provide a larger scope of practice to either address shortages of physicians or relieve the pressures on them (Canada, Chile, Finland, Ireland, the Netherlands, New Zealand, Slovenia, Spain, Sweden, Switzerland and the United States).

In Germany, physicians can delegate home visits of older patients with reduced mobility in rural and remote regions to non-physician practice assistants. These are physician assistants and nurses with an additional qualification designed by the German Medical Association. The services are mostly checking diagnosis-related parameters (such as measuring blood pressure and glucose levels) and basic medical services (such as bandaging and injections). This scheme was implemented nationwide in 2009 by the integration of the remuneration of these services into statutory health insurance. Only services to patients in rural and remote areas aged 65 and above with at least one chronic disease and immobile patients are remunerated (Bundesrat, 2007). The scheme was initiated by the University of Greifswald and tested in Mecklenburg-Western Pomerania, Brandenburg, Saxony and Saxony-Anhalt. At the time of the project evaluation in July 2008, 38 non-physician practice assistants and 53 GPs had participated in the project and 8 386 home visits to 1 486 patients had been undertaken. Out of 42 surveyed GPs, 38 rated the project as "supporting" and "disburdening". Out of 667 patients, 94.3% found that non-physician practice assistants could take over general home visits and 98.7% responded that they were competent service providers.

Processes-centred re-orientation

Fostering the take-up of new processes in health care delivery and involving non-physician care providers in service delivery are ways to ensure access in regions with low physician density.

Support systems/on-call duty management

There is a need to provide short-term cover for absent physicians in underserved regions. This includes cover for permanent staff to have vacation and study leave, but also to enable them to stay in their location without the pressure of being "on call" at all hours. This short-term temporary (locum) cover can be for planned absence (e.g. when the permanent physician is on vacation or study leave) or unplanned absence (e.g. when the permanent doctor becomes ill).

All health services need to arrange cover for absent staff, but the challenges are more pronounced when there may be only one physician in a remote area, or where there are only a few doctors providing a broader range of services in a remote hospital. There is no "on site" ability to co-ordinate cover or provide "on-call" support from other staff because none exist, so cover must be physically brought to the location. If it is a hard-to-fill location, the same factors that make it hard to fill with permanent staff make temporary cover more challenging and often more costly, because of incentives and travel and accommodation costs.

Policy responses to manage the use of locum doctors have been identified in Australia (Skinner et al., 2006), Scotland (Audit Scotland, 2010) and Northern Ireland (Northern Ireland Audit Office, 2011):

- An emphasis on minimising the need to use external locum staff through time planning, work scheduling and co-ordination of study leave and vacation time, and by providing on-call or cross organisational "cross border" support from other permanent staff, where that is feasible.
- Managing locum costs by using in-house co-ordination or by tight cost control of locums.
- Maximising the "fit" between vacancies and locum skills by clear definitions of skill requirements and timely and effective recruitment of locum physicians.
- Developing and implementing organisation-wide standard policies for pre-employment checks, induction, supervision, and performance management of locum physicians.
- Developing appropriate continuous professional development (CPD) requirements reflecting the development needs and requirements of physicians who work long term in locum posts.

Long-term "temporary" staff cover

Some countries use long-term temporary or locum contracts to recruit and retain physicians in "hard-to-fill" locations. These contracts can allow employers to provide additional one-off or recurring incentives such as payments, housing allowances, and end of contract bonuses. This enables additional incentives to small numbers of staff treated as "exceptional" because of the location's challenges. But it has additional cost implications and can raise additional challenges of managing staff on different terms of employment. It may undermine a team ethos if some staff are treated "exceptionally" whilst others are not.

In Australia, outreach Fly-in/Fly-out (FIFO) is used, where mobile doctors and other providers cover large geographic regions on a scheduled or needs-based approach (Health Workforce Australia, 2013a). Physicians living and working in one location are contracted to provide services to remote areas as an adjunct to their primary work (Battye and McTaggart, 2003). A recent report suggested FIFO doctors had helped increase the number of rural general practitioners in regional Western Australia, for the first time since 2008 (ABC News, 2013). These services incur extra costs and require increased management and administrative support to co-ordinate schedules and ensure communities and services are prepared for visits, and necessary follow-up clinical procedures are planned and delivered.

Technology/Telemedicine

The use of technology can reduce the imbalance between rural and urban areas, in terms of service delivery and access. Telemedicine can connect patients and physicians at distance while reducing administrative and travel costs. Technological developments and improved infrastructure enabling telemedicine can be expected to increasingly enter the daily life of physicians' practice.

Whilst telemedicine solutions may provide cost-efficient delivery options in some cases, rural service provision is generally more costly as it often involves a more limited number of patients, meaning smaller economies of scale.

In Canada, a tele-health network in the province of British Columbia began in 2001, using videoconferences to link patients, health-care providers and health-care administrators in 12 communities to resources in Vancouver. It has expanded to approximately 200 tele-health facilities with 470 videoconferencing end points, providing 18 000 consultations in 2007-08 (Ministry of Health of British Columbia). Schaafsma et al. (2007) evaluated a tele-health network with five sites connected with Vancouver. It provides clinical support for maternal/child care, medical, nursing, and health education, and administrative meetings. All sites are equipped with videoconferencing and some also have diagnostic equipment. Annual tele-health use in five sites amounted to 67 clinical consultations, 45 education sessions and 88 administrative sessions. Total travel costs were reduced by CAD 724 457 per year, greater than the annual fixed and variable costs of the telemedicine sessions (CAD 553 740).

5.8. Conclusions

Maldistribution of doctors exists in virtually all OECD countries, in rural and socio-economically disadvantaged regions. Crucial influences on physicians' choice of practice location include the organisation of service delivery, the income potential and working conditions, the prestige and recognition they derive from working in a certain region and specialty, and the origin of doctors.

Three broad strategies are available to respond to imbalances in physician distribution.

- The first is to target future physicians by increasing the number of physicians and/or the number of working hours they provide. The crucial focal point is the selection and type of training provided to medical students.
- The second is to *target current physicians* to maximise those practising in underserved regions.
- The third is to *do with less physicians*, i.e. accept that the number of doctors will be lower in some regions and focus on service re-design or configuration through expanding the involvement of non-physician providers and innovations such as telemedicine.

Policy makers will have to blend strategies, and review this mix over time. The best mix of strategies will depend on patient needs, population and physician demography, health care system characteristics, the budgetary situation, and the overall health reform context.

Table 5.7 provides an overview of possible areas of action, likely impact and cost.

Table 5.7. Strategies, areas of action, impact lag and cost impact to address the uneven geographic distribution of doctors

Strategy	Area of action	Impact lag	Cost structure
Targeting future doctors	Medical education	Long-term	Moderate fixed (upfront) cost, moderate variable cost
Targeting current doctors	Financial incentives	Short to medium term	Significant variable cost
	Regulatory policies	Short term	Moderate variable (administrative) cost
Doing with less physicians	Service delivery reform	Medium to long-term	Significant fixed (upfront) cost, moderate variable cost

In times of austerity, countries may face limitations in what is financially feasible in the short term. This may, by default, orientate policy makers away from options that have upfront cost implications, such as the extension of financial incentives, and towards policy options that are less costly but may take longer to have any impact, such as some education interventions, or may be politically controversial, such as some regulatory changes. It is important that policy makers look beyond the short term when assessing the options. While broad characteristics of interventions can be identified, more robust evaluations are required to improve the evidence base of policies to tackle imbalances in physician supply.

Notes

1. This chapter builds on *OECD Health Working Paper No. 69* (OECD, 2014), providing some data updates and updates in policy responses and evaluations. The authors would like to thank Carol Nader for useful editing.

2. Predominantly urban regions are defined as regions where less than 15% of the population live in rural areas. Predominantly rural regions are defined as regions where more than 50% of the population live in rural areas with no urban centre of at least 200 000 inhabitants accounting for more than 25% of the region's population (OECD, 2011).

References

Aasland, O.G., J.O. Røvik and J. Wiers-Jenssen (2008), "Motives for Choice of Specialty During and After Medical School", *Tidsskr Nor Legeforen*, Vol. 128, pp. 1833-1837.

ABC News (2013), "FIFO Doctors Push Up Regional GP Numbers", Australian Broadcasting Corporation.

Alexandersen, Ø. et al. (2004), "Medisinerutdanningen i Tromsø –sikrer den legerekrutteringen til Nord-Norge?" [Medical education in Tromsø – does it ensure the recruitment of physicians in Northern Norway?], *Tidsskr Nor Lægeforen*, Vol. 16, No. 124, pp. 2107-2109.

AOK Saxony and Thuringia (2011), *Gemeinsame Presseerklärung: Ärzte erhalten finanzielle Förderungen bei Niederlassung in Thüringen* [Joint press declaration: Physicians receive financial support for practice opening in Thuringia].

Audit Scotland (2010), *Using Locum Doctors in Hospitals*, Edinburgh, http://www.audit-scotland.gov.uk.

Australian House of Representatives' Standing Committee on Health and Ageing (2012), *Lost in the Labyrinth: Report on the Inquiry into Registration Processes and Support for Overseas Trained Doctors*, Canberra.

Barlet, M. et al. (2012), "L'accessibilité potentielle localisée (APL) : une nouvelle mesure de l'accessibilité aux médecins généralistes libéraux [Localised potential accessibility: a new measure of accessibility to private GPs] ", *Études et Résultats*, Vol. 795, No. 3, DREES, Paris.

Bärnighausen, T. and D. Bloom (2009), "Financial Incentives for Return of Service in Underserved Areas: A Systematic Review", *BMC Health Services Research*, Vol. 29, No. 9, p. 86.

Battye, K.M. and K. McTaggart (2003), "Development of a Model for Sustainable Delivery of Outreach Allied Health Services to Remote North-west Queensland, Australia", *Rural and Remote Health*, Vol. 3, No. 3, p. 194.

Bennett, K.L. and J.P. Phillips (2010), "Finding, Recruiting, and Sustaining the Future Primary Care Physician Workforce: A New Theoretical Model of Specialty Choice Process", *Acad Med 2010*, Vol. 85(10 Suppl), pp. S81-S88, October.

Bourgueil, Y., J. Mousquès and A. Tajahmadi (2006), "Comment améliorer la répartition géographique des professionnels de santé ? Les enseignements de la littérature internationale et des mesures adoptées en France" [How to improve the geographical distribution of health professionals ? Lessons learned from the international literature and the measures adopted in France], *Rapport No 534*, IRDES, Paris.

Bourgueil, Y. et al. (2009), "An Exploratory Evaluation of Multidisciplinary Primary Care Group Practices in Franche-Comté and Bourgogne", *Issues in health Economics No. 147*, IRDES, Paris.

Buddeberg-Fischer, B. et al. (2008), "The New Generation of Family Physicians – Career Motivation, Life Goals and Work-life Balance", *Swiss Med Weekly 2008*, Vol. 138, No. 21-22, pp. 305-312.

Bundesrat (2007), *Empfehlungen der Ausschüsse, Entwurf eines Gesetzes zur strukturellen Weiterentwicklung der Pflegeversicherung (Pflege-Weiterentwicklungsgesetz)* [Recommendation of the committees, draft law for the structural development of the long-term care insurance (long-term care insurance development law)], *Drucksache 718/1/07*, Berlin.

Cameron, M. and S. Kosmina (2013), "GP Distribution in Rural Australia – Has the OTD Moratorium Worked?", presented at the 12th National Rural Health Conference: Strong Commitment. Bright Future, Adelaide.

Canadian Residency Matching Services (2010), *Canadian Students Studying Medicine Abroad*.

Chandola, T. (2012), "Spatial and Social Determinants of Urban Health in Low-, Middle- and High-income Countries", *Public Health*, Vol. 126, No. 3, pp. 259-226, March.

Cheng, T.C. et al. (2010), "What Factors Influence the Earning of GPs and Medical Specialists in Australia? Evidence from the MABEL Survey"*, Melbourne Institute Working Paper Series*, No.12/10, Melbourne Institute of Applied Economic and Social Research.

Colegrove, D.J. and B.E. Whitacre (2009), "Interest in Rural Medicine Among Osteopathic Residents and Medical Students", *Rural and Remote Health*, Vol. 9, No. 1192.

Colorado Health Institute (2012), *A Profile of Colorado's Rural Physicians, Colorado Rural Physician Survey: A Chart Pack*, June 5.

Cooper, J.K., K. Heald and M. Samuels (1972), "The Decision for Rural Practice", *Journal of Medical Education*, Vol. 47, pp. 939-944.

Creed, P.A., J. Searle and M.E. Rogers (2010), "Medical Specialty Prestige and Lifestyle Preferences for Medical Students", *Social Science and Medicine*, Vol. 71, No. 6, pp. 1084-1088, September.

Delamaire, M. and G. Lafortune (2010), "Nurses in Advanced Roles: A Description and Evaluation of Experiences in 12 Developed Countries*", OECD Health Working Papers*, No. 54, OECD Publishing, Paris, http://dx.doi.org/10.1787/5kmbrcfms5g7-en.

Deloitte (2011), *Inntekts- og kostnadsundersokelse for driftsåret 2009 – landets fastleger og avtalespesialister* [Income and cost analysis in 2009 for General practitioners and outpatient specialists], Oslo.

Department of Health and Ageing, Australian Government (2015), *Medical Rural Bonded Scholarship Scheme*, accessed at http://www.health.gov.au/mrbscholarships.

Department of Health and Ageing, Australian Government (2012). *Bonded Medical Places Scheme, Information Booklet for 2013*.

Department of Health and Ageing, Australian Government (2008), *Report on the Audit of Health Workforce in Rural and Regional Australia 2008,* Commonwealth of Australia, Canberra.

Department of Health, Health Service Executive Ireland (2013), *Securing the Future of Smaller Hospitals: A Framework for Development*, Dublin, February.

Dolea, C., L. Stormont and J.-M. Braichet (2010), "Evaluated Strategies to Increase Attraction and Retention of Health Workers in Remote and Rural Areas", *Bull World Health Organ*, Vol. 88, No. 5, pp. 379-385.

Dywili, S. et al. (2012), "Experiences of Overseas Trained Health Professionals in Rural and Remote Areas of Destination Countries – A Literature Review", *Australian Journal of Rural Health,* Vol. 20, pp. 175-184.

Elliott, V.S. (2012), "Who Still Wants To Be a Country Doctor?", *Amed News*.

EU-SILC (2013), *Statistics on Income, Social Inclusion and Living Conditions*.

Federal Joint Committee (2012), *Bedarfsplanungs-Richtlinie* [Planning guideline of the Federal Joint Committee], Federal Ministry of Justice.

Feldman, M.A. et al. (2008), "The Difference Between Medical Students Interested in Rural Family Medicine Versus Urban Family or Specialty Medicine", *Canadian Journal of Rural Medicine*, Vol. 13, No. 2, pp. 73-79, January.

Frehywot. S. et al. (2010), "Compulsory Service Programmes for Recruiting Health Workers in Remote and Rural Areas: Do They Work?", *Bull World Health Organ [online]*, Vol. 88, No. 5, pp. 364-370.

Gibis, B. et al. (2012), "The Career Expectations of Medical Students, Findings of a Nationwide Survey in Germany", *Deutsches Aerzteblatt International*, Vol. 109, No. 18, pp. 327-332.

Greß, S. and K. Stegmüller (2011), *Gesundheitliche Versorgung Stadt und Land, ein Zukunftskonzept* [Health care in cities and the countryside, a future concept], Friedrich Ebert Foundation, Federal Office of Hesse,Wiesbaden.

Grobler, L. et al. (2009), "Interventions for Increasing the Proportion of Health Professionals Practising in Rural and Other Underserved Areas", *Cochrane Database of Systematic Reviews*, Vol. 1, Art. No. CD005314, http://dx.doi.org/10.1002/14651858.CD005314.pub2.

Han, G. and J. Humphreys (2006), "Integration and Retention of International Medical Graduates in Rural Communities: A Typological Analysis", *Journal of Sociology*, Vol. 42, No. 2, pp. 189-207.

Hancock, C. et al. (2009), "Why Doctors Choose Small Towns: A Developmental Model of Rural Physician Recruitment and Retention", *Social Science & Medicine*, Vol. 69, pp. 1368-1376.

Health Workforce Australia (2013) *National Rural and Remote Workforce Innovation and Reform Strategy*, HWA, Adelaide.

Heisler, E.J. (2013), *Physician Supply and the Affordable Care Act*, Congressional Research Service, 15 January.

Henry, L., R.S. Hooker and K.L. Yates (2011), "Role of Physician Assistants in Rural Health Care", *Journal of Rural Health*, Vol. 27, pp. 220-229.

HPM – Harbour Peaks Management Inc. (2008), *British Columbia Rural Physician Programs Review*, March 31.

Huisman, M. et al. (2013), "Socioeconomic Inequalities in Mortality Rates in Old Age in the World Health Organization Europe Region", *Epidemiologic Reviews*, Vol. 35, No. 1, pp. 84-97.

Humphreys, J.S et al. (2008), "Beyond workforce: A Systemic Solution for Health Service Provision in Small Rural and Remote Communities", *Medical Journal of Australia*, Vol. 188, No. 8, p. 77.

IGAS – Inspection générale des affaires sociales (2011), *Pharmacies d'officine : rénumeration, missions* [Community Pharmacy: remuneration, missions]*, Réseau,* rapport, Paris.

Inoue, K., M. Matsumoto and T. Sawada (2007), "Evaluation of a Medical School for Rural Doctors", *Journal of Rural Health*, Vol. 23, No. 2, pp. 183-187.

Jakoubovitch, S. et al. (2012), "Les emplois du temps des médecins généralistes" [The timetables of general practitioners], *Études et Résultats*, No. 797, DREES Paris.

Jones, M., J.S. Humphreys and M.R. McGrail (2012), "Why Does a Rural Background Make Medical Students More Likely to Intend to Work in Rural Areas and How Consistent Is the Effect? A Study of the Rural Background Effect", *Australian Journal of Rural Health*, Vol. 20, pp. 29-34.

KBV – National Association of Statutory Health Insurance Physicians (2011a), *Grunddaten zur medizinischen Versorgung in Deutschland* [Basis data on medical service in Germany], Berlin.

KBV (2011b), *MVZ-Survey, Medizinische Versorgungszentren in ländlichen Regionen* [Survey among community health centers, community health centers in rural areas], Berlin.

KBV (2011c), *Beruf und Familie verbinden: Wie sieht das in der Praxis aus?* [Combining work and family: How does this look like in practice?], Berlin.

Laven, G. and D. Wilkinson (2003), "Rural Doctors and Rural Backgrounds: How Strong is the Evidence? A Systematic Review", *Australian Journal of Rural Health*, Vol. 11, No. 6, pp. 277-284.

Lu, D.J., J. Hakes and M. Bai (2008), "Rural Intentions. Factors Affecting the Career Choices of Family Medicine Graduates", *Canadian Family Physician*, Vol. 54, pp. 1016-1017.e1-5.

Mason, J. (2013), *Review of Australian Government Health Workforce Programs,* Department of Health and Ageing, Australian Government.

Mathews, M. et al. (2013), "Evaluation of Physician Return-for-Service Agreements in Newfoundland and Labrador", *Health Care Policy*, Vol. 8, No. 3, pp. 42-53.

Matsumoto, M. et al. (2008), "A Contract-based Training System for Rural Physicians: Follow-up of Jichi Medical University Graduates (1978-2006)", *Journal of Rural Health*, Vol. 24, No. 4, pp. 360-368.

McGrail, M.R. et al. (2012), "How Do Rural GPs' Workloads and Work Activities Differ with Community Size Compared with Metropolitan Practice", *Australian Journal of Primary Health*, Vol. 19, No. 3, pp. 228-233.

McGrail, M.R. et al. (2011), "Nature of Association Between Rural Background and Practice Location: A Comparison of General Practitioners and Specialists", *BMC Health Services Research*, Vol. 11:63.

Ministère des Affaires sociales et de la Santé (2015), *2015 : Pacte territoire santé 2* [Pact territory health 2], 20 November, Paris.

Ministère des Affaires sociales et de la Santé (2012a), *Conclusion des négociations sur la convention pharmaciens d'officine* [Conclusion of negotiations on the convention for pharmacists working in community pharmacies], 29 March, Paris.

Ministère des Affaires sociales et de la Santé (2012b), *Le pacte territoire santé pour lutter contre les déserts médicaux* [The pact territory health to tackle medical desertification], 13 December, Paris.

Ministère des Affaires sociales et de la Santé (2012c), *Les maisons de santé* [Health Homes], Paris.

Ministry of Health of British Columbia (2012), *Rural Retention Program (RRP), Policy Framework for Health Authorities*, June.

Ministry of Health of British Columbia, *Telehealth*.

Natanzon, J. et al. (2010), "Future Potential Country Doctor: The Perspectives of German GPs", *Rural and Remote Health*, Vol. 10:1347.

New York Health (2011), *Health Care Reform in New York City – Access to Primary Health Care before Reform*, Epi Research Report, New York City Department of Health and Mental Hygiene, New York.

NHS Scotland (2010), *Final Report of the Remote and Rural Implementation Group. Remote and Rural Implementation Group*, Edinburgh.

Northern Ireland Audit Office (2011), *The Use of Locum Doctors in Northern Ireland Hospitals*, Belfast.

Northern Ontario School of Medicine (NOSM) (2012), "Distributed Community-engaged Learning", Document prepared for the *Rendez-Vous 2012 Conference*, Thunder Bay, 9-13 October.

OECD (2015), *Health at a Glance 2015: OECD Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/health_glance-2015-en.

OECD (2013), *Regional Database*, available at: http://stats.oecd.org/OECDregionalstatistics/.

OECD (2012), "Gender Equality in Employment", *Closing the Gender Gap: Act Now*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264179370-en.

OECD (2011), "Annex A: Territorial Grids and Regional Typology", *OECD Regions at a Glance 2011*, OECD Publishing, Paris, http://dx.doi.org/10.1787/reg_glance-2011-38-en.

OECD (2010), *OECD Rural Policy Reviews: Strategies to Improve Rural Service Delivery,* OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264083967-en.

ONM – Ordre national des médecins (2012), *Observatoire pour la sécurité des médecins, Recensement national des incidents 2012* [Observatory for the security of physicians, National Census of Incidents], Paris.

Ono, T., M. Schoenstein, and J. Buchan (2014), "Geographic Imbalances in Doctor Supply and Policy Responses", *OECD Health Working Papers*, No. 69, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jz5sq5ls1wl-en.

ONP – Ordre national des pharmaciens (2012), *Les pharmaciens – Panorama au 1er janvier 2012* [The pharmacists – Overview in the 1st January 2012], Paris.

PLO – Organisation of General Practitioners in Denmark (2013), *§ 2 aftaler og andre aftaler* [§2-agreements and other agreements], Praktiserende Lægers Organisation.

Rabinowitz, H.K. et al. (2011), "Increasing the Supply of Rural Family Physicians: Recent Outcomes from Jefferson Medical College's Physician Shortage Area Program (PSAP)", *Acad Med.*, Vol. 86, No. 2, pp. 264-269, http://dx.doi.org/10.1097/ACM.0b013e31820469d6.

Regioneres Lønnings- og takstnævn, Praktiserende Lægers Organisation (2011), *Overenkomst om almen praksis* [Agreement on General Practice], 1 April.

Rourke, J. (2010), "How Can Medical Schools Contribute to the Education, Recruitment and Retention of Rural Physicians in their Region?", *Bull World Health Organization*, Vol. 88, pp. 395-396.

Rourke, J. (2008), "Increasing the Number of Rural Physicians", *Canadian Medical Association Journal*, Vol. 178, pp. 322-325.

Rourke, J. (2005), "Strategies to Increase the Enrolment of Students of Rural Origin in Medical School: Recommendations from the Society of Rural Physicians of Canada", *Journal of Ayub Medical* College, Vol. 172, No. 1, pp. 62-65.

Schaafsma, J. et al. (2007), "An Economic Evaluation of a Telehealth Network in British Columbia", *Journal of Telemedicine and Telecare*, Vol. 13, No. 5, pp. 251-256.

Skinner, C. et al. (2006), "The Challenge of Locum Working Arrangements in New South Wales Public Hospitals", *Medical Journal of Australia*, Vol. 185, No. 5,pp. 276-278.

Soethout, M.B.G., G. van der Wal and O.T.J. ten Cate (2007), "Carrierewensen en beroepskeuze van recent afgestudeerden artsen" [Career preferences and choice of a career among recently graduated doctors", *Nederlands Tijdschrift voor Geneeskunde*, Vol. 38, pp. 2118-2124.

URPS Médecins IDF (2013), *Professionnels de santé en Ile-de-France*, basé sur les données de la Caisse autonome de retraite des médecins français de 2009.

Van den Berg, N. et al. (2009), "AGnES: Hausarztunterstützung durch qualifizierte Praxismitarbeiter, Evaluation der Modellprojekte: Qualität und Akzeptanz" [AGnES: GP support by qualified practice assistants, evaluation of model projects: Quality and acceptance], *Deutsches Ärzteblatt International*, Vol. 106, No. 1–2, pp. 3-9.

Van den Hombergh, P. et al. (2005), "Saying 'Goodbye' to Single-handed Practices: What Do Patients and Staff Loose or Gain?", *Family Practice*, Vol. 22, pp. 20-27.

Von Stillfried, D. (2012), "Wirtschafts- und Arbeitssituation der Vertragsärzte – Zielsetzung und Ergebnisse des ZiPP" [Economic situation and working conditions of SHI physicians – goals and results of the Central institute's practice pannel], presentation at conference in Berlin, 20 November 2012.

Weeks, W.B. and A.E. Wallace (2008), "Rural–Urban Differences in Primary Care Physicians' Practice Patterns, Characteristics, and Incomes", *Journal of Rural Health*, Vol. 24, No. 2, pp. 161-170.

Weiskotten, H.G. et al. (1960), "Trends in Medical Practice. An Analysis of the Distribution and Characteristics of Medical College Graduates, 1915-1950", *Journal of Medical Education*, Vol. 35, pp. 1071-1121, December.

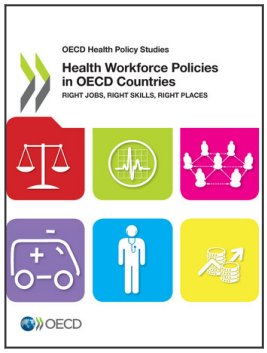
WHO (2010), *WHO Global Code of Practice on the International Recruitment of Health Personnel*, World Health Organization, Geneva.

Wilson, N.W. et al. (2009), "A Critical Review of Interventions to Redress the Inequitable Distribution of Healthcare Professionals to Rural and Remote Areas", *Rural and Remote Health*, Vol. 9, No. 2, p. 1060.

Annex 5.A1. Overview of programmes designed to achieve a better geographic distribution of doctors and health services in OECD countries

Table 5.A1.1. Type of programmes to promote a better geographic distribution of doctors and health services in different OECD countries

	Type	Location	Programme	Start year
Medical education policies	Student selection	Australia	Bonded Medical Places Scheme	2004
	Student selection	Australia	Medical Rural Bonded Scholarship	2001 (closed from 2016)
	Student selection	Japan	Regional Quota	2000s
	Medical school for rural area	Norway	Tromsoe Medical School	1972
	Medical school for rural area	Japan	Jichi Medical School	1972
	Regionalised entry into medical education and specialty training	France	*Numerus clausus* policy for entry in medical education Epreuves Classantes Nationales (ECN)	2004
	Distributed medical school in rural area	Canada	Northern Ontario School of Medicine	2005
	Internship	Norway	Finnmark internship programme	1997
	Internship	Australia (NSW)	Rural resident medical officer cadetship programme	1988
	Internships	UK (Scotland)	GP rural fellowships, several medical schools	Varies
Financial incentives	New practice opening incentive	Germany	Financial support for designated shortage	2007
	New practice opening incentive	Canada	Northern and Rural Recruitment and Retention Initiative	2010
	Support for work-life balance	Canada	Financial support to hire locum physicians	At least 2004
	Support for work-life balance	Denmark	Financial support to hire additional staff	2008/2009/2010
	One instalment - retirement	Denmark	Financial incentive for older GPs to postpone retirement	2009/13
	Minimum income guarantee	Denmark	Guaranteed minimum income for two years after practice opening	2008
	Minimum income guarantee	France	Guaranteed minimum income for two years after practice opening	2012
	Bonus for rural practice	Canada	Annual bonus depending on conditions – Rural Retention Programme	2003
	Bonus for rural practice	Denmark	Higher numeration for signing up more patients on the list	2006/07
	Bonus for rural practices	UK (England and Wales)	GP contract renegotiation including rurality index	2004
	Bonus for retirement delay	Canada	Staged annual bonus based on years of practice	2003
	Bonus for retirement delay	Germany	Quarterly support for GPs aged 65 and above	2009
Regulation of practice location	Practice restriction	Germany	No practice permits are issued for overserved areas	1993
	Vacancy determination and practice restriction	Denmark	Practice permits issued based on list size and distance	2011
	Vacancy determination and practice restriction	Norway	Practice permits issued based on list size and general situation in municipality	2001
	Targeting International Medical Graduates	Australia	Ten-year moratorium for access to Medicare payment	1997
	Targeting International Medical Graduates	Canada	Return-of-Service obligation in several provinces	Varies
Service delivery reform	Group practice	France	Maisons de santé pluridisciplinaires	2007
	Group practice	Germany	Medizinisches Versogungszentrum (MVZ)	2004
	Group practice	Switzerland	Financially supported group practices	2007
	Group practice	Japan	Group practice with rotation of multiple clinic	2007
	Group practice/task-sharing	Slovenia	Model practices	2011
	Rotation schemes	UK (Scotland)	Obligated Networks	2009
	Rotation scheme	Ireland	Hospital groups	2013
	Mobile doctors	Australia	FIFO/DIDO programmes	Varies
	Management of on-call duties	AUS/UK (Scotland, Northern Ireland)	Effective management of locum medical staff	Varies
	Telemedicine	Canada	Telemedicine providing clinical support for maternal/child care, education among others	2001
	New roles/task-sharing	Germany	AGnES (non-physician practice assistants) take over GP's home visits	2009
	New roles/task-sharing	France	Pharmacist scope of practice extension	2009



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