

## Occupational and spatial mobility of rural physiotherapists: insights for workforce development

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### Abstract

There has been a persistent undersupply of physiotherapists in rural and remote Australia since at least the 1980s. Addressing this undersupply will require, along with increasing the number of physiotherapists educated in rural and remote areas, encouraging physiotherapists to migrate from urban to rural areas. Addressing undersupply will also require encouraging physiotherapists to remain in the profession while they are living in rural and remote Australia. The purpose of this paper is to provide a high level view of how these 'mobilities' of physiotherapists between 2006 and 2011 affected supply. Data from the 2011 Census are used to identify the characteristics of people who were qualified as physiotherapists but working in another occupation ('exits') and of practising physiotherapists who had migrated to a rural or remote area between 2006 and 2011. The paper concludes that the rural and remote workforce is young and highly mobile, and that strategies are needed to encourage mid-career (35-49 years old) physiotherapists in particular to work in rural and remote areas.

### Background and aim

The aim of this research is to examine how occupational and residential mobility of physiotherapists between 2006 and 2011 might have contributed to the persistent undersupply of these professionals in rural and remote Australia. Occupational mobility was indicated by the number of people who had their highest education qualification in the field of physiotherapy, but who were working in another occupation. Residential mobility occurred when people who were practising as physiotherapists in 2011 moved in to or out of rural or remote areas between 2006 and 2011. Particular attention was paid to the relationships between age and mobility.

The guiding principle of the Australian Government is for rural, regional and remote Australians to be as healthy as their urban counterparts with the skills and capacity to maintain healthy communities.<sup>1</sup> Achieving this vision depends in part on the ability to recruit and retain an adequate health workforce. An essential part of this workforce is the allied health workforce which comprises around 15% of the total health workforce.<sup>2</sup> Of the eight allied health categories included in the 2011 Australian population census, physiotherapy was by far the largest, comprising nearly 30 % of the allied health workforce in Australia.

Physiotherapists are primary care health professionals whose primary focus is to maintain and maximise mobility, physical function and the prevention of further injury. They have an especially important role to play in both the ongoing health and well-being of an ageing population and in occupational rehabilitation. In the period 2001-2005 for example physiotherapy consultations in Australia for people over 65 years of age rose by 43%. The demand for physiotherapist services in Australia is predicted to increase with an ageing population, a concomitant increase in the incidence of chronic disease and an increased emphasis on the delivery of multidisciplinary care.<sup>3</sup> Nowhere is this more apparent than in rural and remote areas with studies noting poorer health outcomes,<sup>4,5</sup> an ageing of rural and remote populations in Australia<sup>6,7</sup> and an ongoing shortage in the wider allied health workforce.<sup>8</sup>

While the patterns of allied health workforce distribution may vary between both the different allied health professions and the different geographical regions, a substantial body of research shows that the allied health workforce in general and physiotherapy in particular is significantly under-represented in rural and remote areas of Australia. Williams and colleagues<sup>9</sup>, for example note that although little research has been conducted into physiotherapy as a discrete allied health profession, it is nevertheless one of the largest clinical allied health professions with one of the highest attrition rates and critical workforce shortages in rural and remote areas. Smith and colleagues<sup>10</sup> highlight the disparity in the ratio of allied health practitioners to population, from 2.66 per 10 000 in capital cities to between 1.41 and 1.81 in regional areas, 1.17 in remote areas and 0.60 in very remote areas while

the Dept. of Employment similarly identifies a physiotherapist shortage throughout regional areas of Australia.<sup>11</sup> The 2011 Census confirms the undersupply, finding that while 25% of the Australian population lived in a rural or remote area according to the 2011 Census, just 15% of physiotherapists worked in rural or remote areas.

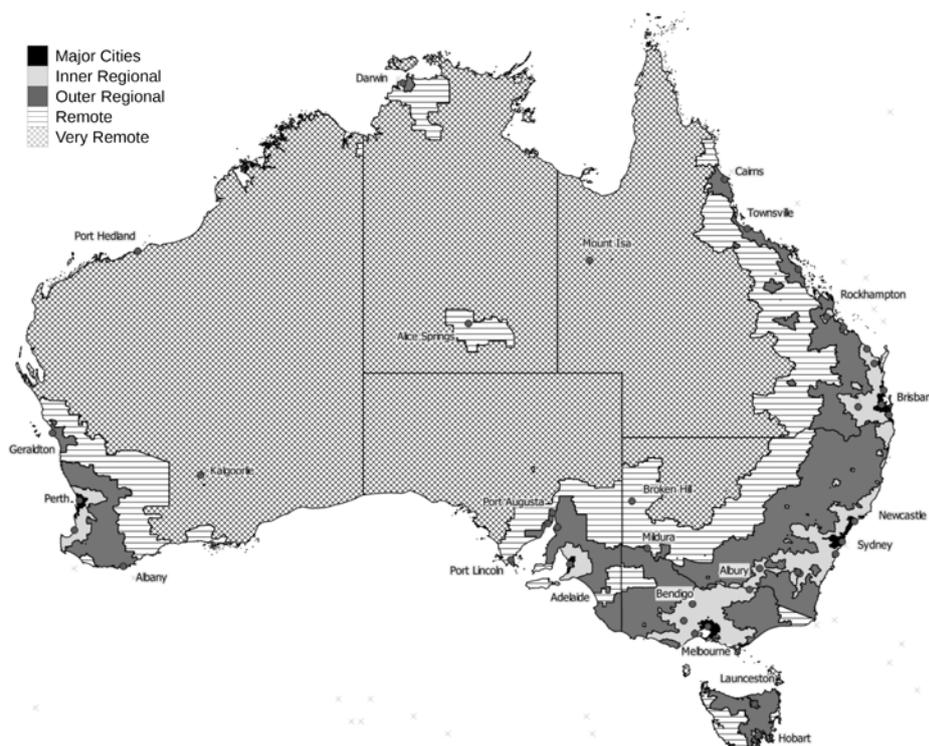
Numerous qualitative studies (see, for example,<sup>12-16</sup>) have identified a significant number of barriers to recruiting and retaining health workers including physiotherapists to rural and remote areas. These can be broadly categorised as personal organisational and professional reasons including such things as geographic, social or professional isolation, further education, case load and after hours work, workplace stress and adaptive capacity to live in a rural or remote area. These studies also argue that rural and remote areas have a disproportionate number of young physiotherapists, and that this age bias increases the barriers to retention in particular. However, the dominant approach to alleviating workforce supply problems continues to be programs to produce more workers, and to encourage new recruits to consider rural practice through rural oriented education and training.

Addressing under-supply and lack of experience in the workforce requires both attracting more people to the profession (occupational mobility) and attracting professionals to live and work in rural and remote areas (spatial mobility). There has generally been limited attention paid to the role of occupational and spatial mobility in the persistence of supply imbalances in the health workforce<sup>17</sup>, so this paper begins to address this issue.

## Method

Data were drawn from the 2011 Census of Population and Housing<sup>2</sup>. For the purposes of this paper, rural and remote areas were identified using a modified Australian Statistical Geography Standard remoteness areas (ASGS-RA) classification. This classification considers degrees of remoteness as a function of the distance between the location of interest and urban centres of various sizes. The research considered 'major cities' and 'inner regional' areas to be urban, 'outer urban' areas to be rural, and 'remote' and 'very remote' areas to be remote (Figure 1). The research also considered Darwin (Northern Territory 'outer regional') to be urban.

Figure 1 ASGS-RA classifications, 2011



Source: Australian Bureau of Statistics 2011 Census of Population and Housing

Residential migration data were not available for ASGS-RA areas. Instead, a correspondence between Statistical Area 3 (SA3) units (which typically represent colloquial regions such as 'the Hunter' in New South Wales, 'North West' in Queensland, 'Pilbara' in Western Australia and so on) and ASGS-RA areas was estimated. In cases where an SA3 overlapped ASGS-RA areas, the SA3 was classified as the more urban of the areas.

Despite some limitations, the Census provides a useful source of information because it is historically consistent, and it provides details about the demographic, economic and educational characteristics of physiotherapists which are not available in other national data sets. Future research should examine some of the analyses in this paper using alternative data sources (such as professional registration databases), but those data sources are generally not available for such a period of time as the Census, and are likely to exclude some of the participants in which we are interested (particularly those with qualifications in a profession, but who are not practicing that profession).

The analysis initially compared the physiotherapist to resident population ratio (per 10000 population) and the age structure of the physiotherapist workforce for each ASGS-RA area. The proportion of people qualified as physiotherapists but working in another occupation in each ASGS-RA area in each State and the Northern Territory was then examined, along with the age distribution of occupational 'exits'. To support these data, the population of physiotherapists recorded at the 2006 Census was 'aged forward' to identify which age categories experienced an increase in numbers (implying entries into the profession) and which experienced a decrease (implying exits). Finally, the migration patterns of physiotherapists into and out of rural and remote Australia between 2006 and 2011 were analysed.

## Results

### Workforce structure

During the period 2006-2011 the population for rural and remote areas of Australia increased by 1.69% and 8.59% respectively. In the same period the number of employed physiotherapists per 10000 increased by 0.07% and 0.08% respectively. There was however a substantial variability, especially within rural areas, with those areas beginning the period with relatively high physiotherapist-population ratios all recording significantly higher increases compared to other rural and remote regions. The 'favoured' areas tended to be coastal and relatively proximate to large urban centres.

Over one third of physiotherapists working in rural and remote Australia were aged less than 35 years ('early career'), with a similar proportion (35%) aged 50 years and over ('late career'), leaving just under 30% in the 'mid career' age group. There was substantial difference between the rural workforce (30% early career, 30% mid career and 40% late career) and the remote workforce (55% early career, 33% mid career, 12% late career). There were also substantial differences between States, with, for example, Tasmania's rural workforce including 52% in late career compared with 34% in Queensland. There were no late career physiotherapists in remote New South Wales or the Northern Territory. Table 1 shows the percentage of physiotherapists in each age category for each State where there were more than 10 physiotherapists in the relevant zone.

About 30% of people who were qualified physiotherapists and living in rural and remote Australia in 2011 were not employed as physiotherapists. Table 2 shows the percentage of qualified physiotherapists not working as physiotherapists in rural and remote areas of each State and the Northern Territory. South Australia (15%) had the lowest proportion of 'non workers', while New South Wales (35%) had the highest. Workforce non-participation varied most dramatically in remote areas, with South Australia having no 'non workers', while New South Wales had 69% of qualified physiotherapists not working as physiotherapists and the Northern Territory had 45%.

**Table 1 Age Distribution of Rural and Remote Workforce**

	Early (15-34 years)	Mid (35-49 years)	Late (50+ years)	n
NSW Rural	24%	34%	42%	178
VIC Rural	34%	27%	40%	92
QLD Rural	39%	27%	34%	294
SA Rural	26%	34%	41%	84
WA Rural	30%	32%	38%	94
TAS Rural	19%	29%	52%	60
TOTAL RURAL	31%	30%	39%	802
NSW Remote	100%	0%	0%	14
QLD Remote	48%	23%	29%	14
SA Remote	52%	23%	25%	29
WA Remote	56%	38%	5%	58
NT Remote	52%	48%	0%	42
TOTAL REMOTE	55%	33%	12%	131
<i>Total Rural and Remote</i>	34%	30%	35%	933

**Table 2 Qualified Physiotherapists not working as Physiotherapists in Each State and the Northern Territory**

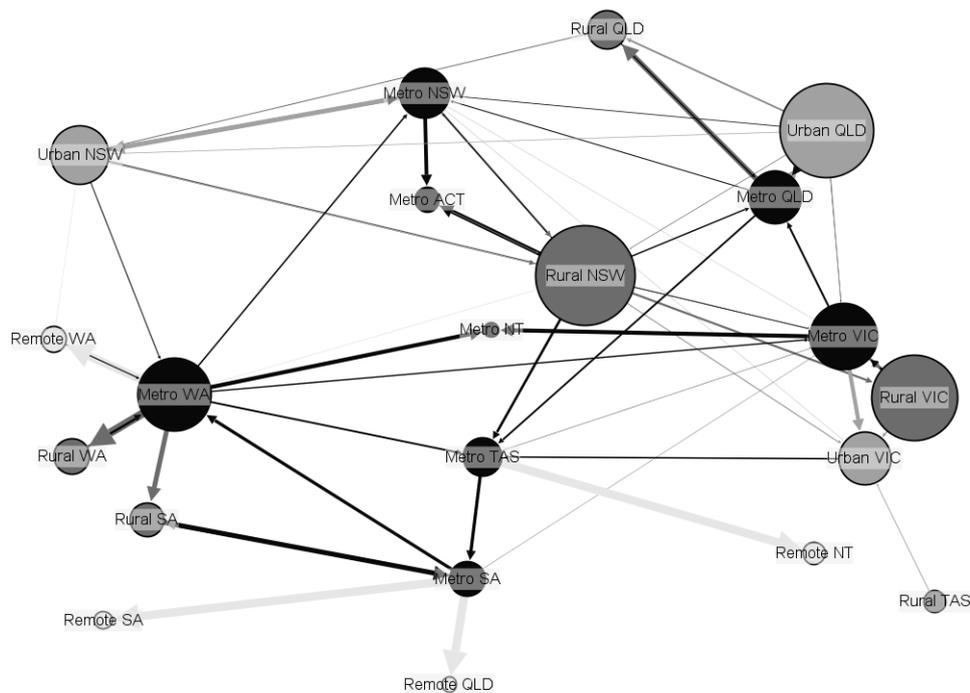
State	Rural	Remote	Total
New South Wales	34%	69%	35%
Victoria	33%	n.a	33%
Queensland	27%	20%	26%
South Australia	19%	0%	15%
Western Australia	30%	31%	31%
Tasmania	26%	0%	25%
Northern Territory	26%	45%	31%
AUSTRALIA	29%	29%	29%

Ageing forward for both qualified and employed physiotherapists indicated a significant number of new entrants in the 20-24, 25-29 and 30-34 year old age groups and a significant number of exits in the 35-39 year old age group. This trend was especially prominent in remote areas with the age distribution suggesting that many new arrivals to rural and remote areas are new graduates.

Around 50% of all rural and remote physiotherapists in 2011 had migrated from another region since 2006. The early career (20-34 years old) age group had the highest proportion of migrants (70% in rural areas and 85% in remote areas) while late career (50-64 years old) had the lowest proportions (6% and 4%). Nearly one quarter of mid career (aged 35-49 years) physiotherapists in rural areas were in-migrants to those areas between 2006 and 2011, along with 11% in remote areas.

Excluding the Northern Territory, domestic in-migration of physiotherapists to rural and remote regions was heavily constrained by state borders, with rural and remote areas in all states being heavily reliant upon their major cities (see Figure 2). In migration from other states was generally limited to nearby regions in adjacent states. Overseas in migrants made up the second highest source of in-migrants to rural and remote areas averaging around 15% (not shown in Figure 2). There was very little migration from rural and remote areas to other rural and remote areas, with the exception of small flows between rural New South Wales and rural Victoria largely confined to the border areas. The Northern Territory had a different dynamic to other States, with no intra-Territory migration.

Figure 2 Exchange of Physiotherapists Between Remoteness Areas, 2006-2011



Source: Australian Bureau of Statistics 2011 Census of Population and Housing

In migrants were much more likely to move to the larger population centres close to the coast and enjoying high amenity levels, for example coastal areas within easy travelling distance of capital cities, popular tourist destinations or large industrial type areas. In contrast, the least popular regions were those outer rural and remote regions characterised by long travelling distances to major centres and low levels of access to services.

## Discussion

The rural and remote physiotherapist workforce is subject to high levels of both occupational and spatial mobility. This mobility is likely to be in part a function of the age structure of the workforce, with high numbers of early career and late career workers. Early career workers are subject to high spatial mobility, while late career workers are subject to higher occupational mobility associated with retirement and the transition to retirement.

While there are differences between States, and the Northern Territory is a unique case in many instances, the career long mobility pattern appears clear. There are numerous occupational and spatial entries in the early career ages, and numerous occupational exits in the late career ages. There is also a high level of occupational exits within the mid career ages, and it is this aspect of the 'life cycle' which is perhaps most concerning. In rural areas in particular, we can expect a large loss of workforce over the next ten years because of the high numbers of late career workers. While exits can be covered by in-migration and the training of new physiotherapists, the bulk of these entries will be physiotherapists in early career. Many of these will not transition to mid career in rural or remote areas, leaving a substantial experience gap likely to emerge. In order to maintain a balance of experience levels, programs will need to be implemented to either retain older workers in the workforce longer (past normal retirement age) or to specifically target recruitment and retention (in occupation as well as space) of mid career workers.

The research has revealed the potential substantial impact of occupational mobility on the rural and remote workforce. Limitations in the data mean that only those who have left the profession but remained in rural or remote areas can be identified. Those who left rural and remote areas AND left the occupation cannot be identified. Nevertheless, the research suggests as many as one third of the

potential rural and remote workforce is not practising. Many of these may be employed in support positions (managing health services, teaching, undertaking research and development projects etc.), but their absence is significant enough to account for much of the undersupply. More research is required to assess whether programs are needed to support the return to practice of these occupational exits, or whether their contribution post-practice is of value to rural and remote health more broadly, and increase spatial mobility is needed to compensate for occupational exits.

The research reinforces the claim that rural workforces are substantially different from remote workforces, and this is clear both in age profile and in patterns of occupational and spatial mobility. Furthermore, the differences between rural and remote areas in different States hints at the existence of differences at even lower geographic levels. Programs aimed at building the workforce need consider not only the general patterns of mobility, but the conditions around occupations and spatial mobility that may apply in specific locations (perhaps determined by lifestyle amenity, proximity to other types of locations and so on).

## Conclusion

Undersupply of physiotherapists in rural and remote Australia remains a substantial issue for the profession. Workforce shortages have been shown to arise from both spatial and occupational mobility, and the key risks to a sustainable workforce in the future include the failure of early career practitioners to progress to mid career, and the impending exit of late career practitioners who are particularly prominent in rural areas. While previous programs have focussed on recruitment as an issue of education of new workers, and space based incentives for work, the need to more carefully consider mobility has been highlighted in this research.

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### Presenter

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