

What we know and don't know about rural health in Australia

Sally Bullock¹

¹Australian Institute of Health and Welfare

Introduction

In an environment of evidence-based health policy it is important to have the right data to understand where we have been as a country, where we are and where we are going. Data provide crucial fodder for policy-makers to design policy, evaluate its effectiveness and scan the environment for emerging trends or patterns which have direct relevance to their portfolio. Data also shape health professional's understanding of their patients, the health needs of their community and the evaluation of their interventions or services.

Australia is fortunate to know a lot about rural health. This paper is more about acknowledging what we don't know rather than what we do. Australia's Rural Health Information Framework (RHIF) outlines main topic areas central to the understanding of rural health, and proposes indicators to systematically monitor these areas.

Guided by the RHIF, the objectives of this paper are to:

- revisit some key indicators relating to the health of rural Australians and the performance of the health system;
- review the capacity of Australia's data to effectively monitor rural health;
- consider emerging information needs of the rural health sector;
- propose a coordinated approach to revise the national monitoring and reporting of rural health, which is separate to but mindful of, the new information requirements of the Australian Government's health reform agenda.

Discussion and analysis is targeted at the national level.

Where have we been?

Australia started to systematically report national health data in the early 1900s. In the first year book published by the Commonwealth Bureau of Census and Statistics (now the Australian Bureau of Statistics (ABS), the only geographic aggregation of health statistics was by state.¹ National comparison of rural and urban Australians accelerated in the 1990s when rural Australians were identified as a priority population group for national health policy-makers. The development of geographical classifications for statistical comparisons between rural and urban areas also provided the opportunity for more comparative analysis in the field from this time forward.

Australia currently uses the ABS Australian Standard of Geographical Classification (ASGC) to categorise data with a spatial dimension.² In 2001, the ASGC contained the concept of remoteness for the first time. The ASGC Remoteness Area classification was designed specifically for comparative statistical purposes and divides Australia into six categories based on distance to service centres. The classification is a direct

measure of remoteness and does not take into account any indirect factors, such as demography, climate or the physical environment. For national statistics comparing rural and urban areas, the ABS and Australian Institute of Health and Welfare (AIHW) recommend the use of the ASGC Remoteness Area structure.

In 2003, the RHIF was developed to, 'identify all the types of information that are important to develop an understanding of, and to monitor, the health of rural, regional and remote Australians' (Figure 1).³ This document provided the foundation for national rural health surveillance in Australia and has been revised once since its development.⁴ In addition to identifying priority areas for rural health monitoring, the Framework stipulated indicators for many of these areas. These indicators have been reported twice since the Framework's development.^{5,7}

The development of the RHIF was facilitated by a Rural Health Advisory Committee and drew on information gathered previously in a Rural Health Information Workshop conducted by the AIHW.⁸

Figure 1 Summary of the Rural Health Information Framework



The work of Australian research agencies and academics have contributed significantly to the understanding of the complexities of rural health, particularly through the provision of epidemiological evidence which assists in interpreting the rural-urban health differential.

Where are we now?

Indicators of health and health system performance

This section revisits some key indicators relating to each of the three dimensions of the RHIF; health status, determinants of health and health system performance.

Life expectancy and mortality are two robust measures of health status which show clearly that the health of rural Australians is generally worse than those living in urban areas (Table 1). Life expectancy decreases with increasing remoteness and when death rates are compared directly with major cities, the rates are higher.

Table 1 Life expectancy and mortality, by ASGC RA ^{6,9}

Indicator	Major cities	Inner regional	Outer regional	Remote	Very remote
			Years		
Life expectancy at birth (males) (2002–2004)	79	78	77	77	72
Life expectancy at birth (females) (2002–2004)	84	83	83	82	78
			Standardised ratio		
All cause mortality (2002–2004)	1.00	*1.07	*1.12	*1.18	*1.69

* Statistically significant from major cities.

Note: The difference in mortality rates between major cities and regional and remote areas has been described using a standardised mortality ratio, where major cities = 1.00. This ratio tells us how much higher rates in regional and remote areas were than expected if major cities rates had applied.

While mortality rates are decreasing overall, the relative difference in mortality rates between major cities and rural and remote areas did not change between 1997–1999 and 2002–2004.⁹

Rural Australians are also more likely to report behaviours associated with poorer health. Table 2 displays data for the three current areas of focus for the Australian Preventative Health Taskforce: smoking, alcohol and overweight/obesity.

Table 2 Selected indicators of determinants of health⁶

Indicator	Major cities	Inner regional	Outer regional and remote
	Standardised prevalence ratio		
Daily or current smoking (15 years and over)	1.00	*1.15	*1.30
Risky or high-risk alcohol consumption (long-term) (15 years and over) (Males)	1.00	*1.19	*1.41
Risky or high-risk alcohol consumption (long-term) (15 years and over) (Females)	1.00	1.12	1.16
Overweight/obesity	1.00	*1.10	*1.10

* Statistically significant from major cities.

Note: The difference in rates between major cities and regional and remote areas has been described using a standardised ratio, where major cities = 1.00. This ratio tells us how much higher rates in regional and remote areas were than expected if major cities rates had applied.

Reporting of health system performance indicators for 2005–06 showed that⁷:

- In general, as remoteness increased, the supply of health professionals decreased and the average number of hours worked by health professionals increased.
- Rates of hospitalisations were up to 1.6 times as high for remote residents than for residents of major cities.
- People living outside major cities were less likely to access disability services and more likely to have a disability than their major city counterparts.
- Hospitals in rural and remote areas were less likely to be nationally accredited than those in major cities, although this may partly reflect varied, and sometimes voluntary, accreditation practices across jurisdictions.

For more detailed data on rural health indicators, refer to *Rural, regional and remote health: indicators of health status and determinants of health* and *Rural, regional and remote health: indicators of health system performance*.^{7, 8}

Are information needs being met?

Every so often, it is important to weigh up whether the current surveillance framework and information infrastructure continues to meet the needs of health professionals, researchers and policy-makers. The report, *Rural, regional and remote health: information framework and indicators, version 1b*, provided a review of data gaps and limitations identified during the Framework's first reporting period. Almost five years on, elements of this report are outdated. This is generally good news, as it means improvements to data quality or infrastructure have occurred. However, some questions remained unanswered—several data gaps or limitations still exist, and new limitations have emerged. Tables 3 and 4 reflect these data improvements and limitations respectively.

Table 3 Summary of improvements in data quality or availability, by Rural Health Information Framework topic areas

Framework topic area	General specification of indicator	Type of improvement	Description
Health status			
Chronic disease	Prevalence of chronic disease.	Potential improvement in data quality.	The Australian Government is planning to conduct a nutrition and physical activity survey which will incorporate biomedical measurements, such as blood. Blood is an accurate indicator of the presence of certain chronic diseases, for example diabetes.
Disability	Prevalence of disability.	Improvement in data availability and scope.	The 2006 ABS Census included a question on disability and need for assistance. As the census enumerates the entire population, information on the prevalence of disability in remote areas will be available for the first time.
Death rates	Overall mortality rates.	Improvement in Indigenous identification.	Using data linkage between registered death records to Census records, the ABS Census Data Enhancement Indigenous Mortality Quality study, provided an alternative assessment of the quality of the Indigenous status identification in registered deaths data and provided recommendations to improve Indigenous identification in the future. ¹⁰

Framework topic area	General specification of indicator	Type of improvement	Description
Determinants of health			
Health literacy	Not defined.	Indicator and data source now available.	Adult Literacy and Life Skills Survey was conducted by the ABS in 2006.
Physical activity	Proportion of people engaging in insufficient physical activity.	Improved data quality for children.	National Children's Nutrition and Physical Activity Survey 2007 has now been released.
Nutrition	Estimated dietary energy intake, intake of saturated fat, fresh fruit and vegetables and dietary fibre.	Potential improvement in data quality.	The Australian Government is planning to conduct a nutrition and physical activity survey which should incorporate useful nutrition tools, such as respondent's 24 hour recall of food consumption and food frequency questionnaires.
Blood pressure	Not defined.	Potential improvement in data quality.	As for chronic disease.
Cholesterol	Not defined.	Potential improvement in data quality.	As for chronic disease.
Overweight/obesity	Proportion of persons aged 18 years and over with a body mass index in the overweight and obese ranges.	Improvement in data quality.	2007–08 National Health Survey measured respondent's height and weight which can then be used to calculate Body Mass Index.
Health system performance			
Female general practitioners (GPs)	Proportion of GPs who are female in each area.	Improved frequency and quality of data.	As part of the Australian Government's broad health reform, a national registration and accreditation scheme for 9 professionals will be established by 1 July 2010. The nine professionals included are: medical practitioners; nurses and midwives; optometrists; osteopaths; pharmacists; physiotherapists; podiatrists; and psychologists.
Medical and surgical treatment in presenting good health outcomes	Rates of medical and surgical misadventure.	Potential new indicators available.	The Australian Commission on Safety and Quality in Health Care is working with partners to develop a suite of indicators for safety and quality in health care.
Waiting times by public patients for elective surgery	The mean, median, 25th and 75th percentiles of the number of days public patients have to wait for elective surgery.	Improved data quality.	The mean, median, 25th and 75th percentiles of the number of days public patients have to wait for elective surgery is now available by RA categories.
Response time in emergency departments	Suggested mean, median, 25th and 75th percentiles of the time spent waiting for treatment in emergency waiting rooms.	Improved data availability.	Data on waiting times in public hospital emergency departments available through National Non-admitted Patient Emergency Database.
Supply of health workers	The number of major groups of health workers and their full-time equivalent working in each area.	Improved data quality and frequency.	Refer to information on female GPs.

Table 4 Summary of areas where data limitations and gaps still exist, by Rural Health Information Framework topic areas

Framework topic area	Limitations
Retrieval time for victims of trauma	Nationally comparable data on ambulance response times across rural and remote areas is not currently available. ¹¹ Further work is also required for systematic recording of aero-medical services.
Availability of food (fresh vegetables and fruit)	No national data source identified
Acceptance of health services by Indigenous Australians	No national data source identified.
Patient satisfaction with health service	A national survey (or set of standardised questions to be included in state data source) is currently not available.
Waiting time for results of diagnostic tests	Information on the utilisation of pathology and diagnostic imaging is available through Medicare; however it is currently not possible to calculate time from referral to provision of result. An indicator measuring the time taken from referral to diagnostic test would also be useful to consider.
Rate of prescription (Indigenous Australians only)	Information on the prescriptions dispensed to Indigenous Australians through the Aboriginal Medical Services is not currently available.
Workforce in training	Current Australian Government data is of insufficient quality to accurately identify graduates place of residence during secondary education.

Table 4 is not an exhaustive list of the Framework's limitations. Telemedicine—where technology is used to exchange medical information for consultative, diagnostic and/or treatment services—is an important area not currently represented in the Framework, and for which there is limited national data available. It is accepted by health professionals and policy makers that telemedicine is a cost-effective way of achieving equity of access to specialist care¹², and the technology is currently implemented in several places across Australia.¹³

Without data on the use of telemedicine, it is not possible to identify the technology's contribution to improved access to health services in rural areas. Furthermore, a baseline measure is not currently available to monitor increased uptake over time. In the first instance, the simple use of a flag in Australia's national database on hospital statistics (the National Hospital Morbidity Database), indicating whether telemedicine was used for diagnostic or procedural purposes, would be useful. Similarly, a flag could also be included in primary care data collections, such as Bettering the Evaluation and Care of Health (BEACH).

Closely related to this, data on internet coverage, bandwidth, the presence of information technology hardware (particularly computers) and health professional use of this technology would also be practical to include in any surveillance framework. These data could help in the understanding of some of the barriers and enablers to the implementation and uptake of telemedicine, and any issues related to the implementation of e-health in rural areas.

The potential contribution that a unique patient identifier and electronic health record could make to rural health research is significant. For example, this technology could provide improved knowledge of coordination of care, chronic disease management and distance travelled to health services. An electronic health record could also facilitate further exploration of the migration patterns of older and sicker people from more remote to less remote areas. Therefore, consideration of new indicator definitions considering the potential data available from electronic health records would also be useful in the long-term.

Where are we going?

With the recent establishment of an Australian Office of Rural Health within the Department of Health and Ageing and the broad health reform currently under way, now seems a fitting time for the rural health sector to consider its information requirements and the extent to which they are currently being addressed.

A review of Australia's current Rural Health Information Framework would be a useful starting point. For example:

- Does the Framework still have currency and relevancy with its users?
- Is the Framework able to answer questions that are important for current and future rural health policy? This paper has addressed some current gaps, such as information communication technology.
- What level of flexibility is required in reporting by geography? Is there too great an emphasis on the presentation of indicators by broad ASGC RA classification? There is evidence that aggregation of data by broad remoteness categories can mask different health outcomes within a single category.¹⁴
- Do new data advancements, such as mesh blocks, have a role to play in rural health surveillance?
- How does the Framework relate to information frameworks in other related sectors, such as education, environment or transport?
- How does the Framework fit within the new national performance-based reporting environment (see discussion below)?

In November 2008, at the Council of Australian Government (COAG) meeting, the Australian Government and the States and Territories agreed to report against a number of health system performance measures.¹⁵ From 2009–10 onwards, these performance measures will be reported annually by ASGC RA.¹⁶

Do the COAG indicators sufficiently capture all the issues specific to rural health areas? Are there 'cascading' indicators important to the rural health field which should be separately reported to inform health policy? An example is the incidence of Ross River Fever, which could flow from the COAG indicator on incidence and prevalence of important preventable disease and injury.

Multidisciplinary and multi-stakeholder input is important in any review of this kind. The establishment of an advisory committee or, a broad consultation process with stakeholders are two possible mechanisms to achieve this.

Some benefits of a multidisciplinary review would be:

- improved coordination of Australian rural health research and information;
- harmonisation of definitions, terminology and metadata across all areas of data reporting and collection (that is, ranging from clinical and service levels to national performance reporting);
- identification of possible collaboration opportunities with other government departments interested in rural and remote statistics, for example, Bureau of Agriculture, Fisheries and Forestry or Department of Infrastructure, Transport, Regional Development and Local Government;
- consideration of the future impact of record linkage and the electronic health record on identification and definition of rural health indicators.

Conclusion and recommendation

Australia has a rich selection of rural health data which can be used to describe rural and urban differentials at a national level. From the early 1990s rural health analysis was based mainly on mortality records. Since then research has diversified to include analysis of other health status measures and broader determinants of health. The development of the Rural Health Information Framework and regular reporting of its indicators has contributed greatly to this expansion. Regular reporting of indicators has also provided baseline and follow-up measures to evaluate the effectiveness of rural health policies.

This surveillance will continue to be important. Acknowledging what we need to know now, and predicting our information needs in the future, is critical for the ongoing renewal of Australia's information infrastructure. Some Socratic ignorance—that is, knowing what we don't know—is also useful. This paper recommends a coordinated and multi-stakeholder review of the current information needs of the rural health sector and an assessment of the Rural Health information Framework's capacity to meet these. Given the prominence of national indicator development and performance reporting, it is particularly important that the sector ensure their information needs are articulated.

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References

1. Commonwealth Bureau of Census and Statistics (CBCS) 1908. Official Year Book of the Commonwealth of Australia, containing authoritative statistics for the period 1901-1907. Australian Bureau of Statistics (ABS). Cat. No. 1301.0. Canberra: CBCS, 1908, <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1301.0Main+Features11908?OpenDocument>>, accessed 12 December 2008.
2. ABS. Australian Standard Geographical Classification, 2001. ABS Cat. No. 1216.0. Canberra: ABS, 2001.
3. Australian Institute of Health and Welfare (AIHW). Rural, regional and remote health: information framework and indicators, Version 1. AIHW Cat. No. PHE 44. Canberra: AIHW, 2003.
4. AIHW. Rural, regional and remote health: information framework and indicators, Version 1b. AIHW Cat. No. PHE 69. Canberra: AIHW, 2005.
5. AIHW. Rural, regional and remote health: indicators of health. AIHW Cat. No. PHE 59. Canberra: AIHW, 2005.
6. AIHW. Rural, regional and remote health: indicators of health status and determinants of health. AIHW Cat. No. 97. Canberra: AIHW, 2007.
7. AIHW. Rural, regional and remote health: indicators of health system performance. AIHW Cat. No. PHE 103. Canberra: AIHW, 2008.
8. Strong, K. Rural health information workshop report. Australian Journal of Rural Health 1997; 7:109–114.
9. AIHW. Rural, regional and remote health: a study on mortality, 2nd edition. AIHW Cat. No. PHE 96. Canberra: AIHW, 2007.
10. ABS. Information paper: Census data enhancement—Indigenous mortality quality study, Australia. ABS Cat. No. 4723.0. Canberra: ABS, 2008.
11. Steering Committee for the Review of Government Services. Report on government services 2009, volume 1. Canberra: Productivity Commission, 2009.
12. Duckett, S.J. The Australian Health care System, 3rd edition. Melbourne: Oxford University Press, 2007.
13. University of Queensland Centre for Online Health, Research and Service pages, <<http://www.uq.edu.au/coh/>>, accessed 12 January 2009.
14. Pampalon R, Martinez J, Hamel D. Does living in rural areas make a difference for health in Québec? Health and Place 2006; 12: 421–435.

15. Council of Australian Governments' Communiqué of 29 November 2008 meeting, Attachment A, Health and Ageing, 2008, <http://www.coag.gov.au/coag_meeting_outcomes/2008-11-29/attachments.cfm#attachmenta>, accessed 12 December 2008.
16. AIHW. A set of performance indicators across the health and aged care system. Canberra: AIHW, 2008. <http://www.aihw.gov.au/indicators/performance_indicators_200806_draft.pdf>, accessed 12 January 2009. (Note: At the time of publication, the final specifications of these indicators were not published).

Presenter

Sally Bullock joined the Australian Institute of Health and Welfare in 2004 and has worked on a range of projects relating to functioning and disability and population health. She has played key roles in the coordination and analysis of national administrative data sets and has considerable skills in data development, collection, analysis and reporting for program and policy analysis. Sally has a Bachelor of Science (University Melbourne), a postgraduate diploma in International Health, and is currently completing a Masters in Public Health. For the last year Sally has been managing the Institute's rural health work program.