



Submission to the Parliament of Australia Senate Enquiry into

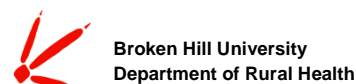
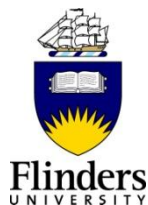
“The factors affecting the supply of health services and medical professionals in rural areas”

Professor John S Humphreys, Dr Matthew McGrail, Professor John Wakerman, Professor David Lyle & Professor David Perkins

on behalf of the

Centre of Research Excellence in Rural and Remote Primary Health Care

9 December 2011



Executive summary

- Point 1:** Governments in Australia have sought to address the long-standing problems of workforce shortage in rural and remote areas through a wide range of measures.
- Point 2:** The factors limiting the health and medical workforce supply are complex and vary according to the context in which they operate.
- Point 3:** Health worker satisfaction (which determines the likelihood of taking-up and remaining in rural and remote practice) results from a combination of professional, personal and external factors, some of which are more ‘modifiable’ than others.
- Point 4:** Health workforce retention can be improved through the adoption of flexible bundling of financial and non-financial incentives within a strategic workforce retention strategy that can respond to local contextual conditions and the varying needs of individual practitioners.
- Point 5:** Because previous and current policies and programs dealing with incentives to improve recruitment and retention have been inadequately evaluated, their effectiveness is uncertain. Improved monitoring and evaluation of new policies are imperative in order to ensure value for money.
- Point 6:** In seeking to distribute incentive funding to support rural and remote practitioners, it is important to remember that there is no ‘natural’ classification which differentiates ‘rural’ and ‘remote’ communities from urban centres. Any ‘rural-urban’ classification used to guide resource allocation must be fit-for-purpose.
- Point 7:** Funding designed to ‘incentivise’ recruitment and retention of doctors to communities experiencing medical workforce shortage continues to be inappropriately distributed because of shortcomings associated with the flawed use of the ASGC-RA classification.
- Point 8:** Any classification used to guide distribution of incentives for the recruitment and retention of doctors to difficult-to-service areas must be based on the factors that attract or deter doctors. While distance and location may be among these factors, by themselves, they are not sufficient to form the basis for guiding incentive funding.
- Point 9:** The failure of the recent review to adequately address the fundamental inequities associated with continued use of the ASGC-RA and the need for a Senate Enquiry highlights the need for an alternative fairer alternative approach.
- Point 10:** We propose a classification in which sentinel professional and other factors known to be significantly associated with recruitment and retention are used to guide the eligibility for, and distribution of, incentives.
- Point 11:** When these workforce factors are examined in relation to population size and geographical remoteness of communities, population size is a more sensitive measure in directing where recruitment and retention incentives should be provided, with remoteness only required to discriminate between the smallest communities.
- Point 12:** This new 6-level geographical classification provides a better basis for equitable resource allocation of recruitment and retention incentives to doctors based on the attractiveness of non-metropolitan communities, both professionally and non-professionally, as places to work and live.

Introduction

The Australian Government is seeking information and evidence relating to the factors affecting the supply and distribution of health services and medical professionals in rural areas. In particular the terms of reference for this enquiry seek information relating specifically to:

- (a) the factors limiting the supply of health services and medical, nursing and allied health professionals to small regional communities as compared with major regional and metropolitan centres;
- (b) the effect of the introduction of Medicare Locals on the provision of medical services in rural areas;
- (c) current incentive programs for recruitment and retention of doctors and dentists, particularly in smaller rural communities, including:
 - (i) their role, structure and effectiveness;
 - (ii) the appropriateness of the delivery model; and
 - (iii) whether the application of the current Australian Standard Geographical Classification – Remoteness Areas classification scheme ensures appropriate distribution of funds and delivers intended outcomes
- (d) any other related matters.

This submission from the Centre of Research Excellence in Rural and Remote Primary Health Care (hereafter CRE) focuses particularly on information that informs the third of Term of Reference (c). The information presented below is based on research evidence deriving from numerous studies undertaken by members of the CRE over a long period of time, and which have been published in peer-reviewed journals.

Further information can be obtained from (a) the specific references for further reading which are detailed in the bibliography at the end of this submission, or (b) direct contact with the authors via email to john.humphreys@monash.edu or by telephone on 03 5440 9081 or 0417 551 494. Members of the CRE are willing to be available to present at any meeting that the Senate Committee may wish to hold.

Term of reference

- (a) The factors limiting the supply of health services and medical, nursing and allied health professionals to small regional communities as compared with major regional and metropolitan centres:**

The problem of workforce shortage in rural and remote areas is one of longstanding.¹ For example, in a landmark national review of the state of rural health in Australia 35 years ago that went largely unnoticed, the Hospitals and Health Services Commission stated that:

¹ Walpole R. *Rural Health*. Proceedings of the Rural Health Conference of the RACGP. Melbourne: Newton Press, 1979; Chater AB. The role of the National Rural Health Alliance. *Australian Journal of Rural Health* 1993; 1: 5-12; Department of Community Services & Health. *A Fair Go for Rural Health*. Canberra: Department of Community Services & Health, 1991; Australian Rural Health Care Task Force. *Preliminary Report to the Australian Health Ministers' Advisory Council*, October 1990; Australian Health Ministers' Conference. *National Rural Health Strategy*. Canberra: Australian Government Publishing Service, 1994; Australian Health Ministers' Conference. *National Rural Health Strategy Update*. Canberra: Australian Government Publishing Service,

“Many country people find it difficult to obtain adequate health care. There is a shortage of doctors, dentists and other health personnel, and difficulties in maintaining health facilities in many districts ... even where an adequate range of services is available, access may be impeded by lack of public transport or poor roads...” (Hospitals & Health Services Commission, 1976, 2)²

Since that time considerable attention has focused on how to address this issue, including research, conferences, workshops, consultations and government funded inquiries. In response, over the past two decades, Commonwealth and State governments of all persuasions have introduced policies and funded programs designed to improve the recruitment and retention of health and medical professionals to under-supplied rural and remote areas. A summary of many of these initiatives was published in 2002.³

Point 1: Governments in Australia have sought to address the long-standing problems of workforce shortage in rural and remote areas through a wide range of measures.

Suffice to say that the factors limiting the health and medical workforce supply are complex and vary according to the context in which they operate – that is, while some professional factors appear to be common in acting as deterrents to the take-up of practice (such as excessive workload and on-call, lack of locum relief etc), other non-professional factors (such as lack of spouse employment and educational opportunities) vary in significance according to geographical location. Hence for example, many small coast communities have a significant advantage in environmental amenity compared with inland and remote communities that are located a long way from metropolitan centres.

Moreover, while acknowledging that issues of recruitment and retention overlap, it is important to distinguish between factors which influence recruitment to, and workforce retention in, rural and remote practice. Health workforce recruitment studies have highlighted the importance of student background, aspirations and interest in rural practice, needs of spouses and partners, the extent to which the training program has a rural mission, rural mentoring and support systems for students and rural educational experiences as the best predictors for taking up rural practice.⁴ While some of these background variables (such as rural background and interest in rural practice) continue to influence practitioner satisfaction in rural practice, other research has found that practice issues such as income and workload were far more significant predictors of practitioner retention in rural areas.⁵ In his research on physicians, Cutchin concluded that: “The decision to locate in a rural practice setting occurs largely from outside that setting. The decision to remain takes place from within the practice setting and arises from the stream of experience there”.⁶

1996; Australian Health Ministers’ Conference. *Healthy Horizons 1999-2003: A Framework for Improving the Health of Rural, Regional and Remote Australians*. Canberra: Australian Government Publishing Service, 1999.

² Hospitals & Health Services Commission. *Rural Health in Australia*, Canberra: Australian Government Publishing Service, 1976;

³ Humphreys JS, Hegney D, Lipscombe J, Gregory G & Chater B, 2002: Whither rural health? Reviewing a decade of progress in rural health, *Australian Journal of Rural Health*, 10(1): 2-14.

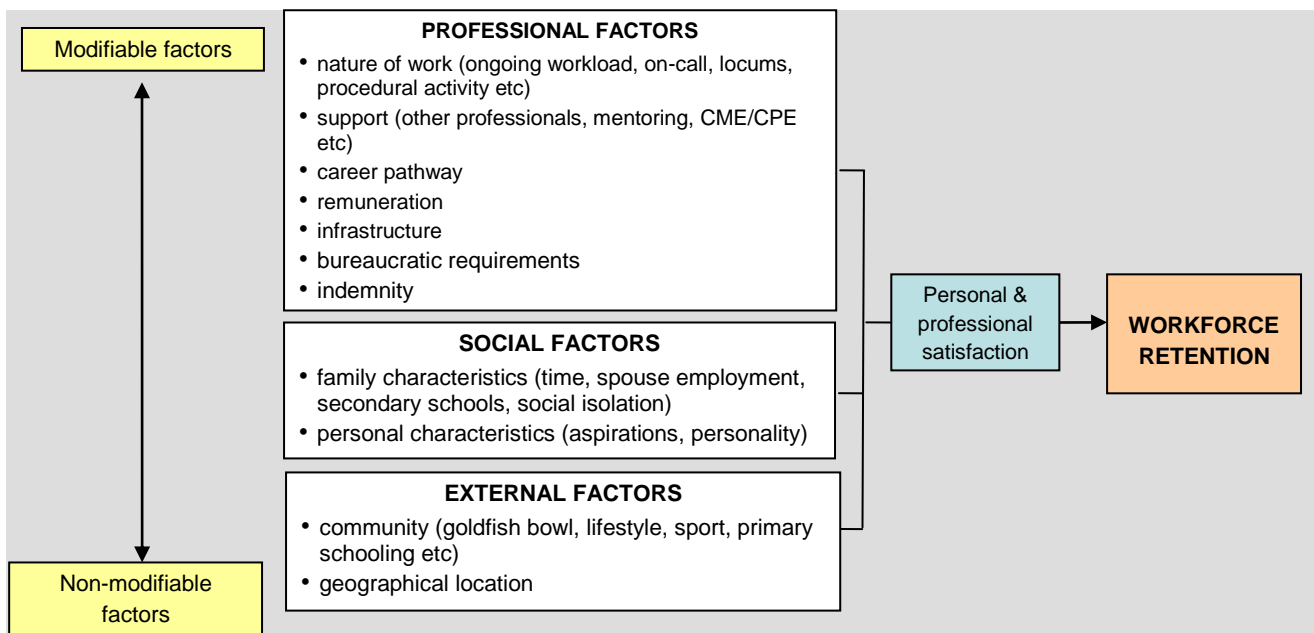
⁴ Hays R, Nichols A, Wise A, Adkins P, Craig M, Mahoney M, 1995: Choosing a career in rural practice in Queensland, *Australian Journal of Rural Health*;3:171-4; Rabinowitz H, Diamond J, Hojat M & Hazelwood C, 1999: Demographic, educational and economic factors related to recruitment and retention of physicians in rural Pennsylvania, *Journal of Rural Health*,15(2):212-8; Hoyal F, 1995: Retention of rural doctors, *Australian Journal of Rural Health*,3:2-9.

⁵ Ibid.

⁶ Cutchin M. Community and self: concepts for rural physician integration and retention. *Social Science & Medicine*. 1997;44(11):1661-74.

Researchers from the CRE have undertaken extensive work in relation to what factors are responsible for workforce retention in rural and remote communities.⁷ In seeking to improve workforce retention, it is important to distinguish between modifiable and non-modifiable factors (see Figure 1). While there are clear limits to the likely effects of policy and program interventions on those factors considered least modifiable (such as worker origin and workplace location), studies suggest there is considerable scope to influence many other factors which serve either as triggers to leave or motivation to increase length of stay. These factors can be broadly classified under three headings:

Figure 1: Factors contributing to decision to leave or stay in rural practice



- Professional issues relate largely to the nature of the job itself, vocational satisfaction, support, remuneration, procedural opportunities, physical conditions, high workloads and on-call ratios, and lack of locum relief for time away. Professional satisfaction (associated with the variety of work, autonomy of practice, and a feeling of doing an important job) is the main reason for doctors staying in rural practice, while triggers to leave include problems with obtaining locum relief, the pressure and constancy of after-hours work, access to continuing medical education, and bureaucratic requirements.
- Social factors relate to personal and family characteristics, including difficulties of coping with change, problems with secondary education for children, lack of occupational opportunities for spouses, remoteness from family, poor housing, personality clashes with colleagues, jealousy by other community, and lack of time to spend with the family.
- External factors refer to the many political, economic and social forces of change that often precipitate geographical relocation of employment. Examples include policy changes impacting upon existing practice funding arrangements or levels of professional remuneration, major changes impacting upon the immediate community (such as drought

⁷ Humphreys JS, Wakerman J, Wells R, Kuipers P, Jones J, Entwistle P & Harvey P, 2007: *Improving primary health care workforce retention in small rural and remote communities – How important is ongoing education and training*, Canberra, Australian Primary Health Care Research Institute. Available at http://www.anu.edu.au/aphcri/Domain/Workforce/humphreys_1_final.pdf

and the effect of economic restructuring or downturn on the economic base of the town), and changes to the provision of health, education and other community services resulting from policies of service rationalisation or centralisation. Community facilities, support and relationships, and personal satisfaction with rural lifestyle are important influences on the extent to which rural doctors’ needs are satisfied.

So long as health workers experience professional and personal satisfaction with rural and remote practice they are likely to remain in their existing location.

Point 2: The factors limiting the health and medical workforce supply are complex and vary according to the context in which they operate

(b) the effect of the introduction of Medicare Locals on the provision of medical services in rural areas

The implementation of Medicare Locals around the country is at a very early stage and it is difficult at this time to make an accurate assessment on their impact on services in rural and remote areas. Like their precursors, the Divisions of General Practice, some will undoubtedly perform better than others in improving access and facilitating co-ordination of care. However, the essential issue here is that we require a comprehensive and nationally consistent evaluation framework that is based on the stated policy objectives of the Medicare Local program in order to be able to make an assessment of effectiveness in years to come.

It is also worth noting that in some rural and remote areas, Medicare Locals have been established that bear no relationship to the functional operation of health services or natural; geographical and demographic catchments. Simply imposing catchments on the basis of administrative boundaries (such as ABS units) is likely to render them dysfunctional in operation, since health services and communities have long-established ‘natural’ catchment areas in which they operate. This factor needs to be included in any evaluation framework.

(c) current incentive programs for recruitment and retention of doctors and dentists, particularly in smaller rural communities including their role, structure and effectiveness and the appropriateness of the delivery model

Clearly there are many areas where Government support and incentives can be used to create and maintain a workplace and community environment in which health and medical professionals can achieve high levels of professional and personal satisfaction, and thereby provide an appropriate and sustainable workforce supply in rural and remote communities.

Much of the detailed investigative work undertaken by researchers from the CRE on this issue has been summarised in documents launched by the Hon. Mr Warren Snowden (the then Minister for Rural, Remote and Indigenous Health) in Parliament House in June 2010 and published by Buykx et al⁸ and Humphreys et al.⁹

Our research showed clearly that a wide range of financial, professional, social and environmental factors impact upon workforce retention. The consequences of poor workforce

⁸ Buykx P, Humphreys JS, Wakerman J & Pashen D, 2010: A systematic review of effective retention incentives for health workers in rural and remote areas: Towards evidence-based policy, *Australian Journal of Rural Health*, 18, 102-109.

⁹ Humphreys JS, Wakerman J, Pashen D & Buykx P, 2009: *Retention strategies and incentives for health workers in rural and remote areas: what works?*, Canberra: Australian Primary Health Care Research Institute. Available at:

http://www.anu.edu.au/aphcri/Domain/RuralRemote/International_retention_strategies_research.pdf

retention and high turnover are considerable, including restricted access to appropriate care and loss of skills and experience; compromised continuity and quality of care; high recruitment costs. While no one measure alone is likely to be sufficient to improve retention, our research identified several key outcomes.

- It is clear that both financial and non-financial incentives, such as housing and improved working conditions, are likely to be most effective when ‘bundled’ in a strategic workforce retention strategy. The six essential components of such a strategy are: (1) maintaining an adequate and stable staffing, (2) providing appropriate and adequate infrastructure, (3) maintaining realistic and competitive remuneration, (4) fostering an effective and sustainable workplace organisation, (5) shaping the professional environment that recognises and rewards individuals making a significant contribution to patient care, and (6) ensuring social, family and community support.
- Retention strategies should be sufficiently flexible to respond to local contextual conditions and the varying needs of individual practitioners. For example, housing is overwhelmingly the most important issue for many health workers in isolated and remote areas. Health services should be able to vary retention measures and incentives according to the difficulty of recruiting and retaining staff without being constrained by a ‘one-coat-fits-all’ retention policy mandated by health authorities for all services within their jurisdiction. A flexible retention funding pool would allow this.
- Research indicates the need to ensure that all health professionals (regardless of discipline) working in rural and remote areas are provided with essential requirements for them to deliver sustainable high quality care in a way that is professionally satisfying. A coordinated national approach is required to enable services to design and flexibly implement retention packages for all of their staff.
- There has been and continues to be a substantial sum spent on incentives and other recruitment and retention strategies with inadequate or no assessment of their effectiveness. Whatever the retention incentive adopted, a rigorous evaluation strategy using pre- and post-intervention baseline measures should be employed from the outset. Health services should be able to pool available workforce funding to target retention in ways that best suit their circumstances with appropriate indicators built in for monitoring the effectiveness of the incentives and measures adopted.

Point 3: Health worker satisfaction (which determines the likelihood of taking-up and remaining in rural and remote practice) results from a combination of professional, personal and external factors, some of which are more ‘modifiable’ than others.

Point 4: Health workforce retention can be improved through the adoption of flexible bundling of financial and non-financial incentives within a strategic workforce retention strategy that can respond to local contextual conditions and the varying needs of individual practitioners.

Point 5: Because previous and current policies and programs dealing with incentives to improve recruitment and retention have been inadequately evaluated, their effectiveness is uncertain. Improved monitoring and evaluation of new policies are imperative in order to ensure value for money.

(c) (iii) whether the application of the current Australian Standard Geographical Classification – Remoteness Areas classification scheme ensures appropriate distribution of funds and delivers intended outcomes

The way in which rural and remote communities are differentiated from urban and metropolitan communities has important implications for workforce planning and resource allocation. Rural Australia, which contains approximately one-third of the population, is extremely heterogeneous, including vast regions of sparse populations along with both isolated and closely-settled small rural towns and larger regional centres. Vast distances separate many of these communities, and, combined with their small population sizes, mean that the delivery of health care services to most of rural and remote Australia requires additional resources to compensate for disadvantages associated with geography.

Point 6: In seeking to distribute incentive funding to support rural and remote practitioners, it is important to remember that there is no 'natural' classification which differentiates 'rural' and 'remote' communities from urban centres. Any 'rural-urban' classification used to guide resource allocation must be fit-for-purpose.

Since 2009, the Australian Government has adopted the Australian Standard Geographical Classification - Remoteness Areas (ASGC-RA) system. Unfortunately, the ASGC-RA system has been shown to be flawed as the basis for guiding the distribution of income supplementation designed to attract health workforce to areas that are traditionally difficult to recruit and retain in¹⁰ – See Table 1.

Table 1 Summary of main weaknesses of the ASGC-RA classification
<ul style="list-style-type: none">• Extreme heterogeneity characterises some groupings, especially Inner Regional and sometimes Outer Regional categories• Only measures geographical remoteness, resulting in many highly dissimilar towns having the same classification (eg: Port Macquarie & Gundagai)• The separation of the five remoteness categories is somewhat subjective.• Penalises smaller, more densely populated states (for example, more than 80% of rural Victoria's population is defined as 'inner regional').

The ASGC-RA scheme fails to deliver equitable health resource allocation, resulting in patterns of resource distribution that reward totally unlike communities with the same incentives.¹¹ Highly dissimilar localities (such as Bendigo - a large regional centre with a population of almost 100,000, and Rushworth – a small rural town with a population of only 1,000) are classified as being 'equal!' In short, because this classification is based on 'geography' without regard to factors that influence rural medical workforce recruitment and retention, it is characterised by significant shortcomings.

Point 7: Funding designed to 'incentivise' recruitment and retention of doctors to communities experiencing medical workforce shortage continues to be inappropriately distributed because of the shortcomings associated with the flawed use of the ASGC-RA classification.

¹⁰ McGrail MR, Humphreys JS, 2009: Geographical classifications to guide rural health policy in Australia, *Australia and New Zealand Health Policy*, 6:28.

¹¹ Van der Plaaf F. Lines in the sand. *Australian Rural Doctor*. 2011;pg. 22-24.

Over the last twenty years the Australian Government has provided additional funding to rural and remote areas characterised as difficult to recruit to or retain health services within. Currently, the Department of Health and Ageing manages around 50 rurally-targeted programs along with a number of additional state-based programs, largely because mainstream programs do not adequately meet the needs of practitioners in rural and remote communities.¹²

The sole dependence on geographical factors of location, distance and population size to differentiate communities eligible for support ignores the very basis of what differentiates the lived experience of doctors who take up or remain in practice in different geographical settings. Recruitment and retention difficulties of the rural and remote health workforce stem from a wide range of key professional and non-professional factors that influence the decision-making of doctors¹³. Foremost among these are nature of practice activity, practice characteristics, after-hours on-call, professional support, personal/family lifestyle issues, and geographical/community factors.

Point 8: Any classification used to guide distribution of incentives for the recruitment and retention of doctors to difficult-to-service areas must be based on the factors that attract or deter doctors. While distance and location may be among these factors, by themselves, they are not sufficient to form the basis for guiding incentive funding.

The continued use of an inappropriate classification as the basis for guiding the distribution of additional funding support will not fix the problem of doctor shortages in rural areas because it results in inequities in the eligibility of rural communities for that support. Ongoing application of ASGC-RA will mask or average out important local differences by grouping highly dissimilar communities as being equal, thus allocating incentives to rural and remote doctors inappropriately. In calling this Senate Enquiry, the Australian Government has now recognised the inappropriateness of the ASGC-RA classification, the shortcomings of which were still not addressed in the recent GISCA Review of the Remoteness Area (RA) Classification and the Accessibility/Remoteness Index (ARIA).¹⁴

Point 9: The failure of the recent review to adequately address the fundamental inequities associated with continued used of the ASGC-RA and the need for a Senate Enquiry highlights the need for an alternative fairer alternative approach.

Solution to the problem:

So what determines a satisfactory classification scheme for allocating recruitment and retention incentives? From the outset, it is necessary to identify several important decisions associated with the development of any geographical classification designed to underpin resource allocation. These relate to (i) the need to be clear on the purpose of the classification as this determines what is being measured; (ii) the choice of procedure for grouping similar clusters; (iii) the criteria and cut-off points underpinning groups; and (iv) the choice of spatial units.¹⁵

¹² Department of Health and Ageing: *Programs and initiatives*. Accessed from

<http://www.health.gov.au/internet/main/publishing.nsf/Content/programs-initiatives-all>

¹³ Humphreys J, Jones J, Jones M, Hugo G, Bamford E, Taylor D, 2001: A critical review of rural medical workforce retention in Australia, *Australian Health Review*, 24:91-102; Humphreys JS & Rolley F, 1998: A modified framework for rural general practice: the importance of recruitment and retention, *Social Science & Medicine*, 46(8): 939-945.

¹⁴ National Centre for Social Applications of Geographical Information Systems (GISCA), 2011: *Accessibility Remoteness Index of Australia (ARIA) Review*, Department of Health & Ageing, Canberra.

¹⁵ J.S. Humphreys, 1998: Delimiting ‘Rural’: Implications of an agreed ‘rurality’ index for healthcare planning and resource allocation, *Australian Journal of Rural Health*, 6, 212-216.

Bearing these criteria in mind, research staff from the **Centre of Research Excellence in Rural and Remote Primary Health Care** have examined the shortcomings of the ASGC-RA as the basis for resource distribution, and used relevant data from the national *Medicine in Australia: Balancing Employment and Life* (MABEL) study to develop an alternative classification that results in more equitable distribution of incentive funding.

The detailed results of this research (which is summarised in what follows) will be published in more detail in the February 2012 issue of the Australian Journal of Rural Health. See:

JS Humphreys, M McGrail, C Joyce, A Scott & G Kalb, 2012: Who should receive recruitment and retention incentives? Improved targeting of rural doctors using medical workforce data, *Australian Journal of Rural Health* (Forthcoming February).

Since rural incentive programs are designed as compensation for working in areas characterised by low levels of access and environmental amenity, high isolation, high levels of socio-economic disadvantage, small population base and greater demand for, and complexity of, activity, it is vital that they target eligible doctors appropriately, so that public resources are allocated efficiently and effectively. Currently, the Australian Government's *Rural Health Workforce Strategy* provides \$134.4 million of additional financial support for rural doctors based on the ASGC-RA classification, with workforce incentives *supposedly* scaled or geared "to provide greatest benefits to the most remote communities where there is the greatest need".¹⁶ Unfortunately, under the existing ASGC-RA scheme, many doctors are eligible for the same incentives even though the communities within which they practise and the nature of their activity are very different.

Geo-coded data were selected for 3636 general practitioners who participated in the national *Medicine in Australia: Balancing Employment and Life* (MABEL) study. Four professional indicators shown to be related to difficulties with recruitment and retention (total hours worked in their usual week excluding after hours on-call; whether the GP undertakes work in a public hospital; whether the GP is called out to attend patients two or more times per week after hours; and whether it is difficult for the GP to take time off) and two non-professional indicators (whether there are good employment opportunities locally for the GP's partner; and whether the choice of schools locally is adequate) were selected. These six indicators were selected on the basis of their known importance in attracting workforce or influencing length of stay. While procedural activity at public hospitals is known to be attractive to some rural GPs, long hours, excessive on-call and difficulty in getting time off are known deterrents of rural practice.¹⁷ Similarly, lack of employment opportunities for (de-facto) spouses and inadequate educational facilities locally are important considerations or triggers for leaving rural practice.¹⁸ Building upon evidence of how the "complexity" of activities undertaken by doctors varies

¹⁶ Australian Government Department of Health and Ageing, 2011: *Rural Health Workforce Strategy* [accessed 12th August 2011]; Available from: <http://www.health.gov.au/internet/otd/Publishing.nsf/Content/program-RuralHealthWorkforceStrategy-lp>.

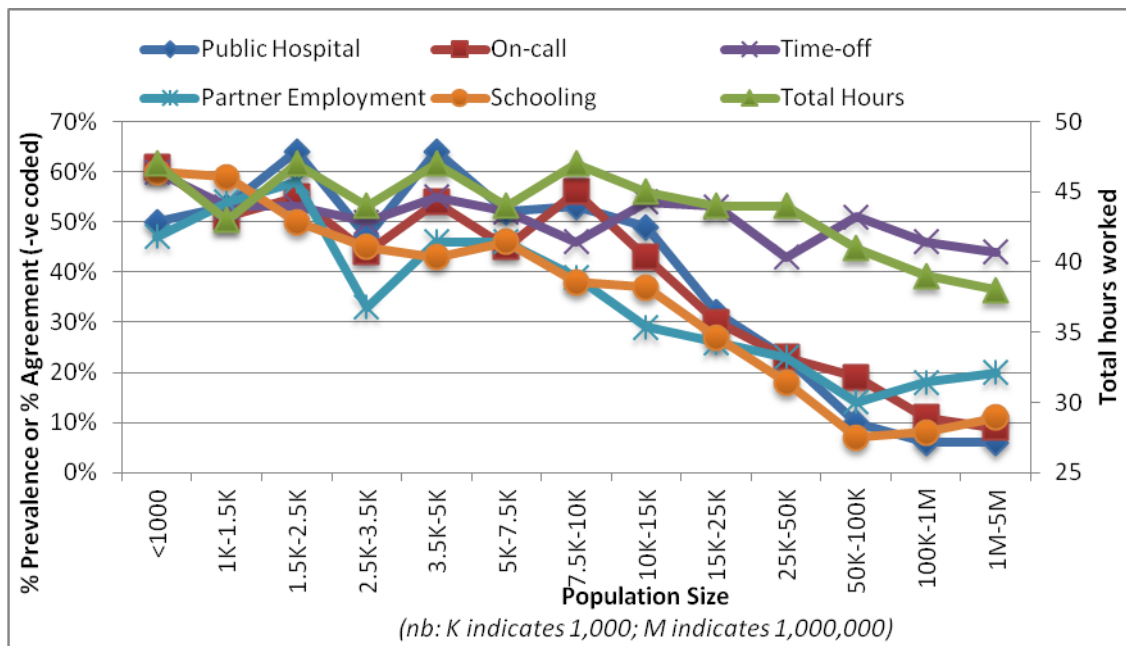
¹⁷ Alexander C. Why doctors would stay in rural practice in the New England Health area of New South Wales. *Australian Journal of Rural Health*. 1998;6:136-139; Hays R, Wynd S, Veitch C, Crossland L. Getting the balance right? GPs who chose to stay in rural practice. *Australian Journal of Rural Health*. 2003;11(4):193-198; Humphreys JS, Jones MP, Jones JA, Mara PR. Workforce retention in rural and remote Australia: determining the factors that influence length of practice. *Medical Journal of Australia*. 2002;176:472-476.

¹⁸ Goertzen J. The four-legged kitchen stool: recruitment and retention of rural family physicians. *Canadian Family Physician*. 2005;51:1181-1183

geographically¹⁹, these six sentinel indicators were mapped against workplace location and population size of the community.

Point 10: We propose a classification in which sentinel professional and other factors known to be significantly associated with recruitment and retention are used to guide the eligibility for, and distribution of, incentives.

Research results based on MABEL data show that these sentinel indicators are strongly associated with population size. All indicators increase (becoming more problematic within that locality) as population size decreases (See Figure 1).



Based on these sentinel medical workforce indicators, four broad population size groupings, which minimise ‘within-group’ variation whilst also maximising ‘between-group’ variation, emerge. These are: (1) 0-5K – ‘Small Rural’; (2) 5-15K – ‘Medium Rural’; (3) 15-50K – ‘Large Rural’; (4) >50K – ‘Regional Centre’ & ‘Metropolitan’ - groupings which are not dissimilar from the service centre levels used in the calculation of ASGC-RA. Further testing reveals that the addition of geographical remoteness (ASGC-RA) captures no additional variation in the 6 indicators within each of the >50K, 15-50K and 5-15K categories. Only when population size decreases to the smallest group (0-5K) does the addition of remoteness (ASGC-RA, split by the 2 ‘remote’ and 2 ‘regional’ categories) capture a significantly increased association for total hours, public hospital, on-call and schooling.

Point 11: When these workforce factors are examined in relation to population size of communities and geographical remoteness, population size is shown to be a more sensitive measure in directing where recruitment and retention incentives should be provided, with remoteness only required to discriminate between the smallest communities.

Table 2 confirms that adoption of our proposed 6-level rurality classification measures a significantly stronger association with four out of six sentinel indicators, compared to the

¹⁹ Humphreys J, Jones J, Jones M, Mildenhall D, Mara P, Chater B, Rosenthal DR, Maxfield M & Adena M, 2003: The influence of geographical location on the complexity of rural general practice activities, *Medical Journal of Australia*.179:416-420.

association with ASGC-RA alone. Our research has also found that further separation of communities of population sizes 5-15K, 15-50K or >50K by any of ASGC-2 to ASGC-5 is unnecessary because it adds nothing to the measured statistical association against our six indicators. Table 3 illustrates the application of this improved classification.

Table 2: Statistical significance of association between the 6 sentinel indicators and the new 6-level classification compared to the currently used ASGC-RA classification

	Statistical Test	ASGC-RA	New 6-level classification
Total Hours	Rho	0.114	0.125
Public Hospital	$\chi^2(1)$	18.2	156.8
On-call	$\chi^2(1)$	42.9	120.2
Time-off	$\chi^2(1)$	11.8	5.0 (p=0.025)
Partner Employment	$\chi^2(1)$	5.2	72.3
Schooling	$\chi^2(1)$	68.6	134.5

nb: Responses from ASGC-RA = 1 were excluded for all statistical tests; All p-values are <0.001 unless specified

Table 3: Proposed new 6-level rurality classification			
New 6 level classification	Population Size	ASGC-RA	Example locations
1	(All)	ASGC-1	Most capital cities, Wollongong, Newcastle, Geelong, Sunshine Coast, Gold Coast
2	>50,000	(All)	Bendigo, Ballarat, Hobart, Mackay, Launceston, Rockhampton, Townsville, Cairns, Darwin
3	15,000-50,000	(All)	Coffs Harbour, Shepparton, Mt Gambier, Bundaberg, Busselton, Mildura, Albany, Broken Hill, Whyalla, Burnie, Kalgoorlie, Alice Springs, Mt Isa
4	5,000-15,000	(All)	Ulladulla, Sale, Warwick, Ararat, Gympie, Lithgow, Victor Harbor, Port Augusta, Emerald, Bairnsdale, Horsham, Moree, Ayr, Parkes, Broome, Port Lincoln, Esperance, Katherine, Karratha
5	0-5,000	ASGC-2 & 3	Gundagai, Leongatha, Strathalbyn, Pinjarra, Cooroy, Latrobe, Port Sorell, Naracoorte, Bega, Kerang, Chinchilla, Margaret River
6	0-5,000	ASGC-4 & 5	Bourke, Kununurra, Roxby Downs, Charleville, Queenstown, Derby, Tennant Creek, Halls Creek, Ceduna, Nhulunbuy, Weipa

Point 12: This new 6-level geographical classification provides a better basis for equitable resource allocation of recruitment and retention incentives to doctors based on the attractiveness of non-metropolitan communities, both professionally and non-professionally, as places to work and live.

(d) Any other related matters

“An appropriately trained and available workforce is one aspect of sustainable PHC services in rural and remote Australia. It is important to take both a systemic and systematic approach to the development of effective and sustainable health services in rural and remote areas. The inter-relationship between the essential service requirements of sustainable primary health services highlights the need for, and importance of, a systems approach in which components of sustainability are identified and their inter-relationships measured. Focusing solely on one or other individual component (such as workforce supply) without regard to their relationship to, and the importance of, related parts has had limited impact. Sustainable solutions depend on systematically addressing all the essential requirements which relate to adequate funding, workforce, infrastructure, health services linkages and effective management, governance and leadership of services.”²⁰

Conclusion:

Continuing to use ASGC-RA in its current form will not only maintain the existing distributional inequities (with GPs receiving the same incentives regardless of the fact that their practice activities and workplace locations vary significantly), but also exacerbate existing difficulties in attracting GPs to small, ‘difficult-to-recruit-to’ communities because doctors practising in larger communities receive the same incentives.

Our research provides a validated geographical classification scheme that forms a better basis for equitable resource allocation for doctors based on (1) the nature of activity and service provided by doctors in their communities, and (2) their attractiveness both professionally and non-professionally as settings to work and live in. Using the sentinel recruitment and retention indicators, it shows that key professional and non-professional aspects of rural practice correlate with locality-based characteristics to produce a classification predominantly defined by population size which effectively defines homogeneous groupings of doctors. In this way, GPs sharing similar characteristics and needs for support are grouped together and differentiated from other groups of GPs who arguably need more or less support through incentives.

Key references for further reading:

- Humphreys JS, McGrail M, Joyce C, Scott A, Kalb G, 2011: Who should receive recruitment and retention incentives? Improved targeting of rural doctors using medical workforce data, *Australian Journal of Rural Health*, (Forthcoming February 2012).
- McGrail M, Humphreys J, Joyce C, Scott A, Kalb G, 2011: How do rural GP's workload and work activities differ with community size compared with metropolitan practice? *Australian Journal of Primary Health* (accepted 23 August 2011)
- Buykx P, Humphreys JS, Wakerman J & Pashen D, 2010: A systematic review of effective retention incentives for health workers in rural and remote areas: Towards evidence-based policy, *Australian Journal of Rural Health*, 18, 102-109.
- McGrail M, Humphreys JS, Joyce C, Scott A & Kalb G, 2010: Professional satisfaction and general practice: Does it vary by size of community?, *Medical Journal of Australia*, 193: 94-98.

²⁰ Humphreys JS, Wakerman J, Wells R, Kuipers P, Jones J & Entwistle P, 2008: 'Beyond workforce': a systemic solution for health service provision in small rural and remote communities, *Medical Journal of Australia*, 188 (8 Supplement): S77-S80.

- McGrail M & Humphreys JS, 2009: Geographical classifications to guide rural health policy in Australia, *Australian and New Zealand Health Policy*, 6:28 (8 Dec 2009) Available at: <http://www.anzhealthpolicy.com/content/pdf/1743-8462-6-28.pdf>
- Jones JA, Humphreys JS & Adena MA, 2004: Rural GPs' ratings of initiatives designed to improve rural medical workforce recruitment and retention, *Rural and Remote Health: The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy*, 4(314): 1-10.
- Humphreys JS, Jones JA, Jones MP, Mildenhall D, Mara PR, Chater B, Rosenthal DR, Maxfield NM & Adena MA, 2003: The influence of geographical location on the complexity of rural general practice activities, *The Medical Journal of Australia*, 179, 416-420.
- Humphreys JS, Jones MP, Jones, JA & Mara PR, 2002: Workforce retention in rural and remote Australia: determining the factors that influence length of practice, *The Medical Journal of Australia*, 176(10): 472-476.
- Humphreys JS, Jones J, Jones M, Hugo G, Bamford E & Taylor D, 2001: A critical review of rural medical workforce retention in Australia, *Australian Health Review*, 24(4): 91-102.
- Humphreys JS & Rolley F, 1998: A modified framework for rural general practice: the importance of recruitment and retention, *Social Science & Medicine*, 46(8): 939-945.